Detailed Design

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Environmental Monitoring System

SaintSoft

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1. External Design Specifications

1.1 User Displays

Login Screen:

Users are able to check current news 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:

Password Recovery

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.

User name (e-mail address): 

Security question: What is your mother's maiden name? 

Answer: 

Submit  Back

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):

Welcome New User

We are pleased that you picked the Environmental Monitoring system for your monitoring and security needs.

Account Information

This information will allow you to enter into our system. Your e-mail address will be your USERNAME and will be the address where billing and updated system information will be sent. Your password must adhere to some of our standards. The password must be at least 6 characters long. The password must have at least 1 upper case letter, 1 lower case, and 1 special character. The special characters include _ & + * ? % ^ . Additionally, you must pick a security question and provide an answer for it. You will need to know the security question and answer if you forget your password. You can click on the "Forgot your password?" link on the login page. All the fields are required.

E-mail: 
Password: ____________________________________________ 
Retype Password: ____________________________________ 
Security question: What is your mother's maiden name? 
Answer: ____________________________________________ 

Submit  Back

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):

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

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.
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 up to 5 different e-mail addresses 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 phones. You will always be notified via your primary e-mail address.

E-mail Address:

<table>
<thead>
<tr>
<th>E-mail Addresses</th>
<th>E-mail address to use</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. <a href="mailto:john@einssof.siena.edu">john@einssof.siena.edu</a></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

Phone:

Done
Third Registration Screen (Notification Information) continued:

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:

Welcome Mr. Swarner

You currently have no sensors registered.
Click below to add device.

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:

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.
Welcome Mr. Swarner

IP Address: 192.168.0.1
Location: Home

Current Status of your Devices

<table>
<thead>
<tr>
<th>HOME</th>
<th>OFFICE</th>
<th>BASEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>temperature</strong></td>
<td><strong>camera</strong></td>
<td><strong>water</strong></td>
</tr>
<tr>
<td>74°F</td>
<td>No Motion</td>
<td>OK</td>
</tr>
<tr>
<td>Alert History</td>
<td>Alert History</td>
<td>Alert History</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HOME</th>
<th>OFFICE</th>
<th>OFFICE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>light</strong></td>
<td><strong>smoke</strong></td>
<td><strong>humidity</strong></td>
</tr>
<tr>
<td>1</td>
<td>OK</td>
<td>10%</td>
</tr>
<tr>
<td>Alert History</td>
<td>Alert History</td>
<td>Alert History</td>
</tr>
<tr>
<td>Device Options</td>
<td>Device Options</td>
<td>Device Options</td>
</tr>
</tbody>
</table>

Deleting 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:**

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

Your profile information will appear here. You are able to change any of it just be deleting what is in the text box, inserting the corrected information and pressing submit.

Contact Information

First Name: Ken

Last Name: Swanner

Street: 11 Green Dr.

City: Albany, State: NY

Location: Home

Phone: (518) 399 - 5555

E-mail: movaesaintsoft@siena.edu

Password: 123456

Security question: What is your pet's name?
User Profile Screen continued:

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:

Welcome Administrator

Statistics:
- Number of users: 1,000
- Number of Sensors: 2,325
- Current users logged in: 625

System Status: NORMAL

Recent Alerts (within the last 24 hours):
- spikeman94@hotmail.com
  Temperature 12/23/05 19:15:23
- isovesaysaintsoft@siena.edu
  Water 12/23/05 15:35:23
- zlc003@siena.edu
  Temperature 12/25/05 08:55:45

Waiting for our system to check if...
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:

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

Admin Location:

The computer you are at new 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: Ken's Office PB 382
IP Address: 192.168.0.1

Submit  Back
**Change E-mail Screen:**

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.

**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]

---

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:

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:

Query Result

Click on headings (Username, Sensors, etc.) to sort by that field. A triangle will indicate the field and the direction of the sort (ascending or descending).

Search Results:

<table>
<thead>
<tr>
<th>Username</th>
<th>Sensors</th>
<th>Name</th>
<th>Select</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="mailto:ed8888@stema.edu">ed8888@stema.edu</a></td>
<td>3</td>
<td>Schmidt, Dan</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:spokesman44@hotmail.com">spokesman44@hotmail.com</a></td>
<td>4</td>
<td>Schmidt, Joseph</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:welovesaintsoft@yahoo.com">welovesaintsoft@yahoo.com</a></td>
<td>1</td>
<td>Swamer, Ken</td>
<td></td>
</tr>
</tbody>
</table>

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:

Welcome Mr. Swarner

Current Status of your Devices

<table>
<thead>
<tr>
<th>HOME</th>
<th>OFFICE</th>
<th>BASEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>74°F</td>
<td>No Motion</td>
<td>OK</td>
</tr>
</tbody>
</table>

Alert History

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 filed. 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 to 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.
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3/7/2006

**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:

- Process
- Data Flow
- Data Store
- Data Source
Context Diagram:
Level 0: Environmental Monitoring System
Level 1: Manage User Request

1.1 Verify Login ID and Password
- Remote-User-Login
- Process-Request
- Remote-User-Verification

1.2 Retrieve Sensor Information
- Remote-User-Request
- Account Information
- Retrieve-Stat

Client Info and Sensor Data
Level 2: Manage Website

Visible Systems Corporation EDUCATIONAL/TRAINING Version

Website Administrator

- Request-for-Login
- Maintain-Info
- Administrator-Request
- Administrative-Log

2.1 Authenticate Administrator
- Administrator-Verification

2.2 Choose and View Information
- System-Data

2.3 Change User Settings
- Update-Request

Client Info and Sensor Data
Level 3: Obtain Monitoring Data

**Diagram:**

- **Sensored User**
  - Sensored-User-Login
  - Sensored-User-Request
  - Sensored-User-Account-Information
  - Sensor-Info-and-Current-IP-Address

- **3.1 Verify Login & Process Request**
  - Profile-Info
  - Device-Options
  - Alerts-Options
  - Device-Registration

- **3.2 Verify & Obtain Sensor Data**
  - Stored-IP-Address-and-Sensor-Info
  - Current-IP-Address-and-Sensor-Data

---

**Client Info and Sensor Data**
Level 3.1: Verify Login & Process Request

Visible Systems Corporation EDUCATIONAL/TRAINING Version

- Sensored User
  - Sensored-User-Login
  - Sensored-User-Request

- 3.1.1 Verify Login
  - Sensored-User-Verification

- 3.1.2 Register New Sensored User
  - Sensored-User-Registration

- 3.1.3 Register New Device
  - Device-Registration

- 3.1.4 Change Device Options
  - Device-Options

- 3.1.5 Change Alerts Options
  - Alerts-Options

- 3.1.6 Change Profile Information
  - Profile-Info

Client Info and Sensor Data
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.
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

<table>
<thead>
<tr>
<th>Account-Information</th>
<th>Location</th>
<th>Data Flow</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level 0</td>
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</tr>
<tr>
<td></td>
<td>Source:</td>
<td>Manage User Request (Process)</td>
</tr>
<tr>
<td></td>
<td>Dest:</td>
<td>Remote User (Source/Sink)</td>
</tr>
<tr>
<td></td>
<td>Level 1</td>
<td>(1)</td>
</tr>
<tr>
<td></td>
<td>Source:</td>
<td>Retrieve Sensor Information (Process)</td>
</tr>
<tr>
<td></td>
<td>Dest:</td>
<td>Remote User (Source/Sink)</td>
</tr>
<tr>
<td></td>
<td>Context Diagram</td>
<td>(CONTEXT)</td>
</tr>
<tr>
<td></td>
<td>Source:</td>
<td>Environmental Monitoring System (Process)</td>
</tr>
<tr>
<td></td>
<td>Dest:</td>
<td>Remote User (Source/Sink)</td>
</tr>
<tr>
<td></td>
<td>Date Last Altered:</td>
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<td>Source:</td>
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<tr>
<td></td>
<td>Dest:</td>
<td>Website Administrator (Source/Sink)</td>
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<tr>
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<td>Level 2</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>Source:</td>
<td>Choose and View Information (Process)</td>
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<td></td>
<td>Dest:</td>
<td>Website Administrator (Source/Sink)</td>
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<tr>
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<td>Context Diagram</td>
<td>(CONTEXT)</td>
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<td>Source:</td>
<td>Environmental Monitoring System (Process)</td>
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<td>Website Administrator (Source/Sink)</td>
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<td>Dest:</td>
<td>Change User Settings (Process)</td>
</tr>
<tr>
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<td>Level 0</td>
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<td></td>
<td>Source:</td>
<td>Website Administrator (Source/Sink)</td>
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<td>(CONTEXT)</td>
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<tr>
<td></td>
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<th>Administrator-Verification</th>
<th>Location</th>
<th>Data Flow</th>
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<td>(2)</td>
</tr>
<tr>
<td></td>
<td>Source:</td>
<td>Authenticate Administrator (Process)</td>
</tr>
</tbody>
</table>
Environmental Monitoring System

Alerts-Options 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

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

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

Change Device Options Process

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

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Environment Monitoring System

**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**

*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**

*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**

*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*

*Parent: Manage Website (Process)*

*Date Last Altered: 11/28/2005*  
*Date Created: 11/18/2005*
Client Info and Sensor Data

**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
Environmental Monitoring System

Profile-Info
Current-IP-Address-and-Sensor-Data
Update-Request
Administrator-Verification
Remote-User-Verification

Output Flows:
Stored-IP-Address-and-Sensor-Info
System-Data
Retrieve-Stat

Level 1

Input Flows:
Remote-User-Verification
Output Flows:
Retrieve-Stat

Date Last Altered: 11/28/2005
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---------------------------------------------------------------------------------------------------------------------------------

Current-IP-Address-and-Sensor-Data    Data Flow

Location:
Level 3 (3)
Source: Verify & Obtain Sensor Data (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

---------------------------------------------------------------------------------------------------------------------------------

Device-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 Device 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

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Device-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 Device (Process)
Environmental Monitoring System

**Process**

**Description:**
A system that allows you to view different sensor information

**Process #:** 0

**Location:**

**Context Diagram**

**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
- Request-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

**Children:** Manage Website

**Maintain-info**

**Location:**

**Level 2**

**Source:** Website Administrator (Source/Sink)

**Dest:** Choose and View Information (Process)

**Level 0**

**Source:** Website Administrator (Source/Sink)

**Dest:** Manage Website (Process)
Manage User Request  
**Description:**
Process user login information to let them log in

**Process #:** 1  
**Location:** Level 0

**Input Flows:**  
Remote-User-Login  
Retrieve-Stat

**Output Flows:**  
Account-Information  
Remote-User-Verification

Obtain Monitoring Data  
**Description:**
Collecting all the data from sensored user then process it to the client info and sensor data

**Process #:** 3  
**Location:** Level 0

**Input Flows:**  
Sensor-Info-and-Current-IP-Address  
Sensored-User-Login  
Stored-IP-Address-and-Sensor-Info
Environmental Monitoring System

Profile-Info

Location: Level 3 (3)
Source: 
Dest: 

Level 3.1 (3.1)
Source: 
Dest: 

Level 0 (0)
Source: 
Dest: 

Context Diagram (CONTEXT)
Source: 
Dest: 

Register New Device

Description:
Allow sensored user to register new sensor

Process #: 3.1.3
Location:

Level 3.1 (3.1)

Output Flows:

Device-Registration

Environmental Monitoring System

Children:

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Register New Sensored User

Description:
Registration for first time sensored user

Process #: 3.1.2
Location:

Level 3.1 (3.1)

Output Flows:

Sensored-User-Registration

Environmental Monitoring System

Children:
Environmental Monitoring System

Children:

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

---------------------------------------------------------------------------------------------------------------------------------

Request-for-Login

Location: Level 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

Source: Website Administrator (Source/Sink)
Dest: Manage Website (Process)

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

---------------------------------------------------------------------------------------------------------------------------------

Remote-User-Login

Description:

Location: Level 1

Source: Remote User (Source/Sink)
Dest: Verify Login ID and Password (Process)

Level 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

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Remote-User-Verification

Location: Level 1

Source: Verify Login ID and Password (Process)
Dest: Client Info and Sensor Data (File)

Level 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: 11/28/2005  Date Created: 11/21/2005

---------------------------------------------------------------------------------------------------------------------------------

Remote User

Description:
User that sign in at a location that does not have register sensor

Location:

Context Diagram (CONTEXT)
Input Flows:
Account-Information
Output Flows: 
Remote-User-Login

Input Flows: 
Account-Information 

Level 0 (0) 

Output Flows: 
Remote-User-Login

Input Flows: 
Account-Information 

Level 1 (1) 

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

Retrieve-Stat Data Flow

Location: 
Level 0 (0) 
Source: Client Info and Sensor Data (File) 
Dest: Manage User Request (Process)

Level 1 (1) 
Source: Client Info and Sensor Data (File) 
Dest: Retrieve Sensor 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

Retrieve Sensor Information Process

Description: 
Get sensor information from the client info and sensor data then process and display the information to remote user

Process #: 1.2 
Location: 
Level 1 (1) 

Input Flows: 
Retrieve-Stat 

Output Flows: 
Account-Information 

Environmental Monitoring System 

Date Last Altered: 11/28/2005  Date Created: 10/24/2005

Sensor-Info-and-Current-IP-Address Data Flow

Location: 
Level 0 (0) 
Source: Sensored User (Source/Sink) 
Dest: Obtain Monitoring Data (Process)

Level 3 (3) 
Source: Sensored User (Source/Sink) 
Dest: Verify & Obtain Sensor Data (Process)

Context Diagram (CONTEXT) 
Source: Sensored User (Source/Sink) 
Dest: Environmental Monitoring System (Process)
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: 10/31/2005
Date Created: 10/31/2005
---------------------------------------------

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: Environmental Monitoring System (Process)
Dest: Sensored User (Source/Sink)

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)
Sensored-User-Verification

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

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

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

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System-Data

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

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Update-Request

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

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Verify & Obtain Sensor Data

Description:
To store sensored user info and current IP address
Process #: 3.2
Location:
Level 3 (3)

Input Flows:
- Stored-IP-Address-and-Sensor-Info
Verify Login Process

Description:
Verify sensored user login information with the client info and sensor data

Process #: 3.1.1

Location:
Level 3.1

Input Flows:
Sensored-User-Login
Sensored-User-Request

Output Flows:
Sensored-User-Verification

Date Last Altered: 11/28/2005
Date Created: 10/24/2005

Verify Login & Process Request Process

Description:
Process sensored user login information then verify with the client info and sensor data

Process #: 3.1

Location:
Level 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

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

Input Flows:
Remote-User-Login
Remote-User-Verification

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
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.xp&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

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

User Information

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Data Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user_id</td>
<td>Text</td>
<td>a value assigned by the software to uniquely identify the user to accommodate for changes to the username</td>
</tr>
<tr>
<td>name</td>
<td>Text</td>
<td>the user's first name as entered during the registration process</td>
</tr>
<tr>
<td>email</td>
<td>Text</td>
<td>the user's e-mail address</td>
</tr>
<tr>
<td>primary_phone</td>
<td>Text</td>
<td>the user's primary e-mail address</td>
</tr>
<tr>
<td>password</td>
<td>Text</td>
<td>a string of characters that conform to a predefined schema</td>
</tr>
<tr>
<td>phone</td>
<td>Text</td>
<td>the default phone number for the purposes of contacting the user</td>
</tr>
<tr>
<td>city</td>
<td>Text</td>
<td>the user's city of residence</td>
</tr>
<tr>
<td>state</td>
<td>Text</td>
<td>the user's state of residence</td>
</tr>
<tr>
<td>zip</td>
<td>Text</td>
<td>the user's zip code</td>
</tr>
<tr>
<td>phone</td>
<td>Text</td>
<td>the user's phone number</td>
</tr>
<tr>
<td>location</td>
<td>Text</td>
<td>the user's location</td>
</tr>
<tr>
<td>temp</td>
<td>Real</td>
<td>the current temperature</td>
</tr>
<tr>
<td>light_threshold</td>
<td>Real</td>
<td>the temperature threshold for light</td>
</tr>
<tr>
<td>sound</td>
<td>Real</td>
<td>the temperature threshold for sound</td>
</tr>
<tr>
<td>camera</td>
<td>Real</td>
<td>the temperature threshold for camera</td>
</tr>
<tr>
<td>air_flow</td>
<td>Real</td>
<td>the temperature threshold for air flow</td>
</tr>
<tr>
<td>humidity</td>
<td>Real</td>
<td>the temperature threshold for humidity</td>
</tr>
<tr>
<td>humidity_threshold</td>
<td>Real</td>
<td>the temperature threshold for humidity</td>
</tr>
</tbody>
</table>

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.
Location Information

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

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

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Data Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>user_id</td>
<td>Text</td>
<td>a value assigned by the software to uniquely identify the user to accommodate for changes to the username</td>
</tr>
<tr>
<td>location</td>
<td>Text</td>
<td>the name assigned to the location by the user during its registration to uniquely identify it to the user (e.g., office, home, school, etc.)</td>
</tr>
<tr>
<td>temp</td>
<td>Number</td>
<td>temperature reading from sensor</td>
</tr>
<tr>
<td>temp_threshold</td>
<td>Number</td>
<td>a user defined limit to activate alert process</td>
</tr>
<tr>
<td>smoke</td>
<td>Number</td>
<td>smoke reading from sensor</td>
</tr>
<tr>
<td>smoke_threshold</td>
<td>Number</td>
<td>a user defined limit to activate alert process</td>
</tr>
<tr>
<td>water</td>
<td>Number</td>
<td>water reading from sensor</td>
</tr>
<tr>
<td>water_threshold</td>
<td>Number</td>
<td>a user defined limit to activate alert process</td>
</tr>
<tr>
<td>light</td>
<td>Number</td>
<td>light reading from sensor</td>
</tr>
<tr>
<td>light_threshold</td>
<td>Number</td>
<td>a user defined limit to activate alert process</td>
</tr>
<tr>
<td>sound</td>
<td>Number</td>
<td>sound reading from sensor</td>
</tr>
<tr>
<td>sound_threshold</td>
<td>Number</td>
<td>a user defined limit to activate alert process</td>
</tr>
<tr>
<td>camera</td>
<td>Number</td>
<td>stored snapshot from camera</td>
</tr>
<tr>
<td>air_flow</td>
<td>Number</td>
<td>air flow reading from sensor</td>
</tr>
<tr>
<td>air_flow_threshold</td>
<td>Number</td>
<td>a user defined limit to activate alert process</td>
</tr>
<tr>
<td>humidity</td>
<td>Number</td>
<td>humidity reading from sensor</td>
</tr>
<tr>
<td>humidity_threshold</td>
<td>Number</td>
<td>a user defined limit to activate alert process</td>
</tr>
</tbody>
</table>
2.3 Structure Diagrams

![Structure Diagram]

User

Log In

Log In Failed

OK?

Main Screen
Remote User Main Screen

Remote User Main Screen

Log Out

Log In Screen

Add Device

Add Device Screen

View Alert History

View Alert History Screen
Environmental Monitoring System

Sensored User Screen

Sensored User Main Screen

Log Out

Log In Screen

Add Device

Add Device Screen

View Alert History

View Alert History Screen

Edit User Profile

User Profile Screen

Edit Device Options

Device Options Screen

Delete Device

Sensored User Main Screen
Add Device Screen

Add Device Screen

Enter Device Info

User Main Screen

View Alert History Screen

View Alert History Screen

View History

User Main Screen
Query Results Screen

Query Results Screen

View Results

User Main Screen

Edit Profile

User Profile 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 sensor 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

<table>
<thead>
<tr>
<th>ID 1.1.#</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>User clicks the “Login” button without typing a User Name and Password</td>
<td>Error message</td>
<td>Login Error: You must supply a User Name and Password to access your account</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>User types the wrong User Name or Password and clicks the “Login” button</td>
<td>Error message</td>
<td>Login Error: You may have entered your User Name or Password incorrectly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>User types the User Name and Password and clicks the “Login” button</td>
<td>Does it work?</td>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>User clicks the recovery password link</td>
<td>Does it load?</td>
<td>Password Recovery Screen is loaded</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>New User clicks the register new user link</td>
<td>Does it load?</td>
<td>Welcome New User Screen is loaded</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 1.2 Welcome New User Screen

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

<table>
<thead>
<tr>
<th>ID</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>User clicks the “Submit” button without filling in any information</td>
<td>Error message</td>
<td>Error: You must fill in all fields before submitting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>User clicks the “Submit” button after filling in all the fields</td>
<td>Does it work?</td>
<td>Provided information is stored. Notification Information Screen is loaded; user’s e-mail and phone number are displayed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>User clicks the “Back” button</td>
<td>Does it work?</td>
<td>Welcome New User Screen is loaded</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 1.4 Notification Information Screen

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

<table>
<thead>
<tr>
<th>ID</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>User clicks the “Submit” button without filling in any information</td>
<td>Error message</td>
<td>Error: You must fill in all fields before submitting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>User clicks the “Submit” button after filling in all the fields</td>
<td>Does it work?</td>
<td>The provided information is sent to <a href="mailto:ilovesaintsoft@siena.edu">ilovesaintsoft@siena.edu</a>. If it is correct</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>then an e-mail will be sent to the user with user password.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>User clicks the “Back” button</td>
<td>Does it work?</td>
<td>Log in Screen is loaded</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 1.6 Sensored User Menu

<table>
<thead>
<tr>
<th>ID 1.6.#</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>User clicks the “User Profile” button</td>
<td>Does it work?</td>
<td>User Profile Screen and Sensored User Menu are loaded; the user’s profile information is displayed on User Profile Screen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>User clicks the “Refresh” button</td>
<td>Does it work?</td>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>User clicks the “Add Device” button</td>
<td>Does it work?</td>
<td>Register Sensors Screen is loaded; IP address and operating system are displayed. Sensored User Menu is</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>also loaded</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-----</td>
<td>-----</td>
<td>-------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>User clicks the “Home” button</td>
<td>Does it work?</td>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>User clicks the “Log Off” button</td>
<td>Does it work?</td>
<td>The User becomes logged off of the system. Log in Screen is loaded</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 1.7 Sensored User Home Screen with no sensors registered

<table>
<thead>
<tr>
<th>ID</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>User accessing Sensored User Home Screen with no sensors registered</td>
<td>Does it load?</td>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>User clicks the “Add Device” button</td>
<td>Does it work?</td>
<td>Register Sensors Screen is loaded; IP address and operating system are displayed. Sensored User Menu is also loaded</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 1.8 Sensored User Home Screen with devices

<table>
<thead>
<tr>
<th>ID</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>User accessing Sensored User Home Screen with devices</td>
<td>Does it load?</td>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>User clicks the “Alert History Button” button</td>
<td>Does it work?</td>
<td>Alert History Screen is loaded displaying all alerts for the specified device. Sensored User Menu is also loaded</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>User clicks the “Device Options” button</td>
<td>Does it work?</td>
<td>Device Options Screen and Sensored User Menu are loaded</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>User clicks the “Delete” button</td>
<td>Does it work?</td>
<td>Alert Message: Are you sure you want to delete this sensor? If User clicks “OK” button the device will be deleted.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 1.9 Register Sensors Screen

<table>
<thead>
<tr>
<th>ID 1.9.#</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>User accessing Register Sensors Screen</td>
<td>Does it load?</td>
<td>Register Sensors Screen is loaded; IP address and operating system are displayed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>User clicks the “Submit” button without filling in any information</td>
<td>Error message</td>
<td>Error: You must fill in all fields before submitting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>User clicks the “Submit” button after filling in all the fields and selecting the sensor type</td>
<td>Does it work?</td>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>User clicks the “Back” button</td>
<td>Does it work?</td>
<td>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</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Alert History Screen

<table>
<thead>
<tr>
<th>ID 1.10.#</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>User accessing Alert History Screen</td>
<td>Does it load?</td>
<td>Alert History Screen is loaded displaying all alerts for the specified device</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>User clicks the “Back” button</td>
<td>Does it work?</td>
<td>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</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1.11 Device Options Screen

<table>
<thead>
<tr>
<th>ID</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>User clicks the “Submit” button without filling in any information</td>
<td>Error message</td>
<td>Error: You must fill in all fields before submitting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>User clicks the “Submit” button after filling in all the fields and selecting “Enable” or “Disable” radio button</td>
<td>Does it work?</td>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>User clicks the “Cancel” button</td>
<td>Does it work?</td>
<td>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</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 1.12 User Profile Screen

<table>
<thead>
<tr>
<th>ID 1.12.#</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>User accessing User Profile Screen</td>
<td>Does it load?</td>
<td>User Profile Screen is loaded; the user’s profile information is displayed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>User clicks the “Submit” button but some fields are not filled in</td>
<td>Error message</td>
<td>Error: You must fill in all fields before submitting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>User clicks the “Submit” button after updating the user profile</td>
<td>Does it work?</td>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>User clicks the “Back” button</td>
<td>Does it work?</td>
<td>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</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Unit Test 2. Remote User

#### Unit Test: 2.1. Remote User Home Screen

<table>
<thead>
<tr>
<th>ID</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>User accessing Remote User screen</td>
<td>Does it load?</td>
<td>Page loads, user’s name, location, and IP are displayed. User’s devices show up with information regarding their status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>User clicks the Alert History button</td>
<td>Does the alert history page display?</td>
<td>The Alert History page loads displaying all alerts for the specified device</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>User clicks the Refresh button</td>
<td>Does the page display after refresh?</td>
<td>The page is refreshed, specifically the sensors, incase one is not working</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>properly or the browser window has been open for a long period of time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>User clicks the Add Device button</td>
<td>Does it add a device?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Add Device page loads and displaying all the information to add a specified device</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>User clicks the Log Off button</td>
<td>Does it work?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The user log off</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Unit Test: 2.2. Alert History Screen

<table>
<thead>
<tr>
<th>ID 2.#</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>User accessing Alert History screen</td>
<td>Does it load?</td>
<td>Page loads, displaying all alerts for the specified device</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>User clicks on Back button</td>
<td>Does it work?</td>
<td>The user is brought back to the Remote User home screen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>User clicks on Home button</td>
<td>Does it work?</td>
<td>The user is brought back to the Remote User home screen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>User clicks on Refresh button</td>
<td>Does it work?</td>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>User clicks on Add Device button</td>
<td>Does it work?</td>
<td>The Add Device page loads</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---------------------------------</td>
<td>--------------</td>
<td>--------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>User clicks on Log Off button</td>
<td>Does it work?</td>
<td>The user is log off</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Unit Test: 2.3. Add A Device Screen

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

### Unit Test: 3.1. Administrator Home Screen

<table>
<thead>
<tr>
<th>ID</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Admin logs into the home screen</td>
<td>Does it load?</td>
<td>Page loads, welcome message is displayed properly, location and IP are displayed, statistics and recent alerts are displayed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Admin performs a search</td>
<td>Does it work?</td>
<td>The Query Results page loads displaying the search results</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Admin clicks the Admin Location button</td>
<td>Does it load?</td>
<td>The Admin Location page loads displaying the current location and IP address</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Admin clicks the Refresh button</td>
<td>Does it work?</td>
<td>The Admin Home Screen refreshes and any new information is displayed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Admin clicks the Change Email button</td>
<td>Does it load?</td>
<td>The Email Change page loads</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Admin clicks the Change Password button</td>
<td>Does it load?</td>
<td>The Password Reset page loads</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Admin clicks the Log Off</td>
<td>Does it work?</td>
<td>The Admin is logged</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Admin clicks the Delete Account button</td>
<td>Does it work?</td>
<td>A message box is displayed confirming that the Admin wants to delete an account. Account is deleted</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Admin clicks the Deactivate button</td>
<td>Does it work?</td>
<td>A message box is displayed confirming that the Admin wants to deactivate an account. Account is deactivated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Admin clicks the Disable/Enable Sensor button</td>
<td>Does it load?</td>
<td>The Disable/Enable Sensor page is loaded displaying the current sensors, location, and action</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Admin clicks the Activate button</td>
<td>Does it work?</td>
<td>A message box is displayed confirming that the Admin wants to activate an account. Account is activated</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Unit Test: 3.2. Query Results Screen

<table>
<thead>
<tr>
<th>ID</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Admin performs a search and is brought to the Query Results page</td>
<td>Does it load?</td>
<td>Page loads and displays the search results with the correct fields</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Admin sorts the results</td>
<td>Does it work?</td>
<td>The results sort correctly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Admin sorts a column of the results</td>
<td>Does it work?</td>
<td>The selected column sorts the results correctly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Admin clicks the Change Selected button</td>
<td>Does it load?</td>
<td>The User Profile page loads displaying the users contact information, email information, and cell phone numbers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Admin clicks the Back button</td>
<td>Does it work?</td>
<td>The Admin is taken back to the Admin Home Screen</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Unit Test: 3.3. User Profile Screen

<table>
<thead>
<tr>
<th>ID</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Admin clicks the Change Selected button on the Query Results page</td>
<td>Does it load?</td>
<td>Page loads and displays the users contact information, email information, and cell phone numbers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Admin edits a field</td>
<td>Does it work?</td>
<td>The Admin is able to type text into the text boxes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Admin changes the Default Notification</td>
<td>Does it work?</td>
<td>The default notification is changed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Admin clicks the Submit button</td>
<td>Does it load?</td>
<td>A user’s profile information is changed and the Admin is brought to the Admin Home Screen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Admin clicks the Back button</td>
<td>Does it work?</td>
<td>The Admin is taken back to the Query Results page</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Unit Test: 3.4. Administrator Location Screen

<table>
<thead>
<tr>
<th>ID</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Admin clicks the Admin Location button</td>
<td>Does it load?</td>
<td>Page loads and displays the Admin’s Location and IP Address</td>
<td>Pass</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Admin edits the location field</td>
<td>Does it work?</td>
<td>The Admin is able to type text into the text box</td>
<td>Pass</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Admin clicks the Submit button</td>
<td>Does it load?</td>
<td>The Admin is brought to the Admin Home Screen and the location and IP address are updated</td>
<td>Fail</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Admin clicks the Back button</td>
<td>Does it work?</td>
<td>The Admin is taken back to the Admin Home Screen</td>
<td>Pass</td>
<td></td>
</tr>
</tbody>
</table>
### Unit Test: 3.5. Refresh Button Clicked

<table>
<thead>
<tr>
<th>ID 35.#</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Admin clicks the Refresh button</td>
<td>Does it work?</td>
<td>The Admin Home Screen refreshes and any new information is displayed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Unit Test: 3.6. Change Email Screen

<table>
<thead>
<tr>
<th>ID 36.#</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Admin clicks the Change Email button</td>
<td>Does it load?</td>
<td>Page loads and displays text boxes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Admin edits a field</td>
<td>Does it work?</td>
<td>The Admin is able to type text into the text boxes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Admin clicks the Submit button</td>
<td>Does it load?</td>
<td>A message box is displayed and the Admin’s email is changed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Admin clicks the Back button</td>
<td>Does it work?</td>
<td>The Admin is taken back to the Admin Home Screen</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Unit Test: 3.7. Change Password Screen**

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

**Unit Test: 3.8. Log Out Button Clicked**

<table>
<thead>
<tr>
<th>ID</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Admin clicks the Log Out button</td>
<td>Does it work?</td>
<td>The Admin is logged out and the User Log In screen is loaded</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Unit Test: 3.9. Delete Account Button Clicked

<table>
<thead>
<tr>
<th>ID</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.9.</td>
<td>Admin clicks the Delete Account button</td>
<td>Does it work?</td>
<td>A message box is displayed confirming that the Admin wants to delete an account. Account is deleted</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Unit Test: 3.10. Deactivate Account Button Clicked

<table>
<thead>
<tr>
<th>ID</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.10.</td>
<td>Admin clicks the Delete Account button</td>
<td>Does it work?</td>
<td>A message box is displayed confirming that the Admin wants to deactivate an account. Account is deactivated</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Unit Test: 3.11. Disable/Enable Sensor Screen

<table>
<thead>
<tr>
<th>ID</th>
<th>What is being tested:</th>
<th>Tested for:</th>
<th>Expected Outcome:</th>
<th>Pass or Fail:</th>
<th>Comments:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Admin clicks the Disable/Enable button and is brought to the Disable/Enable Sensor Screen</td>
<td>Does it load?</td>
<td>Page loads and displays user’s current sensors, locations, and actions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Admin enables a sensor and clicks the Submit button</td>
<td>Does it work?</td>
<td>The user’s sensor becomes enabled and the Admin is brought to the Admin Home Screen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Admin disables a sensor and clicks the Submit button</td>
<td>Does it work?</td>
<td>The user’s sensor becomes disabled and the Admin is brought to the Admin Home Screen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Admin clicks the Back button</td>
<td>Does it work?</td>
<td>The Admin is taken back to the Admin Home Screen</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 Gannt Chart

<table>
<thead>
<tr>
<th>Task Name</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
</tr>
</thead>
<tbody>
<tr>
<td>1    Team Meetings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2    Class Meetings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3    Client Meeting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4    Detailed Design</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5    Detailed Design Presentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6    Acceptance Test</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7    Acceptance Test Presentation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8    Academic Celebration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9    End of Semester Celebration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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.