Preliminary Design

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Automated Excel Grading System

Oasis Technologies

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# Automated Excel Grading System

## Preliminary Design

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Preliminary Design

I. Product Overview and Summary

Siena College offers two courses in the Computer Science Department that utilize Microsoft Excel. These courses have a required lab where the students create spreadsheets, which then need to be graded by the lab instructor. There is also a pre-lab associated with each lab that the students are required to complete. There are a large number of students that take these courses thus creating a large amount of excel spreadsheets that requiring grading by the lab instructors. As a result of the high quantity of spreadsheets that need grading we have been tasked, by Dr. Scott Hunter and Ms Jami Cotler, with creating a system to grade these labs and pre-labs automatically and report back to the students and instructors the results. The students will have the ability to log in to a web based system and submit these labs and pre-labs and view their grades.
II. User Displays, Report Formats, and User Command Summaries

**Note: All screens can be accessed as HTML pages by going to the following link: http://oraserv.cs.siena.edu/~perm_oasis/prototype

Login Views

Login View:

This is a view that all users will see when first loading the website. It is where all users will enter their username and password. If student's have not already set up their account, they can click on the "Register Here" link which will take them to the Register View. They can also recover their password from here if they forgot it.
Register View:

This is the view students will see when attempting to create an account. They will fill in their Name, Username, Password twice for verification, Lecture Section, and Lab Section and then click on a "Register" button to finish their registration.
Forgot Password View:

This screen is where you fill out your name, username, and e-mail address. Then an email will be sent to the user with their password.
Invalid Login View:

This screen is displayed when you enter an invalid username or password.
Student Views

Student View:

This is a view of what the students will see when they log into the system. There are two buttons they can click. One will bring them to their pre-labs home page and the other to their labs home page.
Student View 1:

This screen is where the student views their pre-labs. It will display all pre-lab files associated with each lab and the corresponding grades. It will also display a button to upload new pre-labs and a button to view the errors from the lab.
Student View 2:

This screen is where the student views their labs. It will display all lab files associated with each lab and the corresponding grades. It will also display a button to upload new labs and a button to view the errors from the lab.
Student View 3:

This screen is where the students can upload their pre-lab files.
Student View 4:

This screen is where a student can upload their lab files.
Student View 5:

This is the screen of the HTML error report generated for the student.

File 1

Cell A1 is incorrect. The correct value is 8, your value is 6. You received 0 out of 3 points

Cell C12 is incorrect. The correct font size is 12, your font size is 14. You received 0 out of 3 points

Cell D18 is correct. The correct font color is red, your font color is red. You received 3 out of 3 points

Cell C25 is correct. The correct formula is A1+B2-C3, your formula is A1+B2-C3. You received 5 out of 5 points

Cell B12 is incorrect. The correct value is 12, your value is 13. You received 0 out of 2 points

File 2

Cell E4 is incorrect. The correct value is 354, your value is 222. You received 0 out of 3 points

Cell H28 is correct. The correct font color is blue, your font color is black. You received 0 out of 1 points
Lab Instructor Views

Lab Instructor View 1:

This is the area where Lab Instructors will be able to decide which grades they want to view. They will first select which students they want to see: either a single lab section or all of their lab sections. Then they will select if they want to view all labs or a specific lab.
Lab Instructor View 2:

This is where the grades selected in Lab Instructor View 1 are displayed. This is where Lab Instructors can choose to view the graded files, approve the grades and also change the grade if necessary. This screen allows you to see the lab file in excel and also give the instructor and error report.
Lab Instructor View 3:

This is the error report that the lab instructor sees. It has everything that was marked incorrect from the excel file. They can edit this report to mark things correct that were marked incorrect by the system but deemed acceptable by the instructor.

```plaintext
File 1
A1, value, 3, 0, 6, 0, 3
C12, fontsize, 15, 14, 0, 3
D18, fontcolor, red, red, 0, 3
B13, value, 13, 13, 0, 3

File 2
X4, value, 154, 222, 0, 3
X28, fontcolor, blue, black, 0, 1
```
Lecture Instructor Views

Lecture Instructor View 1:

This is the area where Lecture Instructors will be able to decide what they want to view. They will first select which students they want to see: either a single lecture section or all of their lecture sections. Then they will select if they want to view all labs or a specific lab.
Lecture Instructor View 2:

This is where the grades selected in Lecture Instructor View 1 are displayed. The lecture instructor can view the submitted lab in excel and can also view the error report to the corresponding lab on an HTML page.
Course Administrator Views

Course Administrator View 1:

This is the area where the Course Administrator will be able to decide what they want to view. They will first select which students they want to see: a single lab section, a single lecture session, or all students. Then they will select if they want to view all labs or a specific lab. They can also edit/delete instructors or register new ones. They have the option of searching for a student by name. They can also view all students or all instructors. Finally, they have the option of uploading answer keys on this page.
Course Administrator View 2:

This is where the grades selected in Course Administrator View 1 are displayed. From this screen they will also be able to launch the excel file or view the error reports. Also they have the option of approving the grades as well.
Course Administrator View 3:

This screen is where the Course Administrator can create a new instructor account. You are able to select which type of instructor they are as well as the corresponding sections they teach.
Course Administrator View 4:

This screen is where you are able to view all of the instructors. This screen gives you the option of editing or deleting an instructor. (editing screen is in view 5)
Course Administrator View 5:

This screen allows you to change the instructor’s information including the type of instructor and the lecture/lab sections.
Course Administrator View 6:

This screen allows you to view all the students taking your class. This screen gives you the option of editing their information or deleting their account. (editing screen in view 7)

<table>
<thead>
<tr>
<th>Name</th>
<th>Lab Section</th>
<th>Lecture Section</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Student 1</td>
<td>1</td>
<td>3</td>
<td>Edit</td>
<td>Delete</td>
</tr>
<tr>
<td>Student 2</td>
<td>2</td>
<td>1</td>
<td>Edit</td>
<td>Delete</td>
</tr>
</tbody>
</table>
Course Administrator View 7:

When the Course Administrator chooses view all students then clicks the edit button, this screen will show everything stored on this particular student's account in separate fields. The Course Administrator will be able to change any of these fields. These fields include name, username, password, lecture section, and lab section.

![Edit Student Information Screen](image-url)
Course Administrator View 8:

This screen is where the Course Administrator can upload their answer keys for the labs. Also this screen allows the Course Administrator to upload sample lab files.
III. Detailed Data Flow Diagrams

Level 0: Context Diagram
Level 1: Student

[Diagram of Student Interface with nodes for Login, Register, Upload Files, View Feedback, and System Login, Forgot Password, Database]
Level 2: Lab Instructor

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Level 3: Lecture Instructor

3.0 Lecture Instructor Interface

3.1 Login

3.2 Sort By

3.3 View Feedback

Database

3.1.1 System Login

3.1.2 Forgot Password

Login-Info

Confirmation

Sort-Criteria

Student-List

Grades

Grade-Request

Login-Info

Confirmation

Sort-Criteria

Student-List

Grades

Grade-Request

Login-Info

Confirmation

Forgot-Password-Request

Email-Password

Database

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Level 4: Course Administrator

Diagram showing the flow of information and processes related to course administration, including login, sort by, student info, manage sections, register, search, create course password, upload files, and view feedback. The diagram is connected to a database and includes various nodes and paths indicating interactions and confirmations.
IV. Logical Data Dictionary

Level 0: Context Diagram

Lab Files Data Flow
Source: Student
Destination: Automated Excel Grading System
Description: Lab files will be submitted to the system.

Grade Data Flow
Source: Automated Excel Grading System
Destination: Student
Description: The grades of the lab or pre-labs will be viewed by the student.

Corrected Grades Data Flow
Source: Lab Instructor
Destination: Automated Excel Grading System
Description: The lab instructor will send the verified or corrected grades to the system.

Grades Data Flow
Source: Automated Excel Grading System
Destination: Lab Instructor
Description: The unverified grades will be viewed by the lab instructor.

Lab Files Data Flow
Source: Automated Excel Grading System
Destination: Lab Instructor
Description: The lab instructor will be able to view the student’s submitted files.

Lab Grades Data Flow
Source: Automated Excel Grading System
Destination: Lecture Instructor
Description: The lecture instructor can view the student’s lab grades.

Grading Key Data Flow
Source: Course Administrator
Destination: Automated Excel Grading System
Description: The course administrator will submit the key for grading.

Student Info Data Flow
Source: Automated Excel Grading System
Destination: Course Administrator
Description: The course administrator can view each student’s information.

Grades Data Flow
Source: Automated Excel Grading System
Destination: Course Administrator
Description: The course administrator can view each student’s grades.

Lab Files Data Flow
Source: Database
Destination: Automated Excel Grading System
Description: The system will retrieve each student’s submitted files from the database.

Lab Files Data Flow
Source: Automated Excel Grading System
Destination: Database
Description: The system will send all the student’s files to the database when submitted.

Student Source/Sink
Input Flows: Grade
Output Flows: Lab Files
Description: Student that is enrolled in a lab section.

Lab Instructor Source/Sink
Input Flows: Grade, Lab Files
Output Flows: Corrected Grades
Description: Instructor of one or multiple lab sections. Must verify/correct all grades, and can view each student’s submitted files.

Lecture Instructor Source/Sink
Input Flows: Lab Grades
Description: Instructor of one or multiple lecture sections. Can view each student’s grades for labs.

Course Administrator Source/Sink
Input Flows: Student Info, Grades
Output Flows: Grading Key
Description: The administrator of the Excel Course. Can submit the grading key and view student information and grades.

Database Data Store
Input Flows: Lab Files
Output Flows: Lab Files
Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.
Level 1: Student

Login Info Data Flow
   Source: Student Interface
   Destination: Login
   Description: Username and password for student.

Confirmation Data Flow
   Source: Login
   Destination: Student Interface
   Description: Acceptance or rejection of login info.

Student Info Data Flow
   Source: Student Interface
   Destination: Register
   Description: Student’s registration information.

Confirmation Message Data Flow
   Source: Register
   Destination: Student Interface
   Description: Confirmation sent to the student to confirm registration.

Lab Files Data Flow
   Source: Student Interface
   Destination: Upload Files
   Description: Student’s completed lab file.

Confirmation Data Flow
   Source: Upload Files
   Destination: Student Interface
   Description: Confirmation that lab file has been submitted successfully.

Feedback Request Data Flow
   Source: Student Interface
   Destination: View Feedback
   Description: Request for feedback on the submitted lab files.

Feedback Files Data Flow
   Source: View Feedback
   Destination: Student Interface
   Description: Feedback on lab files after grading system completion and lab instructor verification.

Login Info Data Flow
   Source: Login
   Destination: Database
   Description: Username and password for student.
Confirmation Data Flow  
Source: Database  
Destination: Login  
Description: Acceptance or rejection of login info.

Student Info Data Flow  
Source: Register  
Destination: Database  
Description: Student’s registration information.

Confirmation Message Data Flow  
Source: Database  
Destination: Register  
Description: Confirmation of successful registration.

Lab Files Data Flow  
Source: Upload Files  
Destination: Database  
Description: Student’s completed lab file.

Confirmation Data Flow  
Source: Database  
Destination: Upload Files  
Description: Confirmation that lab file has been submitted successfully.

Feedback Request Data Flow  
Source: View Feedback  
Destination: Database  
Description: Request for feedback on the submitted lab files.

Feedback Files Data Flow  
Source: Database  
Destination: View Feedback  
Description: Feedback on lab files after grading system completion and lab instructor verification.

Student Interface Source/Sink  
Input Flows: Confirmation, Confirmation Message, Confirmation, Feedback Files  
Output Flows: Login Info, Student Info, Lab Files, Feedback Request  
Description: Student’s web interface with which they will be able to login, register, upload files, and view feedback.

Login Process  
Input Flows: Login Info, Confirmation  
Output Flows: Confirmation, Login Info  
Description: This process will check the login info against the database and determine whether it is correct or incorrect.

Register Process  
Input Flows: Student Info, Confirmation  
Output Flows: Confirmation Message, Student Info  
Description: The student’s will register themselves into the grading system.
Upload Files Process
  Input Flows: Lab Files, Confirmation
  Output Flows: Confirmation, Lab Files
  Description: Student’s will upload their completed lab files into the system for grading.

View Feedback Process
  Input Flows: Feedback Request, Feedback Files
  Output Flows: Feedback Files, Feedback Request
  Description: Displays student’s feedback on submitted lab files.

Database Data Store
  Input Flows: Login Info, Student Info, Lab Files, Feedback Request
  Output Flows: Confirmation, Confirmation, Confirmation, Feedback Files
  Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.

Location – Student – Login – Level 1.1

Login Info Data Flow
  Source: System Login
  Destination: Database
  Description: Sends student’s login info to database.

Confirmation Data Flow
  Source: Database
  Destination: System Login
  Description: Acceptance or rejection of login info.

Forgot Password Request Data Flow
  Source: Forgot Password
  Destination: Database
  Description: Request for email containing password.

Email With Password Data Flow
  Source: Database
  Destination: Forgot Password
  Description: Email containing student’s password.

System Login Process
  Input Flows: Confirmation
  Output Flows: Login Info
  Description: Confirms or rejects user’s attempt to login with username and password.

Forgot Password Process
  Input Flows: Email with password
  Output Flows: Forgot Password Request
  Description: Sends user an email containing password.
Database Data Store
   Input Flows: Login Info, Forgot Password Request
   Output Flows: Confirmation, Email With Password
   Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.

Location – Student – Upload Files – Level 1.3

Lab File Data Flow
   Source: Upload Lab
   Destination: Database
   Description: Student’s completed lab file.

Confirmation Data Flow
   Source: Database
   Destination: Upload Lab
   Description: Confirmation that lab file has been submitted successfully.

Pre Lab File Data Flow
   Source: Upload Pre Lab
   Destination: Database
   Description: Student’s completed pre lab file.

Confirmation Data Flow
   Source: Database
   Destination: Upload Pre Lab
   Description: Confirmation that pre lab file has been submitted successfully.

Upload Lab Process
   Input Flows: Confirmation
   Output Flows: Lab File
   Description: Student uploads completed lab file to system for grading.

Upload Pre Lab Process
   Input Flows: Confirmation
   Output Flows: Pre Lab File
   Description: Student uploads completed pre lab file to system for grading.

Database Data Store
   Input Flows: Lab File, Pre Lab File
   Output Flows: Confirmation, Confirmation
   Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.

Location – Student – View Feedback – Level 1.4

View File Request Data Flow
   Source: View Submitted Files
   Destination: Database
   Description: Student’s request view previously submitted lab files.
Lab File Data Flow
Source: Database
Destination: View Submitted Files
Description: Student’s previously submitted lab files.

Error Report Request Data Flow
Source: View Error Report
Destination: Database
Description: Request to view error report generated by grading system.

Error Report Data Flow
Source: Database
Destination: View Error Report
Description: Error Report generated by grading system.

View Submitted Files Process
Input Flows: Lab File
Output Flows: View File Request
Description: Displays student’s submitted lab file from database.

View Error Report Process
Input Flows: Error Report
Output Flows: Error Report Request
Description: Displays student’s error report generated by grading system.

Database Data Store
Input Flows: View File Request
Output Flows: Error Report Request
Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.
Level 2: Lab Instructor

Login Info Data Flow
Source: Lab Instructor Interface
Destination: Login
Description: Username and password for lab instructor.

Confirmation Data Flow
Source: Login
Destination: Lab Instructor Interface
Description: Acceptance or rejection of login info.

Sort Criteria Data Flow
Source: Lab Instructor Interface
Destination: Sort by
Description: The method which the lab instructor would like to sort students by.

Sort Results Data Flow
Source: Sort by
Destination: Lab Instructor Interface
Description: The resulting list of students determined by the selected sort criteria.

Open Error Report Data Flow
Source: Lab Instructor Interface
Destination: Edit Error Report
Description: Request to open error report generated by the system.

Confirmation Data Flow
Source: Edit Error Report
Destination: Lab Instructor Interface
Description: Confirmation that edited error report has been successfully submitted.

Approve Grade Request Data Flow
Source: Lab Instructor Interface
Destination: Approve Grades
Description: Request to approve grades generated by the system.

Confirmation Data Flow
Source: Approve Grades
Destination: Lab Instructor Interface
Description: Confirmation that approved grades have been successfully submitted.

Feedback Request Data Flow
Source: View Feedback
Destination: Lab Instructor Interface
Description: Request to view feedback generated by grading system.
Feedback Files Data Flow
  Source: View Feedback
  Destination: Lab Instructor Interface
  Description: Feedback generated by the grading system.

Login Info Data Flow
  Source: Login
  Destination: Database
  Description: Username and password for lab instructor.

Confirmation Data Flow
  Source: Database
  Destination: Login
  Description: Acceptance or rejection of login info.

Sort Criteria Data Flow
  Source: Sort By
  Destination: Database
  Description: The method which the lab instructor would like to sort students by.

Sort Results Data Flow
  Source: Database
  Destination: Sort By
  Description: The resulting list of students determined by the selected sort criteria.

Edited Error Report Data Flow
  Source: Edit Error Report
  Destination: Database
  Description: Error report that has been edited by lab instructor.

Confirmation Data Flow
  Source: Database
  Destination: Edit Error Report
  Description: Confirmation that edited error report has been submitted successfully.

Approved Grades Data Flow
  Source: Approve Grades
  Destination: Database
  Description: Grades that have been approved by Lab Instructor.

Confirmation Data Flow
  Source: Database
  Destination: Approve Grades
  Description: Confirmation that approved grades have been submitted successfully.

Feedback Request Data Flow
  Source: View Feedback
Destination: Database
Description: Request to view feedback generated by grading system.

Feedback Files Data Flow
Source: View Feedback
Destination: Database
Description: Feedback files that have been generated by grading system.

Lab Instructor Interface Source/Sink
Input Flows: Confirmation, Sort Results, Confirmation, Confirmation, Feedback Files
Output Flows: Login Info, Sort Criteria, Open Error Report, Approve Grade Request, Feedback Request
Description: Lab instructors web interface with which they will be able to login, sort students, edit error reports, approve student grades, and view feedback generated by the grading system.

Login Process
Input Flows: Login Info, Confirmation
Output Flows: Confirmation, Login Info
Description: This process will check the login info against the database and determine whether it is correct or incorrect.

Sort By Process
Input Flows: Sort Criteria, Sort Results
Output Flows: Sort Results, Sort Criteria
Description: This process will send the sort criteria to the database and take the resulting student list and send it to the lab instructor interface.

Edit Error Report Process
Input Flows: Open Error Report, Confirmation
Output Flows: Edited Error Report, Confirmation
Description: This process is where the lab instructor will be able to edit the error report generated by the grading system.

Approve Grades Process
Input Flows: Approve Grade Request, Confirmation
Output Flows: Confirmation, Approved Grades
Description: This process is where the lab instructor will approve the grades generated by the grading system.

View Feedback Process
Input Flows: Feedback Request, Feedback Files
Output Flows: Feedback Files, Feedback Request
Description: Displays the feedback generated by the grading system to the lab instructor.

Database Data Store
Input Flows: Login Info, Sort Criteria, Edited Error Report, Approved Grades, Feedback Request
Output Flows: Confirmation, Sort Results, Confirmation, Confirmation, Feedback Files
Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.

Location – Lab Instructor – Login – Level 2.1

Login Info Data Flow
   Source: System Login
   Destination: Database
   Description: Sends lab instructor’s login info to database.

Confirmation Data Flow
   Source: Database
   Destination: System Login
   Description: Acceptance or rejection of login info.

Forgot Password Request Data Flow
   Source: Forgot Password
   Destination: Database
   Description: Request for email containing password.

Email With Password Data Flow
   Source: Database
   Destination: Forgot Password
   Description: Email containing lab instructor’s password.

System Login Process
   Input Flows: Confirmation
   Output Flows: Login Info
   Description: Confirms or rejects user’s attempt to login with username and password.

Forgot Password Process
   Input Flows: Email with password
   Output Flows: Forgot Password Request
   Description: Sends user an email containing password.

Database Data Store
   Input Flows: Login Info, Forgot Password Request
   Output Flows: Confirmation, Email With Password
   Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.

Location – Lab Instructor – Sort By – Level 2.2

Selected Section Data Flow
   Source: Sort By Section
   Destination: Database
   Description: Selection that lab instructor would like to sort by section.

Student List Data Flow
   Source: Database
   Destination: Sort By Section
Description: Resulting student list when sorted by section.

Selected Lab Number Data Flow
Source: Sort By Lab #
Destination: Database
Description: Selection that lab instructor would like to sort by lab number.

Student List Data Flow
Source: Database
Destination: Sort By Lab #
Description: Resulting student list when sorted by lab #.

Sort By Section Process
Input Flows: Student List
Output Flows: Selected Section
Description: Sorts all students by their assigned section.

Sort By Lab # Process
Input Flows: Student List
Output Flows: Selected Lab Number
Description: Sorts all students by each assigned lab number.

Database Data Store
Input Flows: Selected Section, Selected Lab Number
Output Flows: Student List, Student List
Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.

Location – Lab Instructor – View Feedback – Level 2.5

Error Report Request Data Flow
Source: View Error Reports
Destination: Database
Description: Lab Instructor’s request to view student’s error report.

Error Report File Data Flow
Source: Database
Destination: View Error Reports
Description: Student’s error report after grading by the system.

File Request Data Flow
Source: View Submitted Files
Destination: Database
Description: Lab Instructor’s request to view student’s lab files.

Student Lab File Data Flow
Source: Database
Destination: View Submitted Files
Description: Student’s original lab files that were submitted to the system.

View Error Reports Process
Input Flows: Error Report File
Output Flows: Error Report Request
Description: Displays student’s error reports to the lab instructor.

View Submitted Files Process
Input Flows: Student Lab File
Output Flows: File Request
Description: Displays student’s original lab files that were submitted to the system.

Database Data Store
Input Flows: Error Report Request, File Request
Output Flows: Error Report File, Student Lab File
Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.

Level 3: Lecture Instructor

Login Info Data Flow
Source: Lecture Instructor Interface
Destination: Login
Description: Username and password for lecture instructor.

Confirmation Data Flow
Source: Login
Destination: Lecture Instructor Interface
Description: Acceptance or rejection of login info.

Sort Criteria Data Flow
Source: Lecture Instructor Interface
Destination: Sort by
Description: The method which the lecture instructor would like to sort students by.

Student List Data Flow
Source: Sort by
Destination: Lecture Instructor Interface
Description: The resulting list of students determined by the selected sort criteria.

Grade Request Data Flow
Source: Lecture Instructor Interface
Destination: View Feedback
Description: The request to view student’s grades generated by the system.

Grades Data Flow
Source: View Feedback
Destination: Lecture Instructor Interface
Description: The grades generated by the system for viewing by the lecture instructor.

Grade Request Data Flow
Source: View Feedback
Destination: Database
Description: The request to retrieve student’s grades generated by the system.

Grades Data Flow
Source: Database
Destination: View Feedback
Description: The grades generated by the system for viewing by the lecture instructor.

Sort Criteria Data Flow
Source: Sort by
Destination: Database
Description: The method which the lecture instructor would like to sort students by.

Student List Data Flow
Source: Database
Destination: Sort by
Description: The resulting list of students determined by the selected sort criteria.

Login Info Data Flow
Source: Login
Destination: Database
Description: Username and password for lecture instructor.

Confirmation Data Flow
Source: Database
Destination: Login
Description: Acceptance or rejection of login info.

Lecture Instructor Interface Source/Sink
Input Flows: Grades, Confirmation, Student List
Output Flows: Grade Request, Login Info, Sort Criteria
Description: Lecture instructors web interface with which they will be able to login, view student’s grades, and sort students.

Login Process
Input Flows: Login Info, Confirmation
Output Flows: Confirmation, Login Info
Description: This process will check the login info against the database and determine whether it is correct or incorrect.

Sort By Process
Input Flows: Sort Criteria, Student List
Output Flows: Student List, Sort Criteria
Description: This process will send the sort criteria to the database and take the
resulting student list and send it to the lecture instructor interface.

View Feedback Process
Input Flows: Grade Request, Grades
Output Flows: Grades, Grade Request
Description: This process will get the requested student grades from the database and send them to the lecture instructor interface.

Database Data Store
Input Flows: Login Info, Sort Criteria, Grade Request
Output Flows: Confirmation, Student List, Grades
Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.

Location – Lecture Instructor – Login – Level 3.1

Login Info Data Flow
Source: System Login
Destination: Database
Description: Sends lecture instructor’s login info to database.

Confirmation Data Flow
Source: Database
Destination: System Login
Description: Acceptance or rejection of login info.

Forgot Password Request Data Flow
Source: Forgot Password
Destination: Database
Description: Request for email containing password.

Email With Password Data Flow
Source: Database
Destination: Forgot Password
Description: Email containing lecture instructor’s password.

System Login Process
Input Flows: Confirmation
Output Flows: Login Info
Description: Confirms or rejects user’s attempt to login with username and password.

Forgot Password Process
Input Flows: Email with password
Output Flows: Forgot Password Request
Description: Sends user an email containing password.

Database Data Store
Input Flows: Login Info, Forgot Password Request
Output Flows: Confirmation, Email With Password
Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.
Location – Lecture Instructor – Sort By – Level 3.2

Selected Section Data Flow
Source: Sort By Section
Destination: Database
Description: Selection that lecture instructor would like to sort by section.

Student List Data Flow
Source: Database
Destination: Sort By Section
Description: Resulting student list when sorted by section.

Selected Lab Number Data Flow
Source: Sort By Lab #
Destination: Database
Description: Selection that lecture instructor would like to sort by lab number.

Student List Data Flow
Source: Database
Destination: Sort By Lab #
Description: Resulting student list when sorted by lab #.

Sort By Section Process
Input Flows: Student List
Output Flows: Selected Section
Description: Sorts all students by their assigned section.

Sort By Lab # Process
Input Flows: Student List
Output Flows: Selected Lab Number
Description: Sorts all students by each assigned lab number.

Database Data Store
Input Flows: Selected Section, Selected Lab Number
Output Flows: Student List, Student List
Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.
Location – Lecture Instructor – View Feedback – Level 3.3

Error Report Request Data Flow
Source: View Error Reports
Destination: Database
Description: Lecture Instructor’s request to view student’s error report.

Error Report File Data Flow
Source: Database
Destination: View Error Reports
Description: Student’s error report after grading by the system.

File Request Data Flow
Source: View Submitted Files
Destination: Database
Description: Lecture Instructor’s request to view student’s lab files.

Student Lab File Data Flow
Source: Database
Destination: View Submitted Files
Description: Student’s original lab files that were submitted to the system.

View Error Reports Process
Input Flows: Error Report File
Output Flows: Error Report Request
Description: Displays student’s error reports to the lecture instructor.

View Submitted Files Process
Input Flows: Student Lab File
Output Flows: File Request
Description: Displays student’s original lab files that were submitted to the system.

Database Data Store
Input Flows: Error Report Request, File Request
Output Flows: Error Report File, Student Lab File
Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.
Level 4: Course Administrator

Login Info Data Flow
Source: Course Administrator Interface
Destination: Login
Description: Username and password for course administrator.

Confirmation Data Flow
Source: Login
Destination: Course Administrator Interface
Description: Acceptance or rejection of login info.

Sort Criteria Data Flow
Source: Course Administrator Interface
Destination: Sort by
Description: The method which the course administrator would like to sort students by.

Sort Results Data Flow
Source: Sort by
Destination: Course Administrator Interface
Description: The resulting list of students determined by the selected sort criteria.

Student Info Data Flow
Source: Course Administrator Interface
Destination: Edit Student Info
Description: Student’s edited information.

Confirmation Data Flow
Source: Edit Student Info
Destination: Course Administrator Interface
Description: Confirmation that the student’s information has been submitted successfully.

Student Info Data Flow
Source: Course Administrator Interface
Destination: Manage Sections
Description: Student’s edited section information.

Confirmation Data Flow
Source: Manage Sections
Destination: Course Administrator Interface
Description: Confirmation that student’s edited section information has been submitted successfully.

Instructor Info Data Flow
Source: Course Administrator Interface
Destination: Register
Description: Instructor’s information for registration as an instructor.

Confirmation Data Flow
Source: Register
Destination: Course Administrator Interface
Description: Confirmation that the instructor has been successfully registered.

Search Criteria Data Flow
Source: Course Administrator Interface
Destination: Search
Description: Criteria that course administrator would like to search for.

Search Results Data Flow
Source: Search
Destination: Course Administrator Interface
Description: Results after search is processed using search criteria.

Key Files Data Flow
Source: Course Administrator Interface
Destination: Upload Files
Description: Key file which will be used for grading by the system.

Confirmation Data Flow
Source: Upload Files
Destination: Course Administrator Interface
Description: Confirmation that key file has been successfully submitted.

Password Data Flow
Source: Course Administrator Interface
Destination: Create Course Password
Description: Password which will be used to register students for the course.

Confirmation Data Flow
Source: Create Course Password
Destination: Course Administrator Interface
Description: Confirmation that password has been successfully created.

Feedback Request Data Flow
Source: Course Administrator Interface
Destination: View Feedback
Description: Request to view feedback generated by the grading system.

Feedback Files Data Flow
Source: View Feedback
Destination: Course Administrator Interface
Description: Feedback generated by the grading system.

Login Info Data Flow
Source: Login
Destination: Database
Description: Username and password for course administrator.
Confirmation Data Flow
Source: Database
Destination: Login
Description: Acceptance or rejection of login info.

Sort Criteria Data Flow
Source: Sort By
Destination: Database
Description: The method which the course instructor would like to sort students by.

Sort Results Data Flow
Source: Database
Destination: Sort By
Description: The resulting list of students determined by the selected sort criteria.

Student Info Data Flow
Source: Edit Student Info
Destination: Database
Description: Student’s edited information.

Confirmation Data Flow
Source: Database
Destination: Edit Student Info
Description: Confirmation that the student’s information has been submitted successfully.

Student Info Data Flow
Source: Manage Sections
Destination: Database
Description: Student’s edited section information.

Confirmation Data Flow
Source: Database
Destination: Manage Sections
Description: Confirmation that student’s edited section information has been submitted successfully.

Instructor Info Data Flow
Source: Register
Destination: Database
Description: Instructor’s information for registration as an instructor.

Confirmation Data Flow
Source: Database
Destination: Register
Description: Confirmation that the instructor has been successfully registered.

Search Criteria Data Flow
Source: Search
Destination: Database
Description: Criteria that course administrator would like to search for.

Search Results Data Flow
Source: Database
Destination: Register
Description: Results after search is processed using search criteria.

Key Files Data Flow
Source: Upload Files
Destination: Database
Description: Key file which will be used for grading by the system.

Confirmation Data Flow
Source: Database
Destination: Upload Files
Description: Confirmation that key file has been successfully submitted.

Password Data Flow
Source: Create Course Password
Destination: Database
Description: Password which will be used to register students for the course.

Confirmation Data Flow
Source: Database
Destination: Create Course Password
Description: Confirmation that password has been successfully created.

Feedback Request Data Flow
Source: View Feedback
Destination: Database
Description: Request to view feedback generated by the grading system.

Feedback Files Data Flow
Source: Database
Destination: View Feedback
Description: Feedback generated by the grading system.

Course Administrator Interface Source/Sink
Input Flows: Confirmation, Sort Results, Confirmation, Confirmation, Confirmation, Confirmation, Search Results, Confirmation, Confirmation, Confirmation, Feedback Files
Output Flows: Login Info, Sort Criteria, Student Info, Student Info, Instructor Info, Search Criteria, Key Files, Password, Feedback Request
Description: Course Administrator’s web interface with which they will be able to login, sort students, edit student information, manage sections, register instructors, search, upload files, create the course password, and view the feedback generated by the grading system.

Login Process
Input Flows: Login Info, Confirmation
Output Flows: Confirmation, Login Info
Description: This process will check the login info against the database and determine whether it is correct or incorrect.

Sort By Process
Input Flows: Sort Criteria, Sort Results
Output Flows: Sort Results, Sort Criteria
Description: This process will send the sort criteria to the database and take the resulting student list and send it to the course administrator interface.

Edit Student Info Process
Input Flows: Student Info, Confirmation
Output Flows: Confirmation, Student Info
Description: This is how the course administrator will edit any student info that is incorrect.

Manage Sections Process
Input Flows: Student Info, Confirmation
Output Flows: Confirmation, Student Info
Description: This is how the course administrator will change any student’s section in the system if they switch sections.

Register Process
Input Flows: Instructor Info, Confirmation
Output Flows: Confirmation, Instructor Info
Description: This is how the course administrator will register the different instructors for the course at the beginning of the semester.

Search Process
Input Flows: Search Criteria, Search Results
Output Flows: Search Results, Search Criteria
Description: The course administrator can search for a student if they are not sure where to quickly find a specific student.

Upload Files Process
Input Flows: Key Files, Confirmation
Output Flows: Confirmation, Key Files
Description: The course administrator will upload the files used by the grading system to grade and provide feedback on the students labs and pre labs.

Create Course Password Process
Input Flows: Password, Confirmation
Output Flows: Confirmation, Password
Description: The course administrator will create the password used by the students when they register for a course so that no students can register that are not enrolled in the course.

View Feedback Process
Input Flows: Feedback Request, Feedback Files
Output Flows: Feedback Files, Feedback Request
Description: The course administrator will be able to view the feedback generated by the grading system.
Database Data Store
Input Flows: Login Info, Sort Criteria, Student Info, Student Info, Instructor Info,
Search Criteria, Key Files, Password, Feedback Request
Output Flows: Confirmation, Sort Results, Confirmation, Confirmation,
Confirmation, Search Results, Confirmation, Confirmation,
Feedback Files
Description: Database containing usernames, passwords, submitted lab files,
graded lab files, grading key, and the grading template.

Location – Course Administrator – Login – Level 4.1

Login Info Data Flow
Source: System Login
Destination: Database
Description: Sends course administrator’s login info to database.

Confirmation Data Flow
Source: Database
Destination: System Login
Description: Acceptance or rejection of login info.

Forgot Password Request Data Flow
Source: Forgot Password
Destination: Database
Description: Request for email containing password.

Email With Password Data Flow
Source: Database
Destination: Forgot Password
Description: Email containing course administrator’s password.

System Login Process
Input Flows: Confirmation
Output Flows: Login Info
Description: Confirms or rejects user’s attempt to login with username and
password.

Forgot Password Process
Input Flows: Email with password
Output Flows: Forgot Password Request
Description: Sends user an email containing password.

Database Data Store
Input Flows: Login Info, Forgot Password Request
Output Flows: Confirmation, Email With Password
Description: Database containing usernames, passwords, submitted lab files,
graded lab files, grading key, and the grading template.
Selected Section Data Flow
Source: Sort By Section
Destination: Database
Description: Selection that course administrator would like to sort by section.

Student List Data Flow
Source: Database
Destination: Sort By Section
Description: Resulting student list when sorted by section.

Selected Lab Number Data Flow
Source: Sort By Lab #
Destination: Database
Description: Selection that course administrator would like to sort by lab number.

Student List Data Flow
Source: Database
Destination: Sort By Lab #
Description: Resulting student list when sorted by lab #.

Sort By Section Process
Input Flows: Student List
Output Flows: Selected Section
Description: Sorts all students by their assigned section.

Sort By Lab # Process
Input Flows: Student List
Output Flows: Selected Lab Number
Description: Sorts all students by each assigned lab number.

Database Data Store
Input Flows: Selected Section, Selected Lab Number
Output Flows: Student List, Student List
Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.
Location – Course Administrator – Manage Sections – Level 4.4

Lab Section Number Data Flow
Source: Create Lab Sections
Destination: Database
Description: Lab section numbers for the semester.

Confirmation Data Flow
Source: Database
Destination: Create Lab Sections
Description: Confirmation that lab sections have been created successfully.

Lecture Section Number
Source: Create Lecture Sections
Destination: Database
Description: Lecture section numbers for the semester.

Confirmation Data Flow
Source: Database
Destination: Create Lecture Sections
Description: Confirmation that lecture sections have been successfully created.

Create Lab Sections Process
Input Flows: Confirmation
Output Flows: Lab Section Number
Description: Creates lab sections for the semester.

Create Lecture Sections Process
Input Flows: Confirmation
Output Flows: Lecture Section Number
Description: Creates lecture sections for the semester.

Database Data Store
Input Flows: Lab Section Number, Lecture Section Number
Output Flows: Confirmation, Confirmation
Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.
Location – Course Administrator – Register – Level 4.5

Instructor Info Data Flow
  Source: Register Instructor
  Destination: Database
  Description: Information for instructor of a lecture or lab section for the semester.

Confirmation Data Flow
  Source: Database
  Destination: Register Instructor
  Description: Confirmation that lecture instructor has been registered successfully.

Student Info Data Flow
  Source: Register Student
  Destination: Database
  Description: Information for student needed for registration.

Confirmation Data Flow
  Source: Database
  Destination: Register Student
  Description: Confirmation that student has been registered successfully.

Register Instructor Process
  Input Flows: Confirmation
  Output Flows: Instructor Info
  Description: Registers an instructor in the grading system for the semester.

Register Student Process
  Input Flows: Confirmation
  Output Flows: Student Info
  Description: Registers a student in the grading system.

Database Data Store
  Input Flows: Instructor Info, Student Info
  Output Flows: Confirmation, Confirmation
  Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.
Sample Lab File Data Flow
Source: Upload Sample Lab Files
Destination: Database
Description: Sample lab file used for grading by the system.

Confirmation Data Flow
Source: Database
Destination: Upload Sample Lab Files
Description: Confirmation that sample lab files have been uploaded to the system successfully.

Key File Data Flow
Source: Upload Key
Destination: Database
Description: Key file used for grading by the system.

Confirmation Data Flow
Source: Upload Key
Destination: Database
Description: Confirmation that key file has been uploaded to the key successfully.

Upload Sample Lab Files Process
Input Files: Confirmation
Output Files: Sample Lab File
Description: Uploads sample lab files to the system which are used for grading.

Upload Key Process
Input Files: Confirmation
Output Files: Key File
Description: Uploads key file to the system which is used for grading.

Database Data Store
Input Files: Sample Lab File, Key File
Output Files: Confirmation, Confirmation
Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.

Error Report Request Data Flow
Source: View Error Reports
Destination: Database
Description: Course administrator’s request to view student’s error report.

Error Report File Data Flow
Source: Database
Destination: View Error Reports
Description: Student’s error report after grading by the system.
File Request Data Flow  
Source: View Submitted Files  
Destination: Database  
Description: Course administrator’s request to view student’s lab files.

Student Lab File Data Flow  
Source: Database  
Destination: View Submitted Files  
Description: Student’s original lab files that were submitted to the system.

View Error Reports Process  
Input Flows: Error Report File  
Output Flows: Error Report Request  
Description: Displays student’s error reports to the course administrator.

View Submitted Files Process  
Input Flows: Student Lab File  
Output Flows: File Request  
Description: Displays student’s original lab files that were submitted to the system.

Database Data Store  
Input Flows: Error Report Request, File Request  
Output Flows: Error Report File, Student Lab File  
Description: Database containing usernames, passwords, submitted lab files, graded lab files, grading key, and the grading template.
V. Logical Data Stores

Table Name: PERSONAL_INFORMATION

username
   Type: varchar
   Description: The person’s username for the system
   Key: yes
   Required: yes
   Length: 20

first_name
   Type: varchar
   Description: Person’s first name
   Key: no
   Required: yes
   Length: 20

last_name
   Type: varchar
   Description: Person’s last name
   Key: no
   Required: yes
   Length: 20

e-mail
   Type: varchar
   Description: Person’s email address
   Key: no
   Required: yes
   Length: 40

password
   Type: varchar
   Description: Person’s password for the system
   Key: no
   Required: yes
   Length: 20

account_type
   Type: varchar
   Description: The account type that they are assigned (ex. student, admin, lab and/or lecture instructor
   Key: no
   Required: yes
   Length: 10
Table Name: STUDENT_FILES

username
  Type: varchar
  Description: The person’s username for the system
  Key: yes
  Required: yes
  Length: 20

lab_num
  Type: int
  Description: the lab number that corresponds to the submitted file
  Key: no
  Required: yes
  Length: 2

file_path
  Type: varchar
  Description: the location where the file is stored
  Key: no
  Required: yes
  Length: 50

file_name
  Type: varchar
  Description: the name of the file submitted
  Key: no
  Required: yes
  Length: 20

file_type
  Type: varchar
  Description: The type of file- can be lab, prelab or error report
  Key: no
  Required: yes
  Length: 10

date_submitted
  Type: Date
  Description: the date the file was submitted to the system
  Key: no
  Required: yes
  Length: 20

grade
  Type: int
  Description: the grade the student was given for this file
  Key: no
  Required: no
  Length: 3
<table>
<thead>
<tr>
<th>Table Name: SECTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>section_number</strong></td>
</tr>
<tr>
<td>Type: varchar</td>
</tr>
<tr>
<td>Description: the section number that is assigned to this lab/lecture</td>
</tr>
<tr>
<td>Key: yes</td>
</tr>
<tr>
<td>Required: yes</td>
</tr>
<tr>
<td>Length: 10</td>
</tr>
<tr>
<td><strong>section_type</strong></td>
</tr>
<tr>
<td>Type: varchar</td>
</tr>
<tr>
<td>Description: lab or lecture</td>
</tr>
<tr>
<td>Key: no</td>
</tr>
<tr>
<td>Required: yes</td>
</tr>
<tr>
<td>Length: 10</td>
</tr>
<tr>
<td><strong>instructor</strong></td>
</tr>
<tr>
<td>Type: varchar</td>
</tr>
<tr>
<td>Description: the username of the instructor teaching this section</td>
</tr>
<tr>
<td>Key: no</td>
</tr>
<tr>
<td>Required: yes</td>
</tr>
<tr>
<td>Length: 20</td>
</tr>
<tr>
<td><strong>semester</strong></td>
</tr>
<tr>
<td>Type: varchar</td>
</tr>
<tr>
<td>Description: the semester the section is being taught</td>
</tr>
<tr>
<td>Key: no</td>
</tr>
<tr>
<td>Required: yes</td>
</tr>
<tr>
<td>Length: 10</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table Name: GRADING_KEY_FILES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>file_name</strong></td>
</tr>
<tr>
<td>Type: varchar</td>
</tr>
<tr>
<td>Description: the name of the file submitted</td>
</tr>
<tr>
<td>Key: yes</td>
</tr>
<tr>
<td>Required: yes</td>
</tr>
<tr>
<td>Length: 20</td>
</tr>
<tr>
<td><strong>lab_num</strong></td>
</tr>
<tr>
<td>Type: int</td>
</tr>
<tr>
<td>Description: the lab number that corresponds with the submitted file</td>
</tr>
<tr>
<td>Key: no</td>
</tr>
<tr>
<td>Required: yes</td>
</tr>
<tr>
<td>Length: 2</td>
</tr>
</tbody>
</table>
VI. Logical Format of Data Files and Databases

We will be using either Oracle DBMS or mySQL for our data storage. The files submitted to the system will not be stored in the tables, instead they will be stored in a separate directory and the path to the files will be stored in the database. We will be storing the following types of fields in our database: varchar, Date and int. Each field will have a maximum size as specified in our Logical Data Stores.
VII. Structure Diagrams

This structure diagram is a graphical representation of the structure of the Automated Excel Grading System. The first diagram displays the system itself broken down into each user type’s interface:
Each of the user interfaces is broken down into the tasks that can be performed by each user:

**Student Interface**
- Login
  - System Login
  - Forgot Password
- Register
- Upload Files
  - Upload Lab
  - Upload Pre-Lab
- View Feedback
  - View Submitted Files
  - View Error Report

**Lab Instructor Interface**
- Login
- Sort By
  - Sort By Lab Section
  - Sort By Lab Number
- Edit Error Report
- Approve Grades
- View Feedback
  - View Error Reports
  - View Submitted Files

**Lecture Instructor Interface**
- Login
- Sort By
  - Sort By Lecture Section
  - Sort By Lab Number
- View Feedback
  - View Error Reports
  - View Submitted Files
Oasis Technologies - Preliminary Design
VIII. Use Case Narrative

Student

The Student user will have the ability to login to the system through the website with a username and password, if they do not have an account they must create one. When creating an account the Student will be required to select their lab and lecture section from a drop down menu. Once the Student logs in they will be able to upload their pre-labs and have the system grade them. After the pre-lab is graded it will provide a report to the Student with all of their errors. The students will also be able to submit their labs, which will be graded, and the grade will be displayed to the Student after it is approved by the instructor. The Student can also view their submitted labs.

Lab Instructor

The Lab Instructor will have the ability to log into the system through the website with a username and password. Their account will be created by the Course Administrator. They will be given an initial password by the course administrator which they can change at anytime. Once the system grades the labs it will provide a report to the Lab Instructor telling them what was wrong on the lab. The lab instructors will have the ability to view the errors on each lab and override the grade in the system if what the system classified as an error is deemed acceptable by the instructor. Once they finalize the grades they can be viewed by the Student User. The lab instructors will also be able to sort students by the lab and lecture section that the student attends and the lab number that they wish to view.

Lecture Instructor

Lecture Instructors will have the ability to log into the system through the website with a username and password. Their accounts will be created by the Course Administrator. They will be given an initial password which they can change at anytime. Lecture Instructors will have the ability to view student’s lab grades in the system that the lab instructor has approved. They can sort students by their lab and lecture section.

Course Administrator

The Course Administrator will log on to the system using the username and password provided by the developers. Once logged into the system they can create other user accounts, upload grading keys and sample lab files, and edit and delete user accounts. The Course Administrator also needs to be able to set up the lab and lecture sections on the system, so the student user can pick the correct lab and lecture section when creating their account. Since the Course Administrator could also be a lecture and lab instructor they will have the same privileges when it comes to changing the grade on a lab and viewing the student’s lab grades.
IX. Functional Requirements

Course Administrator

- **Login**
  - The first time the Administrator logs into the system they will use the username and password given to them by the developers.

- **Create Accounts**
  - The Administrator will create the Lab Instructor and Lecture instructor accounts. When they create these accounts they will specify what user account is being created.
  - They will have the option to create student accounts if needed.

- **Edit Accounts**
  - If any account needs to be changed for any reason the Course Administrator can do so, including changing a students lab section or lecture section.

- **Create Password for Student User**
  - The Administrator creates the initial password so the Student user can log into the system for the first time.

- **Delete Accounts**
  - The Administrator can delete accounts from semester to semester with Student Users leaving the course and Lab and Lecture Instructors not teaching the course.

- **Upload Grading Key and Sample Files**
  - The Administrator will upload one grading key per lab and pre-lab along with multiple sample files per lab and pre-lab.
  - The grading key specifies what sections of the lab files to grade.

- **View Reports**
  - Course Instructor can view students lab grades based on lab or lecture section.

- **Change Password**
  - At any time the Course Administrator can change their password.
Student User

- **Login**
  - The first time the student logs into the system, he or she will create a username and use the specific password given to them in class by the lecture instructor.

- **Upload Labs and Pre-labs**
  - When the student wants to submit a file they will be able to in their student view after they log into the system. The submit button will bring them to a new screen where they will upload each individual file with a browse button that searches the directories on the computer their on.

- **Viewing Pre-Lab Error Reports**
  - The student will click on the view Pre-Lab Button on the student view page to view the report.

- **Viewing Lab Grades, Files and Report**
  - The student can view their graded labs and see what sections they got wrong by clicking on the view Lab Button on the student view page.
  - They can only view these documents once the grades are approved and released by the Lab Instructor.

- **Change Password**
  - At any time the Student User can change their password.

Lab Instructor

- **Login**
  - The first time the Lab Instructor logs into the system they will use the username and password created by the Course Administrator.

- **Review Lab Grades from System**
  - Override any mistakes that the system made after viewing the report generated by the system showing what the student got wrong.

- **Approve Grades For Student User’s View**

- **Viewing Student Grades**
  - They will be able to view the lab grades based on what lab section they want including all their lab sections.
  - They can also view the grades based on lab number, including all labs.

- **Change Password**
  - At any time the Lab Instructor can change their password.
Lecture Instructor

- **Login**
  - The first time the Lecture Instructor logs into the system they will use the username and password created by the Course Administrator.

- **Viewing Lab Grades**
  - Once the Lab Instructor has checked to make sure the lab was graded correctly by the system the Lecture Instructor can view the lab grades.
  - They will be able to view the lab grades based on what lecture section they want including all their lecture sections.
  - They can also view the grades based on lab number, including all labs.

- **Change Password**
  - At any time the Lecture Instructor can change their password.
X. Unit Tests

**Note: All screens can be accessed as HTML pages by going to the following link:**
[http://oraserv.cs.siena.edu/~perm_oasis/miscdocs](http://oraserv.cs.siena.edu/~perm_oasis/miscdocs)

These are a few examples of what our Unit Test will look like. The first is a table of contents that breaks up the test into each screen and each of those screens is then broken down into internal tests. For a whole screen to pass, all of its internal tests must also pass.

### 0. Unit Test Contents

<table>
<thead>
<tr>
<th>Pass/Fail</th>
<th>Screen Number</th>
<th>Internal Tests</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td><strong>Login Screen</strong></td>
</tr>
<tr>
<td></td>
<td>1.1</td>
<td>Load Page</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2</td>
<td>Inadequate Login Attempt</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.3</td>
<td>Incorrect Login Attempt - Unregistered Account</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.4</td>
<td>Incorrect Login Attempt - Incorrect Password</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.5</td>
<td>Correct Student Login</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.6</td>
<td>Correct Lab Instructor Login</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.7</td>
<td>Correct Lecture Instructor Login</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.8</td>
<td>Correct Lab/Lecture Instructor Login</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.9</td>
<td>Correct Course Administrator Login</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.10</td>
<td>Forgot Password</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.11</td>
<td>Register</td>
<td></td>
</tr>
</tbody>
</table>

| 2         |               |                | **Student Homepage**              |
|           | 2.1           | Load Page      |                                   |
|           | 2.2           | Generate Lab Grades Table |                      |
|           | 2.2.1         | Correct Labs Displayed in Table |                   |
|           | 2.2.2         | Correct Unsubmitted Labs Information in Table |       |
|           | 2.2.3         | Correct Submitted Pre-Labs Information in Table |         |
|           | 2.2.4         | Correct Submitted, Ungraded Labs Information in Table |  |
|           | 2.2.5         | Correct Graded Labs Information in Table |                     |
|           | 2.3           | Submit Lab     |                                  |
|           | 2.4           | View Error Report |                                |

| 3         |               |                | **Lab Instructor Homepage**       |
|           | 3.1           | Load Page      |                                   |
|           | 3.2           | Lab Section Dropdown |                      |
|           | 3.3           | Lab Number Dropdown |                       |
|           | 3.4           | View           |                                  |

<p>| 4         |               |                | <strong>Lecture Instructor Homepage</strong>   |
|           | 4.1           | Load Page      |                                   |
|           | 4.2           | Lecture Section Dropdown |                      |
|           | 4.3           | Lab Number Dropdown |                       |
|           | 4.4           | View           |                                  |</p>
<table>
<thead>
<tr>
<th>Num</th>
<th>Name</th>
<th>Description</th>
<th>State Before Test</th>
<th>State After Test</th>
<th>Input</th>
<th>Steps to be Executed</th>
<th>Expected Output</th>
<th>Comments</th>
<th>Pass/ Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Load Page</td>
<td>Page loads properly</td>
<td>Any other webpage</td>
<td>Index.php</td>
<td>None</td>
<td>Load login screen.</td>
<td>Login screen displays all information properly in web browser</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2</td>
<td>Inadequate Login Attempt</td>
<td>Login button is clicked w/o all required login information</td>
<td>Index.php</td>
<td>Error1.php</td>
<td>None</td>
<td>Redirect to error page.</td>
<td>Error page loads telling user they did not supply adequate login information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td>Incorrect Login Attempt - Unregistered Account</td>
<td>Login button is clicked with incorrect username</td>
<td>Index.php</td>
<td>Error2.php</td>
<td>Username: unregistered Password: anything</td>
<td>Determine username is not registered. Redirect to error page</td>
<td>Error page loads telling user they did not supply a valid username or password.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4</td>
<td>Incorrect Login Attempt - Incorrect Password</td>
<td>Login button is clicked with incorrect password</td>
<td>Index.php</td>
<td>Error2.php</td>
<td>Username: student_test Password: incorrect_pword</td>
<td>Determine that password is incorrect for this user. Redirect to error page.</td>
<td>Error page loads telling user they did not supply a valid username or password.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Correct Student Login</td>
<td>Login button is clicked with correct Student Username and password</td>
<td>Index.php</td>
<td>home.php</td>
<td>Username: student_test Password: oasis_s</td>
<td>Determine login is for Student User Generate Student homepage</td>
<td>Student User homepage is generated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Num</td>
<td>Name</td>
<td>Description</td>
<td>State Before Test</td>
<td>State After Test</td>
<td>Input</td>
<td>Steps to be Executed</td>
<td>Expected Output</td>
<td>Comments</td>
<td>Pass/ Fail</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
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<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>1.6</td>
<td>Correct Lab Instructor Login</td>
<td>Login button is clicked with correct Lab Instructor username and password.</td>
<td>Index.php</td>
<td>home.php</td>
<td>Username: lab_instructor_test Password: oasis_lab</td>
<td>Determine login is for Lab Instructor User Generate Lab Instructor homepage</td>
<td>Lab Instructor homepage is generated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.7</td>
<td>Correct Lecture Instructor Login</td>
<td>Login button is clicked with correct Lecture Instructor username and password.</td>
<td>Index.php</td>
<td>home.php</td>
<td>Username: lecture_instructor_test Password: oasis_lec</td>
<td>Determine login is for Lecture Instructor User Generate Lecture Instructor homepage</td>
<td>Lecture Instructor homepage is generated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.8</td>
<td>Correct Lab/Lecture Instructor Login</td>
<td>Login button is clicked with correct Lab/Lecture Instructor username and password.</td>
<td>Index.php</td>
<td>home.php</td>
<td>Username: lab_lecture_test Password: oasis_lablec</td>
<td>Determine login is for Lab/Lecture Instructor User Generate Lab/Lecture Instructor homepage</td>
<td>Lab/Lecture homepage is generated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.9</td>
<td>Correct Course Administrator Login</td>
<td>Login button is clicked with correct Course Administrator username and password.</td>
<td>Index.php</td>
<td>home.php</td>
<td>Username: course_admin_test Password: oasis_ca</td>
<td>Determine login is for Course Administrator User Generate Course Administrator homepage</td>
<td>Course Administrator homepage is generated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Num</td>
<td>Name</td>
<td>Description</td>
<td>State Before Test</td>
<td>State After Test</td>
<td>Input</td>
<td>Steps to be Executed</td>
<td>Expected Output</td>
<td>Comments</td>
<td>Pass/Fail</td>
</tr>
<tr>
<td>------</td>
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<td>----------------------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>1.10</td>
<td>Forgot Password</td>
<td>Forgot Password link is clicked</td>
<td>Index.php</td>
<td>forgot_pword.html</td>
<td>None</td>
<td>Load Forgot Password webpage</td>
<td>Forgot Password screen is displayed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.11</td>
<td>Register</td>
<td>Register link is clicked</td>
<td>Index.php</td>
<td>register.php</td>
<td>None</td>
<td>Load Registration webpage</td>
<td>Registration screen is displayed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 2. Student Homepage

<p>| Num | Name                                  | Description                                                                 | State Before Test | State After Test | Input                                      | Steps to be Executed                                                                 | Expected Output                                                                 | Comments                                                                 | Pass/Fail |
|-----|---------------------------------------|-----------------------------------------------------------------------------|-------------------|------------------|--------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------|
|     | Load Page                            | Page loads properly                                                        | index.php         | home.php          | usernamee: student_test                     | Determine that username is a student User                                               | Homepage screen displays student homepage                                    |           |
| 2.1 |                                       |                                                                             |                   |                  | Password: oasis_s                           | Generate the student homepage                                                           |                                                                                |           |
| 2.1 | Generate Lab Grades Table            | Table containing this student's Lab grades is generated when page is displayed | index.php         | home.php          | usernamee: student_test                     | Determine that username is a student User                                               | Table of students Lab grades displayed in correct format with all grades and information displayed | Requires tests 2.2.1-2.2.5 To pass completely                             |           |
| 2.1 |                                       |                                                                             |                   |                  | Password: oasis_s                           | Generate a table of this student's Lab grades from the database                       |                                                                                |                                                                                |           |
|     | Correct Labs Displayed in Table      | Table contains correct Labs                                                | index.php         | home.php          | usernamee: student_test                     | Determine what Labs need to be displayed                                               | Lab's with key associated for both Lab and Pre-Lab displayed                  |           |
| 2.2.1|                                       |                                                                             |                   |                  | Password: oasis_s                           | Display these Labs and their information in table                                      |                                                                                |                                                                                |           |
|     | Correct Unsubmitted Labs Information in Table | Table contains correct information about unsubmitted Labs | index.php         | home.php          | usernamee: student_test                     | Determine which Labs and Pre-Labs are ready for submission but have not yet been submitted | Unsubmitted Labs and Pre-Labs with key associated display empty rows and Submit link for both Lab and Pre-Lab |                                                                                |           |</p>
<table>
<thead>
<tr>
<th>Num</th>
<th>Name</th>
<th>Description</th>
<th>State Before Test</th>
<th>State After Test</th>
<th>Input</th>
<th>Steps to be Executed</th>
<th>Expected Output</th>
<th>Comments</th>
<th>Pass/ Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2.3</td>
<td>Correct Submitted Pre-Labs Information in Table</td>
<td>Table contains correct information about submitted Pre-Labs</td>
<td>index.php</td>
<td>home.php</td>
<td>username: student_test</td>
<td>Determine which Pre-Labs have been submitted</td>
<td>Pre-Labs that have been submitted display Submission Date</td>
<td>Display View Error Report link</td>
<td></td>
</tr>
<tr>
<td>2.2.4</td>
<td>Correct Submitted, Ungraded Labs Information in Table</td>
<td>Table contains correct information about Submitted, Ungraded Labs</td>
<td>index.php</td>
<td>home.php</td>
<td>username: student_test</td>
<td>Determine which Labs have been submitted, but not yet graded</td>
<td>Submitted Labs displayed with Submission Date</td>
<td>Submit Lab link is now gone</td>
<td></td>
</tr>
<tr>
<td>2.2.5</td>
<td>Correct Graded Labs Information in Table</td>
<td>Table contains correct information about Graded Labs</td>
<td>index.php</td>
<td>home.php</td>
<td>username: student_test</td>
<td>Determine which Labs have been graded</td>
<td>Graded Labs displayed with Lab Grades and View Error Report link</td>
<td>Labs that were not submitted, but graded, will receive a 0 grade</td>
<td></td>
</tr>
<tr>
<td>2.3</td>
<td>Submit Lab</td>
<td>Submit Lab link is clicked</td>
<td>home.php</td>
<td>submit_Lab.php</td>
<td>None</td>
<td>Determine which Lab is to be submitted</td>
<td>Submit Lab page generated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4</td>
<td>View Error Report</td>
<td>View Error Report link is clicked</td>
<td>home.php</td>
<td>Lab*_report.csv</td>
<td>None</td>
<td>Determine which Lab or Pre-Lab Error Report is to be viewed</td>
<td>Error Report page displayed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 3. Lab Instructor Homepage

<table>
<thead>
<tr>
<th>Num</th>
<th>Name</th>
<th>Description</th>
<th>State Before Test</th>
<th>State After Test</th>
<th>Input</th>
<th>Steps to be Executed</th>
<th>Expected Output</th>
<th>Comments</th>
<th>Pass/Fail</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Load Page</td>
<td>Page loads properly</td>
<td>index.php</td>
<td>home.php</td>
<td>Username: <code>lab_instructor_test</code> Password: <code>oasis_lab</code></td>
<td>Determine that Username is a Lab Instructor User Generate the Lab Instructor homepage</td>
<td>Homepage screen displays Lab instructor homepage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>Lab Section Dropdown</td>
<td>Choose Lab Section dropdown menu displays</td>
<td>index.php</td>
<td>home.php</td>
<td>Username: <code>lab_instructor_test</code> Password: <code>oasis_lab</code></td>
<td>Determine that Username is a Lab Instructor User Generate a dropdown menu for choosing from all current Lab Sections</td>
<td>A dropdown menu with all current Lab Sections along with an &quot;All Lab Sections&quot; item is displayed for choosing Lab Section to view</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.3</td>
<td>Lab Number Dropdown</td>
<td>Choose Lab Number dropdown menu displays</td>
<td>index.php</td>
<td>home.php</td>
<td>Username: <code>lab_instructor_test</code> Password: <code>oasis_lab</code></td>
<td>Determine that Username is a Lab Instructor User Generate a dropdown menu for choosing all eligible Labs for viewing</td>
<td>A dropdown menu with all viewable Lab Numbers along with an &quot;All Labs&quot; item is displayed for choosing Lab Number to view</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4</td>
<td>View</td>
<td>View Button is clicked</td>
<td>home.php</td>
<td>lab_view.php</td>
<td>Item in Lab Section dropdown is selected and Item in Lab Number dropdown is selected</td>
<td>Determine the Lab Section and Lab Number criteria Generate Lab Instructor View Labs page</td>
<td>Lab Instructor View Labs page is displayed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 4. Lecture Instructor Homepage

| Num | Name                        | Description                                           | State Before Test | State After Test | Input                                      | Steps to be Executed                                                                 | Expected Output                                                                 | Comments                                                                 | Pass/Fail |
|-----|-----------------------------|-------------------------------------------------------|-------------------|------------------|--------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------|
| 4.1 | Load Page                  | Page loads properly                                   | index.php         | home.php         | Username: lecture_instructor_test          | Determine that username is a Lecture Instructor User                                 | Homepage screen displays Lecture Instructor homepage                          |                                                                       |            |
|     |                             |                                                       |                   |                  | Password: oasis_Lab                        | Generate the Lecture Instructor homepage                                             |                                                                               |                                                                       |            |
| 4.2 | Lecture Section Dropdown   | Choose Lecture Section dropdown menu displays         | index.php         | home.php         | Username: lecture_instructor_test          | Determine that username is a Lecture Instructor User                                 | A dropdown menu with all current Lecture Sections along with an "All Lecture Sections" item is displayed for choosing Lab Section to view |                                                                       |            |
|     |                             |                                                       |                   |                  | Password: oasis_Lab                        | Generate a dropdown menu for choosing from all current Lab Sections                 |                                                                               |                                                                       |            |
| 4.3 | Lab Number Dropdown        | Choose Lab Number dropdown menu displays              | index.php         | home.php         | Username: lecture_instructor_test          | Determine that username is a Lecture Instructor User                                 | A dropdown menu with all viewable Lab Numbers along with an "All Labs" item is displayed for choosing Lab Number to view |                                                                       |            |
|     |                             |                                                       |                   |                  | Password: oasis_Lab                        | Generate a dropdown menu for choosing all eligible Labs for viewing                 |                                                                               |                                                                       |            |
| 4.4 | View                       | View Button is clicked                                 | home.php          | lec_view.php     | Item in Lecture Section dropdown is selected and Item in Lab Number dropdown is selected | Determine the Lecture Section and Lab Number criteria                                 | Lecture Instructor View Labs page is displayed                                     |                                                                       |            |
Appendices

I. Sources of Information
The information in this document was gathered from meetings with our clients, Ms. Jami Cotler and Dr. Scott Hunter, knowledge learned from Dr. Lederman’s Software Engineering lectures, the class textbook Software Engineering: A Practitioner’s Approach by Roger S. Pressman, and team websites from previous years located at: [http://www.cs.siena.edu/~lederman/csis410/csis410.html](http://www.cs.siena.edu/~lederman/csis410/csis410.html)

II. Gantt Chart

![Gantt Chart Image]

III. Glossary of Terms

Gantt Chart: A popular type of bar chart that illustrates a project schedule including start and finish dates, tasks, and events that are to occur to complete the project.

HTML: Hypertext Markup Language (HTML) is programming language used in the creation of Web pages.

Java: A programming language used for developing object oriented programs.

JavaScript: Javascript is a scripting language developed by Netscape that can interact with HTML source code, enabling Web authors to spice up their sites with dynamic content.

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.

PHP: PHP Hypertext Preprocessor is a widely-used, open-source, general-purpose scripting language that is especially suited for web development.

Structure Diagrams: graphical representation of the structure of the Automated Excel Grading System

Student User/Account: The most basic user of this software. Will be able to create their own accounts and use them to upload lab's and pre-lab's and also view their grades.

Use Case Narrative: The basic functionality that the system will have for each of the users.