

Detailed Design

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Environmental Monitoring System

SaintSoft

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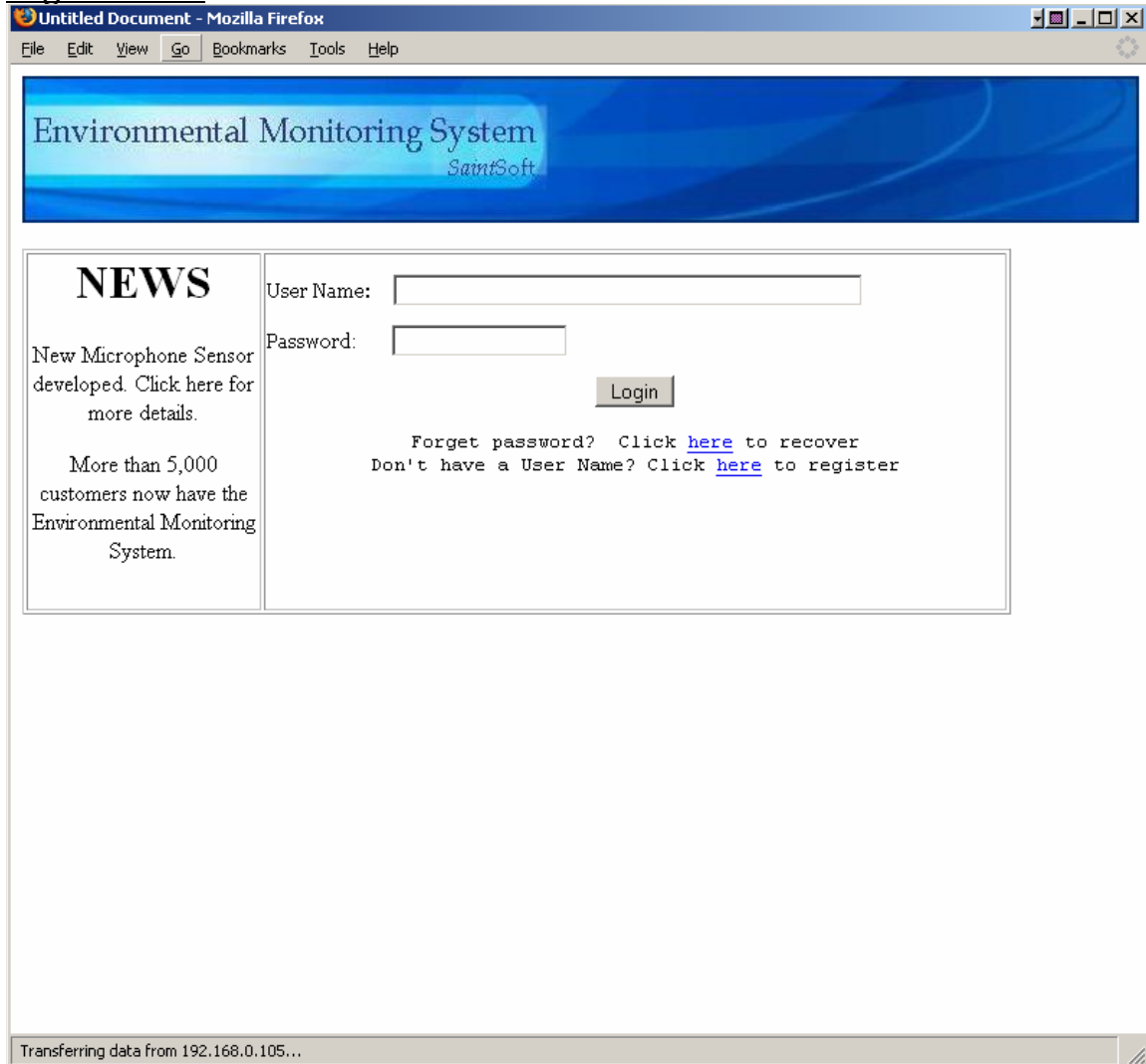
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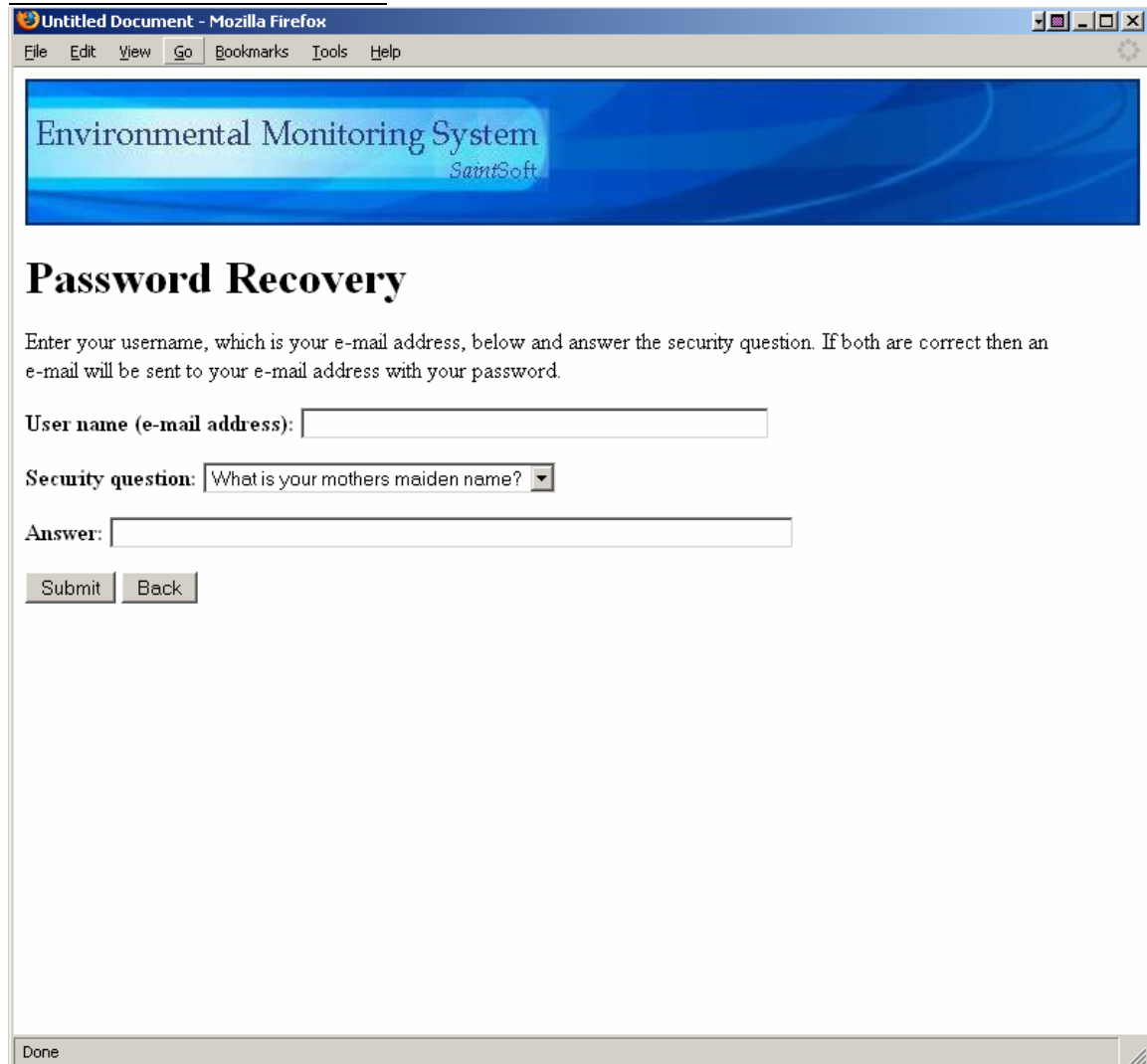
1. External Design Specifications

1.1 User Displays

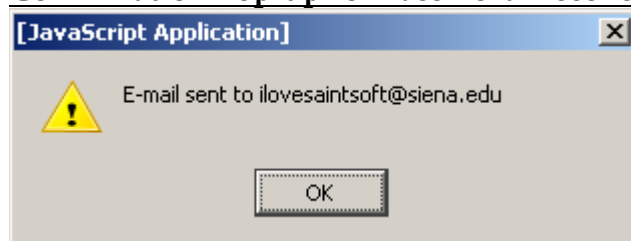
Login Screen:



Users are able to check current new about the product and company. They are able to log into the system, access the password recovery page and access the registration pages.

Password Recover Screen:

The screenshot shows a Mozilla Firefox browser window titled "Untitled Document - Mozilla Firefox". The browser's menu bar includes "File", "Edit", "View", "Go", "Bookmarks", "Tools", and "Help". The page content features a blue header with the text "Environmental Monitoring System" and "SaintSoft" below it. The main heading is "Password Recovery". Below the heading, there is a paragraph of instructions: "Enter your username, which is your e-mail address, below and answer the security question. If both are correct then an e-mail will be sent to your e-mail address with your password." The form contains three input fields: "User name (e-mail address):" with a text box, "Security question:" with a dropdown menu showing "What is your mothers maiden name?", and "Answer:" with a text box. At the bottom of the form are two buttons: "Submit" and "Back". The browser's status bar at the bottom shows "Done".

Confirmation Pop-up for Password Recovery:

If the user forgets their password then they can enter their use name, a security question, and the answer to that security question and the user password will be sent to the e-mail address they provided during registration. The pop-up appears when the submit button is pressed.

Welcome and First Register Screen (Account Information):

The screenshot shows a web browser window titled "Untitled Document - Mozilla Firefox". The browser's menu bar includes "File", "Edit", "View", "Go", "Bookmarks", "Tools", and "Help". The page content features a blue header banner with the text "Environmental Monitoring System" and "SaintSoft" below it. The main heading is "Welcome New User". Below this, a paragraph states: "We are pleased that you picked the Environmental Monitoring system for your monitoring and security needs." A section titled "Account Information" explains that the user's email address will be their USERNAME and will be used for billing and system updates. It specifies password requirements: at least 6 characters long, including 1 upper case letter, 1 lower case, and 1 special character. The special characters listed are underscore, ampersand, plus, minus, asterisk, question mark, percent, and caret. It also mentions a "Forgot your password?" link on the login page. The registration form includes the following fields: "E-mail:" with a text input box; "Password:" and "Retype Password:" with text input boxes; "Security question:" with a dropdown menu currently showing "What is your mothers maiden name?"; and "Answer:" with a text input box. At the bottom of the form are "Submit" and "Back" buttons. The browser's status bar at the bottom shows "Done".

This is the first screen once the user decides to register. The user will enter an e-mail, password twice, a security question, and an answer to that security question. Pressing submit will take you to the next register screen.

Second Register Screen (Contact Information):

Environmental Monitoring System
SaintSoft

Contact Information

Please fill out the form below so we are able to contact you, all fields are required.
NOTICE: Do not register on this computer unless this will be the computer you will be attaching sensors to!!

First Name: Last Name:

Street:

City: State:

Location Name: (Home, Office, Classroom, Jim's Office)
when you sign onto this computer the Location name will appear

Phone: () -

Done

The user will enter contact information into this screen. The contact information includes the user's first name, last name, street, city, state, the location of their computer, and a phone number. Pressing submit will take the user to the last registration screen.

Third Registration Screen (Notification Information):

Environmental Monitoring System
SaintSoft

Notification Information

This information will allow our system to contact you when a threshold is exceeded on your sensors or there are errors. You are allowed to enter upto 5 different e-mail address and 5 phone numbers. Please, via the check boxes choose which e-mail address and phone number you would like to be notified by. Also specify what type of phone you are using. Landline phones include digital phones and regular home/office phoness. You will always be notified via your primary e-mail address.

E-mail Address:

E-mail Addresses:	E-mail address to use:
1. jlovesaintsoft@siena.edu	<input type="checkbox"/>
2. 	<input type="checkbox"/>
3. 	<input type="checkbox"/>
4. 	<input type="checkbox"/>
5. 	<input type="checkbox"/>

Phone:

Done

Third Registration Screen (Notification Information) continued:

Phone:

Numbers:	Type:	Phone to use:
1. 5185552589	Cell <input type="radio"/> Landline <input type="radio"/>	<input checked="" type="checkbox"/>
2. 	Cell <input type="radio"/> Landline <input type="radio"/>	<input type="checkbox"/>
3. 	Cell <input type="radio"/> Landline <input type="radio"/>	<input type="checkbox"/>
4. 	Cell <input type="radio"/> Landline <input type="radio"/>	<input type="checkbox"/>
5. 	Cell <input type="radio"/> Landline <input type="radio"/>	<input type="checkbox"/>

Done

This is the final registration screen. The user can enter up to five e-mail address and five phone numbers. These e-mail address and phone numbers will be used to contact the user in the case of an alert or notification.

Initial Sensored User Screen:

This screen is the initial screen a user will see when first logged in. The users IP address and location of the computer will be displayed along with a warning that there are no sensors registered. The user can change the user profile and add a device from here.

Register Sensors Screen:

Environmental Monitoring System
SaintSoft

REGISTER SENSORS

Here you can add the sensor you have attached to your computer. Enter the name of the owner of the sensor in the first box.

Then enter the location of the sensor, for example Home, Office, Sister's House. IP address and Operating systems should be prefilled, then select the type of sensor using the drop down box. Click submit when you are finished.

Owner of the Sensor:

Location:

IP address: 192.168.0.1

Operating System: Windows XP

Sensor Type:

This screen will allow the user to register a sensor. The owner of the sensor, the location of the sensor and the type of sensor need to be specified. The IP address and operating system will be auto filled.

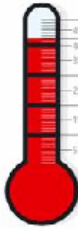

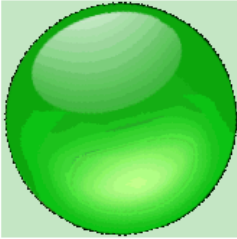
Regular Sensored User Screen:

Environmental Monitoring System
SaintSoft




Welcome Mr. Swarner

IP Address: 192.168.0.1 Location: Home

Current Status of your Devices

 <i>dynamic</i>	 Software Engineering Axis 211 A Mon Feb 20 2006 04:...	
HOME <i>temperature</i>	OFFICE <i>camera</i>	BASEMENT <i>water</i>
74°F	No Motion No Sound	OK
Alert History	Alert History	Alert History
Device Options	Device Options	Device Options

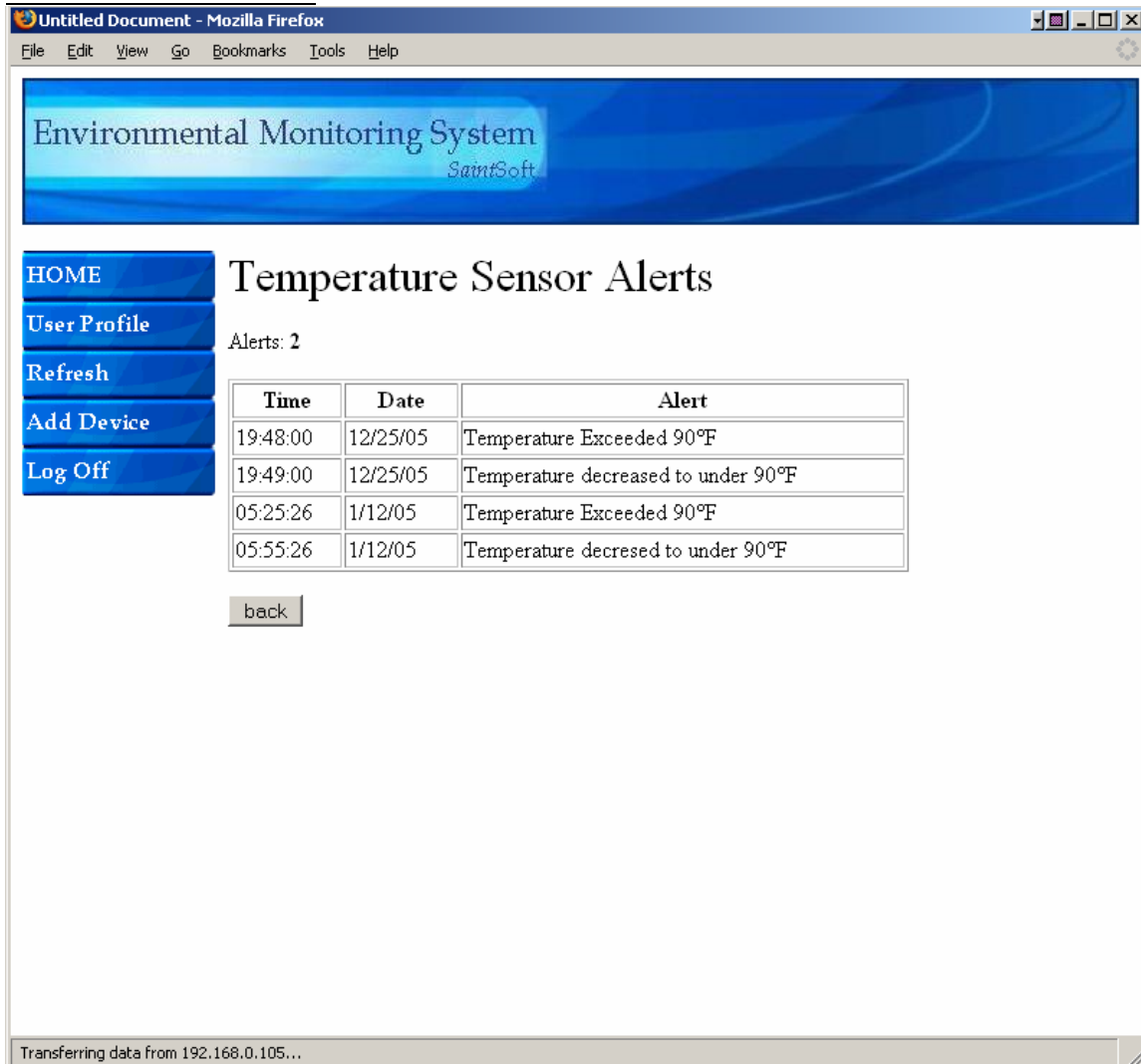
Transferring data from 192.168.0.105...

		
HOME <i>light</i>	OFFICE <i>smoke</i>	OFFICE <i>humidity</i>
1	OK	10%
Alert History	Alert History	Alert History
Device Options	Device Options	Device Options
Delete	Delete	Delete

Transferring data from 192.168.0.105...

This screen is an example of a user with three sensors. The user is able to view the alert history, device options, and has the ability to delete sensors from this page. The user can change the user profile and add a device from here.

Sensor Alert Screens:

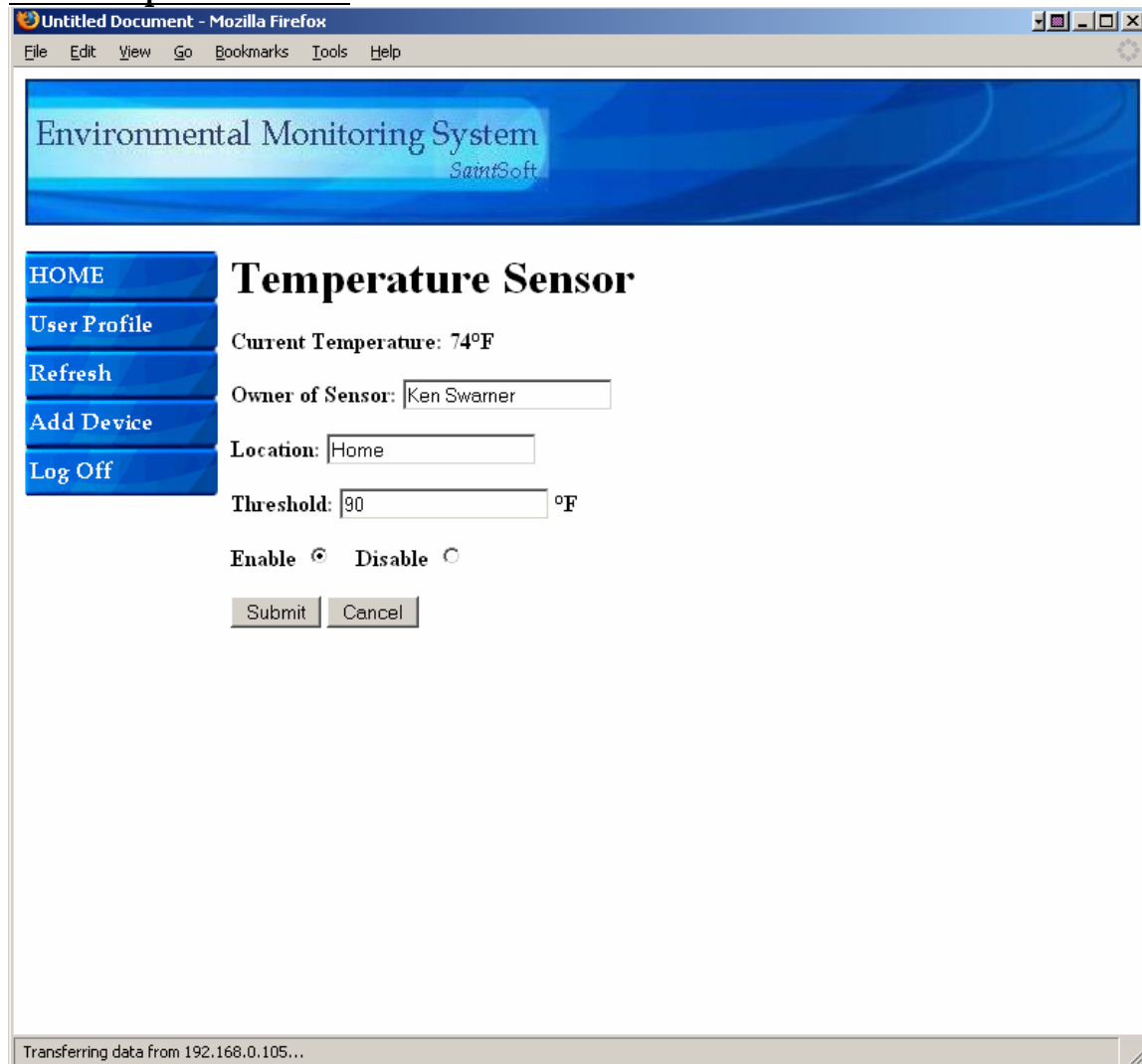


The screenshot shows a web browser window titled "Untitled Document - Mozilla Firefox". The page header features the "Environmental Monitoring System" logo with "SaintSoft" underneath. A left-hand navigation menu contains buttons for "HOME", "User Profile", "Refresh", "Add Device", and "Log Off". The main content area is titled "Temperature Sensor Alerts" and displays "Alerts: 2". Below this is a table with three columns: "Time", "Date", and "Alert". The table contains four rows of data. A "back" button is located below the table. The status bar at the bottom indicates "Transferring data from 192.168.0.105..."

Time	Date	Alert
19:48:00	12/25/05	Temperature Exceeded 90°F
19:49:00	12/25/05	Temperature decreased to under 90°F
05:25:26	1/12/05	Temperature Exceeded 90°F
05:55:26	1/12/05	Temperature decreased to under 90°F

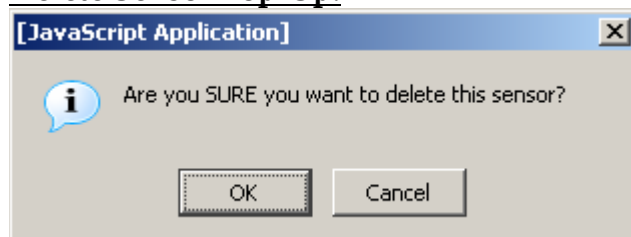
When the user-view the alert history this page appears. The time, date and nature of the alert are displayed. Clicking back will bring the user back to the main page.

Device Option Screens:



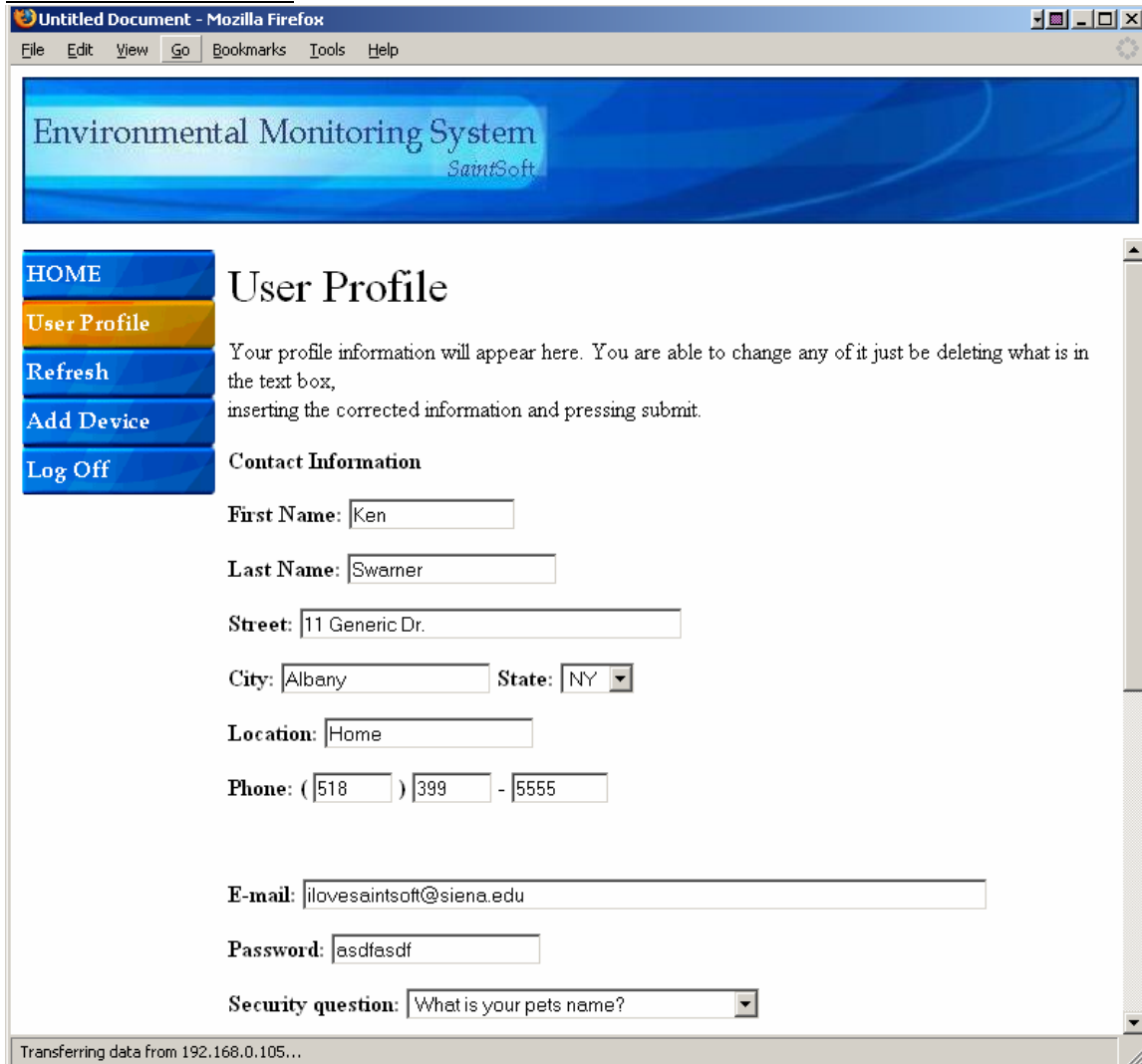
When the device options button is pressed this screen appears. The owner of the sensor, the location and the threshold for the certain sensor can be changed. The user can also enable and disable the sensor if need be.

Delete Sensor Pop-Up:



When the delete button is pressed this pop-up appears checking if the user really wants to delete a sensor.

User Profile Screen:



User Profile Screen continued:

Log Off

Answer:

E-mail Address:

1.

2.

3.

4.

5.

Cell Phone:

1.

2.

3.

Default Notification: Cell Phone E-mail

Transferring data from 192.168.0.105...

When the button for the user profile is pressed this page appears. The user can see the profile information and change it accordingly. The information here was entered during registration.

Administrator Screen:

The screenshot shows the administrator interface for the Environmental Monitoring System. The browser window is titled 'Untitled Document - Mozilla Firefox'. The page has a blue header with the text 'Environmental Monitoring System' and the 'SaintSoft' logo. On the left side, there is a vertical menu with buttons for 'HOME', 'Admin Location', 'Refresh', 'Change E-mail', 'Change Password', and 'Log Off'. The main content area is titled 'Welcome Administrator' and features an illustration of three penguins. Below the penguins, there are two input fields: 'IP address: 192.168.0.1' and 'Location: Ken's Office RB 352'. Under the heading 'Account Management', there is a 'User Name:' field and several buttons: 'Delete Account', 'Deactivate', 'Disable/Enable Sensor', and 'Activate'. The 'Statistics' section displays: 'Number of users: 1,000', 'Number of Sensors: 2,325', and 'Current users logged in: 625'. The 'System Status' is shown as 'NORMAL' in green, with a red message '{ External Connection error.' below it. The 'Recent Alerts (within the last 24 hours)' section contains a scrollable list of alerts: 'spikeman44@hotmail.com Temperature 12/25/05 19:15:23', 'ilovesaintsoft@siena.edu Water 12/25/05 15:35:23', 'sds8081@siena.edu Temperature 12/25/05 08:56:45', and 'spikeman44@hotmail.com'. The status bar at the bottom of the browser window reads 'Waiting for oraserv.cs.siena.edu...'.

Administrator Screen continued:

The screenshot shows a web interface for an administrator. At the top left, there are two blue buttons: 'Change Password' and 'Log Off'. To the right of these buttons, there is a red error message: 'software error }'. The main heading is 'View/Modify User Data:'. Below this, there is a section for 'Account Management' with a 'User Name:' input field. To the right of the input field, there are radio buttons for 'Search By:' with options: Username, Sensor, Alerts, Name, and Date. Below the search options, there is a section for 'Information to include:' with checkboxes for Username, Sensor, Alerts, Name, and Date. To the left of the search options, there are four buttons: 'Delete Account', 'Deactivate', 'Disable/Enable Sensor', and 'Activate'. Below the search options, there is a 'Sort By:' section with radio buttons for 'Ascending' and 'Descending'. At the bottom of the search options, there is a 'Search' button. The status bar at the bottom of the browser window shows 'Transferring data from oraserv.cs.siena.edu...'

When the administrator logs in this is the screen that appears. From here the admin can view the IP address and location of the machine being used. The admin can also view some statistics of the system along with the most recent alerts and the system status. The admin can change the admin location, e-mail and password by clicking the buttons to the left. The admin can query the user database by specified fields at the bottom. Finally the admin can delete, disable, activate and disable/enable sensors by using the buttons on the left.

Admin Location Screen:

Environmental Monitoring System
SaintSoft

HOME
Admin Location
Refresh
Change E-mail
Change Password
Log Off

Admin Location:

The computer you are at now will be considered the admin workstation if you click submit. Your IP address is below and please enter the location of the computer (ex Office, Computer room).

Location:

IP Address: 192.168.0.1

Account Management

User Name:

Done

The admin location page allows the admin to change the location name of the main administrator machine used. The IP address is automatically provided.

Change E-mail Screen:

Environmental Monitoring System
SaintSoft

HOME
Admin Location
Refresh
Change E-mail
Change Password
Log Off

E-mail Change:

Please enter your old e-mail then your new e-mail twice, then click submit.

Old E-Mail:

New E-Mail:

Retype E-mail:

Submit Back

Account Management

User Name:

Delete Account
Deactivate
Disable/Enable Sensor
Activate

Done

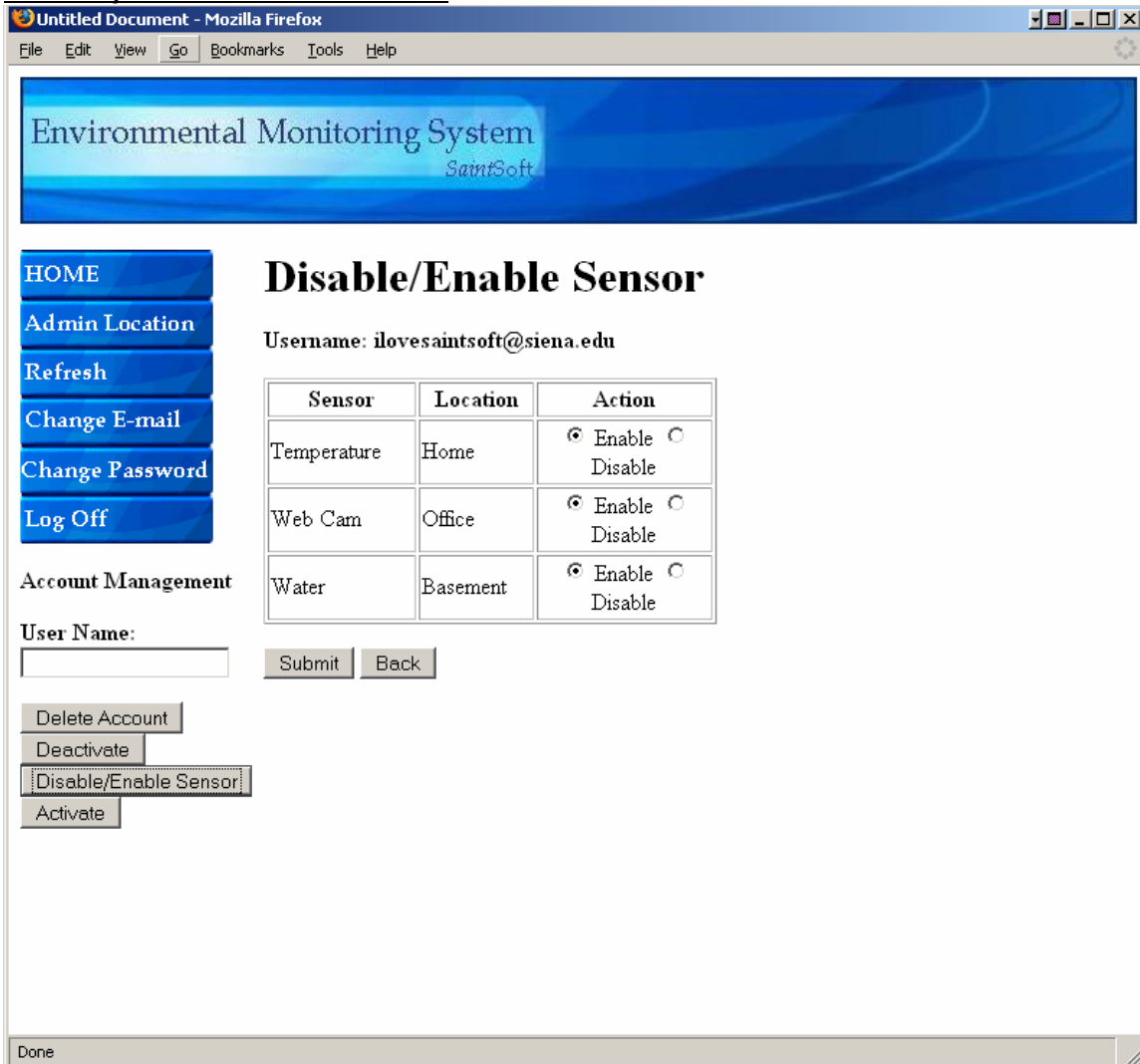
By pressing change e-mail, the admin is able to change the main administrator e-mail by providing the old e-mail and the new e-mail twice.

Change Password Screen:

The screenshot shows a web browser window titled "Untitled Document - Mozilla Firefox". The page header features the "Environmental Monitoring System" logo with the "SaintSoft" brand name. A vertical navigation menu on the left includes buttons for "HOME", "Admin Location", "Refresh", "Change E-mail", "Change Password" (highlighted in orange), and "Log Off". The main content area is titled "Password Reset:" and contains the instruction: "Please enter your old password then your new password twice, then click submit." Below this are three input fields labeled "Old Password:", "New Password:", and "Retype Password:". At the bottom of the form are "Submit" and "Back" buttons. A section titled "Account Management" includes a "User Name:" label and an input field, followed by buttons for "Delete Account", "Deactivate", "Disable/Enable Sensor", and "Activate". The browser's status bar at the bottom shows "Done".

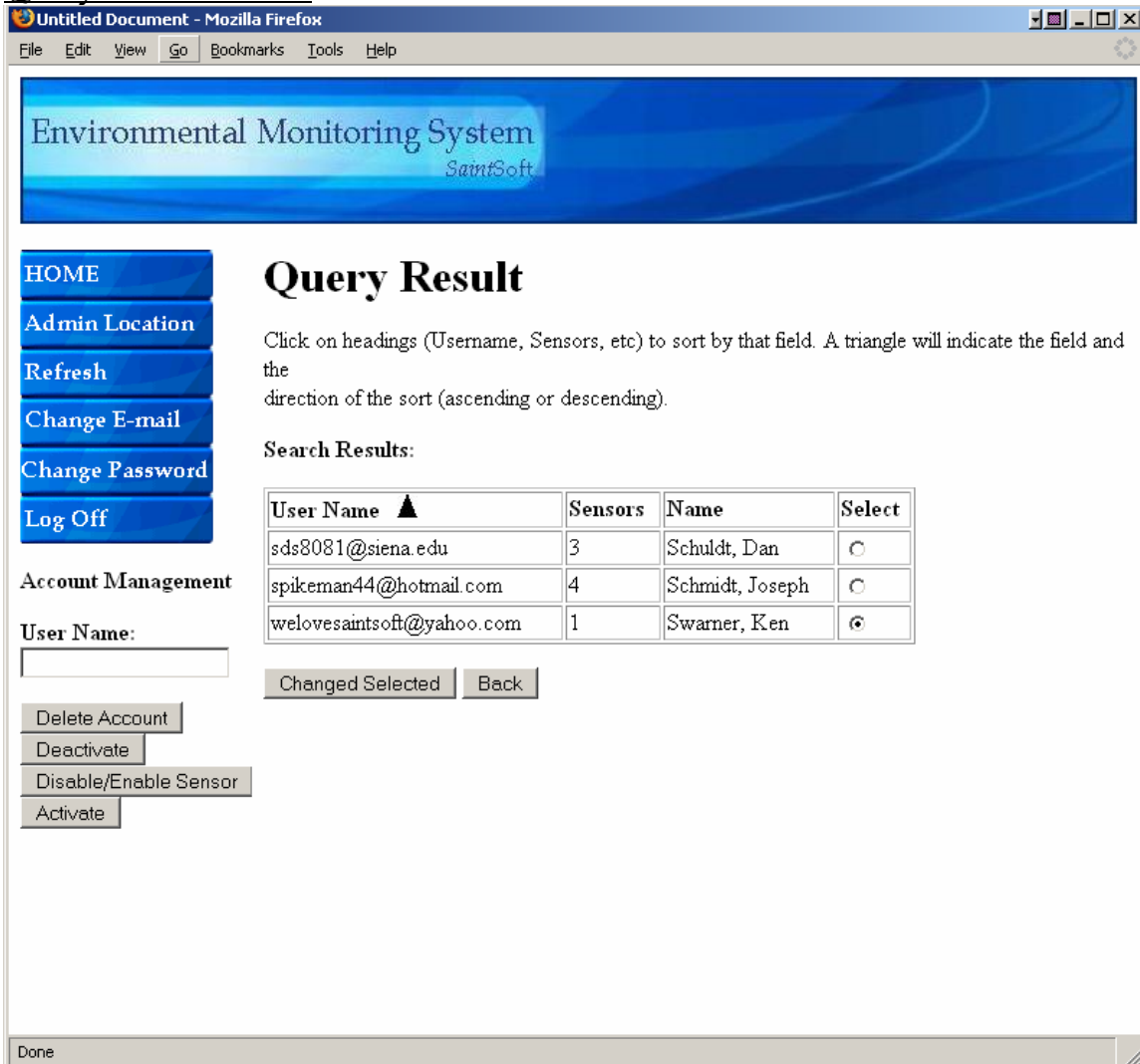
Change password will allow the admin to change the admin password. The admin must provide the old password and type the new password twice.

Disable/Enable Sensor Screen:



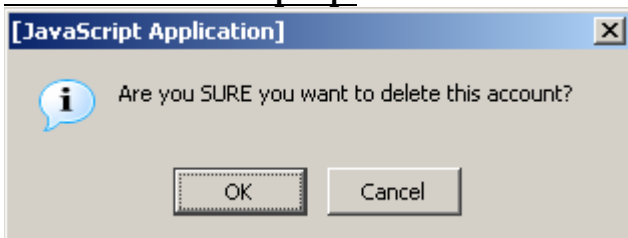
When the disable/enable sensors are clicked then the admin can specify a user name and enable or disable the user's sensors.

Query Result Screen:

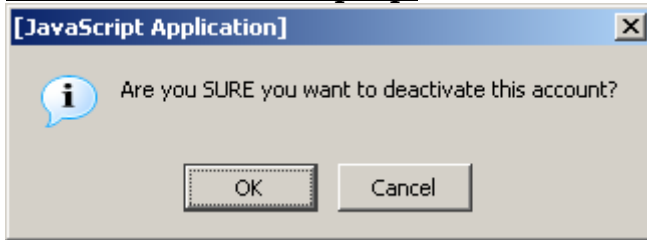


By specifying the field to search by and the information to include the admin can use the query section in the main admin page to view information from the database. This page appears when the admin queries the database. The admin can select a user then click changed selected and can change any user information about the user.

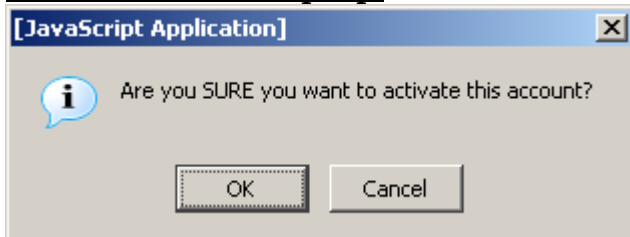
Delete Account Pop-Up:



When the delete account button is pressed this pop-up appears to verify the change the admin is about to make.

Deactivate Account Pop-Up:

When the deactivate account button is pressed this pop-up appears to verify the change the admin is about to make.

Activate Account Pop-Up:

When the activate account button is pressed this pop-up appears to verify the change the admin is about to make.

Remote User Screen:

Environmental Monitoring System
SaintSoft

HOME
Refresh
Add Device
Log Off

Welcome Mr. Swarner

IP Address: 22.134.32.2 **Location:** Remote

Current Status of your Devices

HOME	OFFICE	BASEMENT
74°F	No Motion No Sound	OK
Alert History	Alert History	Alert History

HOME <i>light</i>	OFFICE <i>smoke</i>	OFFICE <i>humidity</i>
1	OK	10%
Alert History	Alert History	Alert History

Transferring data from 192.168.0.105...

This page appears when a remote users logs in. The remote user is able to view the alert history and the information provided by the sensors. The remote user can add a device and view the machines IP address and location.

1.2 User Summary

Login Screen:

The Login Screen is the first screen that a user is faced with upon access to the system. This screen contains a section in which current news is displayed. Such news could include upgrades to the system, new sensors available to users or a simple system status. The screen also contains two entry fields. The first field is for the user name, the second for the user's password. Upon correctly completing the specified information, the user is then directed to the corresponding user welcome screen. The initial login screen also provides the user with two links. The first link allows the user to retrieve a lost password. Upon clicking the link, the user is directed to the password recover screen. The second link allows a new user to create a new account and when clicked, directs the user to the first register screen.

Password Recover Screen:

The Password Recover Screen allows a user to retrieve a lost or forgotten password. This screen contains 3 fields. After being directed to this screen from the Login Screen, the user is prompted for the user name (e-mail address) in the first entry field. In addition, the user must select a security question from a drop down menu and provide the correct answer to that question in the last entry field. The information is entered into the system when the user clicks the provided submit button. Both the question and answer must match those specified by the user during the registration process. Upon confirmation of both the question and answer, the user will receive a pop-up message confirming the delivery of the user's password to the specified e-mail address. At anytime during the password recovery process the user can click on the "Back" button to return to the initial Login Screen.

Confirmation Pop-up for Password Recovery:

The Confirmation Pop-up box is a simple pop-up stating that a password has been sent to a user's e-mail address. The box contains one line stating: "E-mail has been sent to username@domain.com". The user is provided with a button to exit the pop up box. Upon completion of the password recovery, the user is directed back to the Password Recover Screen.

Welcome and First Register Screen (Account Information):

This screen is the first of a series of screens that the user must complete during the registration process. The First Register Screen contains five entry fields. The user is first provided with a summary of the screen, informing them of the rules and restrictions applying to the information the user must supply. The first entry field is the E-mail field. The user is given notice that this e-mail address

will serve as the username from that point on. The second entry field prompts the user for a password to associate with the account. The user is then able to enter a password that must meet the specified restrictions in order to be considered valid. The third entry field prompts the user to re-enter the password for verification. The fourth field is a drop down menu that provides the user with a list of possible security questions and the fourth entry field provides the user to enter an answer to the selected security question. As described in the summary at the top of the screen, the user is to choose a security question that will be used in the future for password recovery purposes. When all fields are complete the user can click the "Submit" button to submit the information to the system. Upon the submission of information, the user is directed to the next screen prompting the user for information, the Second Register Screen. At any time during the process the user is able to click on the "Back" button to return to the initial Login Screen.

Second Register Screen (Contact Information):

The Second Register Screen is accessed from the previous register screen. This screen provides the user with seven entry fields. The screen informs the user that the screen, as well as registration process, should only be completed on the computer in use if the user plans on attaching sensors to it. The user is then prompted for their personal information. The first and second entry fields allow the user to enter their First Name and Last Name respectively. The user is then prompted for the address, Street, City and State in the third, fourth and fifth entry fields respectively. The sixth entry field prompts the user for a Location Name. The user is provided with a brief explanation, stating that this name will be used as a label or title for the login location, as well as a few examples. Finally, the user is prompted for a telephone number for notification purposes. When the user has completed the requested information the "Submit" button can be clicked, submitting the information to the system. Upon submission, the user is directed to the Third Registration Screen. At any time in the process, the user can click on the "Back" button to go to the previous page.

Third Registration Screen (Notification Information):

The Third Registration Screen provides the user with a brief explanation of the screen, stating that the information provided will be used in the case of an alert or error in the system or with a device. The user is prompted to enter up to five different e-mail addresses in which notification or error information will be sent. The user is also able to enter up to five telephone numbers for the same purpose. The user is able to specify whether the telephone number is a cellular number or a landline for notification purposes. Upon completing the screen, the user is able to click the "Submit" button to submit the information to the system. Upon submitting the information, the user is directed to the Initial Sensored User

Screen. At any time during the process, the user can click the “Back” button to return to the previous screen.

From this point on, the user is provided with five different buttons that appear on the left side bar of the screen. The first of these five buttons entitled “Home” will direct the user to their initial welcome screen. The second button, “User Profile”, will direct them to the User Profile Screen in which the user can view and change personal information. The third button, “Refresh”, will refresh the users current page, updating any displayed sensor information. The fourth button, “Add Device”, will direct the user to the Register Sensors Screen, allowing the user to add a new sensor to the account from the computer in which they are located. The fifth and final button, “Log Off” will log the user out of the system and direct them to the Login Screen.

Initial Sensored User Screen:

The user is directed to this screen upon the completion of the registration process or by clicking on the “Home” button on the left side bar. The Initial Sensored User Screen provides the user with a welcome message as well as the current IP address of the computer in which the user is accessing the system. If this IP address is recognized by the system, the screen will also display the location name specific to that IP address. The user is informed that they do not currently have sensors registered to the account and are given the option to add a device by clicking in either of two places, the first being a button below the message, “Add Device”, or the button on the left side toolbar. Both buttons will direct the user to the Register Sensors Screen.

Register Sensors Screen:

The Register Sensors Screen, first, provides the user with a brief explanation of the screen and its functionality. The Screen has three entry fields in which the user must complete in order to register a sensor to their computer. The first of the three prompts the user for the owner’s name that will be associated with the sensor. The second field prompts the user for the location label associated with the sensor. The system will auto-fill the IP Address field as well as the Operating System field. The third entry field provides the user with a drop down menu allowing the user to choose the type of sensor they will be registering to the system. Upon completion of the fields, the user can click the “Submit” button, submitting the information to the system. Upon the submission of information the user is directed to the Regular Sensored User Screen. At any time during the process, the user is able to click on the “Back” button to return to the previous page.

Regular Sensored User Screen:

The Regular Sensored User Screen is much like the Initial Sensored User Screen in that it provides the user with the current IP address of the computer in which the user is located as well as the location label of that computer. Like the Initial Sensored User Screen, the user is able to add a new device to the account. This screen however, provides the user with a graphical display representing information received from the account's registered devices. The information pertaining to each sensor is displayed including the sensor location as well as the sensor's current status. The user is also able to make changes to each of the devices. For each device displayed, each of three buttons are displayed. First, the "Alert History" button allows the user to view the history of the alerts that the pertaining device produced. Upon clicking this button, the user is directed to the appropriate Sensor Alert Screen. Secondly, the user can click on the "Device Options" button allowing the user to make changes to the device information. Upon clicking the Device Options button, the user is directed to the appropriate Device Option Screen. The last button, "Delete", will allow the user to delete the appropriate sensor from their account. Upon clicking this button, the user is faced with a pop-up screen assuring the action.

User Profile Screen:

The User Profile Screen is accessed through the "User Profile" button on the left side bar. The screen allows the user to view and/or change any of the given information including name, address, location label, phone number, e-mail address, password, security question and answer as well as the contact e-mail addresses and phone numbers. By clicking the "Submit" button, the user can submit all (if any) changes made to the information. Upon submitting the new information, the user is directed back to the Regular Sensored User Screen where the location and sensor information is displayed. At any time during the process of changing or viewing profile information the user can click the "Back" button to return to the previous screen without saving any changes.

Sensor Alert Screens:

A Sensor Alert Screen is accessed by clicking on the "Alert History" button provided for each of the registered sensors. The user is provided with a Sensor Alert Screen specific to the device that the user selected. The screen allows the user to view a history of alerts generated by the corresponding sensor. The time, date and a description of the alert are provided for each instance. In addition to the alert, the user is provided with the logged entry of when the sensor falls below the specified threshold to provide the user with complete information. At any time the user can click the "Back" button to return to the Sensored User Screen.

Device Option Screens:

A Device Option Screen is accessed by clicking on the "Device Option" button provided for each of the registered sensors. The user is provided with a Device Option Screen specific to the device that the user selected. The screen allows the user view the current status of the specified device. The user is also able to change information pertaining to that device including the owner's name, location label as well as a threshold point for the sensors in which it applies. The user is able to either enable or disable any of the registered sensors as well. The user can click the "Submit" button to submit all (if any) changes made to the device options. Upon submitting the changes, the user is directed to the Sensored User Screen. At any time the user can click the "Cancel" button to return to the Sensored User Screen.

Delete Sensor Pop-Up:

The Delete Sensor Pop-up appears after the user has clicked the "Delete" button specific to one of the registered sensors. This pop-up ensures that the user wishes to perform the requested action and minimizes mistakes. The pop-up provides the user with a simple message stating "Are you SURE you want to delete this sensor?". The user is then provided with two buttons. The first button, "OK", confirms the user's action and proceeds by deleting the specified sensor. Following the deletion, the user is directed back to an updated Sensored User Screen. The second button, "Cancel", cancels the action and directs the user back to the Sensored User Screen.

Remote User Screen:

The Remote User Screen is much like the Sensored User Screen in that it provides the user with the current IP Address of the computer in which the user is accessing the system from as well as stating that the user is accessing the system from a "Remote" location. The user is able to view a graphical representation of the current status of all devices registered to the account as well as view an alert history pertaining to the specified device. From this point, the user can not make any changes to the account other than add an addition device.

Administrator Screen:

The Administrator Screen is accessed from the login screen only after entering a special username and password. From this point, the Administrator is faced with a welcome screen that displays the current IP Address of the computer accessing the system as well as the location label of that computer. The user is also provided with a set of statistics specific to the system, including the number of users, the number of sensors, the number of users logged into the system as well as the current system status. In addition, the user is provided with the most recent alerts generated by the system. This section will allow the user to view the username (e-mail address) of the user whose sensor generated an alert, the

type of sensor as well as the date and time specific to the alert. The user is also provided with a section in which the database containing user and sensor information can be searched. The Administrator will also be provided with a unique left side bar including additional options. The left sidebar includes six buttons as well as an area for account management. The first of the six buttons, "Home", will direct the user to the Initial User Screen. The second button, "Admin Location", will direct the user to a new screen allowing the user to change the location label associated with the IP Address specific to that computer. The third button, "Refresh", will allow the user to refresh the current page, updating and re-displaying current information related to the system. The fourth button, "Change E-mail", directs the user to a new screen allowing the user to change the registered e-mail address specific to the account. The fifth button, "Change Password", allows the user to change the password specific to the account by directing the user to a new screen. The sixth and final button, "Log Off", will log the user out of the system and re-direct back to the Login Screen.

The View/Modify User Data section of the screen allows the Administrator to search the databases containing both user and sensor information. This search allows the user to search by a single key (username, sensor, alerts, name, date, etc) and allows the user to include specific and additional information in the search. An order in which the information will be displayed can be specified by the user at this point as well. By clicking the "Search" button, the user submits the specified query and will be faced with the results.

The Account Management Section of the left side bar enables the Administrator to search the database for a single user and make changes specific to that account. From this point the user is able to delete the account by clicking the provided "Delete Account" button, deactivate the account by clicking the "Deactivate" button, disable or enable sensors specific to that account by clicking the "Disable/Enable Sensors" button or activate a user's account by clicking the "Activate" button. These options allow the Administrator to have control over the system and be able to troubleshoot within.

Admin Location Screen:

The Administrator Location Screen is accessed from the "Admin Location" button on the left side bar. This screen enables the user to change the location label specific to the computer accessing the system. To do this, the user enters the new label into the provided entry field. By clicking the "Submit" button, the changes are submitted to the system and the user is directed back to the Administrator Main Screen. At any point, the user can click on the "Back" button to return to the previous page without submitting any changes to the account.

Change E-mail Screen:

The Change E-mail Screen is accessed from the left side toolbar by clicking the "Change E-mail" button provided. The user is provided with three entry fields in which the user first enters the old e-mail address, next enters the desired new e-mail address and finally confirms the new e-mail address. By clicking the "Submit" button, the user submits the changed information to the system and is directed to the Administrator Main Screen. At any time, the user can click the "Back" button to return to the previous page without submitting any changes to the account.

Change Password Screen:

The Change Password Screen is accessed from the left side toolbar by clicking the "Change Password" button provided. The user is provided with three entry fields in which the user first enters the old password, next enters the desired new password and finally confirms the new password, adhering to the specified restrictions. By clicking the "Submit" button, the user submits the changed information to the system and is directed to the Administrator Main Screen. At any time, the user can click the "Back" button to return to the previous page without submitting any changes to the account.

Disable/Enable Sensor Screen:

The Disable/Enable Sensor Screen is accessed through the Account Management Section of the left side toolbar and by clicking on the "Disable/Enable Sensors" button. After entering an e-mail address in the entry field the user can click any of four buttons. By clicking the Disable/Enable Sensor button, the user can view all of the sensors registered to the account specified. From here, the user can view the type of each sensor, location of each sensor and choose to either enable or disable that specific sensor. The user can then submit changes by clicking on the "Submit" button. After submitting updated information, the user is directed to the Administrator Main Screen, changes complete. At any time the user can click on the "Back" button to return to the Administrator Main Screen without submitting any changes to the specified account.

Activate Account Pop-Up:

The Activate Account Pop-up appears after the user has clicked the "Activate" button specific to the entered user e-mail address. This pop-up ensures that the user wishes to perform the requested action and minimizes mistakes. The pop-up provides the user with a simple message stating "Are you SURE you want to activate this account?". The user is then provided with two buttons. The first button, "OK", confirms the user's action and proceeds by activating the specified account. Following the addition, the user is directed back to an updated Administrator Main Screen. The second button, "Cancel", cancels the action and directs the user back to the Administrator Main Screen.

Deactivate Account Pop-Up:

The Deactivate Account Pop-up appears after the user has clicked the "Deactivate" button specific to the entered user e-mail address. This pop-up ensures that the user wishes to perform the requested action and minimizes mistakes. The pop-up provides the user with a simple message stating "Are you SURE you want to deactivate this account?". The user is then provided with two buttons. The first button, "OK", confirms the user's action and proceeds by deactivating the specified account. Following the addition, the user is directed back to an updated Administrator Main Screen. The second button, "Cancel", cancels the action and directs the user back to the Administrator Main Screen.

Delete Account Pop-Up:

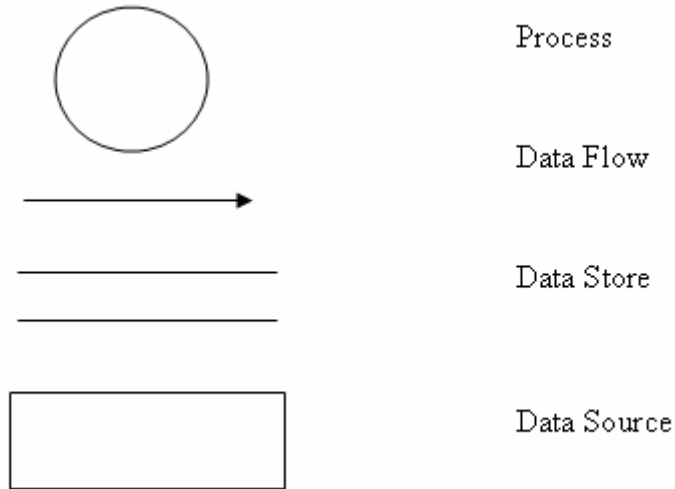
The Delete Account Pop-up appears after the user has clicked the "Delete" button specific to the entered user e-mail address. This pop-up ensures that the user wishes to perform the requested action and minimizes mistakes. The pop-up provides the user with a simple message stating "Are you SURE you want to delete this account?". The user is then provided with two buttons. The first button, "OK", confirms the user's action and proceeds by deleting the specified account. Following the addition, the user is directed back to an updated Administrator Main Screen. The second button, "Cancel", cancels the action and directs the user back to the Administrator Main Screen.

Query Result Screen:

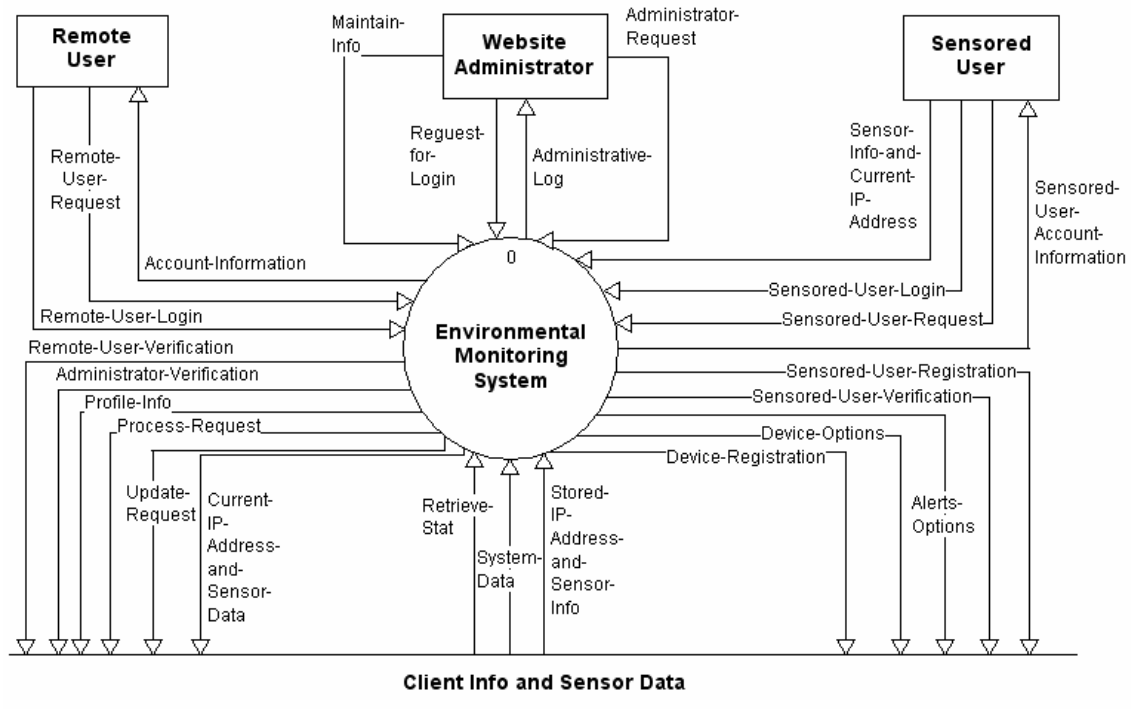
The Query Result Screen is accessed after the user submits a query into the system. The user is provided with a screen displaying the information requested (username, sensor, alerts, name, date, etc) in the order requested (ascending, descending). At the end of each line the user is able to select any of the query results to make changes to those accounts. To do so, the user selects a query result followed by the "Change Selected" button. This action will direct the user to a screen allowing the Administrator to edit the user information. At any point the user can click on the "Back" button to return to the Administrator Main Screen without submitting any changes.

1.3 Detailed Data Flow Diagrams

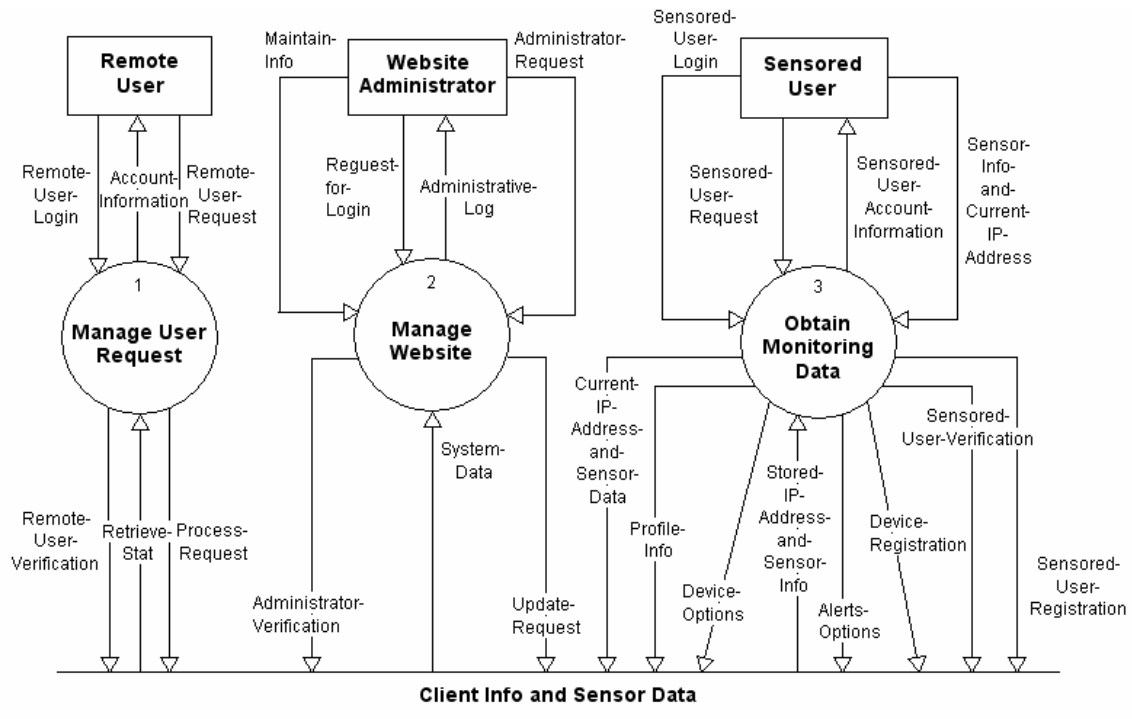
Symbols:



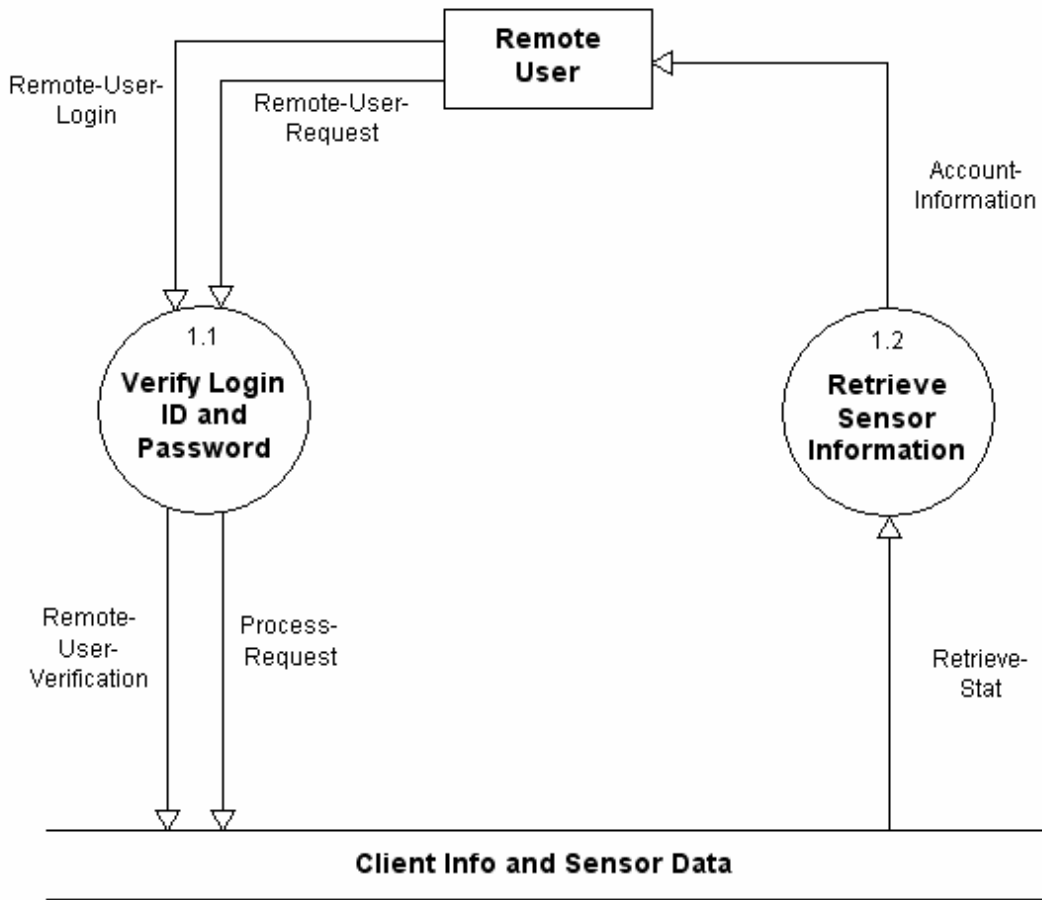
Context Diagram:



Level 0: Environmental Monitoring System

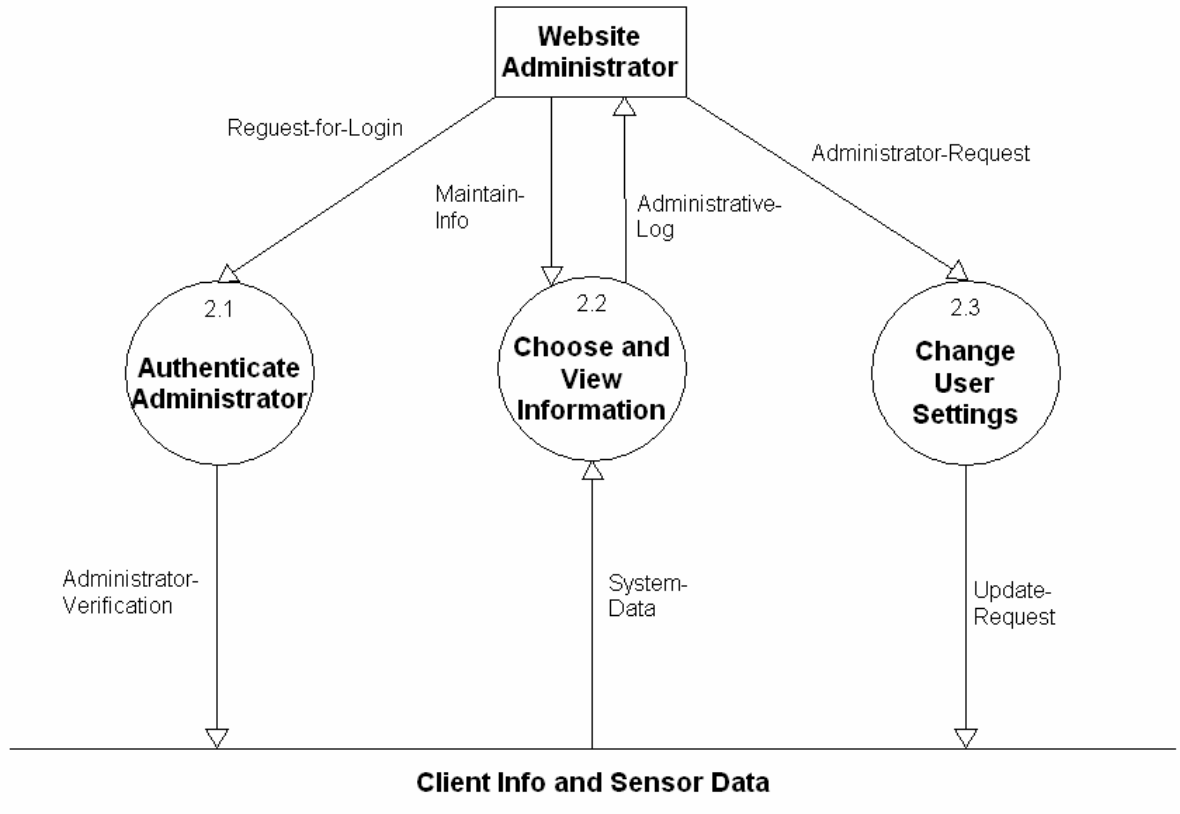


Level 1: Manage User Request



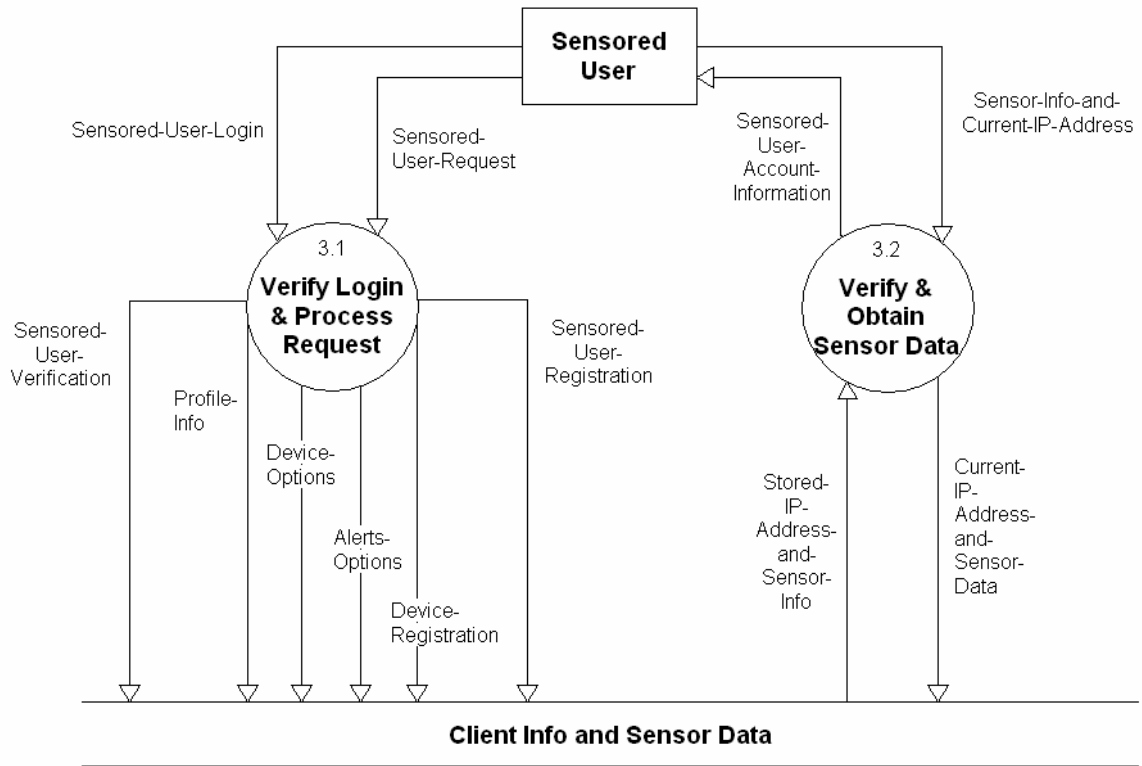
Level 2: Manage Website

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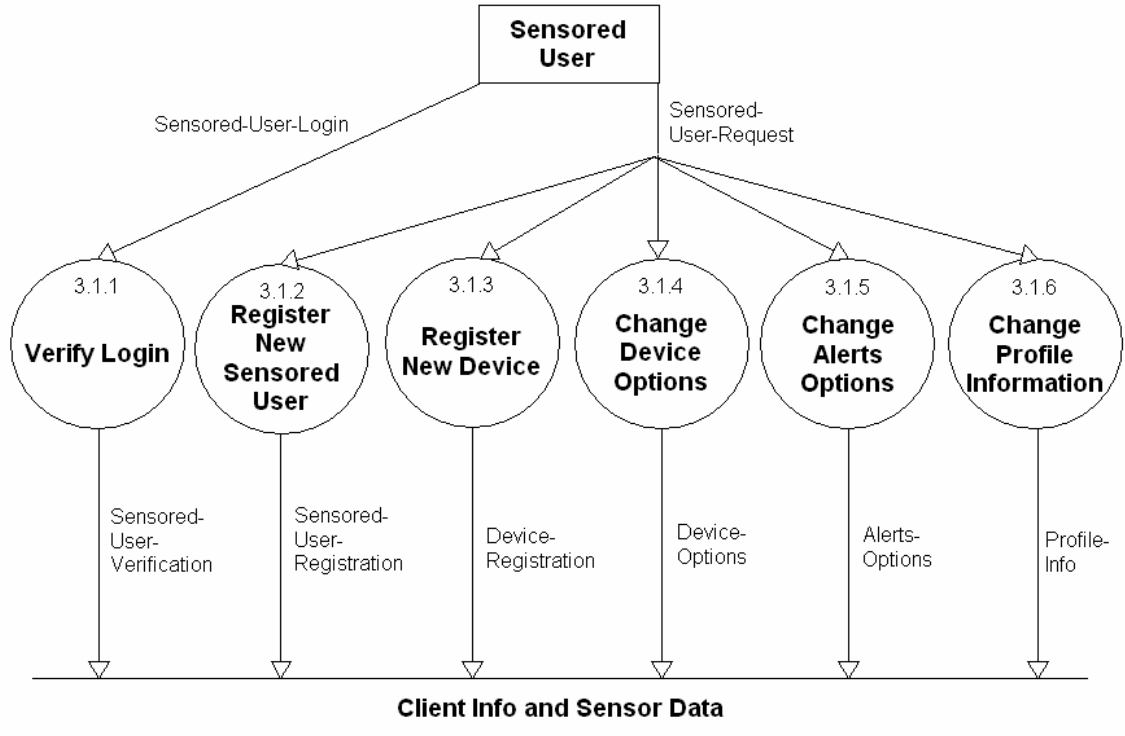
Level 3: Obtain Monitoring Data

Visible Systems Corporation EDUCATIONAL/TRAINING Version



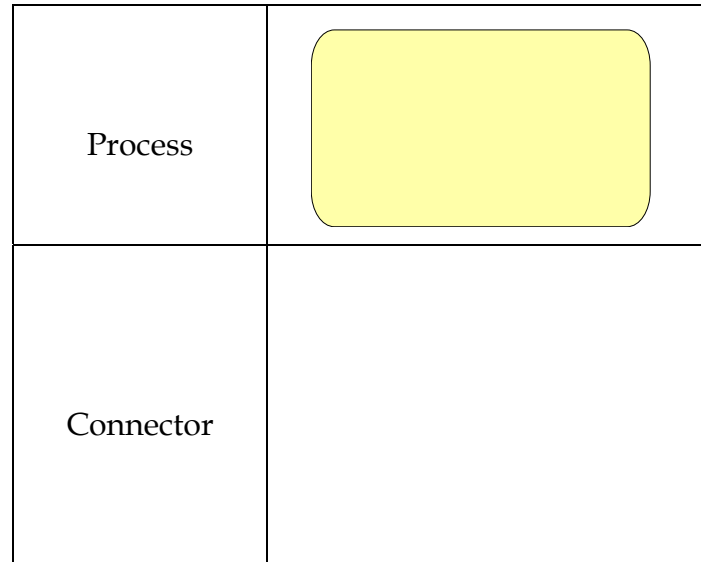
Level 3.1: Verify Login & Process Request

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1.4 Functional Decomposition Diagram

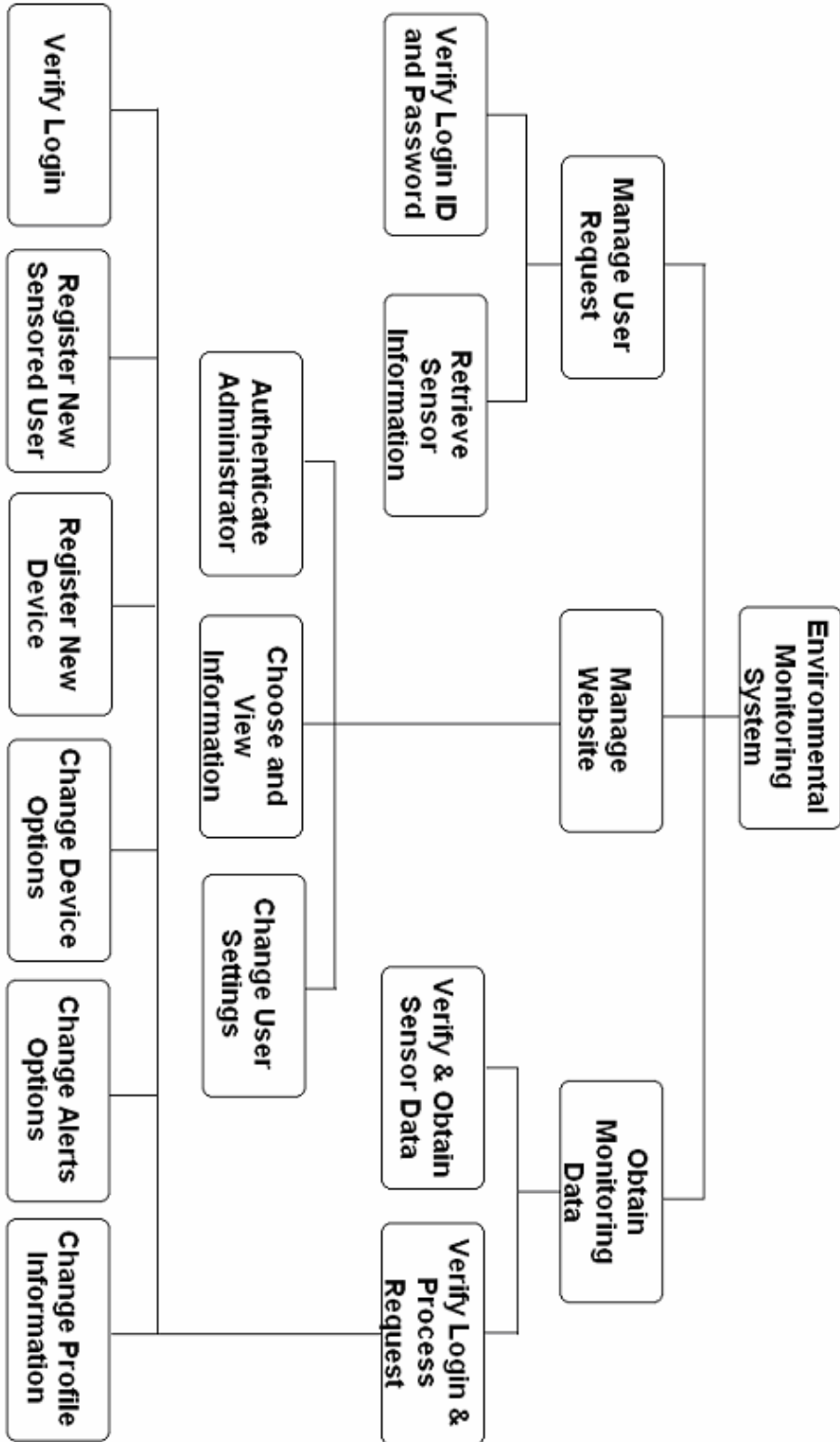
The functional decomposition diagram (FDD) is a tool that depicts the hierarchy in detail using process models. It breaks down or decomposes the business functions into processes makes complex system much easier to understand and analyze.



A Process is an activity that is performed for specific business reason, it is denoted by a rectangle with rounded corners. A process represents a tangible activity that occurs within the organization, each process should only contain one activity.

Connectors are lines that between functions, processes or from a function to a process. They specify hierarchical relationships among the components of the functional decomposition diagram. Connectors should not be named, but their presence implies consists.

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1.5 Logical Data Dictionary

Date: 11/28/2005

Project: DFD DIAGRAM

Page: 1

Time: 7:30:35 PM

Detailed Listing -- Alphabetically
All Entries -- Data Flow Diagrams

Account-Information		Data Flow
<i>Location:</i>		
Level 0	(0)	<i>Source:</i> Manage User Request (Process)
		<i>Dest:</i> Remote User (Source/Sink)
Level 1	(1)	<i>Source:</i> Retrieve Sensor Information (Process)
		<i>Dest:</i> Remote User (Source/Sink)
Context Diagram	(CONTEXT)	<i>Source:</i> Environmental Monitoring System (Process)
		<i>Dest:</i> Remote User (Source/Sink)
<i>Date Last Altered:</i>	10/24/2005	<i>Date Created:</i> 10/24/2005

Administrative-Log		Data Flow
<i>Location:</i>		
Level 0	(0)	<i>Source:</i> Manage Website (Process)
		<i>Dest:</i> Website Administrator (Source/Sink)
Level 2	(2)	<i>Source:</i> Choose and View Information (Process)
		<i>Dest:</i> Website Administrator (Source/Sink)
Context Diagram	(CONTEXT)	<i>Source:</i> Environmental Monitoring System (Process)
		<i>Dest:</i> Website Administrator (Source/Sink)
<i>Date Last Altered:</i>	10/24/2005	<i>Date Created:</i> 10/24/2005

Administrator-Request		Data Flow
<i>Location:</i>		
Level 2	(2)	<i>Source:</i> Website Administrator (Source/Sink)
		<i>Dest:</i> Change User Settings (Process)
Level 0	(0)	<i>Source:</i> Website Administrator (Source/Sink)
		<i>Dest:</i> Manage Website (Process)
Context Diagram	(CONTEXT)	<i>Source:</i> Website Administrator (Source/Sink)
		<i>Dest:</i> Environmental Monitoring System (Process)
<i>Date Last Altered:</i>	11/18/2005	<i>Date Created:</i> 11/18/2005

Administrator-Verification		Data Flow
<i>Location:</i>		
Level 2	(2)	<i>Source:</i> Authenticate Administrator (Process)

[Level 0](#) (0) *Dest:* [Client Info and Sensor Data](#) (File)
Source: [Manage Website](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
[Context Diagram](#) (CONTEXT)
Source: [Environmental Monitoring System](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
Date Last Altered: 11/18/2005 *Date Created:* 11/18/2005

Alerts-Options Data Flow
Location:
[Level 3](#) (3) *Source:* [Verify Login & Process Request](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
[Level 3.1](#) (3.1) *Source:* [Change Alerts Options](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
[Level 0](#) (0) *Source:* [Obtain Monitoring Data](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
[Context Diagram](#) (CONTEXT)
Source: [Environmental Monitoring System](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
Date Last Altered: 11/21/2005 *Date Created:* 11/21/2005

Authenticate Administrator Process
Description:
 Verify website administrator login information then process it to the client info and sensor data
Process #: 2.1
Location:
[Level 2](#) (2) *Input Flows:*
[Request-for-Login](#)
Output Flows:
[Administrator-Verification](#)
[Environmental Monitoring System](#)
Date Last Altered: 11/28/2005 *Date Created:* 11/18/2005

Change Alerts Options Process
Description:
 Allow sensored user to set their alerts
Process #: 3.1.5
Location:
[Level 3.1](#) (3.1) *Output Flows:*
[Alerts-Options](#)
[Environmental Monitoring System](#)
Children:
Date Last Altered: 11/28/2005 *Date Created:* 11/21/2005

Change Device Options Process

Description:

Enabling user to change threshold values for each sensor, also enables user to deactivate or activate sensor

Process #: 3.1.4

Location:

[Level 3.1](#) (3.1)

Output Flows:

[Device-Options](#)

[Environmental Monitoring System](#)

Children:

Date Last Altered: 11/28/2005

Date Created: 11/21/2005

Change Profile Information

Process

Description:

Sensored user are able to change their personal information such as email, phone number, etc.

Process #: 3.1.6

Location:

[Level 3.1](#) (3.1)

Output Flows:

[Profile-Info](#)

[Environmental Monitoring System](#)

Date Last Altered: 11/28/2005

Date Created: 11/21/2005

Change User Settings

Process

Description:

Website administrator can request to change all user setting

Process #: 2.3

Location:

[Level 2](#) (2)

Input Flows:

[Administrator-Request](#)

Output Flows:

[Update-Request](#)

[Environmental Monitoring System](#)

Date Last Altered: 11/28/2005

Date Created: 11/18/2005

Choose and View Information

Process

Description:

It takes the website administrator request, let administrator to maintain their info

Process #: 2.2

Location:

[Level 2](#) (2)

Input Flows:

[System-Data](#)

[Maintain-info](#)

Output Flows:

[Administrative-Log](#)

[Environmental Monitoring System](#)

Date Last Altered: 11/28/2005 Parent: [Manage Website](#) (Process)

Date Created: 11/18/2005

Client Info and Sensor Data

File

Description:

Database that store all client infor and sensor data

Location:[Level 2](#) (2)*Input Flows:*[Administrator-Verification](#)[Update-Request](#)*Output Flows:*[System-Data](#)[Level 3.1](#) (3.1)*Input Flows:*[Sensored-User-Registration](#)[Sensored-User-Verification](#)[Alerts-Options](#)[Device-Options](#)[Device-Registration](#)[Profile-Info](#)[Level 0](#) (0)*Input Flows:*[Remote-User-Verification](#)[Current-IP-Address-and-Sensor-Data](#)[Sensored-User-Registration](#)[Sensored-User-Verification](#)[Profile-Info](#)[Update-Request](#)[Administrator-Verification](#)[Device-Options](#)[Alerts-Options](#)[Device-Registration](#)*Output Flows:*[Retrieve-Stat](#)[System-Data](#)[Stored-IP-Address-and-Sensor-Info](#)[Level 3](#) (3)*Input Flows:*[Sensored-User-Registration](#)[Sensored-User-Verification](#)[Current-IP-Address-and-Sensor-Data](#)[Alerts-Options](#)[Device-Options](#)[Device-Registration](#)[Profile-Info](#)*Output Flows:*[Stored-IP-Address-and-Sensor-Info](#)[Context Diagram](#) (CONTEXT)*Input Flows:*[Sensored-User-Registration](#)[Sensored-User-Verification](#)[Device-Registration](#)[Alerts-Options](#)[Device-Options](#)

		Profile-Info Current-IP-Address-and-Sensor-Data Update-Request Administrator-Verification Remote-User-Verification <i>Output Flows:</i> Stored-IP-Address-and-Sensor-Info System-Data Retrieve-Stat
Level 1	(1)	<i>Input Flows:</i> Remote-User-Verification <i>Output Flows:</i> Retrieve-Stat
<i>Date Last Altered:</i>	11/28/2005	<i>Date Created:</i> 11/18/2005
<hr/>		
Current-IP-Address-and-Sensor-Data		Data Flow
<i>Location:</i>		
Level 3	(3)	<i>Source:</i> Verify & Obtain Sensor Data (Process) <i>Dest:</i> Client Info and Sensor Data (File)
Level 0	(0)	<i>Source:</i> Obtain Monitoring Data (Process) <i>Dest:</i> Client Info and Sensor Data (File)
Context Diagram	(CONTEXT)	<i>Source:</i> Environmental Monitoring System (Process) <i>Dest:</i> Client Info and Sensor Data (File)
<i>Date Last Altered:</i>	11/21/2005	<i>Date Created:</i> 11/21/2005
<hr/>		
Device-Options		Data Flow
<i>Location:</i>		
Level 3	(3)	<i>Source:</i> Verify Login & Process Request (Process) <i>Dest:</i> Client Info and Sensor Data (File)
Level 3.1	(3.1)	<i>Source:</i> Change Device Options (Process) <i>Dest:</i> Client Info and Sensor Data (File)
Level 0	(0)	<i>Source:</i> Obtain Monitoring Data (Process) <i>Dest:</i> Client Info and Sensor Data (File)
Context Diagram	(CONTEXT)	<i>Source:</i> Environmental Monitoring System (Process) <i>Dest:</i> Client Info and Sensor Data (File)
<i>Date Last Altered:</i>	11/21/2005	<i>Date Created:</i> 11/21/2005
<hr/>		
Device-Registration		Data Flow
<i>Location:</i>		
Level 3	(3)	<i>Source:</i> Verify Login & Process Request (Process) <i>Dest:</i> Client Info and Sensor Data (File)
Level 3.1	(3.1)	<i>Source:</i> Register New Device (Process)

[Level 0](#) (0)
Dest: [Client Info and Sensor Data](#) (File)
Source: [Obtain Monitoring Data](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
[Context Diagram](#) (CONTEXT)
Source: [Environmental Monitoring System](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
Date Last Altered: 11/21/2005 *Date Created:* 11/21/2005

Environmental Monitoring System Process

Description:
 A system that allow you to view different sensor information
Process #: 0
Location:

[Context Diagram](#) (CONTEXT)
Input Flows:
[Administrator-Request](#)
[Sensor-Info-and-Current-IP-Address](#)
[Sensored-User-Login](#)
[Sensored-User-Request](#)
[Stored-IP-Address-and-Sensor-Info](#)
[System-Data](#)
[Retrieve-Stat](#)
[Remote-User-Login](#)
[Maintain-info](#)
[Reguest-for-Login](#)
Output Flows:
[Administrative-Log](#)
[Sensored-User-Account-Information](#)
[Sensored-User-Registration](#)
[Sensored-User-Verification](#)
[Device-Registration](#)
[Alerts-Options](#)
[Device-Options](#)
[Profile-Info](#)
[Current-IP-Address-and-Sensor-Data](#)
[Update-Request](#)
[Administrator-Verification](#)
[Remote-User-Verification](#)
[Account-Information](#)

[Environmental Monitoring System](#)
Children: [Manage Website](#) (Process)
Date Last Altered: 11/28/2005 *Date Created:* 10/24/2005

Maintain-info Data Flow

Location:
[Level 2](#) (2)
Source: [Website Administrator](#) (Source/Sink)
Dest: [Choose and View Information](#) (Process)
[Level 0](#) (0)
Source: [Website Administrator](#) (Source/Sink)
Dest: [Manage Website](#) (Process)

Context Diagram (CONTEXT)Source: [Website Administrator](#) (Source/Sink)Dest: [Environmental Monitoring System](#) (Process)

Date Last Altered: 10/24/2005

Date Created: 10/24/2005

Manage User Request

Process

Description:

Process user login information to let them log in

Process #: 1

Location:[Level 0](#) (0)*Input Flows:*[Remote-User-Login](#)[Retrieve-Stat](#)*Output Flows:*[Account-Information](#)[Remote-User-Verification](#)[Environmental Monitoring System](#)*Children:*

Date Last Altered: 11/28/2005

Date Created: 10/24/2005

Manage Website

Process

Description:

A webpage that allow user to login and update their information

Process #: 2

Location:[Level 0](#) (0)*Input Flows:*[System-Data](#)[Maintain-info](#)[Administrator-Request](#)[Reguest-for-Login](#)*Output Flows:*[Administrative-Log](#)[Update-Request](#)[Administrator-Verification](#)[Environmental Monitoring System](#)*Children:* [Choose and View Information](#) (Process)*Parent:* [Environmental Monitoring System](#) (Process)

Date Last Altered: 11/28/2005

Date Created: 10/24/2005

Obtain Monitoring Data

Process

Description:

Collecting all the data from sensed user then process it to the client info and sensor data

Process #: 3

Location:[Level 0](#) (0)*Input Flows:*[Sensor-Info-and-Current-IP-Address](#)[Sensored-User-Login](#)[Stored-IP-Address-and-Sensor-Info](#)

[Sensored-User-Request](#)
Output Flows:
[Sensored-User-Account-Information](#)
[Current-IP-Address-and-Sensor-Data](#)
[Sensored-User-Registration](#)
[Sensored-User-Verification](#)
[Profile-Info](#)
[Device-Options](#)
[Alerts-Options](#)
[Device-Registration](#)

[Environmental Monitoring System](#)
Children:
Date Last Altered: 11/28/2005 *Date Created:* 10/24/2005

Profile-Info Data Flow
Location:
[Level 3](#) (3) *Source:* [Verify Login & Process Request](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
[Level 3.1](#) (3.1) *Source:* [Change Profile Information](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
[Level 0](#) (0) *Source:* [Obtain Monitoring Data](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
[Context Diagram](#) (CONTEXT)
Source: [Environmental Monitoring System](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
Date Last Altered: 11/21/2005 *Date Created:* 11/21/2005

Register New Device Process
Description:
 Allow sensed user to register new sensor
Process #: 3.1.3
Location:
[Level 3.1](#) (3.1) *Output Flows:*
[Device-Registration](#)
[Environmental Monitoring System](#)
Children:
Date Last Altered: 11/28/2005 *Date Created:* 11/21/2005

Register New Sensored User Process
Description:
 Registration for fist time sensed user
Process #: 3.1.2
Location:
[Level 3.1](#) (3.1) *Output Flows:*
[Sensored-User-Registration](#)
[Environmental Monitoring System](#)

Children:
Date Last Altered: 11/28/2005 *Date Created:* 11/21/2005

Reguest-for-Login Data Flow
Location:
[Level 2](#) (2)
Source: [Website Administrator](#) (Source/Sink)
Dest: [Authenticate Administrator](#) (Process)
[Context Diagram](#) (CONTEXT)
Source: [Website Administrator](#) (Source/Sink)
Dest: [Environmental Monitoring System](#) (Process)
[Level 0](#) (0)
Source: [Website Administrator](#) (Source/Sink)
Dest: [Manage Website](#) (Process)
Date Last Altered: 11/18/2005 *Date Created:* 11/18/2005

Remote-User-Login Data Flow
Description:
Location:
[Level 1](#) (1)
Source: [Remote User](#) (Source/Sink)
Dest: [Verify Login ID and Password](#) (Process)
[Level 0](#) (0)
Source: [Remote User](#) (Source/Sink)
Dest: [Manage User Request](#) (Process)
[Context Diagram](#) (CONTEXT)
Source: [Remote User](#) (Source/Sink)
Dest: [Environmental Monitoring System](#) (Process)
Date Last Altered: 11/28/2005 *Date Created:* 11/21/2005

Remote-User-Verification Data Flow
Location:
[Level 1](#) (1)
Source: [Verify Login ID and Password](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
[Level 0](#) (0)
Source: [Manage User Request](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
[Context Diagram](#) (CONTEXT)
Source: [Environmental Monitoring System](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
Date Last Altered: 11/21/2005 *Date Created:* 11/21/2005

Remote User Source/Sink
Description:
 User that sign in at a location that does not have register sensor
Location:
[Context Diagram](#) (CONTEXT)
Input Flows:
[Account-Information](#)

		<i>Output Flows:</i> Remote-User-Login
Level 0	(0)	
		<i>Input Flows:</i> Account-Information
		<i>Output Flows:</i> Remote-User-Login
Level 1	(1)	
		<i>Input Flows:</i> Account-Information
		<i>Output Flows:</i> Remote-User-Login
<i>Date Last Altered:</i>	11/28/2005	<i>Date Created:</i> 11/21/2005
<hr/>		
Retrieve-Stat		Data Flow
<i>Location:</i>		
Level 0	(0)	
		<i>Source:</i> Client Info and Sensor Data (File)
		<i>Dest:</i> Manage User Request (Process)
Level 1	(1)	
		<i>Source:</i> Client Info and Sensor Data (File)
		<i>Dest:</i> Retrieve Sensor Information (Process)
Context Diagram	(CONTEXT)	
		<i>Source:</i> Client Info and Sensor Data (File)
		<i>Dest:</i> Environmental Monitoring System (Process)
<i>Date Last Altered:</i>	10/24/2005	<i>Date Created:</i> 10/24/2005
<hr/>		
Retrieve Sensor Information		Process
<i>Description:</i>		
Get sensor information from the client info and sensor data then process and display the information to remote user		
<i>Process #:</i>	1.2	
<i>Location:</i>		
Level 1	(1)	
		<i>Input Flows:</i> Retrieve-Stat
		<i>Output Flows:</i> Account-Information
		Environmental Monitoring System
<i>Date Last Altered:</i>	11/28/2005	<i>Date Created:</i> 10/24/2005
<hr/>		
Sensor-Info-and-Current-IP-Address		Data Flow
<i>Location:</i>		
Level 0	(0)	
		<i>Source:</i> Sensored User (Source/Sink)
		<i>Dest:</i> Obtain Monitoring Data (Process)
Level 3	(3)	
		<i>Source:</i> Sensored User (Source/Sink)
		<i>Dest:</i> Verify & Obtain Sensor Data (Process)
Context Diagram	(CONTEXT)	
		<i>Source:</i> Sensored User (Source/Sink)
		<i>Dest:</i> Environmental Monitoring System (Process)

Date Last Altered: 10/31/2005 *Date Created:* 10/31/2005
 Sensored-User-Account-Information Data Flow
Location:
[Level 3](#) (3) *Source:* [Verify & Obtain Sensor Data](#) (Process)
Dest: [Sensored User](#) (Source/Sink)
[Level 0](#) (0) *Source:* [Obtain Monitoring Data](#) (Process)
Dest: [Sensored User](#) (Source/Sink)
[Context Diagram](#) (CONTEXT)
Source: [Environmental Monitoring System](#) (Process)
Dest: [Sensored User](#) (Source/Sink)
Date Last Altered: 11/21/2005 *Date Created:* 11/21/2005

Sensored-User-Login Data Flow
Location:
[Level 3](#) (3) *Source:* [Sensored User](#) (Source/Sink)
Dest: [Verify Login & Process Request](#) (Process)
[Level 0](#) (0) *Source:* [Sensored User](#) (Source/Sink)
Dest: [Obtain Monitoring Data](#) (Process)
[Context Diagram](#) (CONTEXT)
Source: [Sensored User](#) (Source/Sink)
Dest: [Environmental Monitoring System](#) (Process)
[Level 3.1](#) (3.1) *Source:* [Sensored User](#) (Source/Sink)
Dest: [Verify Login](#) (Process)
Date Last Altered: 11/21/2005 *Date Created:* 11/21/2005

Sensored-User-Registration Data Flow
Location:
[Level 3](#) (3) *Source:* [Verify Login & Process Request](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
[Level 3.1](#) (3.1) *Source:* [Register New Sensored User](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
[Level 0](#) (0) *Source:* [Obtain Monitoring Data](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
[Context Diagram](#) (CONTEXT)
Source: [Environmental Monitoring System](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)
Date Last Altered: 11/21/2005 *Date Created:* 11/21/2005

Sensored-User-Request Data Flow
Location:
[Level 3](#) (3) *Source:* [Sensored User](#) (Source/Sink)
Dest: [Verify Login & Process Request](#) (Process)
[Level 3.1](#) (3.1)

Source: [Sensored User](#) (Source/Sink)
 Dest: *** Not on Diagram ***
[Level 0](#) (0)
 Source: [Sensored User](#) (Source/Sink)
 Dest: [Obtain Monitoring Data](#) (Process)
[Context Diagram](#) (CONTEXT)
 Source: [Sensored User](#) (Source/Sink)
 Dest: [Environmental Monitoring System](#) (Process)
 Date Last Altered: 11/21/2005 Date Created: 11/21/2005

Sensored-User-Verification

Data Flow

Location:

[Level 3](#) (3)
 Source: [Verify Login & Process Request](#) (Process)
 Dest: [Client Info and Sensor Data](#) (File)
[Level 3.1](#) (3.1)
 Source: [Verify Login](#) (Process)
 Dest: [Client Info and Sensor Data](#) (File)
[Level 0](#) (0)
 Source: [Obtain Monitoring Data](#) (Process)
 Dest: [Client Info and Sensor Data](#) (File)
[Context Diagram](#) (CONTEXT)
 Source: [Environmental Monitoring System](#) (Process)
 Dest: [Client Info and Sensor Data](#) (File)
 Date Last Altered: 11/21/2005 Date Created: 11/21/2005

Sensored User

Source/Sink

Description:

User that sign in at a location that have register sensor

Location:

[Context Diagram](#) (CONTEXT)
 Input Flows:
[Sensored-User-Account-Information](#)
 Output Flows:
[Sensor-Info-and-Current-IP-Address](#)
[Sensored-User-Login](#)
[Sensored-User-Request](#)
[Level 0](#) (0)
 Input Flows:
[Sensored-User-Account-Information](#)
 Output Flows:
[Sensor-Info-and-Current-IP-Address](#)
[Sensored-User-Login](#)
[Sensored-User-Request](#)
[Level 3](#) (3)
 Input Flows:
[Sensored-User-Account-Information](#)
 Output Flows:
[Sensored-User-Login](#)
[Sensor-Info-and-Current-IP-Address](#)
[Sensored-User-Request](#)

[Level 3.1](#) (3.1)

Output Flows:
[Sensored-User-Login](#)
[Sensored-User-Request](#)

Date Last Altered: 11/28/2005

Date Created: 11/21/2005

Stored-IP-Address-and-Sensor-Info

Data Flow

Location:

[Level 0](#) (0)

Source: [Client Info and Sensor Data](#) (File)
Dest: [Obtain Monitoring Data](#) (Process)

[Level 3](#) (3)

Source: [Client Info and Sensor Data](#) (File)
Dest: [Verify & Obtain Sensor Data](#) (Process)

[Context Diagram](#) (CONTEXT)

Source: [Client Info and Sensor Data](#) (File)
Dest: [Environmental Monitoring System](#) (Process)

Date Last Altered: 10/31/2005

Date Created: 10/31/2005

System-Data

Data Flow

Location:

[Level 0](#) (0)

Source: [Client Info and Sensor Data](#) (File)
Dest: [Manage Website](#) (Process)

[Level 2](#) (2)

Source: [Client Info and Sensor Data](#) (File)
Dest: [Choose and View Information](#) (Process)

[Context Diagram](#) (CONTEXT)

Source: [Client Info and Sensor Data](#) (File)
Dest: [Environmental Monitoring System](#) (Process)

Date Last Altered: 10/24/2005

Date Created: 10/24/2005

Update-Request

Data Flow

Location:

[Level 2](#) (2)

Source: [Change User Settings](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)

[Level 0](#) (0)

Source: [Manage Website](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)

[Context Diagram](#) (CONTEXT)

Source: [Environmental Monitoring System](#) (Process)
Dest: [Client Info and Sensor Data](#) (File)

Date Last Altered: 11/18/2005

Date Created: 11/18/2005

Verify & Obtain Sensor Data

Process

Description:

To store sensed user info and current IP address

Process #: 3.2

Location:

[Level 3](#) (3)

Input Flows:
[Stored-IP-Address-and-Sensor-Info](#)

[Sensor-Info-and-Current-IP-Address](#)

Output Flows:

[Sensored-User-Account-Information](#)

[Current-IP-Address-and-Sensor-Data](#)

[Environmental Monitoring System](#)

Date Last Altered: 11/28/2005

Date Created: 10/24/2005

Verify Login

Process

Description:

Verify sensed user login information with the client info and sensor data

Process #: 3.1.1

Location:

[Level 3.1](#) (3.1)

Input Flows:

[Sensored-User-Login](#)

Output Flows:

[Sensored-User-Verification](#)

[Environmental Monitoring System](#)

Children:

Date Last Altered: 11/28/2005

Date Created: 11/21/2005

Verify Login & Process Request

Process

Description:

Process sensed user login information then verify with the client info and sensor data

Process #: 3.1

Location:

[Level 3](#) (3)

Input Flows:

[Sensored-User-Login](#)

[Sensored-User-Request](#)

Output Flows:

[Sensored-User-Registration](#)

[Sensored-User-Verification](#)

[Alerts-Options](#)

[Device-Options](#)

[Device-Registration](#)

[Profile-Info](#)

[Environmental Monitoring System](#)

Children:

Date Last Altered: 11/28/2005

Date Created: 10/24/2005

Verify Login ID and Password

Process

Description:

Check remote user login then verification with the client info and sensor data

Process #: 1.1

Location:

[Level 1](#) (1)

Input Flows:

[Remote-User-Login](#)

Output Flows:

[Remote-User-Verification](#)

[Environmental Monitoring System](#)

Date Last Altered: 11/28/2005

Date Created: 10/24/2005

Website Administrator	Source/Sink
<i>Description:</i> Able to view and change user information	
<i>Location:</i> Context Diagram (CONTEXT)	
	<i>Input Flows:</i> Administrative-Log
	<i>Output Flows:</i> Administrator-Request Maintain-info Request-for-Login
Level 0 (0)	<i>Input Flows:</i> Administrative-Log
	<i>Output Flows:</i> Maintain-info Administrator-Request Request-for-Login
Level 2 (2)	<i>Input Flows:</i> Administrative-Log
	<i>Output Flows:</i> Administrator-Request Maintain-info Request-for-Login
Date Last Altered: 11/28/2005	Date Created: 10/24/2005

1.6 Logical Data Stores

The following information is an initial description of the data we will store in our database as well as a representation of its layout in table form

Underlined entries represent the primary key for its corresponding table

User_Info

user_id: a value assigned by the software to uniquely identify the user to accommodate for changes to the username; VARCHAR(8)

fname: the user's first name as entered during the registration process; VARCHAR(20)

lname: the user's last name as entered during the registration process; VARCHAR(20)

user_name: the username will for our purposes be the user's primary e-mail address; VARCHAR(40)

password: a string of characters that conform to a predefined formula; VARCHAR(10)

primary_phone: the default phone number for the purposes of contacting the user; VARCHAR(9)

Location_Info

user_id: a value assigned by the software to uniquely identify the user to accommodate for changes to the username; VARCHAR(8)

location: the named assigned to the location by the user during its registration to uniquely identify it to the user (ex: office, home, school, etc.) : a value assigned by the software to uniquely identify the user to accommodate for changes to the username; VARCHAR(15)

ip_address: the ip address associated to the specified location; VARCHAR(15)

street_addr: the street address associated with the location; VARCHAR(50)

city: the city where the specified location is located; VARCHAR(20)

state: the state where the specified location is located; VARCHAR(25)

zip: the zip code where the specified location is located; VARCHAR(8)

phone: the phone number specific to the location specified, may also be identified as the primary phone number; VARCHAR(9)

phone_type: identifies the phone number as either a cell phone or a landline phone; VARCHAR(4)

e-mail: the e-mail address specific to the location specified, may also be identified as the primary e-mail address (username); VARCHAR(40)

last_login: saves the date and time of the last time the user logged in from the specified location; VARCHAR(14)

Sensor_Info

user_id: a value assigned by the software to uniquely identify the user to accommodate for changes to the username; VARCHAR(8)

location: the named assigned to the location by the user during its registration to uniquely identify it to the user (ex: office, home, school, etc.); VARCHAR(15)

temp: the most current temperature reading from the attached sensor; NUMBER

temp_threshold: a user defined limit that when reached activates the user alert process; NUMBER

smoke: the most current smoke reading from the attached sensor; NUMBER

smoke_threshold: a user defined limit that when reached activates the user alert process; NUMBER

water: the most current water reading from the attached sensor; NUMBER

water_threshold: a user defined limit that when reached activates the user alert process; NUMBER

light: the most current light reading from the attached sensor; NUMBER

light_threshold: a user defined limit that when reached activates the user alert process; NUMBER

sound: the most current sound reading from the attached sensor; NUMBER

sound_threshold: a user defined limit that when reached activates the user alert process; NUMBER

camera: the most recently stored snapshot captured from the attached camera;

air_flow: the most current light reading from the attached sensor; NUMBER

air_flow_threshold: a user defined limit that when reached activates the user alert process; NUMBER

humidity: the most current humidity reading from the attached sensor; NUMBER

humidity_threshold: a user defined limit that when reached activates the user alert process; NUMBER

2.3 Parameter Specification

User Information Table:

This table will store the personal information from the registration page during the new user registration process. The personal information will include the user's assigned username, name, password and the primary telephone number

Location Info Table:

This table will store the information related to the users' various locations, the table will use the combination of user id and location name to identify the correct row and will store address information, the ip address and the phone number and e-mail address related to that location as well as the last time the user logged in from that location

Sensor Info Table:

This table will store the information received from the sensors and will be stored based on the combination of user id and location name. The table will include the most recently received readings for temperature, smoke, light, humidity, water, sound, air flow, and the most recently received snapshot captured from the camera. The table will also store the user defined thresholds related to each reading.

1.7 Functional Requirements

1. Sensored User

1. Log in screen

- allow the user to log in
- give the user an retrieve their password if they forget it
- allow the user to register if they are a new user
- display recent news on the screen

2. New User screen

- allow the user to fill in all informational fields
- allow the user to submit their information
- allow the user to go back to the previous page

3. Contact Information screen

- allow the user to fill in all informational fields
- allow the user to submit their information
- allow the user to go back to the previous page

4. Notification Information screen

- automatically display the user's email address
- allow the user to enter other email addresses and phone numbers
- allow the user to submit their information
- allow the user to go back to the previous page

5. Sensored User Home screen

- automatically display the user's location and IP address
- allow the user add a device
- allow the user go to the home page
- allow the user view their profile
- allow the user refresh the page with the refresh button
- allow the user log out

6. Register Sensors screen

- automatically display the user's location and IP address
- allow the user to fill in all informational fields
- allow the user to submit their information
- allow the user to go back to the previous page

7. User Home screen with devices

- display a welcome message
- automatically display the user's location and IP address

- display all of the Sensored devices
 - allow the user to view the alert history for each device
 - allow the user to view the device options for each device
 - allow the user to delete each device if they wish
8. Alert History screen
 - display the history for the correct device
 - display the alerts
 - allow the user to go back to the previous page
 9. Device Options screen
 - display the proper information for the specific type of device
 - allow the user to fill in all informational fields
 - allow the user to enable and/or disable a device
 - allow the user to submit their information
 - allow the user to go back to the previous page
 10. Delete Button clicked
 - allow the user to delete a device
 11. User Profile Screen
 - allow the user to fill in all informational fields
 - automatically display the user's default email and phone number
 - allow the user to change the default notification
 - allow the user to submit their information
 - allow the user to go back to the previous page
 12. Refresh Button clicked
 - allow the user to refresh all the devices
 13. Log Out Button clicked
 - allow the user to log out of the system

2. Remote User

1. Remote User Home screen
 - automatically display the user's location and IP address
 - display all of the Sensored devices
 - allow the user to view the alert history for each device

- allow the user to refresh the page
 - allow the user to add a device
 - allow the user to log out
2. Alert History screen
 - display the history for the correct device
 - display the alerts
 - allow the user to go back to the previous page
 3. Register Sensors screen
 - automatically display the user's location and IP address
 - allow the user to fill in all informational fields
 - allow the user to submit their information
 - if the user clicks submit, they become a Sensored user
 - allow the user to go back to the previous page
 4. Log Out button clicked
 - allow the user to log out of the system

3. Administrator

1. Administrator Home screen
 - display a welcome message
 - automatically display the admin's location and IP address
 - display the statistics and recent alerts
 - allow the admin to perform a search
 - allow the admin to select search criteria
 - allow the admin to change his/her location
 - allow the admin to refresh the page
 - allow the admin to change his/her email
 - allow the admin to change his/her password
 - allow the admin to log off
 - allow the admin to delete a user account
 - allow the admin to deactivate a user account
 - allow the admin to disable and/or enable a sensor
 - allow the admin to activate a user account
2. Query Results screen
 - display the results with the correct fields
 - sort the results
 - allow each column to be sorted
 - allow the admin to modify a user's profile information

- allow the admin to go back to the previous page
3. User Profile Screen
 - allow the admin to fill in all informational fields
 - automatically display the user's default email and phone number
 - allow the admin to change the default notification
 - allow the admin to submit the user's information
 - allow the admin to go back to the previous page
 4. Admin Location Screen
 - automatically display the admin's IP address
 - allow the admin to edit the location text box
 - allow the admin to submit their information
 - allow the admin to go back to the previous page
 5. Refresh Button clicked
 - allow the admin to refresh all the devices
 6. Change Email Screen
 - allow the admin to fill in all informational fields
 - allow the admin to submit their information
 - if the admin clicks submit, their email address will change
 - allow the admin to go back to the previous page
 7. Change Password Screen
 - allow the admin to fill in all informational fields
 - allow the admin to submit their information
 - if the admin clicks submit, their password will change
 - allow the admin to go back to the previous page
 8. Log Out button clicked
 - allow the admin to log out of the system
 9. Delete Account Button clicked
 - allow the admin to delete a user's account
 10. Deactivate Account Button clicked
 - allow the admin to deactivate a user's account
 11. Disable/Enable Sensor Screen
 - display the correct user name
 - display the correct sensors
 - allow the admin to enable and/or disable the devices

- allow the admin to submit their information
- allow the admin to go back to the previous page

12. Activate Button clicked

- allow the admin to activate a user's account

1.8 Production/Development Environments

The following information is the hardware and software specifics for our production and development environments. For the hardware the RAM, processor information, and name are specified. For the software the name and version number is specified.

Server Environment

1.125 Mhz Intel Pentium III
Red Hat Linux – ES Release 3
Apache, version 2.0.46
Oracle, version 10g
Mysql, version 4.1.14
PHP, version 4.3.11

Browser Environment

Microsoft Internet Explorer version 6.0.2800.1106
Microsoft Internet Explorer version 6.0.2900.2180.xpsp_sp2_gdr.050301-1519

Mozilla Firefox version 1.0 preview release
Mozilla Firefox version 1.0

Netscape version 7.1

Software Environment

Adobe Acrobat version 5.0.5
Adobe Reader version 6.0.0
Microsoft Office Word 2000 9.0.4402
Microsoft Office Word 2002 10.2627.2625
Microsoft Office Word 2003 11.6361.6360 SP1
Microsoft Office PowerPoint 2000 SR1 9.0.3821
Microsoft Office PowerPoint 2002 10.2623.2625
Microsoft Office PowerPoint 2003 11.6361.6360 SP1
WinSCP version 3.1.0 (Build 165)
Putty Release 0.53b
Macromedia Dreamweaver MX Education Edition 6.0
Macromedia Fireworks MX Education Edition 6.0

Microsoft Paint Version 5.0 (Build 2195 service pack 3)
Microsoft Paint Version 5.1 (Build 2600.xpsp_sp2_gdr.050301-1519)
Visible Analyst Education Edition version 7.5.5
Microsoft Project 2000 9.0.2001.0219SR1

Microsoft Windows Environments

Microsoft Windows 2000 5.00.2195 Service Pack 3
Microsoft Windows XP Professional Version 2002 Service Pack 2

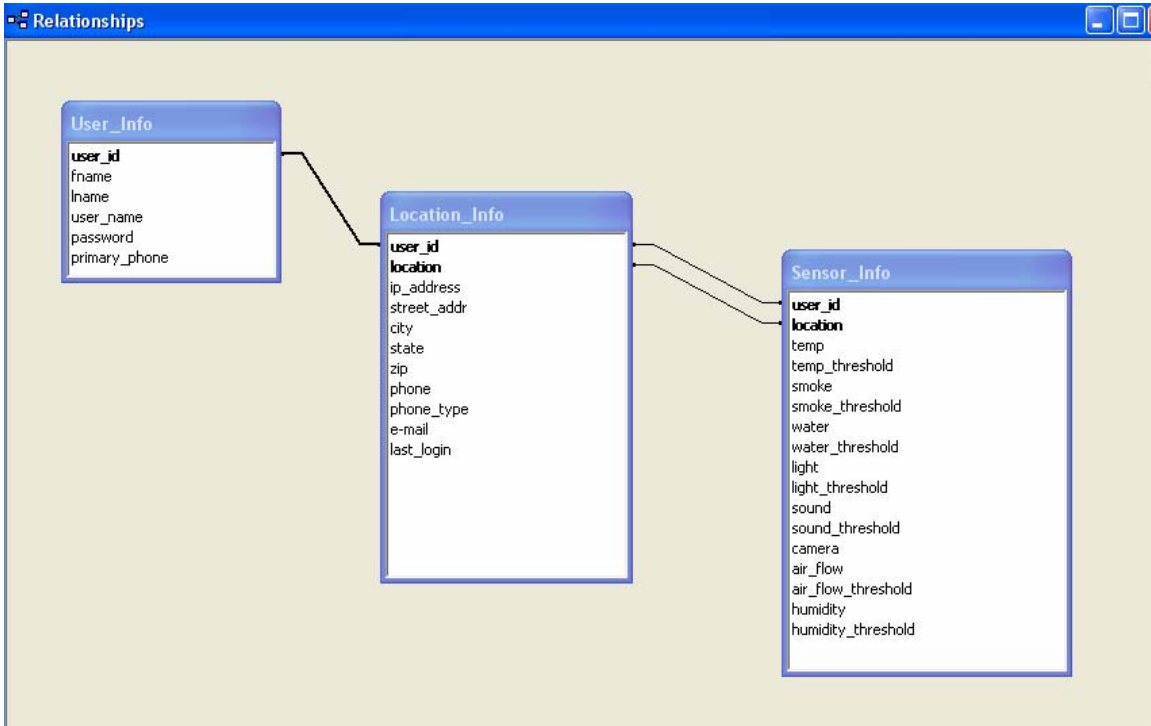
PC Environment

Dell Dimension Dim4550
Intel Pentium 4 2.40 GHz
512 MB of RAM

Gateway E4600 SE
Intel Pentium 4 1300 MHz
130,352 KB RAM

2. Architectural Design Specification

2.1 Database Schema



2.2 Physical Data Structures and Data File Specification

The user information and location information table are created during the registration process and information can be updated by the user.

User Information

	Field Name	Data Type	Description
🔑	user_id	Text	a value assigned by the software to uniquely identify the user to accommodate for changes to the username
	fname	Text	the user's first name as entered during the registration process
	lname	Text	the user's last name as entered during the registration process
	user_name	Text	the username will for our purposes be the user's primary e-mail address
	password	Text	a string of characters that conform to a predefined schema
	primary_phone	Text	the default phone number for the purposes of contacting the user

Location Information

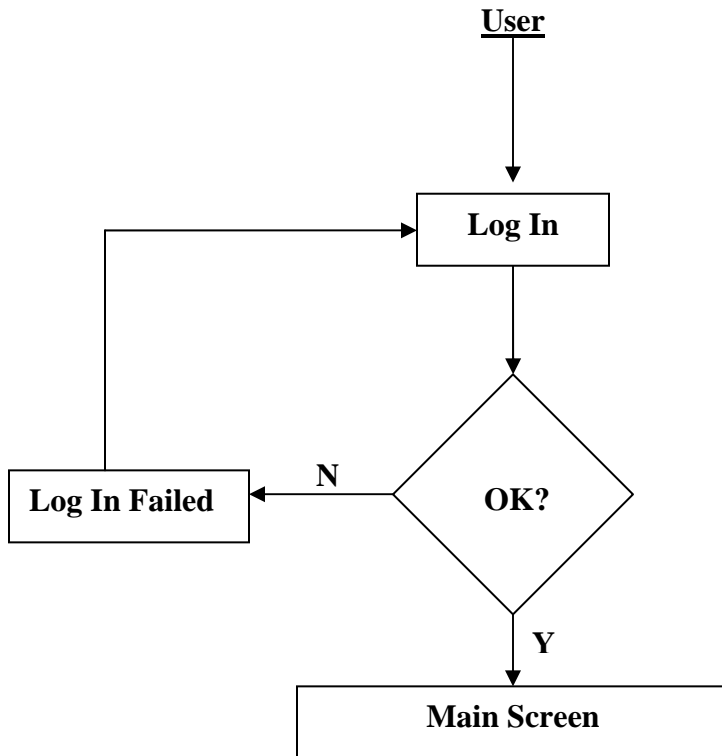
	Field Name	Data Type	Description
	user_id	Text	a value assigned by the software to uniquely identify the user to accommodate for changes to the username
	location	Text	the named assigned to the location by the user during its registration to uniquely identify it to the user (ex: office, home, school, etc.)
	ip_address	Text	the ip address associated to the specified location
	street_addr	Text	the street address associated with the location
	city	Text	the city where the specified location is located
	state	Text	the state where the specified location is located
	zip	Text	the zip code where the specified location is located
	phone	Text	the phone number specific to the location specified, may also be identified as the primary phone number
	phone_type	Text	identifies the phone number as either a cell phone or a landline phone
	e-mail	Text	the e-mail address specific to the location specified, may also be identified as the primary e-mail address (username)
	last_login	Text	saves the date and time of the last time the user logged in from the specified location

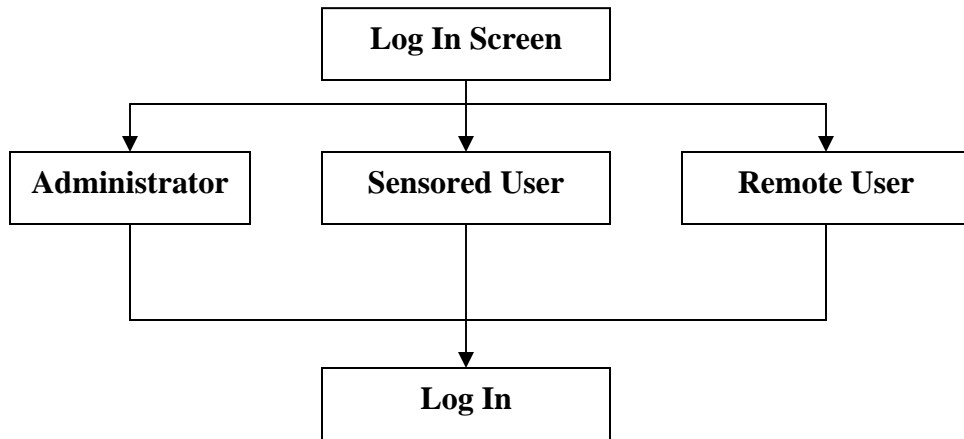
The sensor information table is updated periodically by the software based on the data captured from the attached sensors. Portions of the table can be updated by the users, such as the threshold points.

Sensor Information

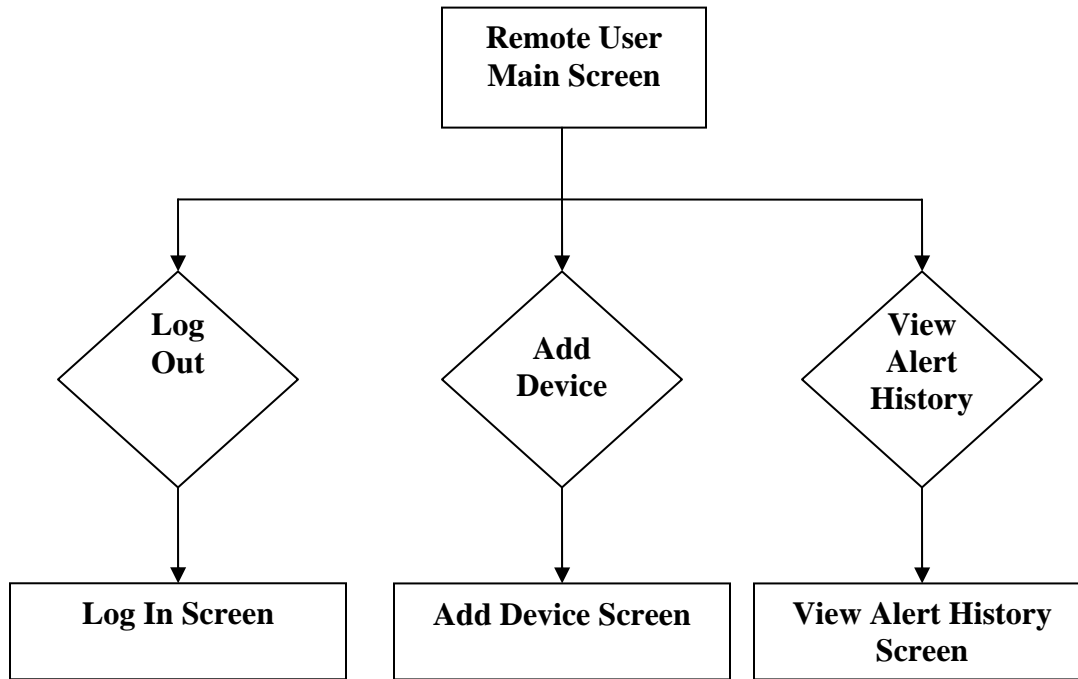
	Field Name	Data Type	Description
🔑	user_id	Text	a value assigned by the software to uniquely identify the user to accommodate for changes to the username
🔑	location	Text	the named assigned to the location by the user during its registration to uniquely identify it to the user (ex: office, home, school, etc.)
	temp	Number	temperature reading from sensor
	temp_threshold	Number	a user defined limit to active alert process
	smoke	Number	smoke reading from sensor
	smoke_threshold	Number	a user defined limit to active alert process
	water	Number	water reading from sensor
	water_threshold	Number	a user defined limit to active alert process
	light	Number	light reading from sensor
	light_threshold	Number	a user defined limit to active alert process
	sound	Number	sound reading from sensor
	sound_threshold	Number	a user defined limit to active alert process
	camera	Number	stored snapshot from camera
	air_flow	Number	air flow reading from sensor
	air_flow_threshold	Number	a user defined limit to active alert process
	humidity	Number	humidity reading from sensor
	humidity_threshold	Number	a user defined limit to active alert process

2.3 Structure Diagrams

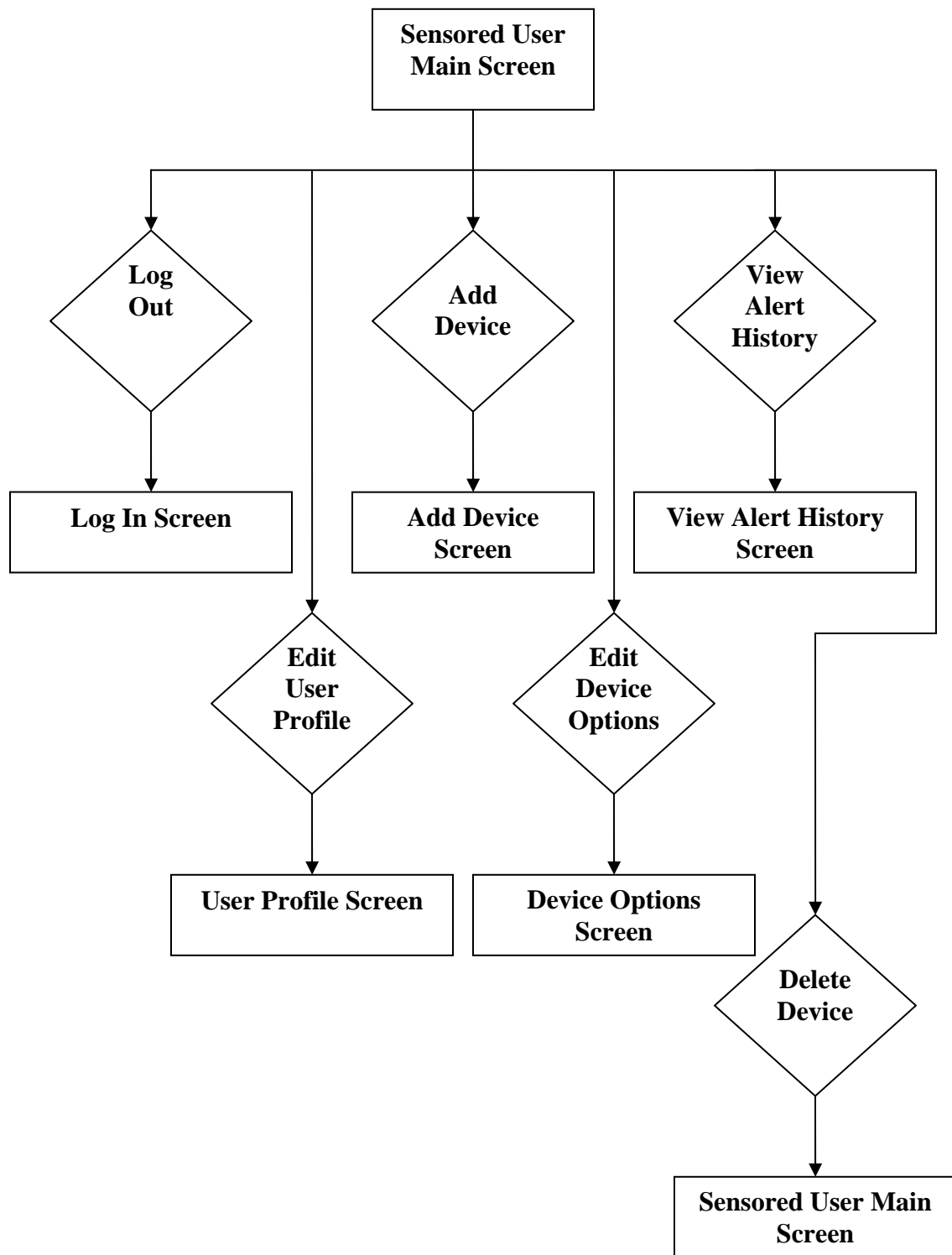




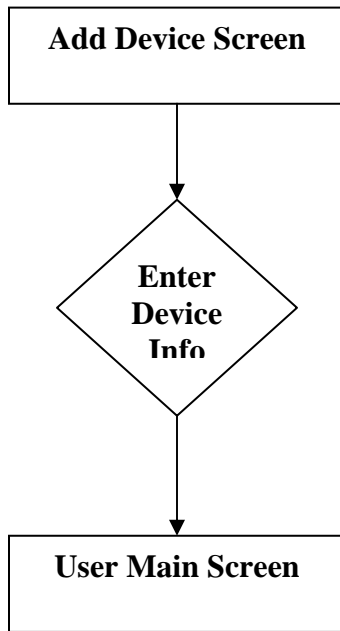
Remote User Main Screen



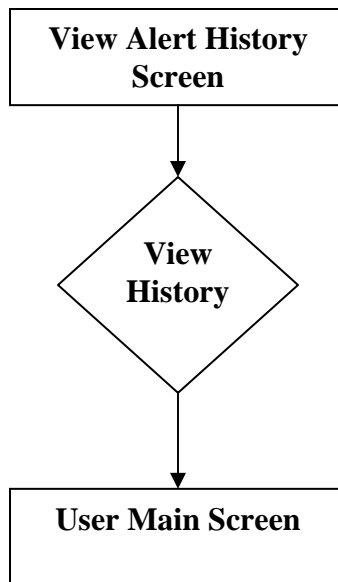
Sensored User Screen



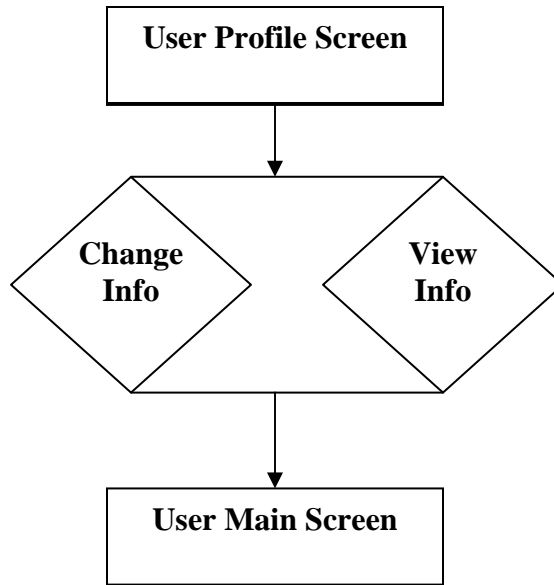
Add Device Screen



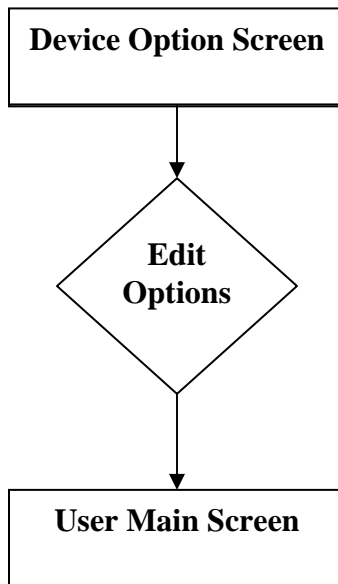
View Alert History Screen

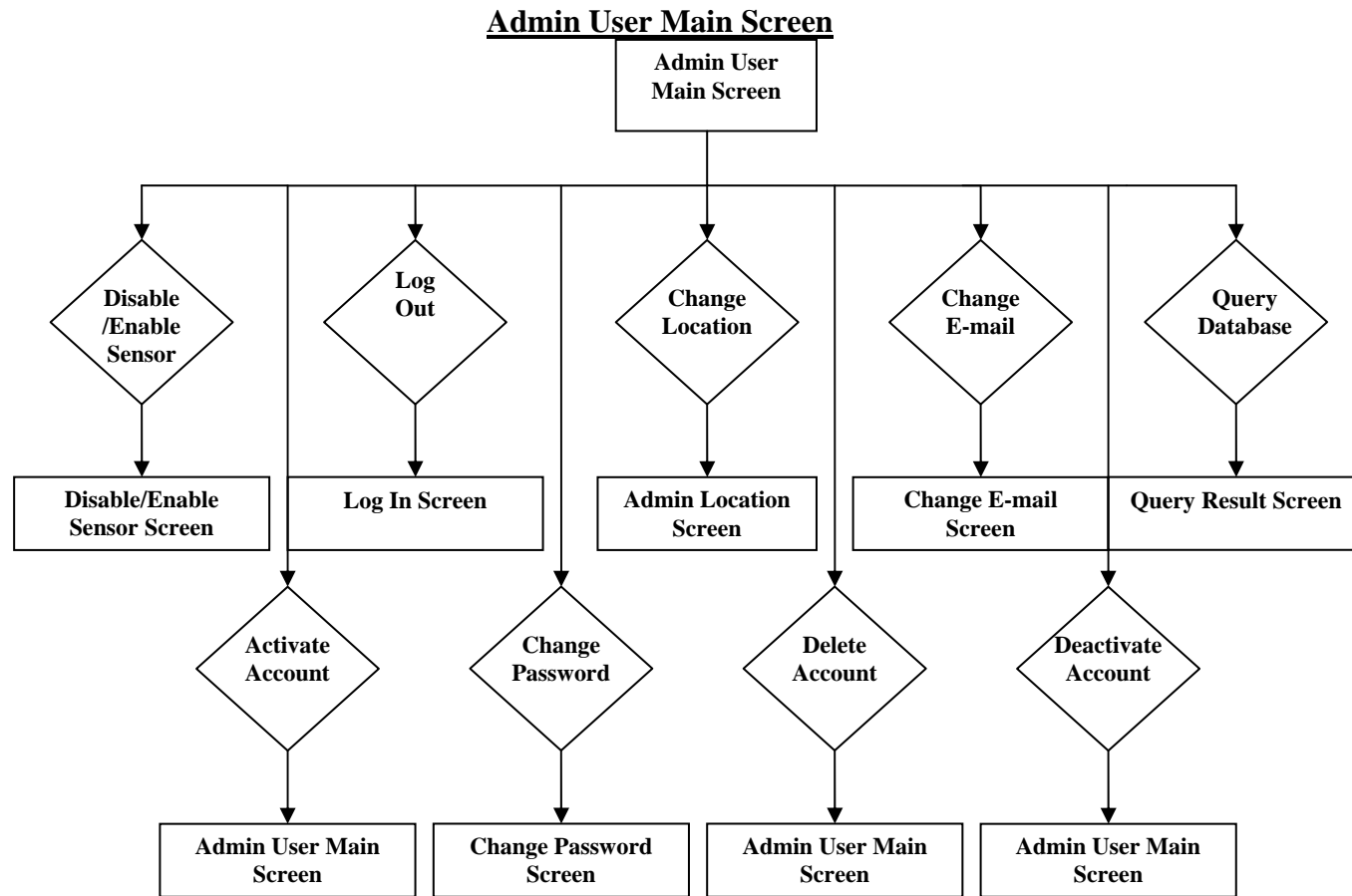


User Profile Screen

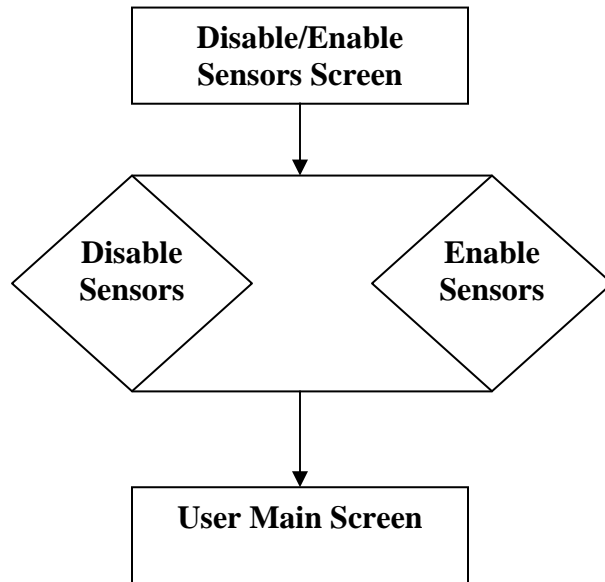


Device Option Screen

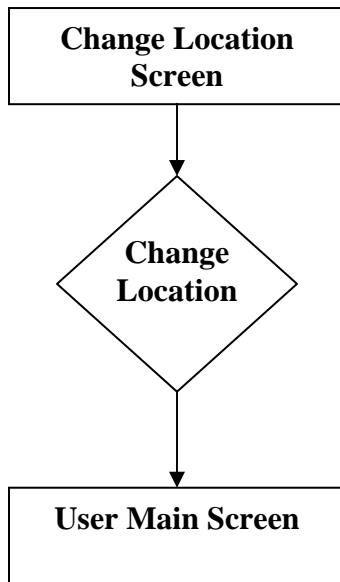




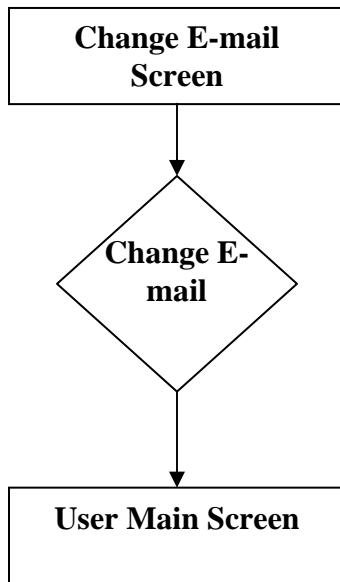
Disable/Enable Sensors Screen



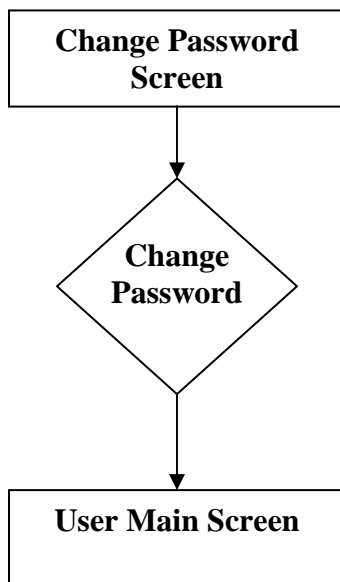
Change Location Screen



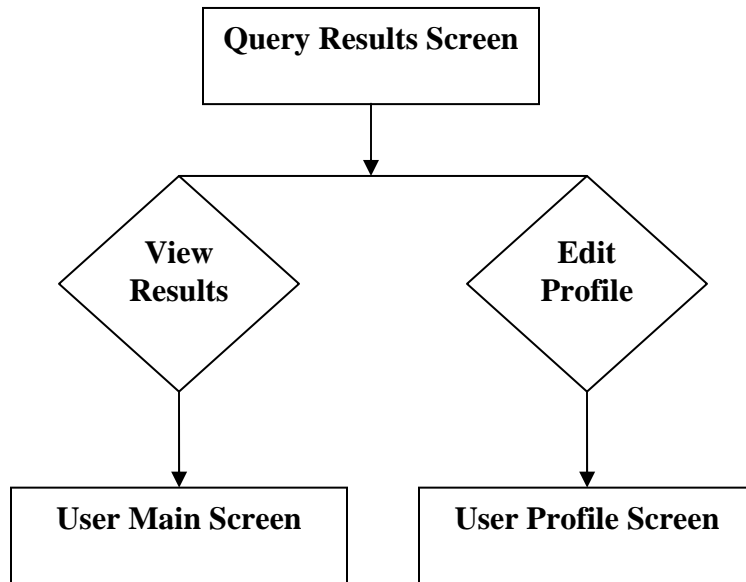
Change E-mail Screen



Change Password Screen



Query Results Screen



2.4 Parameter Specification

User Information Table:

This table will store the personal information from the registration page during the new user registration process. The personal information will include the user's assigned username, name, password and the primary telephone number

Location Info Table:

This table will store the information related to the users' various locations, the table will use the combination of user id and location name to identify the correct row and will store address information, the ip address and the phone number and e-mail address related to that location as well as the last time the user logged in from that location

Sensor Info Table:

This table will store the information received from the sensors and will be stored based on the combination of user id and location name. The table will include the most recently received readings for temperature, smoke, light, humidity, water, sound, air flow, and the most recently received snapshot captured from the camera. The table will also store the user-defined thresholds related to each reading.

2.5 Functional Descriptions

The following functions are required for our system:

- The system will provide a login screen for all authorized users, including the sensed user, the remote user and the administrator. The screen must accept authorized users upon entering a valid user name and password and create an appropriate error message when something goes wrong.
- The system will have an authentication process to restrict the access of unauthorized users.
- Each of the three different users will have the ability to change information personal in nature, including contact information as well as individual sensor preferences.
- The administrator will have the ability to change information specific to the system's users accounts and/or sensors in the event of a problem.
- In the event that a sensor's threshold point has been reached and an alert has been raised, the user will be alerted according to their contact preferences.
- The software must be able to retrieve the proper information from the installed sensors and transmit and store that information into the database for future retrieval.
- The software must be able to retrieve the proper information from the database upon request of the system.

3. Testing Requirements

3.1 Test Plan

Following is the test plan that corresponds to the user interfaces, testing the aspects of each interface. The test plan has been compiled and will be used to further test the software as it progresses.

1. Test plan identifier

Environmental Monitoring System Test Plan Ver. 1.0

2. Introduction

Our team will be using the “V” Model of testing and are currently involved with the component testing portion of the testing process. We have previously completed the Business Case, Requirements, System Specification, System Design and Component Design during the development of our Software Plan, Requirements Specification and Preliminary Design documents. We are working towards completion of the Interface Testing, System Testing and Acceptance Testing as will be shown in our Detailed Design and Acceptance Test documents.

3. Test Items

We will be running our software on a Dell 2550 Server running Red Hat Linux – ES Release 3, with Oracle version 10g, PHP version 4.3.11 and the Apache web server version 2.0.46. We will ensure the integration of our software with Oracle, PHP and Apache. Our software will be tested to support the latest versions of Microsoft Internet Explorer, Mozilla Firefox and Netscape and is supported by the most currently updated version of Microsoft Windows Xp and Mac OS X. Our software will also be tested to ensure that it functions properly with the Wx-Goos-3 mini-goose, the weather goose, and the Axis 211A Web-server video-cam as well as web cams that will be added later on during the development process.

4. Features To Be Tested

We will be testing the functionality of the GUI, including the stability of the web pages used by the various users. Assuring that the software is correctly interfacing with the database system in respect to database queries as well as additions and changes to the database. The test to ensure that the software is properly integrated with the sensors and is retrieving and cataloging the data correctly based on user specifications. Finally, we will test that the software responds in the correct manner based on data received from the sensors as well as user preferences.

5. Features Not To Be Tested

It is our goal to completely test our software and to assure that all aspects of the software are thoroughly tested.

6. Approach

In order to facilitate the software testing process, our team has designated a Testing Manager as well as a Testing Engineer. The primary responsibility of these two individuals is to follow the testing procedures we have adopted and implemented to ensure that all aspects of the software both function properly and meet the client specifications.

7. Pass/Fail Criteria

The ultimate Pass/Fail Criteria for the project will be the fulfillment of all of the functional requirements established by the client. Our team will work towards creating a fully operating project in the time allotted but will meet at the minimum the functional requirements.

8. Suspension Criteria and Resumption Requirements

In the event that those responsible for testing should run into system failure or excessive failures during the unit testing process, the Development Manager and Development Engineer will stop testing, and re-evaluate the problematic portions of the code in order to achieve optimum functionality. Testing will then be started again from the beginning to assure the interdependences of the code is upheld.

9. Test Deliverables

We will be devoting an entire document to the testing process. The Acceptance Test will include the list of Functional Requirements, the complete Unit Test and the results, and a list of error identifications and their resolutions.

10. Testing Tasks

The completion of the unit tests and the documentation procedures involved therein. Each unit test, depending on its complexity, will take approximately 10 to 20 minutes to complete. A copy of the unit test as well as a compatible computer system with internet access and a supported web browser will be required in order to run the unit tests.

Unit Test 1. Sensored User Screen

1.1 Log in Screen

ID 1.1.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	User clicks the "Login" button without typing a User Name and Password	Error message	Login Error: You must supply a User Name and Password to access your account		
2	User types the wrong User Name or Password and clicks the "Login" button	Error message	Login Error: You may have entered your User Name or Password incorrectly		
3	User types the User Name and Password and clicks the "Login" button	Does it work?	Sensored User Home Screen with no sensors registered or Sensored User Home Screen with devices is loaded; user's name, location, and IP address are displayed.		
4	User clicks the recovery password link	Does it load?	Password Recovery Screen is loaded		
5	New User clicks the register new user link	Does it load?	Welcome New User Screen is loaded		

1.2 Welcome New User Screen

ID 1.2.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	User clicks the "Submit" button without filling in any information	Error message	Error: You must fill in all fields before submitting		
2	User has filled in all the fields then clicked the "Submit" button but the two passwords did not match	Error message	Error: The two passwords you entered did not match each other. Please try again.		
3	User has filled in all the fields and clicked the "Submit" button	Does it work?	Provided information is stored. Contact Information Screen is loaded		
4	User clicks the "Back" button	Does it work?	Log in Screen is loaded		

1.3 Contact Information Screen

ID 1.3.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	User clicks the "Submit" button without filling in any information	Error message	Error: You must fill in all fields before submitting		
2	User clicks the "Submit" button after filling in all the fields	Does it work?	Provided information is stored. Notification Information Screen is loaded; user's e-mail and phone number are displayed		
3	User clicks the "Back" button	Does it work?	Welcome New User Screen is loaded		

1.4 Notification Information Screen

ID 1.4.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	User accessing Notification Information Screen	Does it load?	Notification Information Screen is loaded; user's e-mail and phone number are displayed		
2	User clicks the "Submit" button without specifying a type of phone (radio button has not been selected)	Error message	Error: You must specify what type of phone you are using by selecting the appropriate radio button		
3	User selects a stand-alone checkbox without entering e-mail address first	Error message	Error: You must specify your e-mail address first then check the appropriate checkbox		
4	User selects a stand-alone checkbox without entering a phone number first	Error message	Error: You must specify your phone number first then check the appropriate checkbox		
5	User clicks the "Submit" button after filling in all the fields and selecting the	Does it work?	Provided information is stored. Sensored User Home Screen		

	appropriate checkboxes		with no sensors registered and Sensored User Menu are loaded; user's name, location, and IP address are displayed		
6	User clicks the "Back" button	Does it work?	Contact Information Screen is loaded		

1.5 Password Recovery Screen

ID 1.5.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	User clicks the "Submit" button without filling in any information	Error message	Error: You must fill in all fields before submitting		
2	User clicks the "Submit" button after filling in all the fields	Does it work?	The provided information is sent to ilovesaintsoft@siena.edu. If it is correct then an e-mail will be sent to the user with user password.		
3	User clicks the "Back" button	Does it work?	Log in Screen is loaded		

1.6 Sensored User Menu

ID 1.6.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	User clicks the "User Profile" button	Does it work?	User Profile Screen and Sensored User Menu are loaded; the user's profile information is displayed on User Profile Screen		
2	User clicks the "Refresh" button	Does it work?	Sensored User Home Screen with no sensors registered or Sensored User Home Screen with devices is refreshed and loaded; user's name, location, and IP address are displayed; current status of the user's devices is shown. Sensored User Menu is also loaded		
3	User clicks the "Add Device" button	Does it work?	Register Sensors Screen is loaded; IP address and operating system are displayed. Sensored User Menu is		

			also loaded		
4	User clicks the "Home" button	Does it work?	Sensored User Home Screen with no sensors registered or Sensored User Home Screen with devices is loaded; user's name, location, and IP address are displayed; current status of the user's devices is shown. Sensored User Menu is also loaded		
5	User clicks the "Log Off" button	Does it work?	The User becomes logged off of the system. Log in Screen is loaded		

1.7 Sensored User Home Screen with no sensors registered

ID 1.7.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	User accessing Sensored User Home Screen with no sensors registered	Does it load?	Sensored User Home Screen with no sensors registered is loaded; user's name, location, and IP address are displayed; current status of the user's devices is shown		
2	User clicks the "Add Device" button	Does it work?	Register Sensors Screen is loaded; IP address and operating system are displayed. Sensored User Menu is also loaded		

1.8 Sensored User Home Screen with devices

ID 1.8.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	User accessing Sensored User Home Screen with devices	Does it load?	Sensored User Home Screen with devices is loaded; user's name, location, and IP address are displayed; current status of the user's devices is shown		
2	User clicks the "Alert History Button" button	Does it work?	Alert History Screen is loaded displaying all alerts for the specified device. Sensored User Menu is also loaded		
3	User clicks the "Device Options" button	Does it work?	Device Options Screen and Sensored User Menu are loaded		
4	User clicks the "Delete" button	Does it work?	Alert Message: Are you sure you want to delete this sensor? If User clicks "OK" button the device will be deleted.		

1.9 Register Sensors Screen

ID 1.9.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	User accessing Register Sensors Screen	Does it load?	Register Sensors Screen is loaded; IP address and operating system are displayed		
2	User clicks the "Submit" button without filling in any information	Error message	Error: You must fill in all fields before submitting		
3	User clicks the "Submit" button after filling in all the fields and selecting the sensor type	Does it work?	Sensored User Home Screen with devices is loaded; user's name, location, and IP address are displayed; current status of the user's devices is shown. Sensored User Menu is also loaded		
4	User clicks the "Back" button	Does it work?	Sensored User Home Screen with devices or Sensored User Home Screen with no sensors registered is loaded; user's name, location, and IP are displayed; current status of the		

			user's devices is shown. Sensored User Menu is also loaded		
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1.10 Alert History Screen

ID 1.10.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	User accessing Alert History Screen	Does it load?	Alert History Screen is loaded displaying all alerts for the specified device		
2	User clicks the "Back" button	Does it work?	Sensored User Home Screen with devices is loaded; user's name, location, and IP address are displayed; current status of the user's devices is shown. Sensored User Menu is also loaded		

1.11 Device Options Screen

ID 1.11.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	User clicks the "Submit" button without filling in any information	Error message	Error: You must fill in all fields before submitting		
2	User clicks the "Submit" button after filling in all the fields and selecting "Enable" or "Disable" radio button	Does it work?	Sensored User Home Screen with devices is loaded; user's name, location, and IP address are displayed; current status of the user's devices is shown and the selected device is enabled or disabled. Sensored User Menu is also loaded		
3	User clicks the "Cancel" button	Does it work?	Sensored User Home Screen with devices is loaded; user's name, location, and IP address are displayed; current status of the user's devices is shown. Sensored User Menu is also loaded		

1.12 User Profile Screen

ID 1.12.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	User accessing User Profile Screen	Does it load?	User Profile Screen is loaded; the user's profile information is displayed		
2	User clicks the "Submit" button but some fields are not filled in	Error message	Error: You must fill in all fields before submitting		
3	User clicks the "Submit" button after updating the user profile	Does it work?	User Profile is updated; Sensored User Home Screen with no sensors registered or Sensored User Home Screen with devices is loaded. Sensored User Menu is also loaded		
4	User clicks the "Back" button	Does it work?	Sensored User Home Screen with no sensors registered or Sensored User Home Screen with devices is loaded; user's name, location, and IP address are displayed; current status of the user's		

			devices is shown. Sensored User Menu is also loaded		
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Unit Test 2. Remote User

Unit Test: 2.1. Remote User Home Screen

ID 1.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	User accessing Remote User screen	Does it load?	Page loads, user's name, location, and IP are displayed. User's devices show up with information regarding their status		
2	User clicks the Alert History button	Does the alert history page display?	The Alert History page loads displaying all alerts for the specified device		
3	User clicks the Refresh button	Does the page display after refresh?	The page is refreshed, specifically the sensors, incase one is not working		

			properly or the browser window has been open for a long period of time		
4	User clicks the Add Device button	Does it add a device?	The Add Device page loads and displaying all the information to add a specified device		
5	User clicks the Log Off button	Does it work?	The user log off		

Unit Test: 2.2. Alert History Screen

ID 2.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	User accessing Alert History screen	Does it load?	Page loads, displaying all alerts for the specified device		
2	User clicks on Back button	Does it work?	The user is brought back to the Remote User home screen		
3	User clicks on Home button	Does it work?	The user is brought back to the Remote User home screen		
4	User clicks on Refresh button	Does it work?	The page is refreshed, alert history is up to date, incase one is not working properly or the browser window has been open for a long period of time		

5	User clicks on Add Device button	Does it work?	The Add Device page loads		
6	User clicks on Log Off button	Does it work?	The user is log off		

Unit Test: 2.3. Add A Device Screen

ID 3.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	User accessing the Register Sensors screen	Does it load?	Page loads, IP address and operating system automatically appear, display space for user to fill up information		
2	User input information	Does it work?	User information input to the space provided		
3	User clicks on submit button	Does it work?	User become a Sensored User, sensor information displayed		
4	User clicks on back button	Does it work?	Add device screen loads		

Unit Test 3. Administrator

Unit Test: 3.1. Administrator Home Screen

ID 3.1.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	Admin logs into the home screen	Does it load?	Page loads, welcome message is displayed properly, location and IP are displayed, statistics and recent alerts are displayed.		
2	Admin performs a search	Does it work?	The Query Results page loads displaying the search results		
3	Admin clicks the Admin Location button	Does it load?	The Admin Location page loads displaying the current location and IP address		
4	Admin clicks the Refresh button	Does it work?	The Admin Home Screen refreshes and any new information is displayed		
5	Admin clicks the Change Email button	Does it load?	The Email Change page loads		
6	Admin clicks the Change Password button	Does it load?	The Password Reset page loads		
7	Admin clicks the Log Off	Does it work?	The Admin is logged		

	button		out and the User Log In screen is loaded		
8	Admin clicks the Delete Account button	Does it work?	A message box is displayed confirming that the Admin wants to delete an account. Account is deleted		
9	Admin clicks the Deactivate button	Does it work?	A message box is displayed confirming that the Admin wants to deactivate an account. Account is deactivated		
10	Admin clicks the Disable/Enable Sensor button	Does it load?	The Disable/Enable Sensor page is loaded displaying the current sensors, location, and action		
11	Admin clicks the Activate button	Does it work?	A message box is displayed confirming that the Admin wants to activate an account. Account is activated		

Unit Test: 3.2. Query Results Screen

ID 3.2.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	Admin performs a search and is brought to the Query Results page	Does it load?	Page loads and displays the search results with the correct fields		
2	Admin sorts the results	Does it work?	The results sort correctly		
3	Admin sorts a column of the results	Does it work?	The selected column sorts the results correctly		
4	Admin clicks the Change Selected button	Does it load?	The User Profile page loads displaying the users contact information, email information, and cell phone numbers		
5	Admin clicks the Back button	Does it work?	The Admin is taken back to the Admin Home Screen		

Unit Test: 3.3. User Profile Screen

ID 3.3.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	Admin clicks the Change Selected button on the Query Results page	Does it load?	Page loads and displays the users contact information, email information, and cell phone numbers		
2	Admin edits a field	Does it work?	The Admin is able to type text into the text boxes		
3	Admin changes the Default Notification	Does it work?	The default notification is changed		
4	Admin clicks the Submit button	Does it load?	A user's profile information is changed and the Admin is brought to the Admin Home Screen		
5	Admin clicks the Back button	Does it work?	The Admin is taken back to the Query Results page		

Unit Test: 3.4. Administrator Location Screen

ID 3.4.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	Admin clicks the Admin Location button	Does it load?	Page loads and displays the Admin's Location and IP Address		
2	Admin edits the location field	Does it work?	The Admin is able to type text into the text box		
3	Admin clicks the Submit button	Does it load?	The Admin is brought to the Admin Home Screen and the location and IP address are updated		
4	Admin clicks the Back button	Does it work?	The Admin is taken back to the Admin Home Screen		

Unit Test: 3.5. Refresh Button Clicked

ID 3.5.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	Admin clicks the Refresh button	Does it work?	The Admin Home Screen refreshes and any new information is displayed		

Unit Test: 3.6. Change Email Screen

ID 3.6.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	Admin clicks the Change Email button	Does it load?	Page loads and displays text boxes		
2	Admin edits a field	Does it work?	The Admin is able to type text into the text boxes		
3	Admin clicks the Submit button	Does it load?	A message box is displayed and the Admin's email is changed		
4	Admin clicks the Back button	Does it work?	The Admin is taken back to the Admin Home Screen		

Unit Test: 3.7. Change Password Screen

ID 3.7.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	Admin clicks the Change Password button	Does it load?	Page loads and displays text boxes		
2	Admin edits a field	Does it work?	The Admin is able to type text into the text boxes		
3	Admin clicks the Submit button	Does it load?	A message box is displayed and the Admin's password is changed		
4	Admin clicks the Back button	Does it work?	The Admin is taken back to the Admin Home Screen		

Unit Test: 3.8. Log Out Button Clicked

ID 3.8.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	Admin clicks the Log Out button	Does it work?	The Admin is logged out and the User Log In screen is loaded		

Unit Test: 3.9. Delete Account Button Clicked

ID 3.9.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	Admin clicks the Delete Account button	Does it work?	A message box is displayed confirming that the Admin wants to delete an account. Account is deleted		

Unit Test: 3.10. Deactivate Account Button Clicked

ID 3.10.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	Admin clicks the Delete Account button	Does it work?	A message box is displayed confirming that the Admin wants to deactivate an account. Account is deactivated		

Unit Test: 3.11. Disable/Enable Sensor Screen

ID 3.11.#	What is being tested:	Tested for:	Expected Outcome:	Pass or Fail:	Comments:
1	Admin clicks the Disable/Enable button and is brought to the Disable/Enable Sensor Screen	Does it load?	Page loads and displays user's current sensors, locations, and actions		
2	Admin enables a sensor and clicks the Submit button	Does it work?	The user's sensor becomes enabled and the Admin is brought to the Admin Home Screen		
3	Admin disables a sensor and clicks the Submit button	Does it work?	The user's sensor becomes disabled and the Admin is brought to the Admin Home Screen		
4	Admin clicks the Back button	Does it work?	The Admin is taken back to the Admin Home Screen		

11. Environmental Needs

A compatible computer system with at least one of the supported sensor attached will serve as the monitored computer. We will also need a secondary computer system to serve as the remote user login location. The specific software required to undergo the testing process includes a supported web browser and PuTTY to confirm additions and changes made to the database.

12. Responsibilities

The responsibility of completing and delivering our Testing Plan falls in the hands of the entire team. The Testing Manager and Testing Engineer, however, are responsible for the execution and documentation of the testing process.

13. Staff and Training Needs

The entire *SaintSoft* team will be the primary means in the process of delivering the document. The skills required by the team include an overall knowledge of the project and its objectives.

14. Schedule

Testing will commence immediately following the completion of the development phase. This will be roughly between February 21st and March 21st. The testing portion will be completed with the delivery of the Acceptance Test document which will be May 1st.

15. Risks and Contingencies

Due to the current status of the project, we are unable to anticipate the possible risks and therefore their counter measures. As the development process continues, we will be able to further assess the possible risks we may encounter.

16. Approvals

Christian Damberg, Testing Manager

Lioubov Mikhailova, Development Engineer

David Moore, Team Leader

Hannah Palmer, Project Manager

Daniel Schuldt, Development Manager

Tina Ting, Testing Engineer

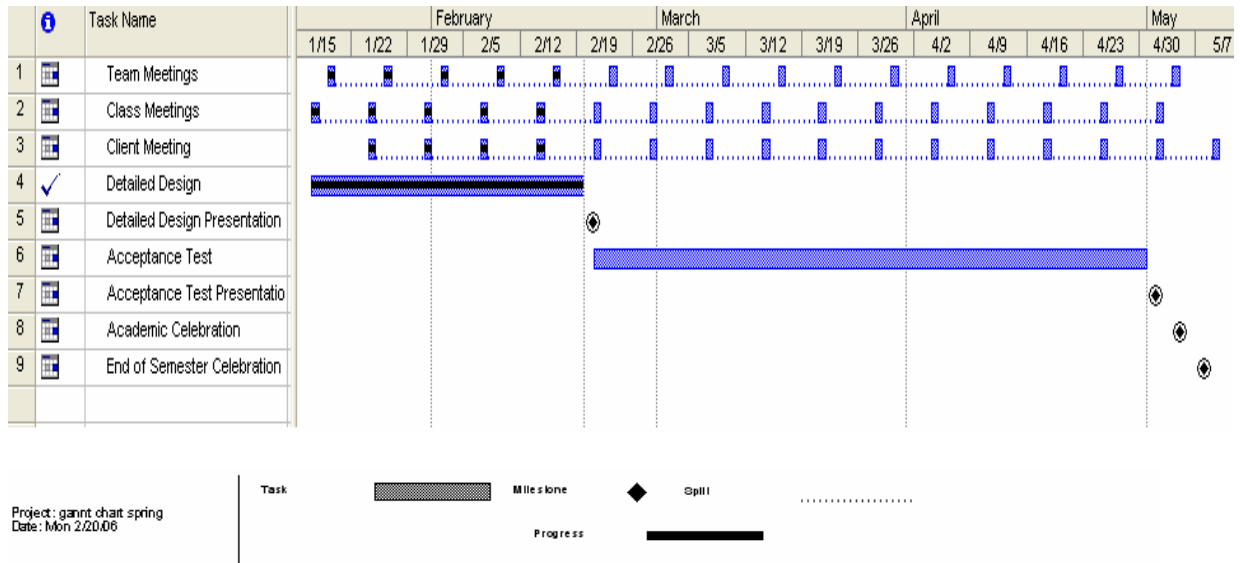
4. Detailed Design Specification

2.6 Packaging Specification

Our software package will include an instructional manual that will provide assistance to the user. This manual will provide the user with information regarding installation and usage of the software. All users will be given a copy of this manual to instruct them on login procedures and a step-by-step guide to how the system works. Also the administrator will be given additional information regarding permission setting.

5. Appendices

5.1 Gantt Chart



5.2 Glossary of Terms

Apache- Apache is an open source web server that runs on most commonly used platforms

Database - A collection of data arranged for ease and speed of search and retrieval.

Gantt Chart: A chart that depicts progress in relation to time, often used in planning and tracking a project.

IP Address - Each machine connected to the Internet has an address known as an Internet Protocol address that takes the form of four numbers separated by dots, for example: 123.45.67.890.

MySQL- An open source relational database management system (RDBMS) that uses Structured Query Language (SQL), the most popular language for adding, accessing, and processing data in a database.

Oracle - a relational database management system (RDBMS) developed and copyrighted by the Oracle Corporation.

PHP- The PHP Hypertext Preprocessor is a programming language that allows web developers to create dynamic content that interacts with databases.

Remote User - A registered user who is accessing the system from a computer that doesn't have any devices attached to it. This user is able to view the information from other sensors, but can not change information or settings for those sensors. The user, however, is able to add new devices to their account.

Sensored User - A user accessing the system from a computer in which at least one device is registered. This type of user is able to view information pertaining to their sensors as well as make changes to the sensors specific to that computer. The user is able to add or remove sensors from their account.

Administrator - User that oversees the web based system, performing maintenance as needed, and also has the ability to make specified changes to other user accounts and devices.