

Environmental Monitoring System

Detailed Design
by
SaintSoft

Welcome

Mr. Kenneth Swarner

Computer Science System

Administrator, Siena College

&

Dr. Timoth Lederman

Professor of Computer Science,

Siena College

SaintSoft Team Organization

- David Moore – *Team Leader*
- Hannah Palmer – *Project Manager*
- Daniel Schuldt – *Development Manager*
- Christian Damberg – *Testing Manager*
- Liubov Mikhailova – *Development Engineer*
- Tina Ting – *Testing Engineer*

Agenda

- **Introduction** – David Moore
- **Prototypes** – Daniel Schuldt / Hannah Palmer
- **Data Structures** – David Moore
- **Test Plan** – Christian Damberg
- **Conclusion and Questions** – David Moore

Prototypes

Hannah Palmer / Daniel Schuldt

Log In Screen

Untitled Document - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

Environmental Monitoring System

SaintSoft

NEWS

New Microphone Sensor developed. Click [here](#) for more details.

More than 5,000 customers now have the Environmental Monitoring System.

User Name:

Password:

Login

Forgot password? Click [here](#) to recover

Don't have a User Name? Click [here](#) to register

Transferring data from 192.168.0.105...

Password Recovery

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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:

Answer:

Done

First Registration Screen

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Environmental Monitoring System
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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 log in page. All the fields are required.

E-mail:

Password: **Retype Password:**

Security question: ▼

Answer:

Done

Second Registration Screen

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Contact Information

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

First Name: Last Name:

Street:

City: State:

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

Phone: () -

Done

Third Registration Screen

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Notification Information

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

E-mail Address:

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

Phone:

Done

Initial Sensored User Screen



Register Sensor Screen

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- HOME
- User Profile
- Refresh
- Add Device
- Log Off

REGISTER SENSORS

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

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

Owner of the Sensor:

Location:

IP address: 192.168.0.1

Operating System: Windows XP

Sensor Type:

Done

Sensored User Screen

Untitled Document - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

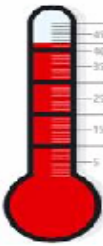

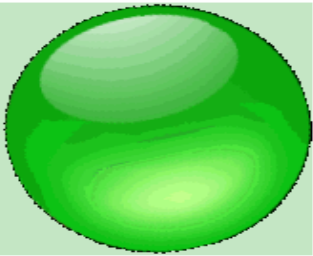
Environmental Monitoring System SaintSoft

HOME
User Profile
Refresh
Add Device
Log Off

Welcome Mr. Swarner




IP Address: 192.168.0.1 Location: Home

Current Status of your Devices

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

Transferring data from 192.168.0.105...

Sensored User Screen Continued

		
HOME <i>light</i>	OFFICE <i>smoke</i>	OFFICE <i>humidity</i>
1	OK	10%
<input type="button" value="Alert History"/>	<input type="button" value="Alert History"/>	<input type="button" value="Alert History"/>
<input type="button" value="Device Options"/>	<input type="button" value="Device Options"/>	<input type="button" value="Device Options"/>
<input type="button" value="Delete"/>	<input type="button" value="Delete"/>	<input type="button" value="Delete"/>

Transferring data from 192.168.0.105...

Sensor Alert Screens

The screenshot shows a Mozilla Firefox browser window displaying the 'Environmental Monitoring System' interface. The page title is 'Temperature Sensor Alerts'. On the left, there is a vertical navigation menu with buttons for 'HOME', 'User Profile', 'Refresh', 'Add Device', and 'Log Off'. The main content area shows 'Alerts: 2' and a table with the following data:

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

Below the table is a 'back' button. At the bottom of the browser window, the status bar indicates 'Transferring data from 192.168.0.105...'

Device Options Screens

Untitled Document - Mozilla Firefox

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Environmental Monitoring System
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HOME

User Profile

Refresh

Add Device

Log Off

Temperature Sensor

Current Temperature: 74°F

Owner of Sensor:

Location:

Threshold: °F

Enable Disable

Transferring data from 192.168.0.105...

User Profile Screen

Untitled Document - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

Environmental Monitoring System
SaintSoft

HOME
User Profile
Refresh
Add Device
Log Off

User Profile

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

Contact Information

First Name:

Last Name:

Street:

City: State:

Location:

Phone: () -

E-mail:

Password:

Security question:

Transferring data from 192.168.0.105...

Remote User Screens

Untitled Document - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

Environmental Monitoring System

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HOME

Refresh

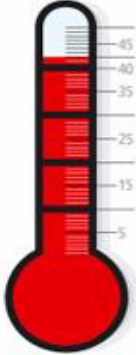


Add Device

Log Off

Welcome Mr. Swarner




IP Address: 22.134.32.2	Location: Remote
-----------------------------------	----------------------------

Current Status of your Devices

	 Software Engineering Axis 211 A Mon Feb 20 2006 04	
HOME	OFFICE	BASEMENT
74°F	No Motion No Sound	OK
Alert History	Alert History	Alert History

Remote User Screens Continued

The screenshot displays a remote user interface with three monitoring panels arranged in a grid. Each panel contains an icon, a title, a status indicator, and an 'Alert History' button. The status indicators are: '1' for the light panel, 'OK' for the smoke panel, and '10%' for the humidity panel. A status bar at the bottom of the window reads 'Transferring data from 192.168.0.105...'. The background of the slide features a blue gradient with a circular pattern of concentric ripples.

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

Transferring data from 192.168.0.105...

Administrator Screens

Untitled Document - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

Environmental Monitoring System

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HOME

Admin Location


Refresh

Change E-mail

Change Password

Log Off

Welcome Administrator



IP address: 192.168.0.1 Location: Ken's Office RB 352

Account Management

User Name:

Delete Account

Deactivate

Disable/Enable Sensor

Activate

Statistics:	Recent Alerts (within the last 24 hours)
Number of users: 1,000	spikeman44@hotmail.com Temperature 12/25/05 19:15:23
Number of Sensors: 2,325	ilovesaintsoft@siena.edu Water 12/25/05 15:35:23
Current users logged in: 625	sds8081@siena.edu Temperature 12/25/05 08:56:45
System Status: NORMAL { External Connection error.	spikeman44@hotmail.com

Waiting for oraserv.cs.siena.edu...

Administrator Screens Cont.

Change Password

Log Off

software error }

View/Modify User Data:

Account Management

User Name:

Delete Account

Deactivate

Disable/Enable Sensor

Activate

Search By:
 Username Sensor Alerts Name Date

Information to include:
 Username Sensor Alerts Name Date

Sort By:
 Ascending Descending

Search

Transferring data from oraserv.cs.siena.edu...

Admin Location Screen

The screenshot shows a web browser window titled "Untitled Document - Mozilla Firefox". The browser's menu bar includes "File", "Edit", "View", "Go", "Bookmarks", "Tools", and "Help". The page content features a blue header with the text "Environmental Monitoring System" and "SaintSoft" below it. On the left side, there is a vertical menu of blue buttons: "HOME", "Admin Location" (highlighted in orange), "Refresh", "Change E-mail", "Change Password", and "Log Off". The main content area is titled "Admin Location:" and contains the following text: "The computer you are at now will be considered the admin workstation if you click submit. Your IP address is below and please enter the location of the computer (ex Office, Computer room).". Below this text, there is a "Location:" label followed by a text input field containing "Ken's Office RB 352". Underneath, the "IP Address:" is displayed as "192.168.0.1". At the bottom of this section are two buttons: "Submit" and "Back". Below the main content, there is a section titled "Account Management" which includes a "User Name:" label and an empty text input field. Underneath the input field are four buttons: "Delete Account", "Deactivate", "Disable/Enable Sensor", and "Activate". The browser's status bar at the bottom left shows the word "Done".

Change E-mail Screen

Untitled Document - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

Environmental Monitoring System
SaintSoft

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

E-mail Change:

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

Old E-Mail:

New E-Mail:

Retype E-mail:

Submit Back

Account Management

User Name:

Delete Account
Deactivate
Disable/Enable Sensor
Activate

Done

Change Password Screen

Untitled Document - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

Environmental Monitoring System
SaintSoft

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

Password Reset:

Please enter your old password then your new password twice, then click submit.

Old Password:

New Password:

Retype Password:

Submit Back

Account Management

User Name:

Delete Account
Deactivate
Disable/Enable Sensor
Activate

Done

Disable/Enable Sensor Screen

Untitled Document - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

Environmental Monitoring System
SaintSoft

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

Account Management

User Name:

Delete Account
Deactivate
Disable/Enable Sensor
Activate

Disable/Enable Sensor

Username: ilovesaintsoft@siena.edu

Sensor	Location	Action
Temperature	Home	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Web Cam	Office	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Water	Basement	<input checked="" type="radio"/> Enable <input type="radio"/> Disable

Submit Back

Done

Query Result Screen

The screenshot shows a Mozilla Firefox browser window titled 'Untitled Document - Mozilla Firefox'. The page header features the text 'Environmental Monitoring System' and 'SaintSoft' on a blue gradient background. On the left side, there is a vertical menu of blue buttons: 'HOME', 'Admin Location', 'Refresh', 'Change E-mail', 'Change Password', and 'Log Off'. Below this menu is an 'Account Management' section with a 'User Name:' label and an input field. Underneath the input field are four buttons: 'Delete Account', 'Deactivate', 'Disable/Enable Sensor', and 'Activate'. The main content area is titled 'Query Result' and contains a paragraph of instructions: '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)'. Below the text is the heading 'Search Results:' followed by a table with four columns: 'User Name', 'Sensors', 'Name', and 'Select'. The table contains three rows of data. Below the table are two buttons: 'Changed Selected' and 'Back'. The browser's status bar at the bottom left shows 'Done'.

Environmental Monitoring System
SaintSoft

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

Account Management

User Name:

Delete Account
Deactivate
Disable/Enable Sensor
Activate

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:

User Name ▲	Sensors	Name	Select
sds8081@siena.edu	3	Schuldt, Dan	<input type="radio"/>
spikeman44@hotmail.com	4	Schmidt, Joseph	<input type="radio"/>
welovesaintsoft@yahoo.com	1	Swarner, Ken	<input checked="" type="radio"/>

Changed Selected Back

Done

Data Structures

David Moore

Data Structures

User Info Table

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

- 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

Data Structures

Location Info Table

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

- 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

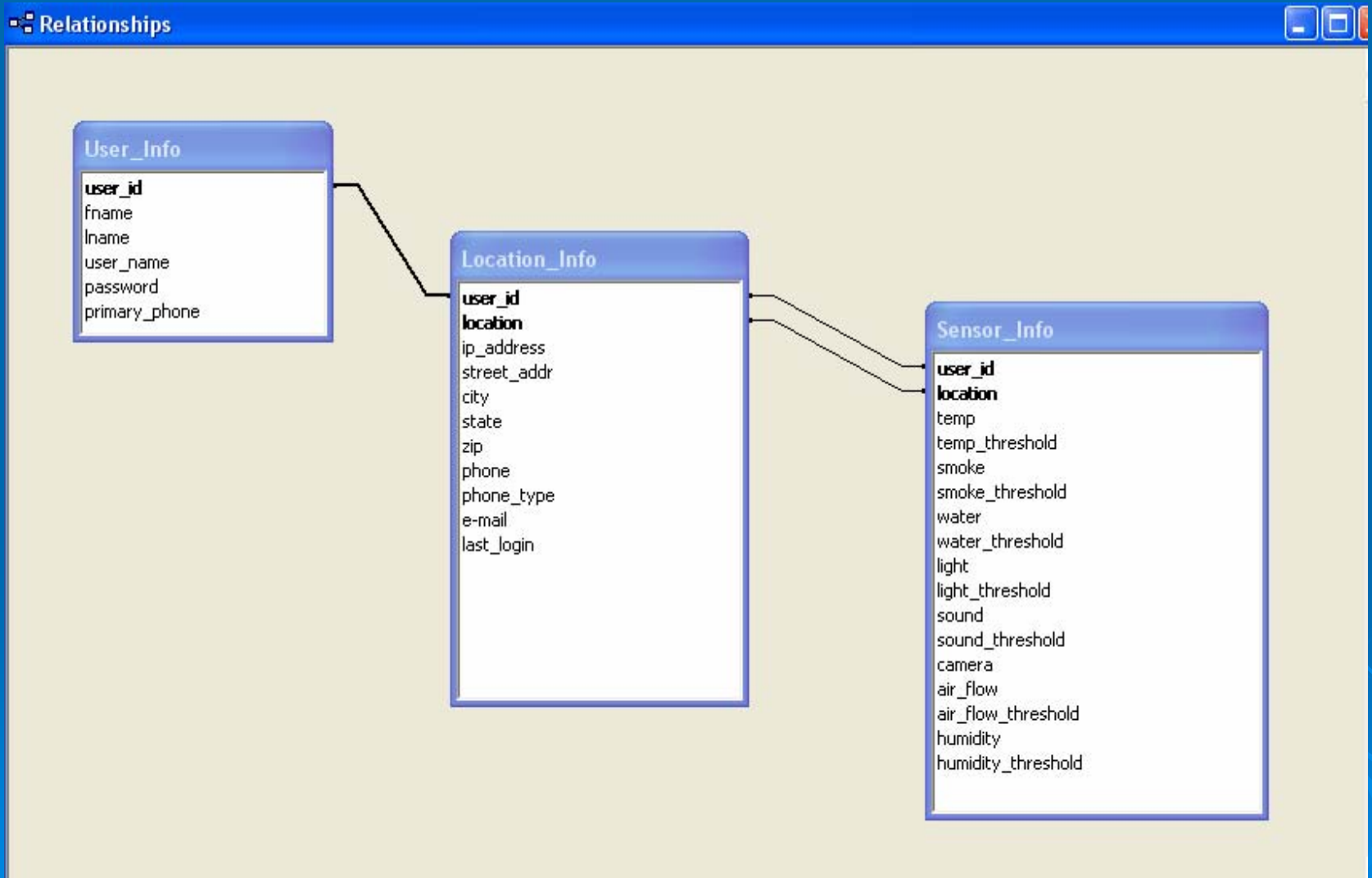
Data Structures

Sensor Information

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

- 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.

Relationship Diagram



Test Plan

Christian Damberg

What Will Be Tested

- The graphical user interfaces will be tested to assure functionality.
- The relationship between the software and database will be tested, ensuring that information transfers correctly.
- The relationship between the software and sensors will be tested, ensuring that information is retrieved correctly.
- The ability of the software to respond in the appropriate manner to the information delivered from the sensors.

Unit Test Example

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

Test Plan Overview

➤ Approach

- We have appointed a Testing Manager as well as a Testing Engineer who's main responsibilities will be to carry out the testing process.

➤ Deliverables

- We will deliver the Acceptance Test, including completed Unit Tests as well as Error Reports and Resolutions.

➤ Pass / Fail Criteria

- The minimum goal is to meet all functional requirements set by the client.

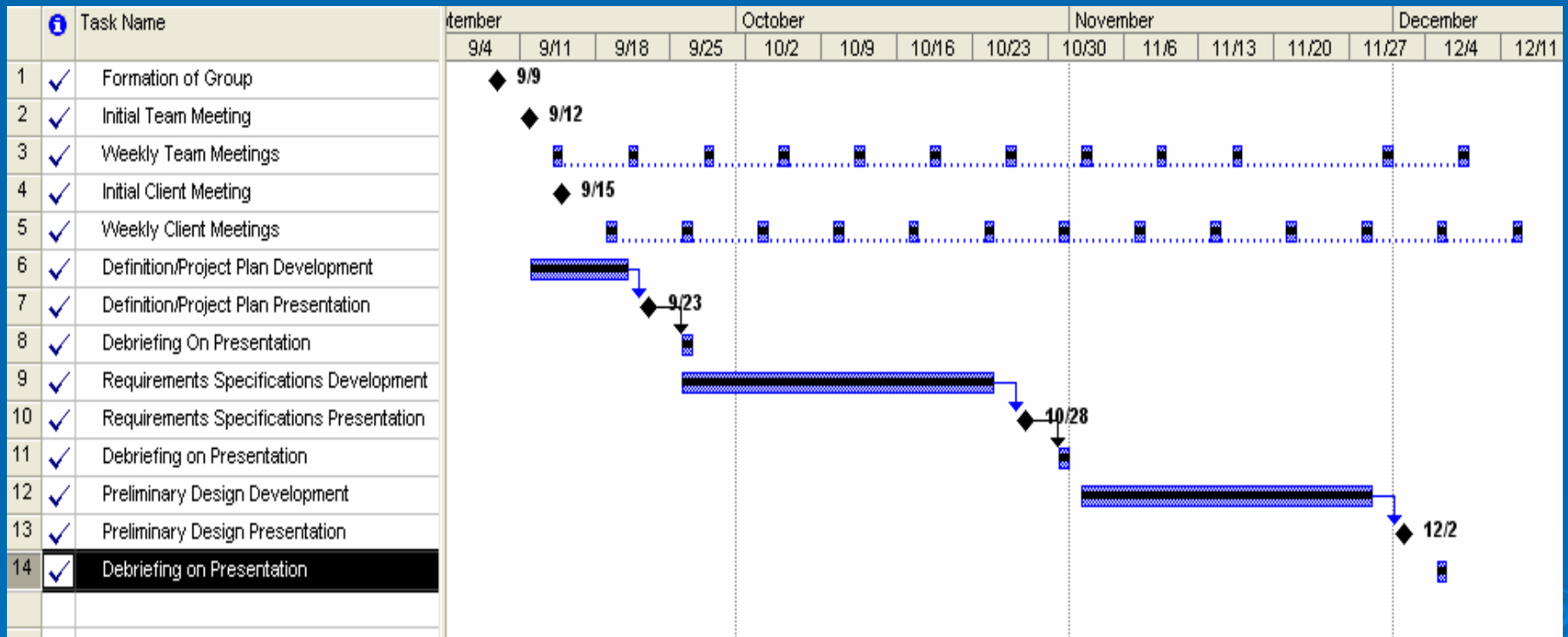
➤ Schedule

- The Acceptance Test/Testing Process is scheduled to be completed by May 1st.

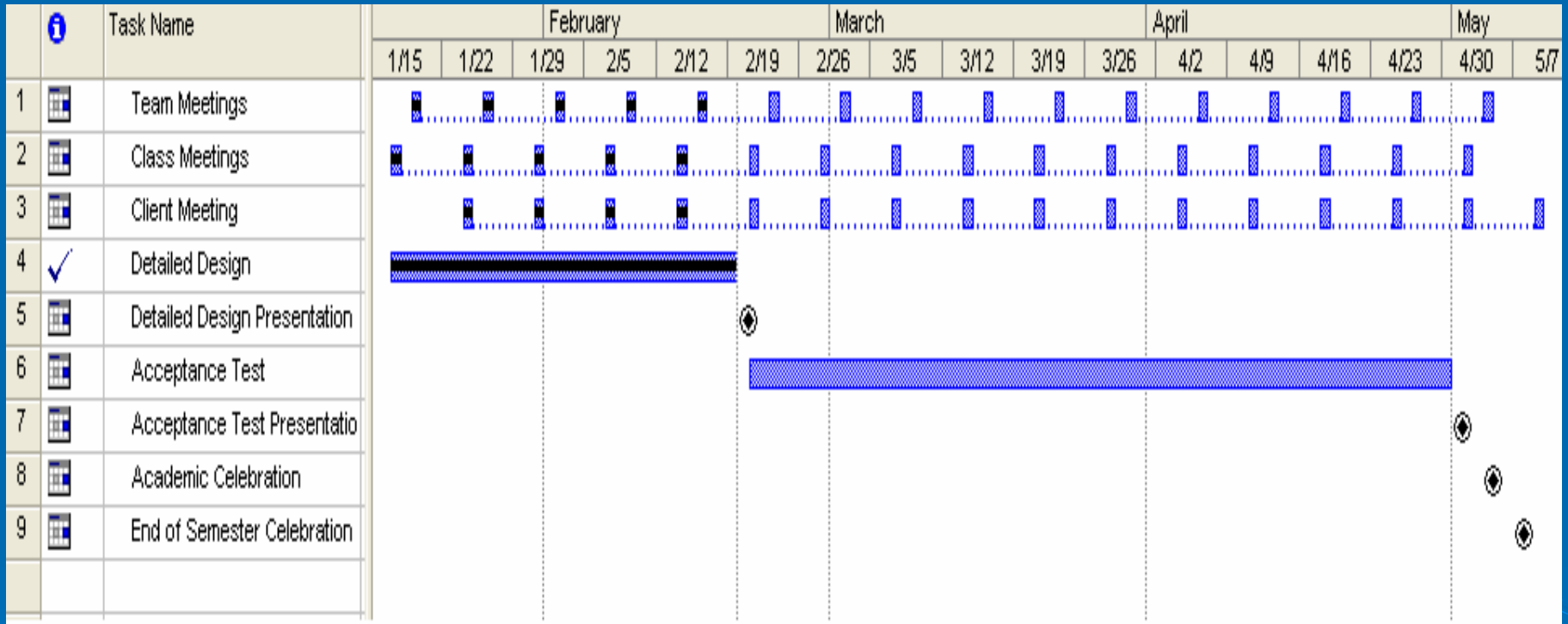
Conclusion

David Moore

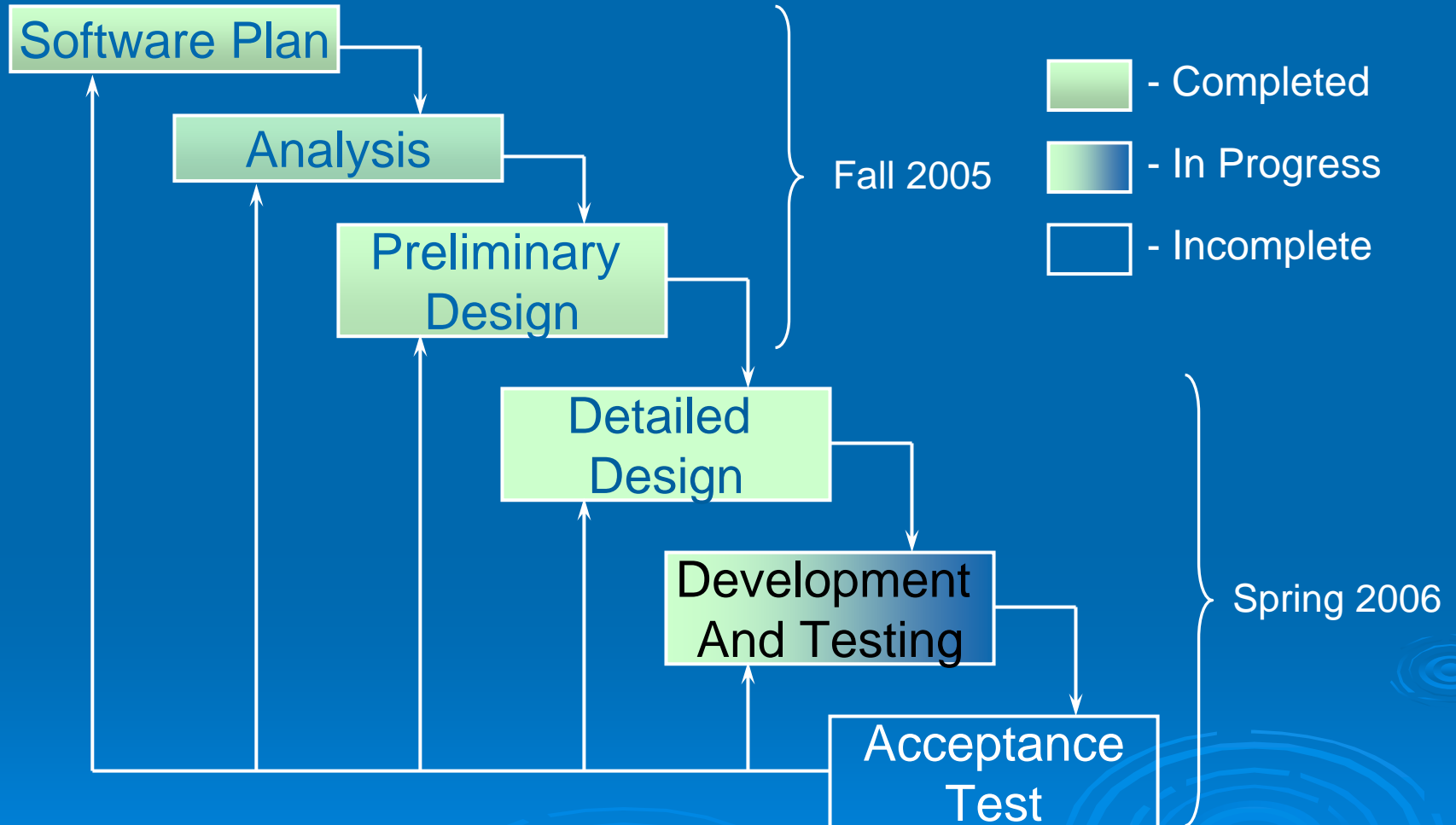
Development Schedule Fall Semester



Development Schedule Spring Semester



Project Plan



Thank You!

Any Questions?