Detailed Design

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Automated Excel Grading System

Oasis Technologies

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Automated Excel Grading System

Detailed Design ***1***

I. Product Overview and Summary 1

II. User Displays, Report Formats, and User Command Summaries 2

Login/ Miscellaneous Views 2

Login View: 2

Register View: 2

Register View: 3

Forgot Password View: 4

Invalid Login View: 5

Student Views 6

Student Homepage: 6

Student View Labs: 7

Student Upload Labs: 8

Student View Pre-Labs: 9

Student Upload Pre-Lab: 10

Lab Instructor Views 11

Lab Instructor Homepage: 11

Lab Instructor View Labs: 12

Lab Instructor View Errors: 13

Lecture Instructor Views 14

Lecture Instructor Homepage: 14

Lecture Instructor View Labs: 15

Course Administrator Views 16

Course Administrator Homepage: 16

Course Administrator View Labs: 17

Course Administrator View All Students: 18

Course Administrator Edit Student: 19

Course Administrator View All Instructors: 19

Course Administrator View All Instructors: 20

Course Administrator Edit Instructor: 21

Course Administrator Create Instructor Page: 22

Course Administrator Upload Lab Keys: 23

Course Administrator Set Lab/Lecture Sections: 24

Course Administrator Edit Lab/Lecture Section: 25

Course Administrator View Admin Account: 26

Course Administrator Change Admin Password: 27

Course Administrator Change Admin: 28

III. Detailed Data Flow Diagrams 29

Level 0: Context Diagram 29

Level 1: 30

Level 2: 32

IV. Logical Data Dictionary 38

Level 0: Context Diagram 38

Level 1: 40

Level 2: 52

V. Logical Data Stores 64
VI. Logical Format of Data Files and Databases 67
VII. Structure Diagrams 68
VIII. Test Plan 71
IX. Subprogram Interface Specifications 71
X. Documentation Prologue for Each Routine 71
XI. Pseudo Code For Each Routine 73
XII. Physical Data Structures and Data File Specifications 75
Personal Info. 75
Sections 76
Submissions 76
Errors 76
Key Files 77
Relationship Diagram. 77
XIII. Packaging Specifications 78
Appendices 79
I. Sources of Information 79
II. Gantt Chart 79
III. Glossary of Terms 79

Detailed 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

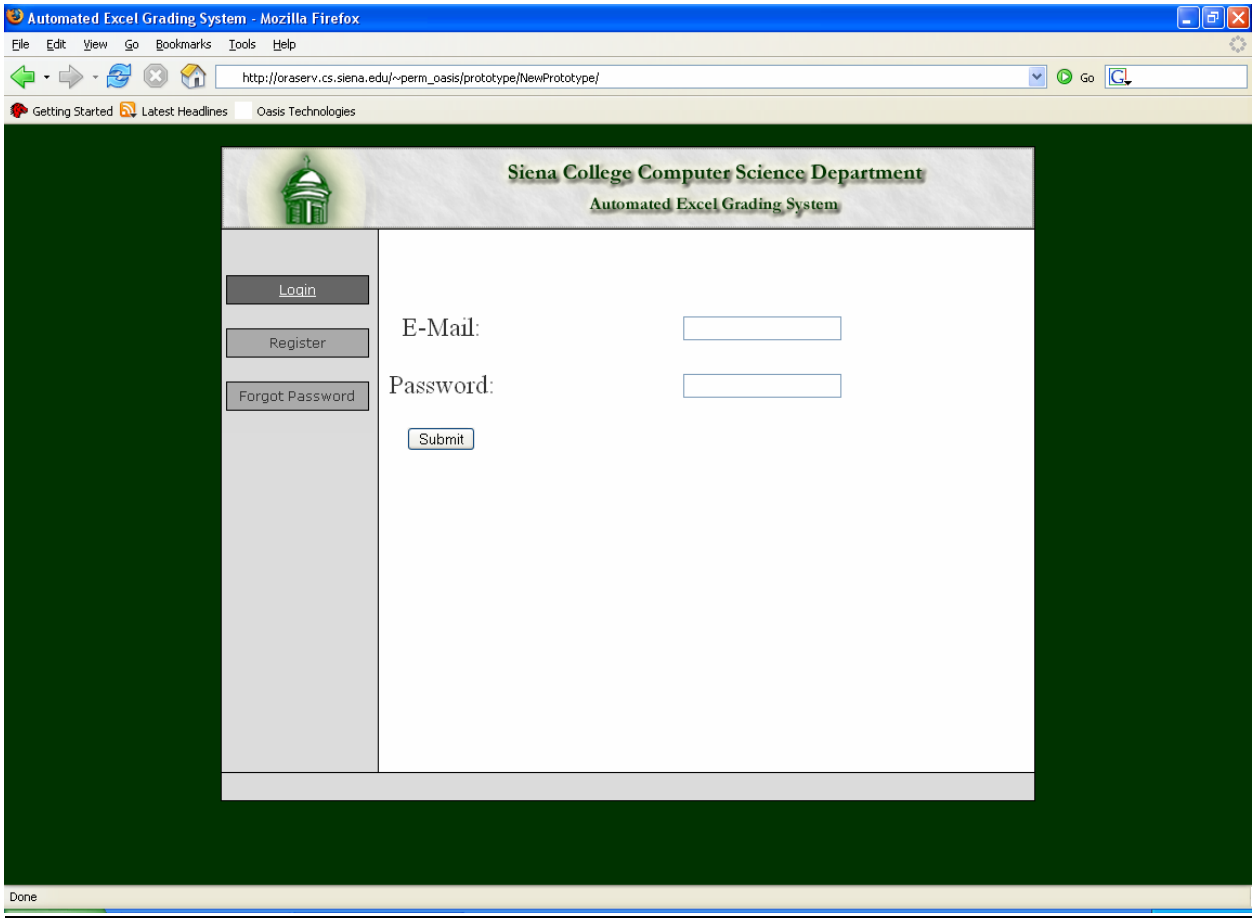
**Note: All screens can be accessed as HTML pages by going to the following url:

http://oraserv.cs.siena.edu/~perm_oasis/prototype/NewPrototype

Login/ Miscellaneous Views

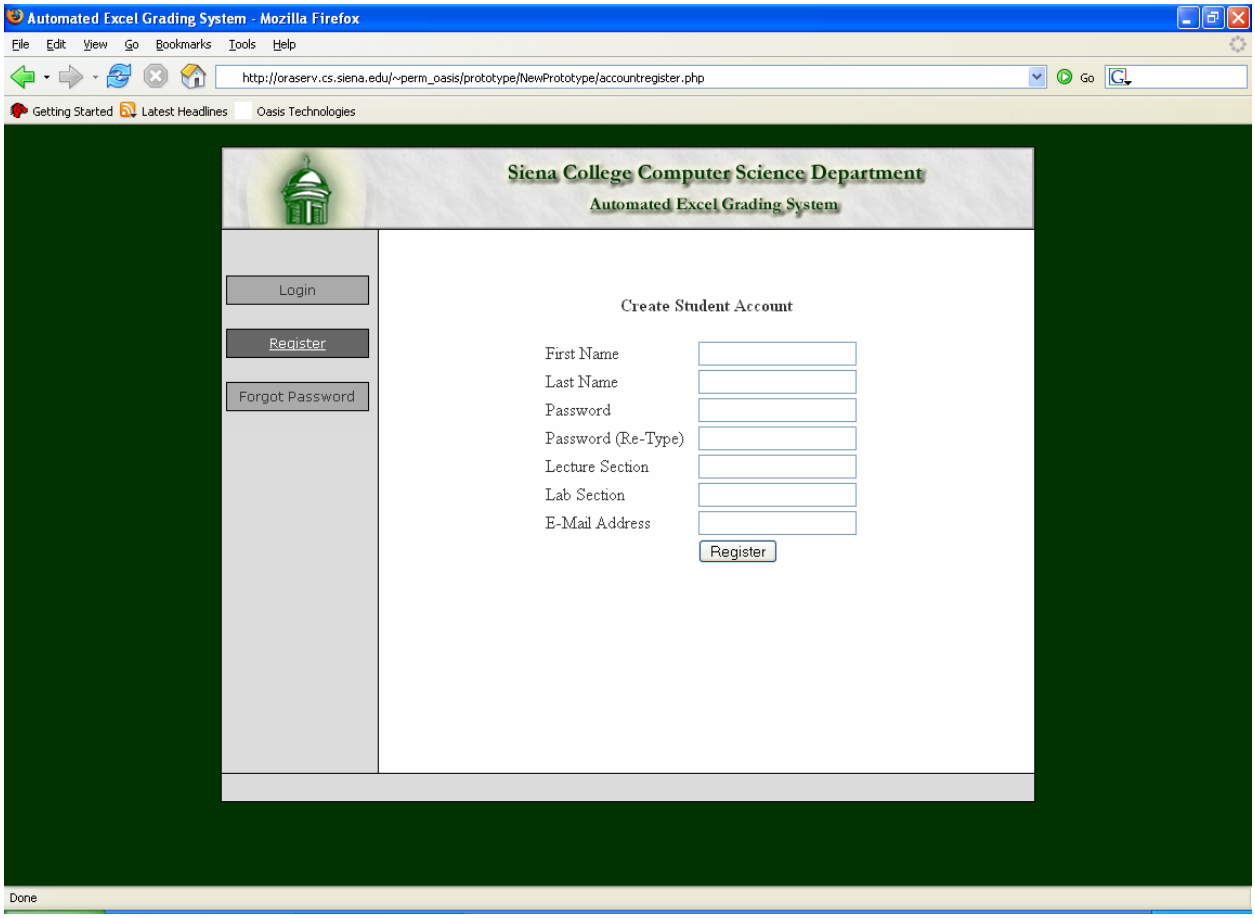
Login View:

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.



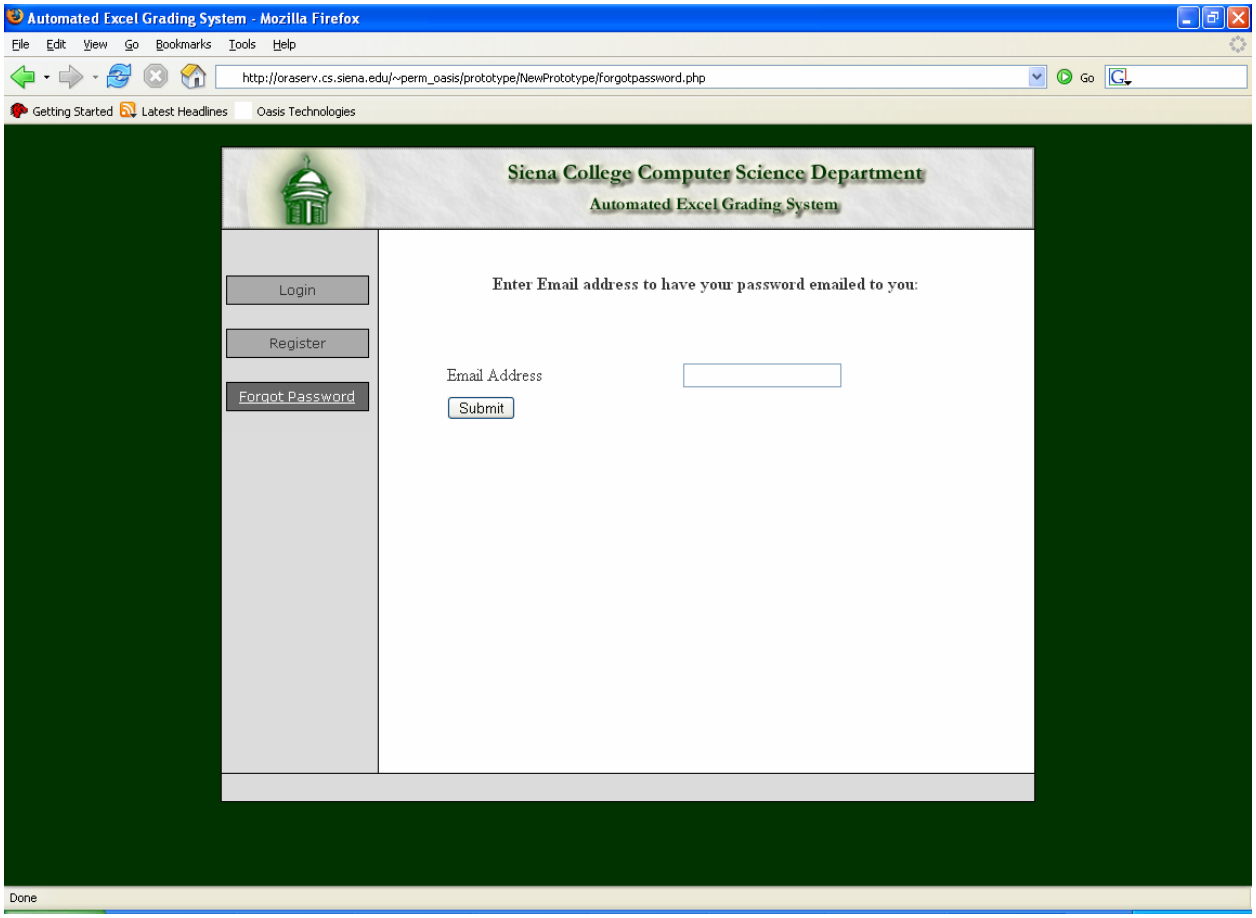
Register View:

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



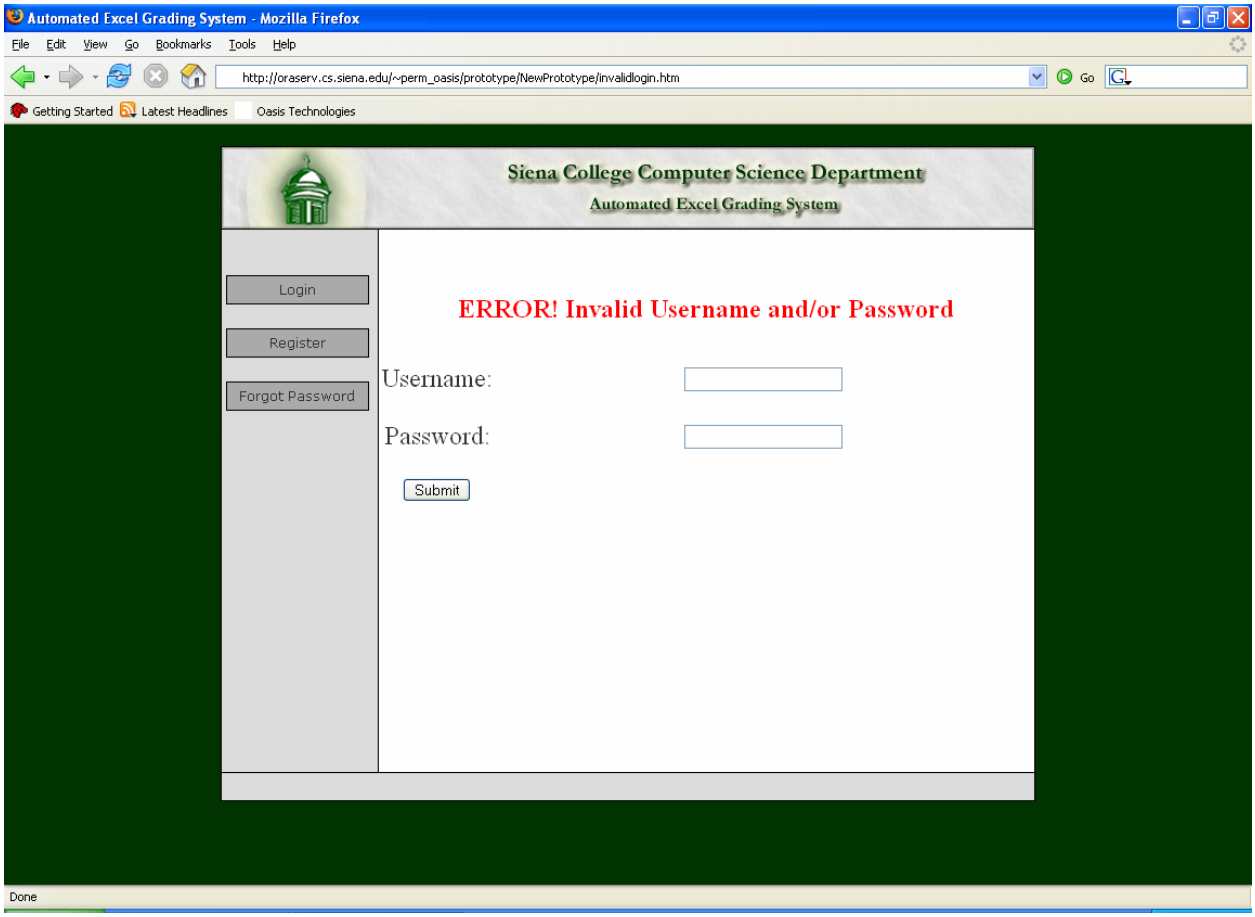
Forgot Password View:

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



Invalid Login View:

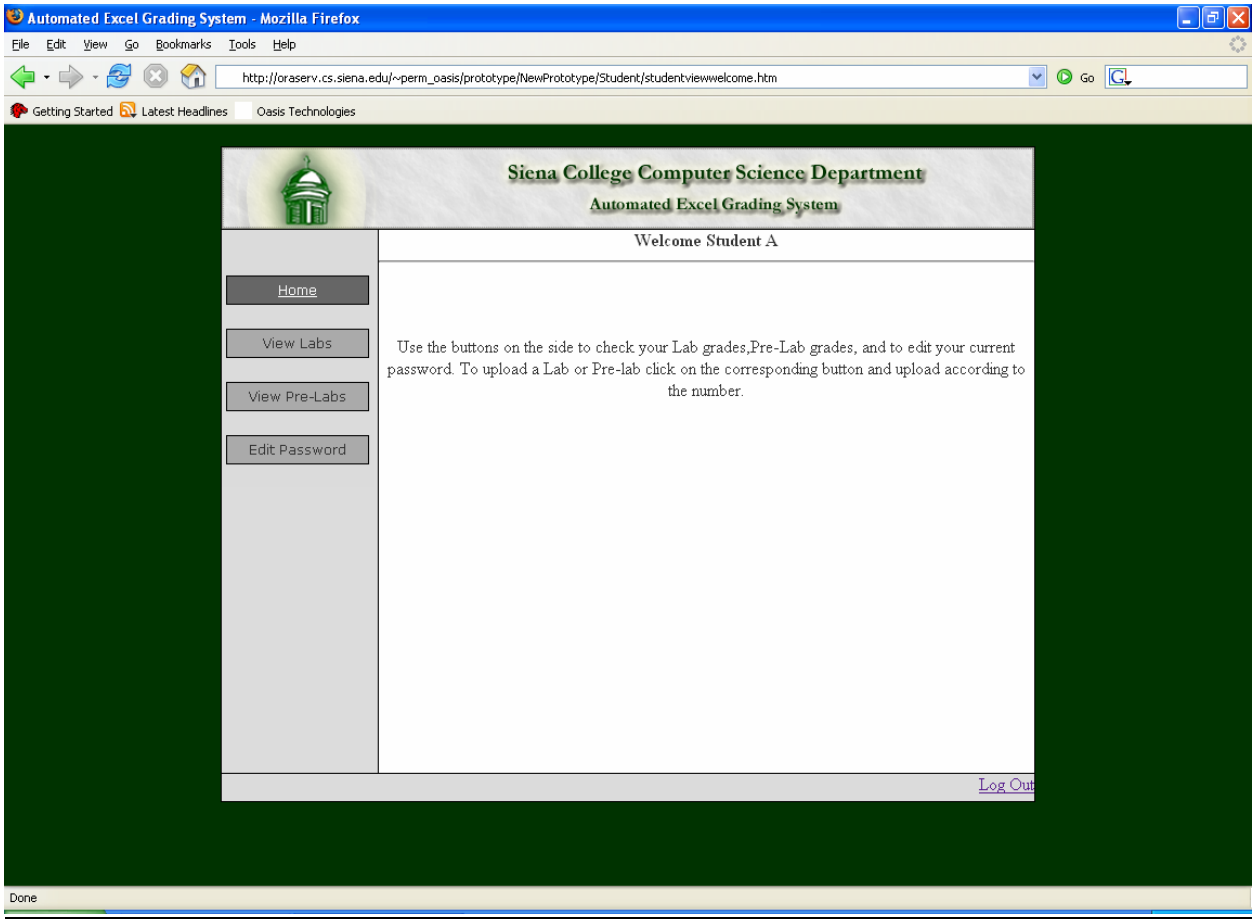
This screen is displayed when you enter an invalid username or password.



Student Views

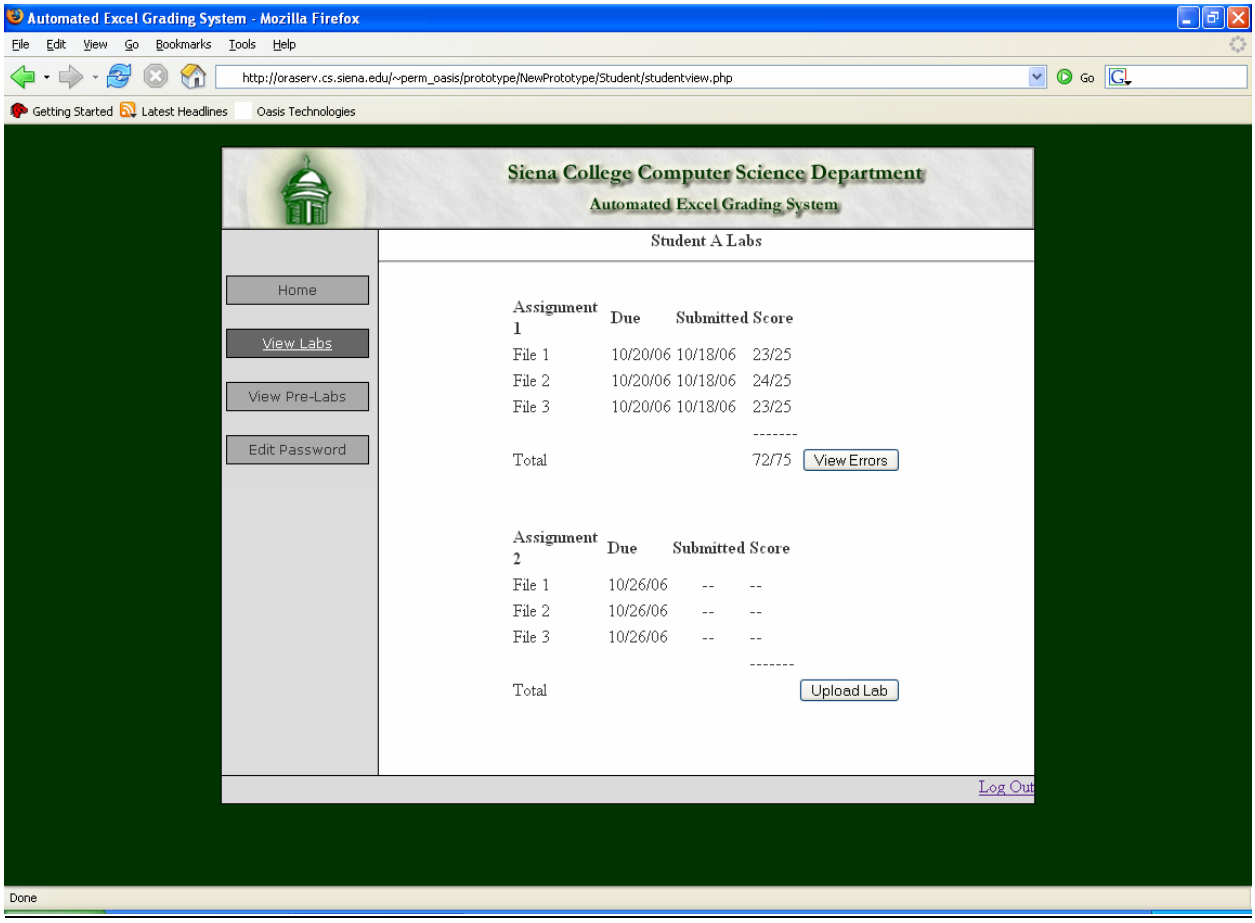
Student Homepage:

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.



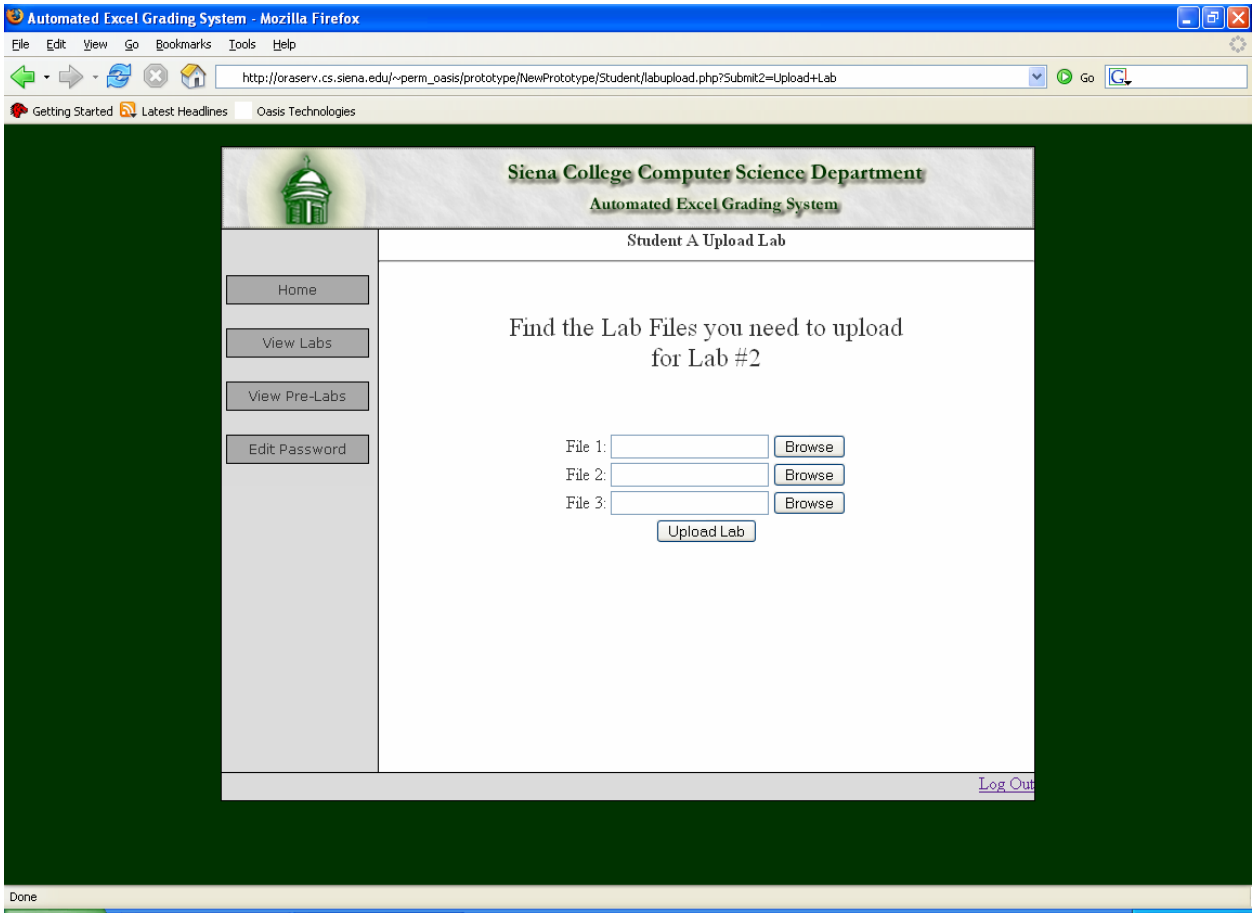
Student View Labs:

This screen is where the student views their lab grades. If they click the “View Errors” button, it will allow them to download their submitted lab with comments in cells where errors were made. 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.



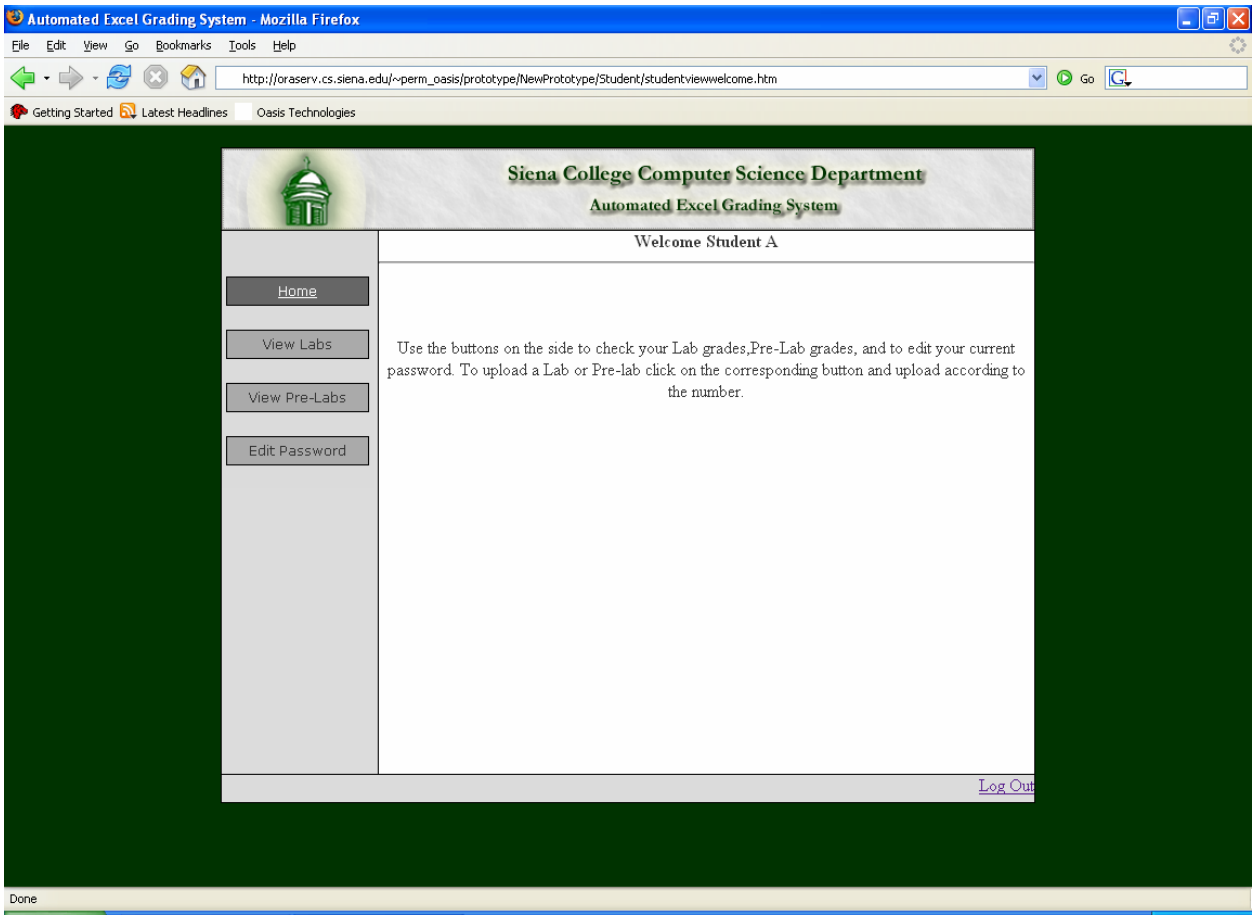
Student Upload Labs:

This screen is where a student can upload their lab files.



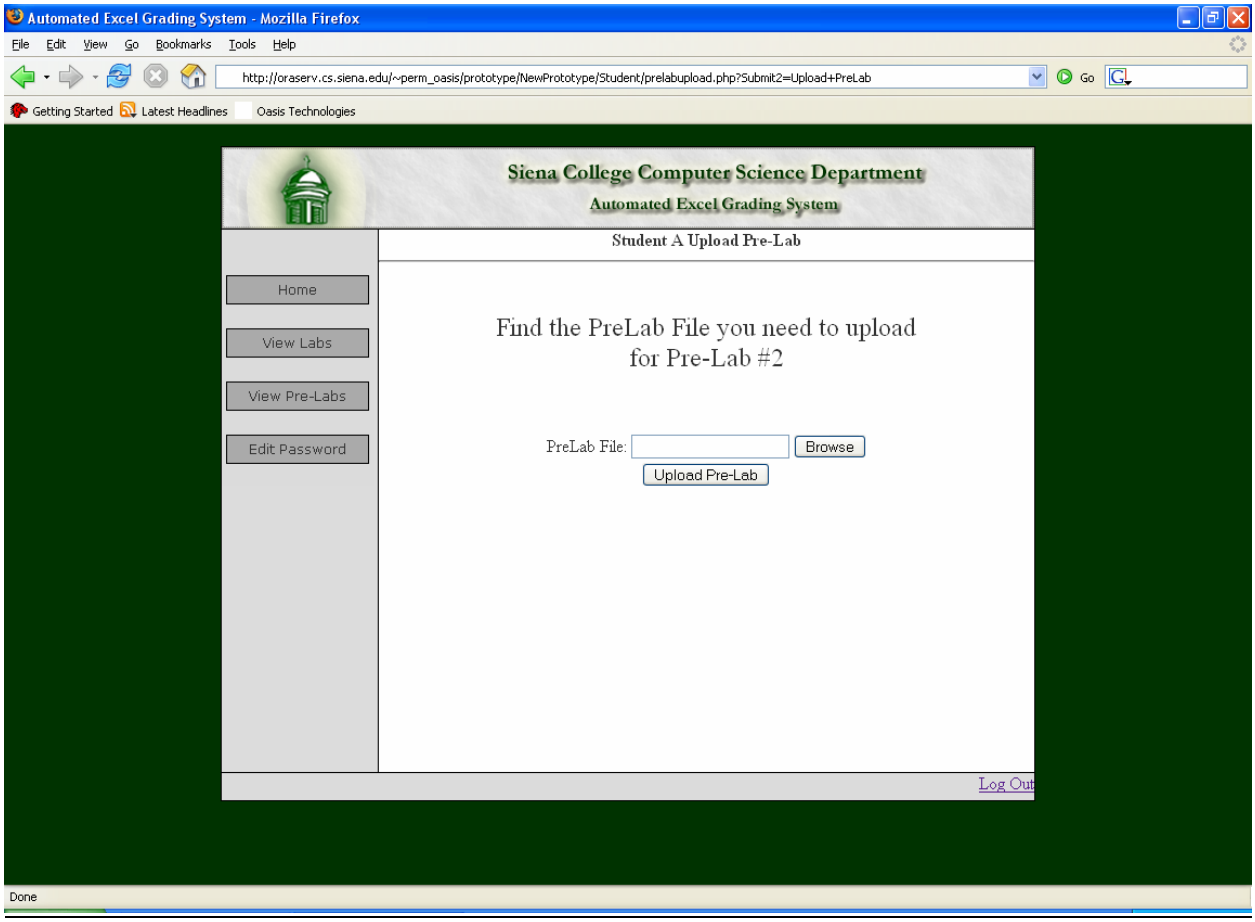
Student View Pre-Labs:

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 Upload Pre-Lab:

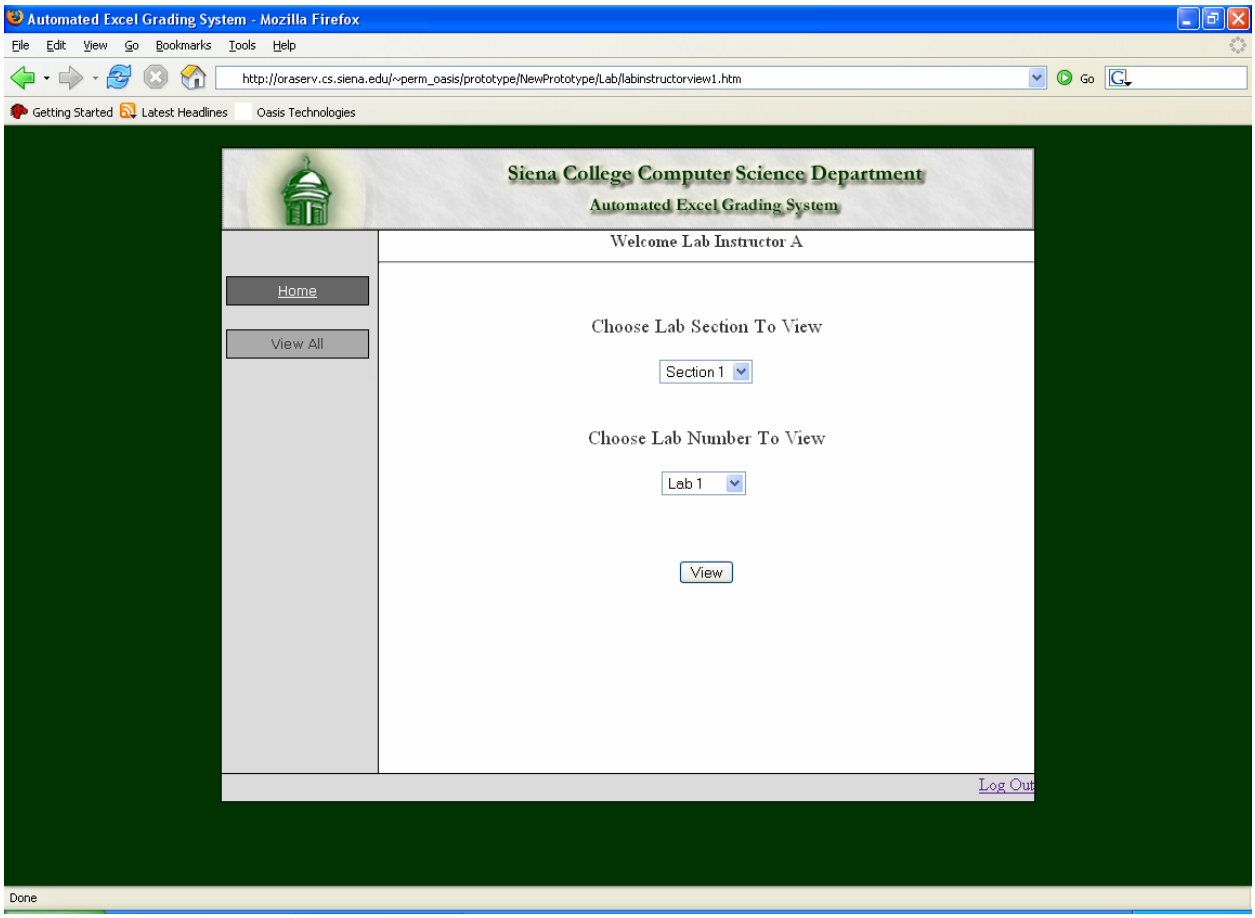
This screen is where the students can upload their pre-lab files.



Lab Instructor Views

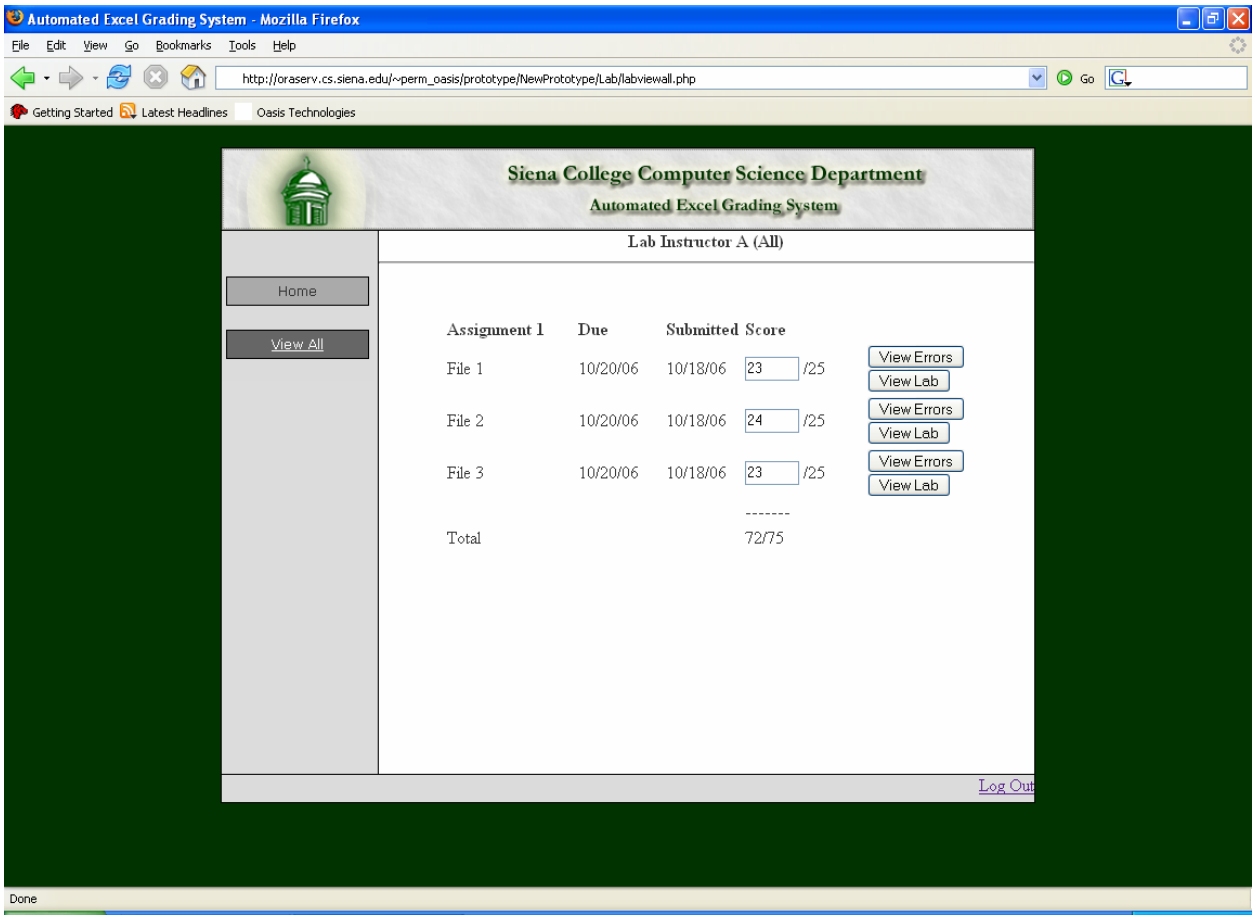
Lab Instructor Homepage:

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.



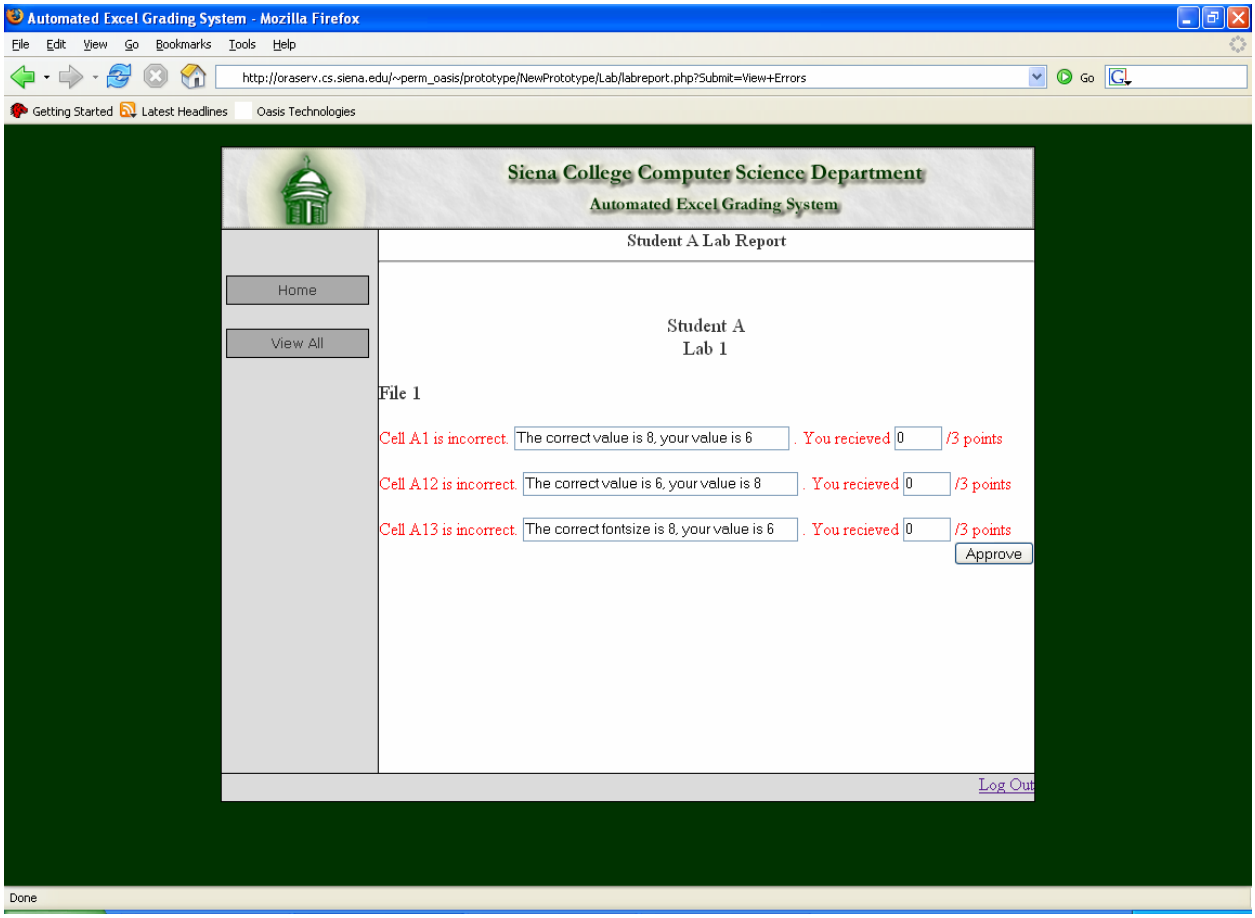
Lab Instructor View Labs:

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. If the "View Errors" button is clicked, the Lab Instructor View Errors page loads. If the "View Lab" button is clicked, the submitted lab can be downloaded.



Lab Instructor View Errors:

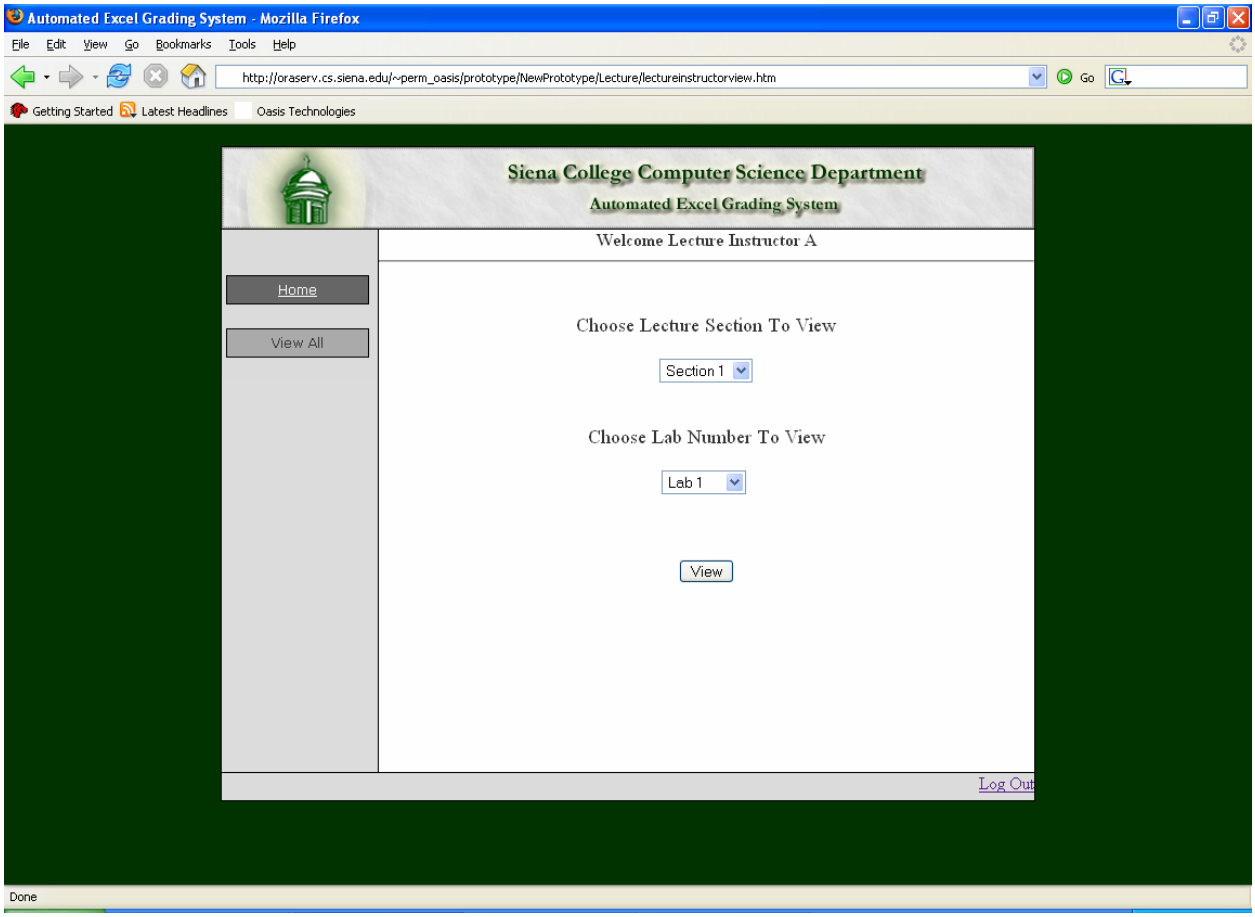
This is the error report that the lab instructor sees. It has everything that was marked incorrect from the excel file including the error that the student receives and the points received and possible for each error made. Lab Instructors can edit the error message the student see's and also change the points earned for each file submitted.



Lecture Instructor Views

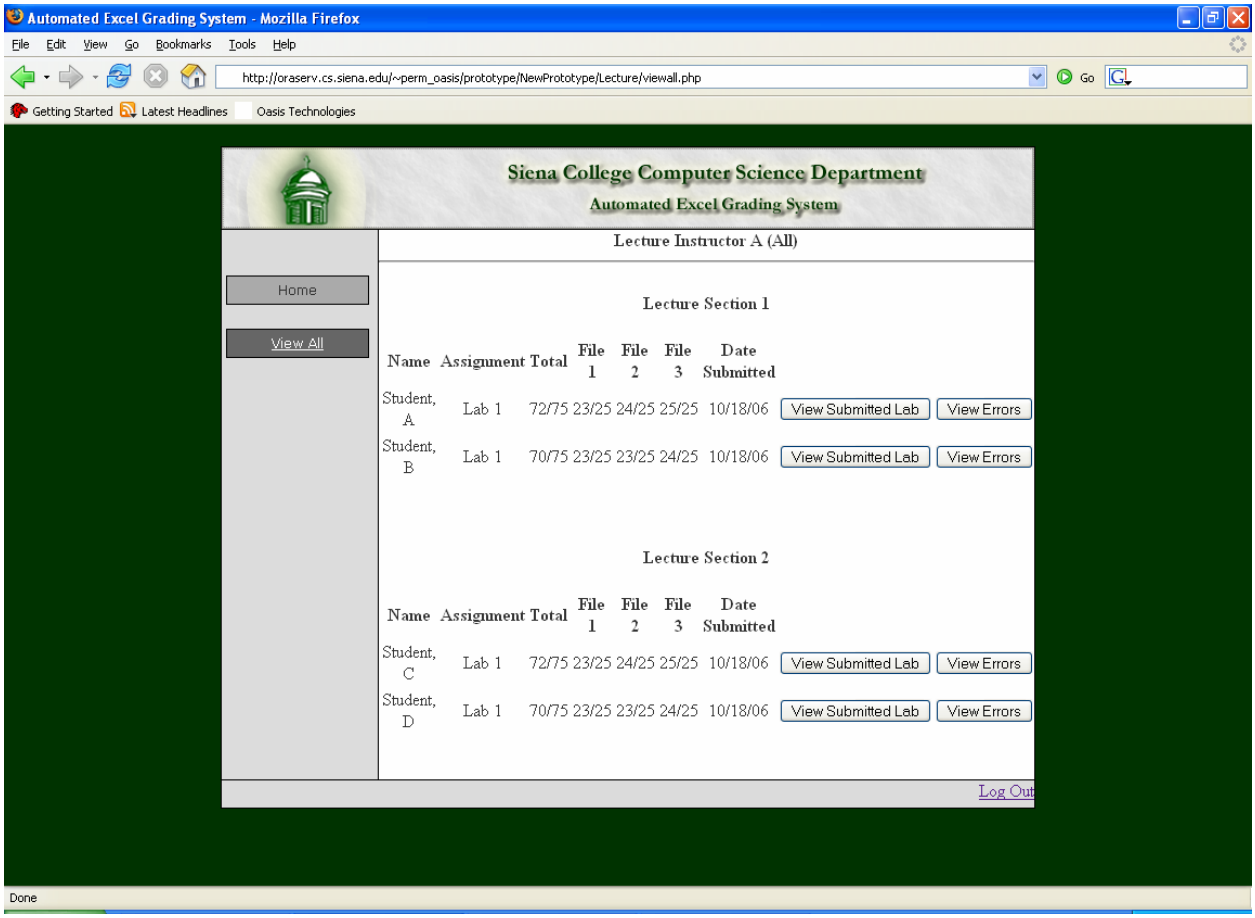
Lecture Instructor Homepage:

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 Labs:

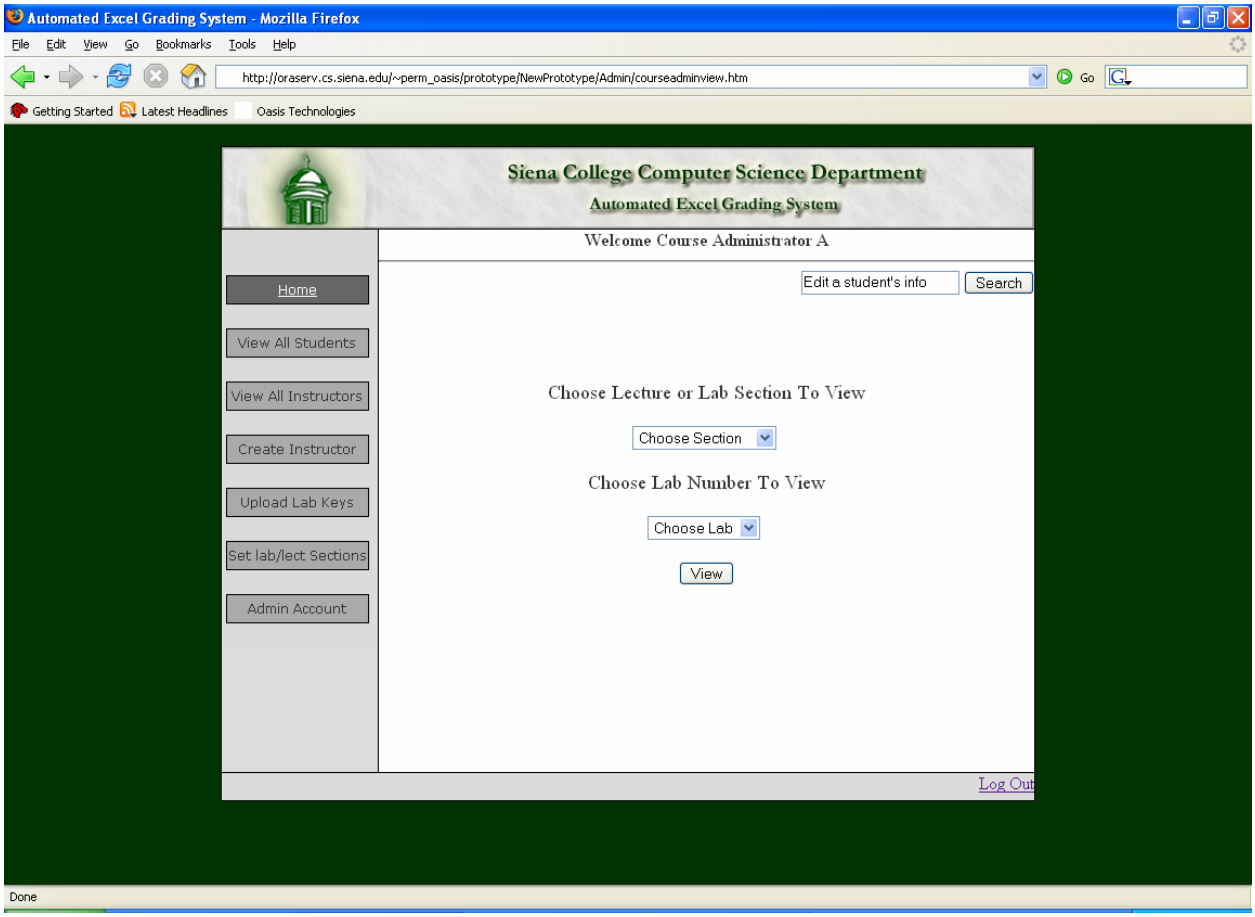
This is where the selected lab grades are displayed. The lecture instructor can view the submitted lab in excel and can also view the error report to the corresponding lab on an HTML page.



Course Administrator Views

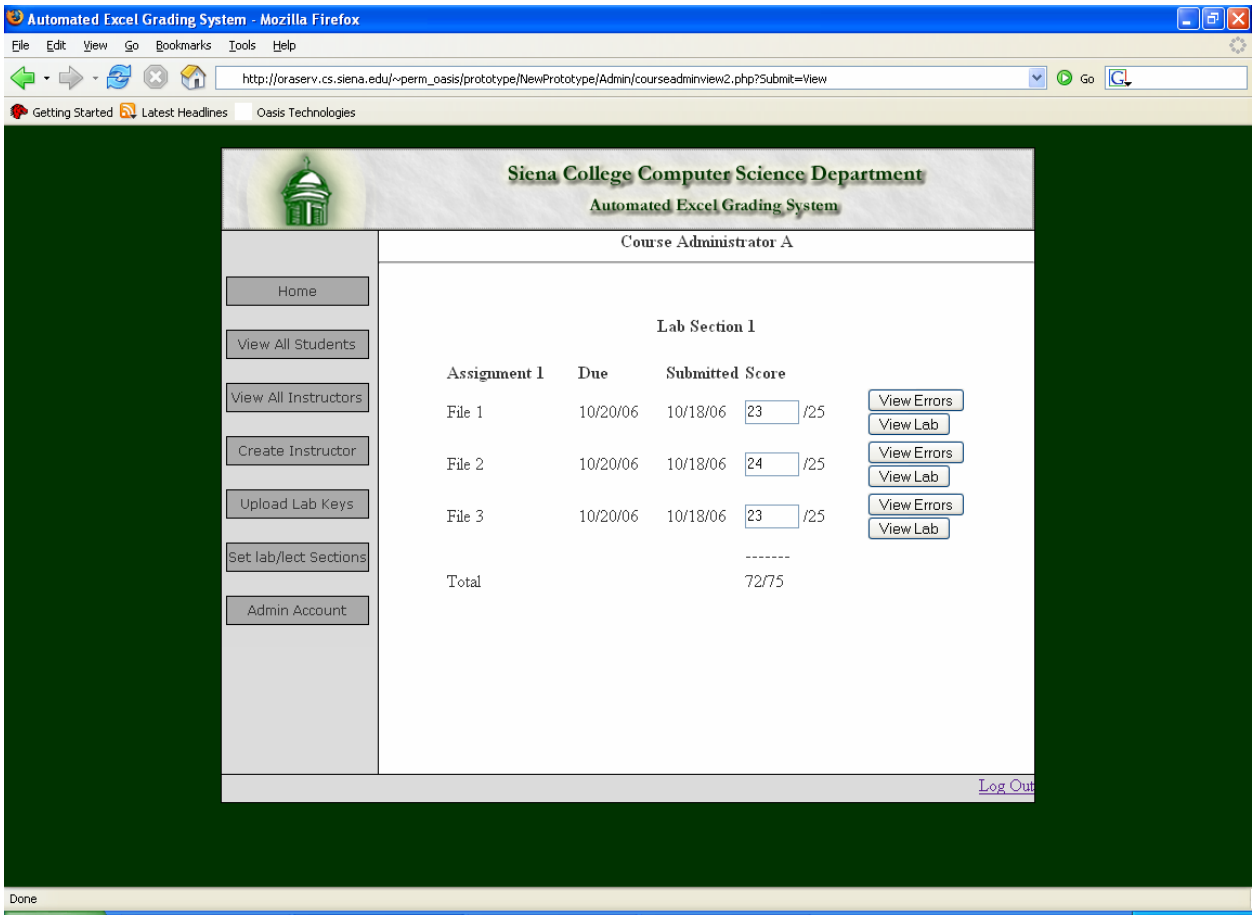
Course Administrator Homepage:

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. Also from here, Course Administrators can navigate to the various other screens where other features are implemented.



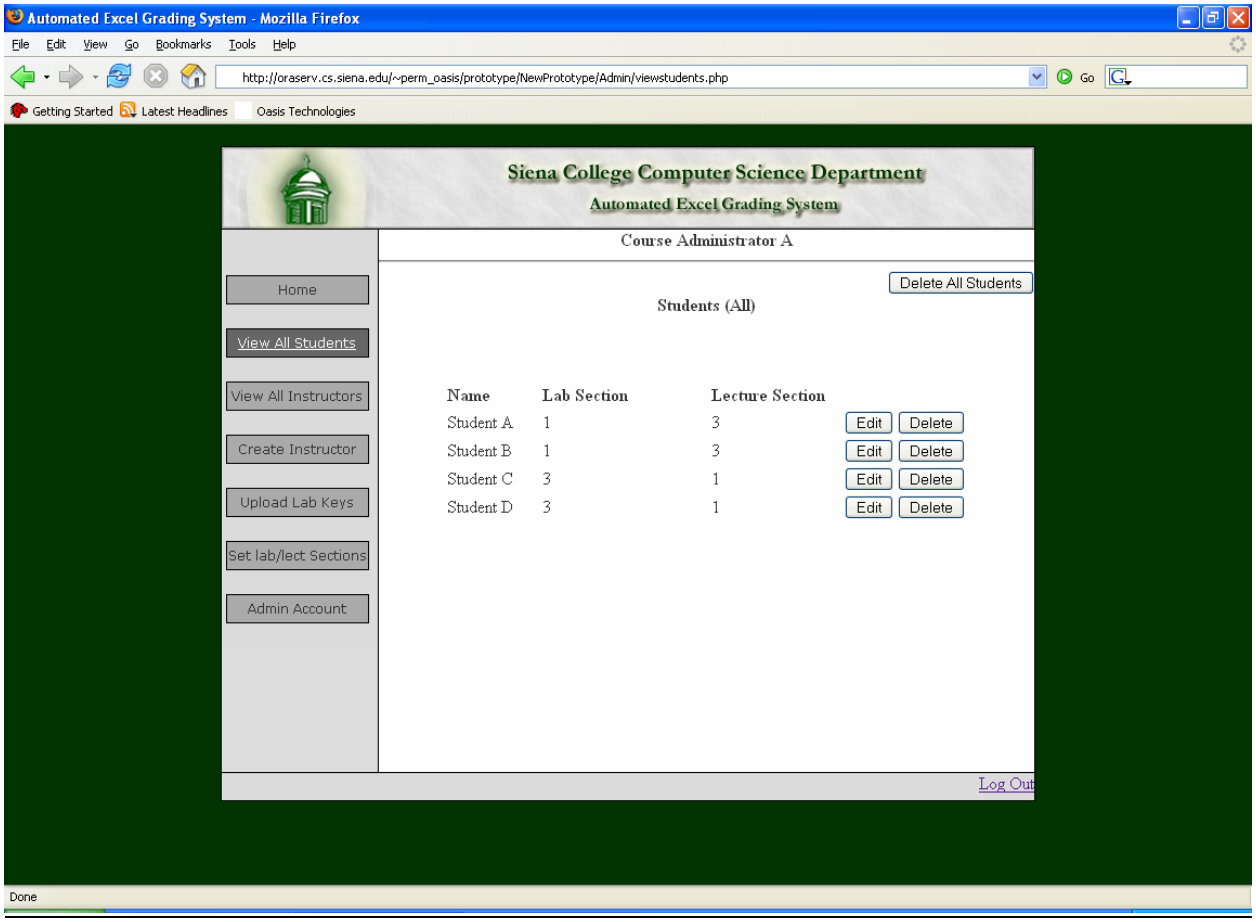
Course Administrator View Labs:

This is where selected lab grades are displayed and the final grades are displayed and may be changed if necessary. If the "View Errors" button is clicked, the Lab Instructor View Errors page loads. If the "View Lab" button is clicked, the submitted lab can be downloaded.



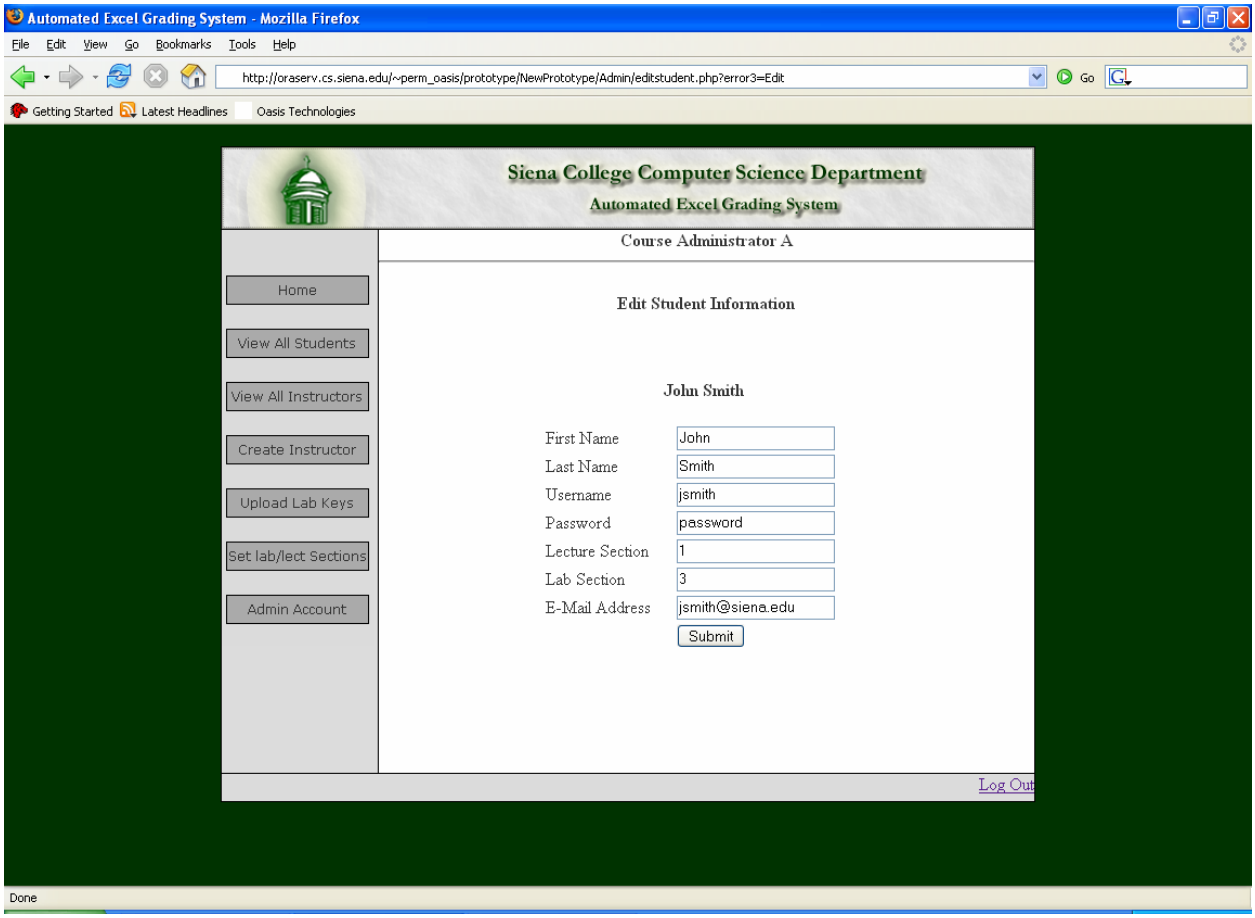
Course Administrator View All Students:

This screen is where the Course Administrator can view all Students in the system. The Students name, Lab Section, and Lecture Section. If the "Edit" button is clicked, the "Course Administrator Edit Student" page loads for the selected student. If the "Delete" button is clicked, the selected student is removed from the system. If the "Delete All Students" button is clicked, all students are removed from the system.



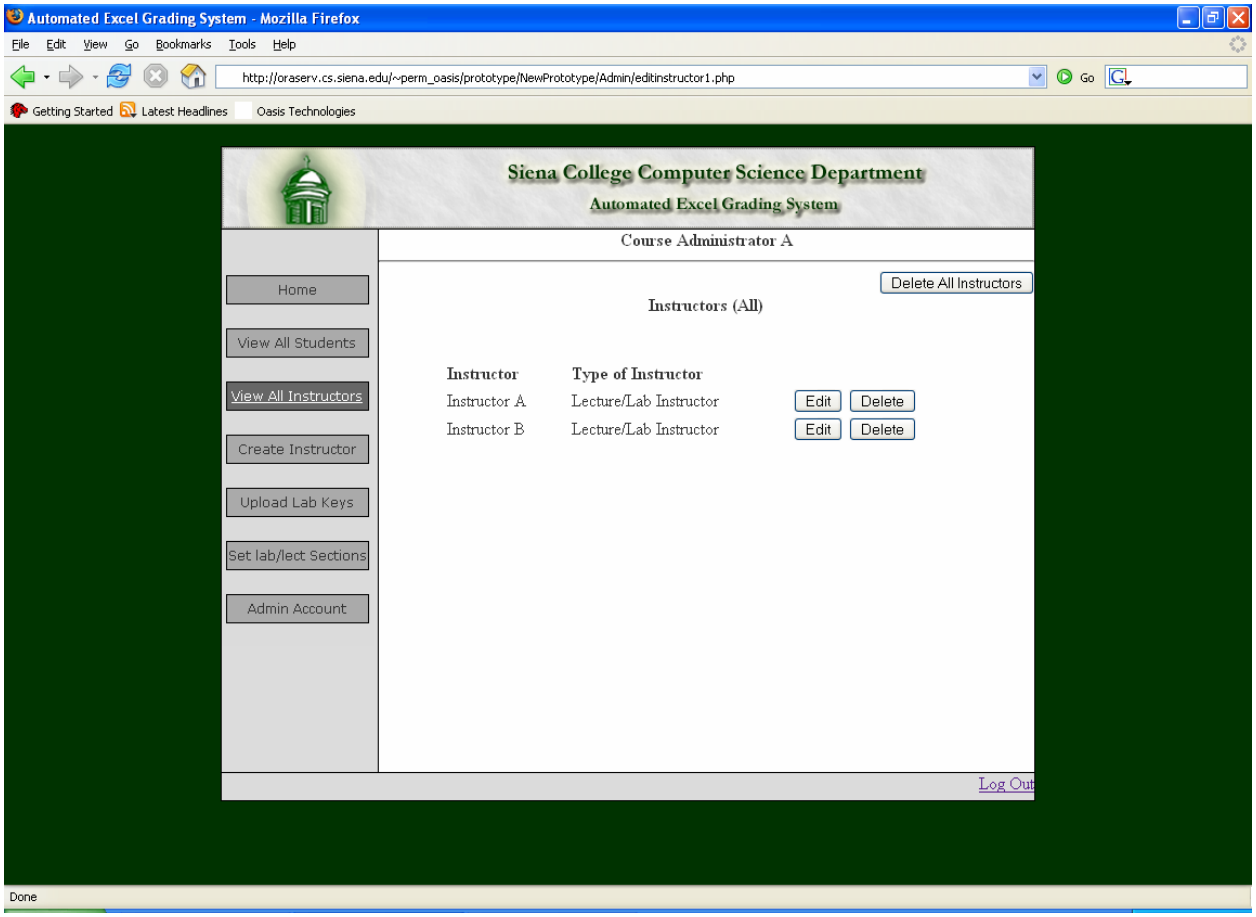
Course Administrator Edit Student:

When the Course Administrator chooses view all students then clicks the edit button, this screen will show everything stored on this particular students account in separate fields. The Course Administrator will be able to change any of these fields. These fields include Name, Username, Password, Lecture Section, Lab Section, and E-Mail Address.



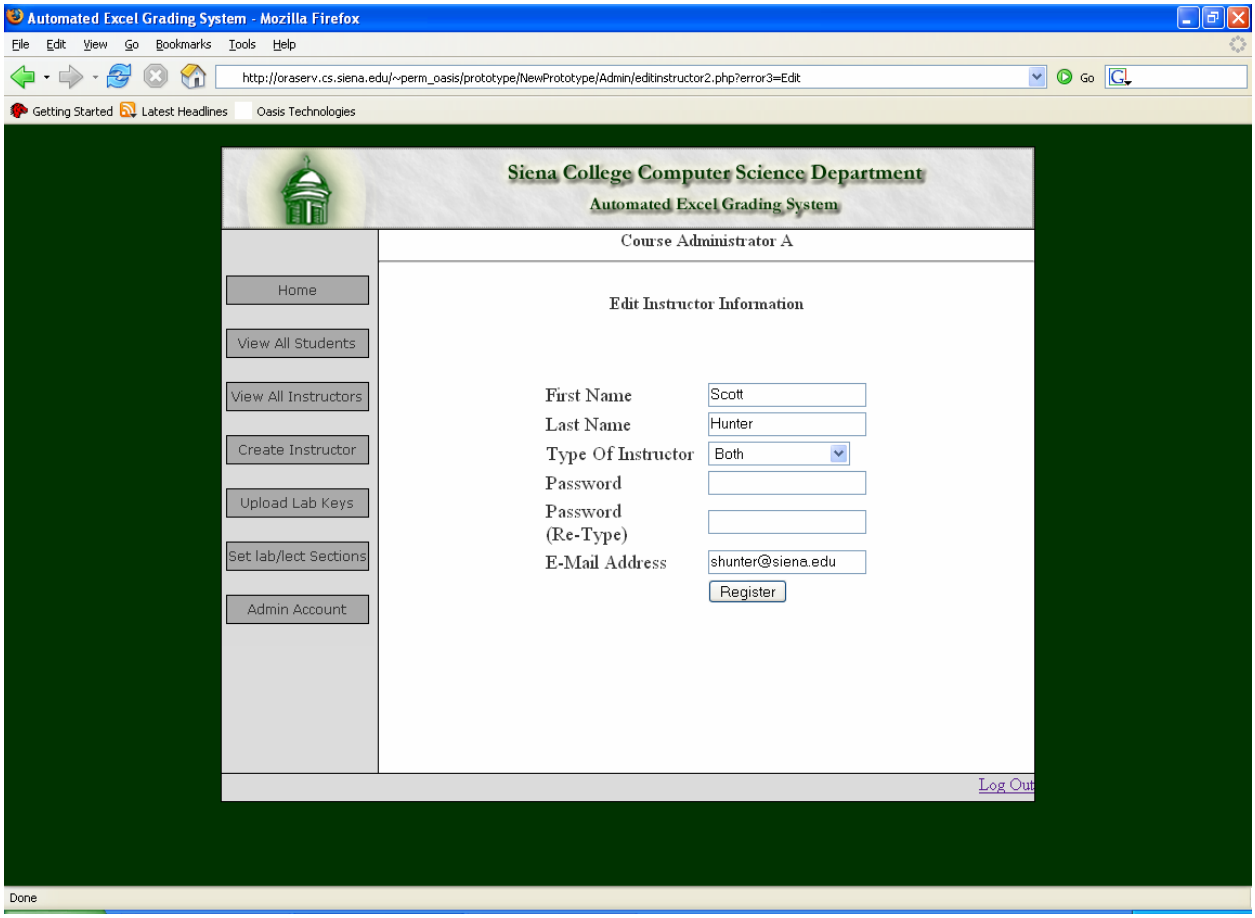
Course Administrator View All Instructors:

This screen is where Course Administrators are able to view all of the instructors. This screen displays the Instructors name and the type of Instructor they are (Lab or Lecture). If the “Edit” button is clicked, the “Course Administrator Edit Instructor” page loads. If the “Delete” button is clicked, the selected Instructor is removed from the system. If the “Delete All Instructors” button is clicked, all Instructors are removed from the system.



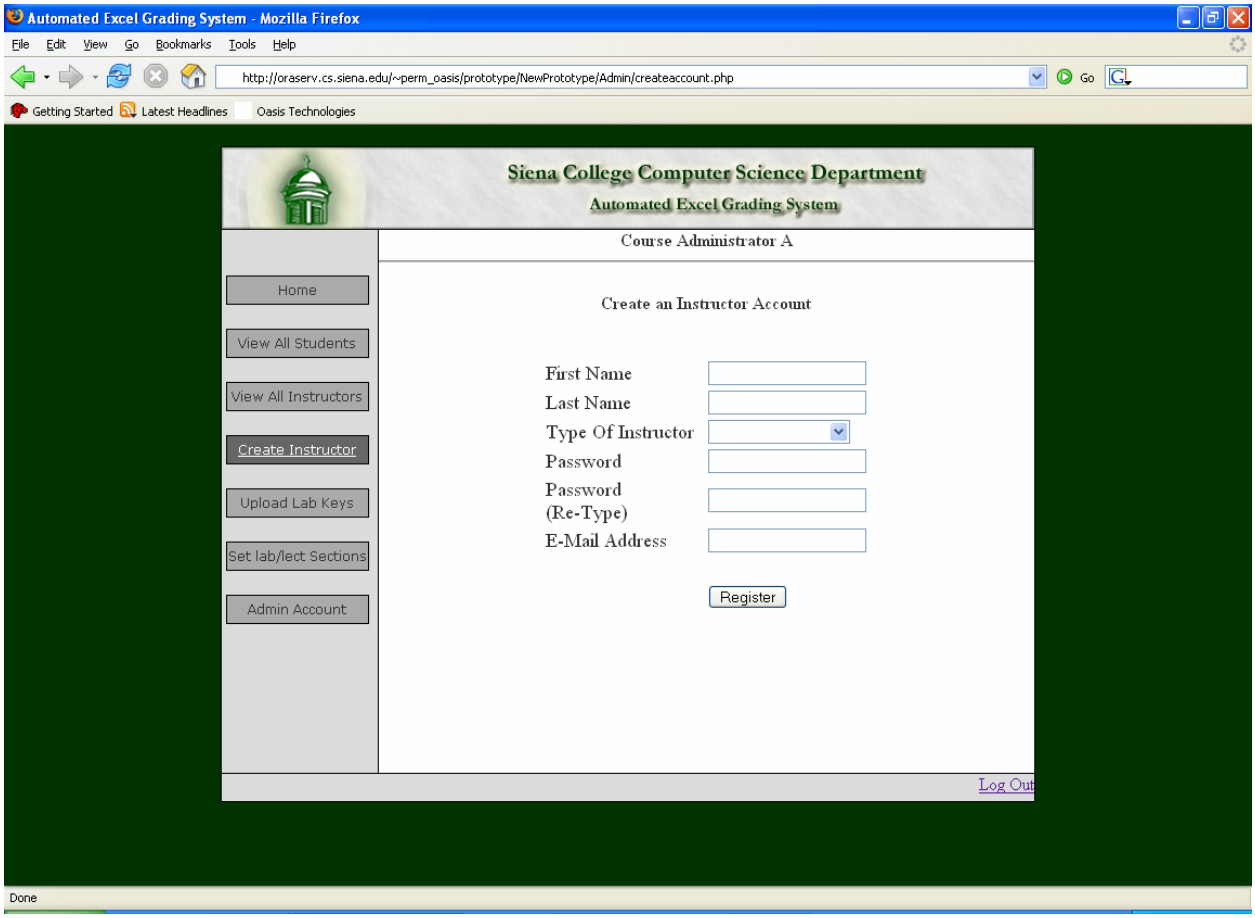
Course Administrator Edit Instructor:

This screen allows the Course Administrator to change the instructor's information. It displays changeable text boxes containing the selected Instructors Name, Password, and Email address along with a drop down menu for the type of Instructor this Instructor is.



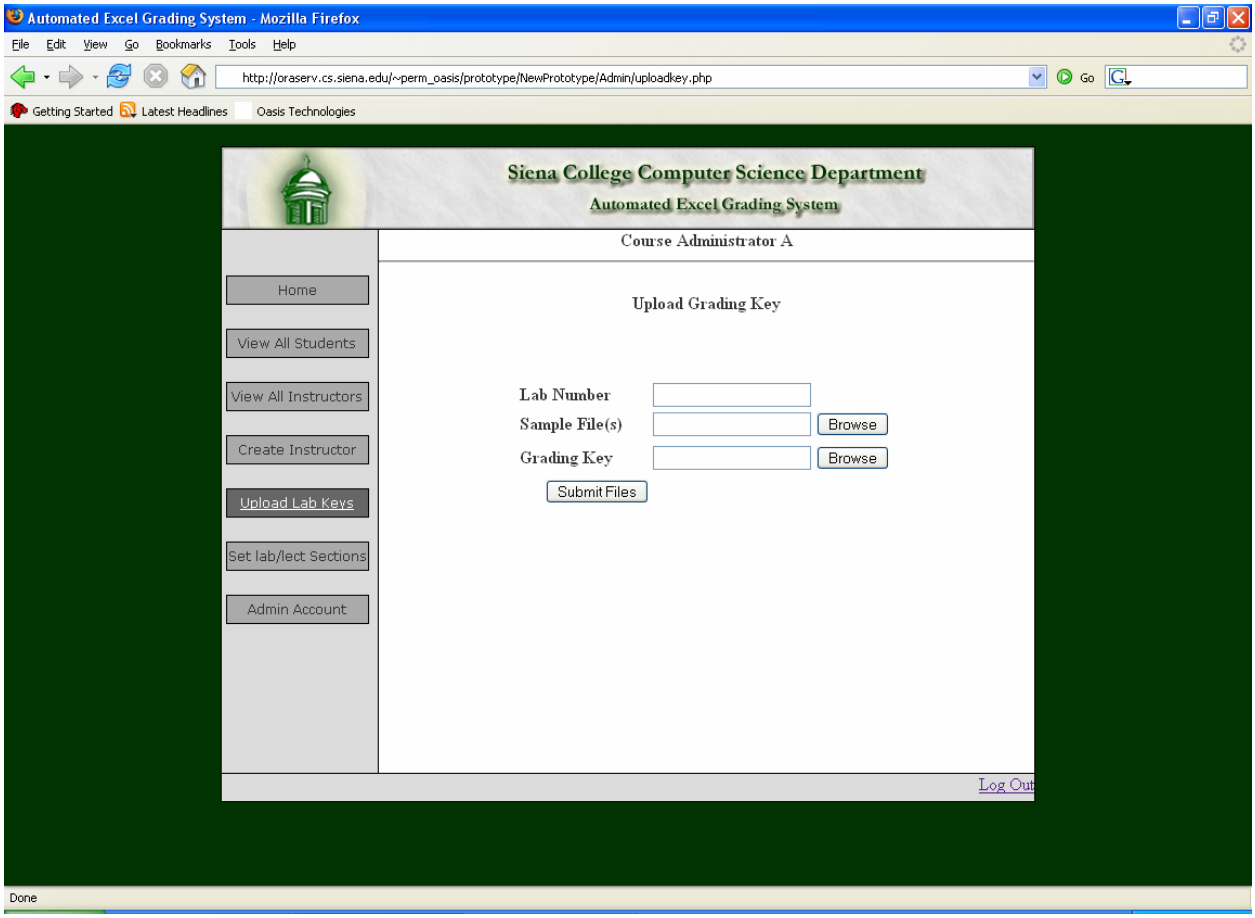
Course Administrator Create Instructor Page:

This screen is where the Course Administrator can create a new instructor account. Here, Course Administrators enter information about Instructors including Name, Type of Instructor, Password (twice for verification), and E-Mail Address.



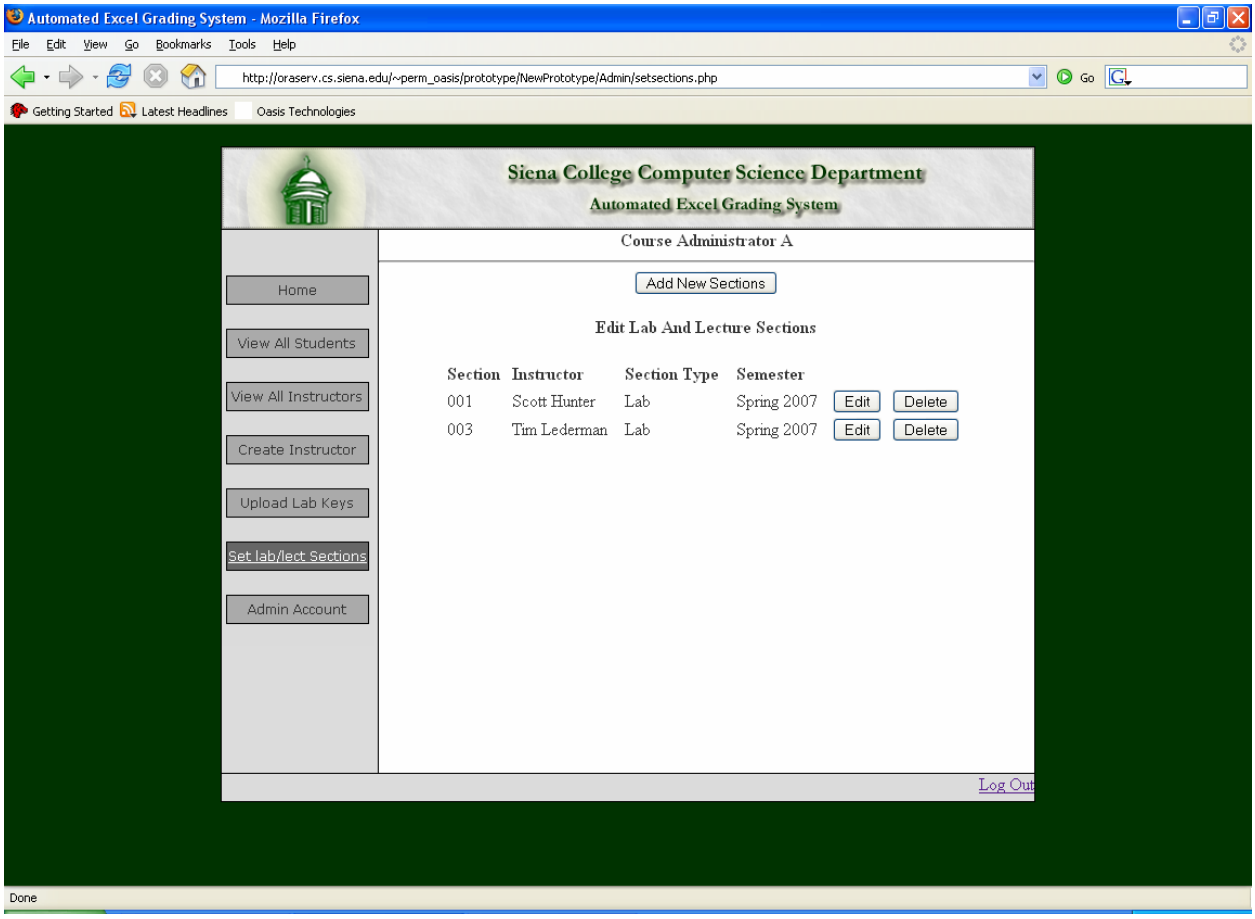
Course Administrator Upload Lab Keys:

This screen is where the Course Administrator can upload Answer Keys and Sample Files for the labs. They simply fill out the Lab Number field, and then click the “Browse” button for each of the Sample Files and then for the Grading Key and then click “Submit Files”



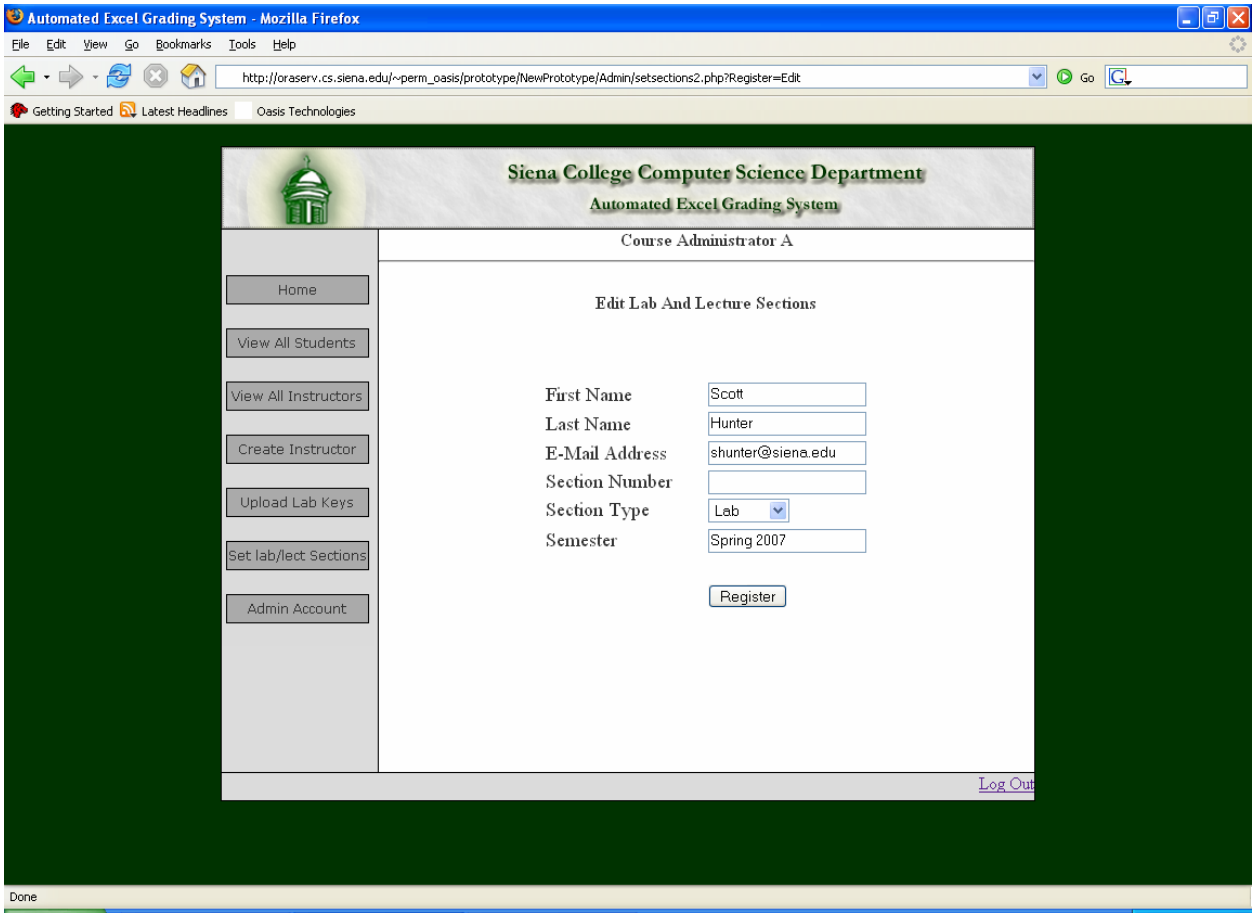
Course Administrator Set Lab/Lecture Sections:

This screen is where the Course Administrator can view each Section with the Instructor of that Section, the Section Type, and the Semester this Section is being taught. If the "Edit" button is clicked, the "Course Administrator Edit Lab/Lecture Section" page is loaded. If the "Delete" button is clicked, the selected Section is removed from the system.



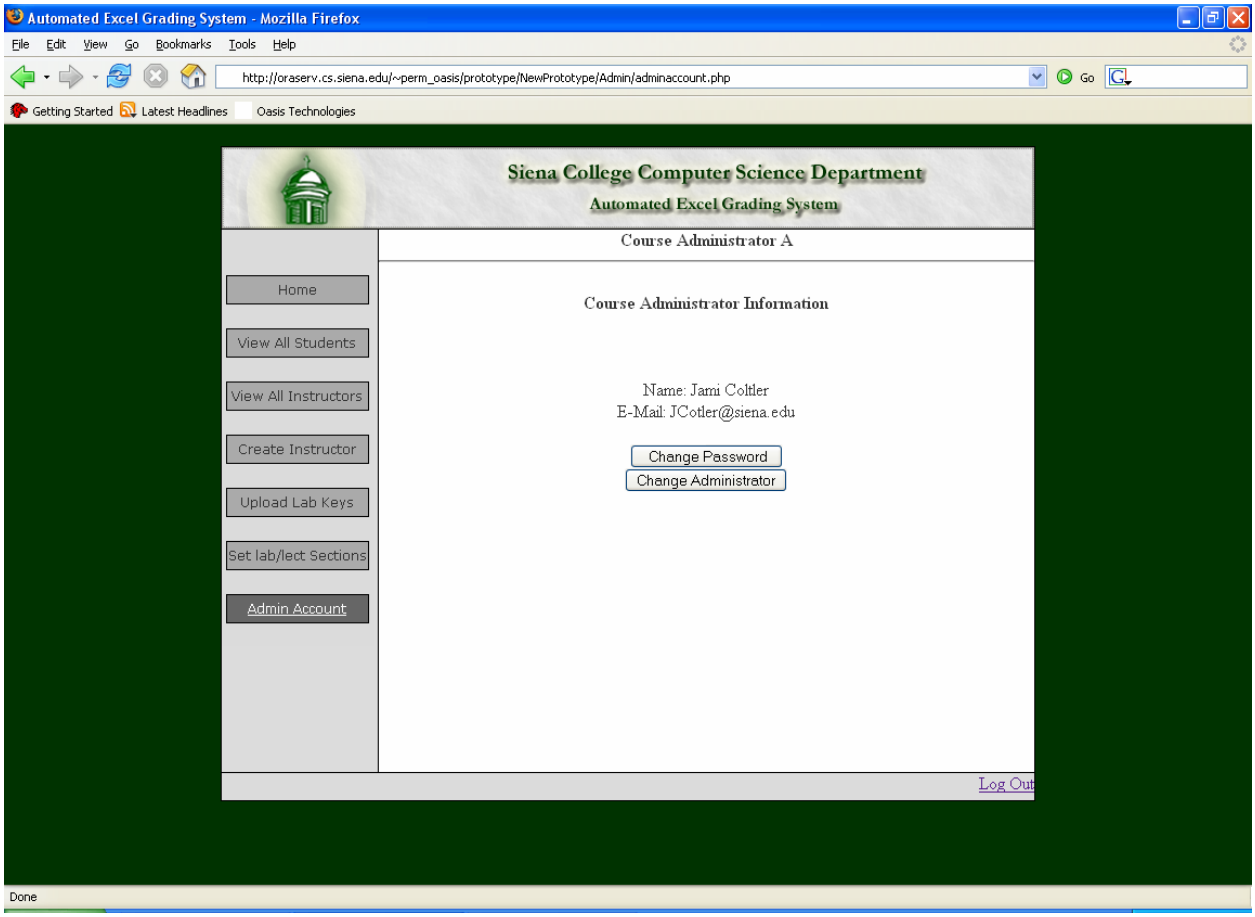
Course Administrator Edit Lab/Lecture Section:

This screen is where the Course Administrator can change the information about any Section. Displayed in text boxes are the selected Sections information including the Instructors Name and E-Mail Address along with the Section Number, Section Type, and the Semester that it is taught. The Course Administrator can change any of these fields and then click the “Register” button to change the section appropriately.



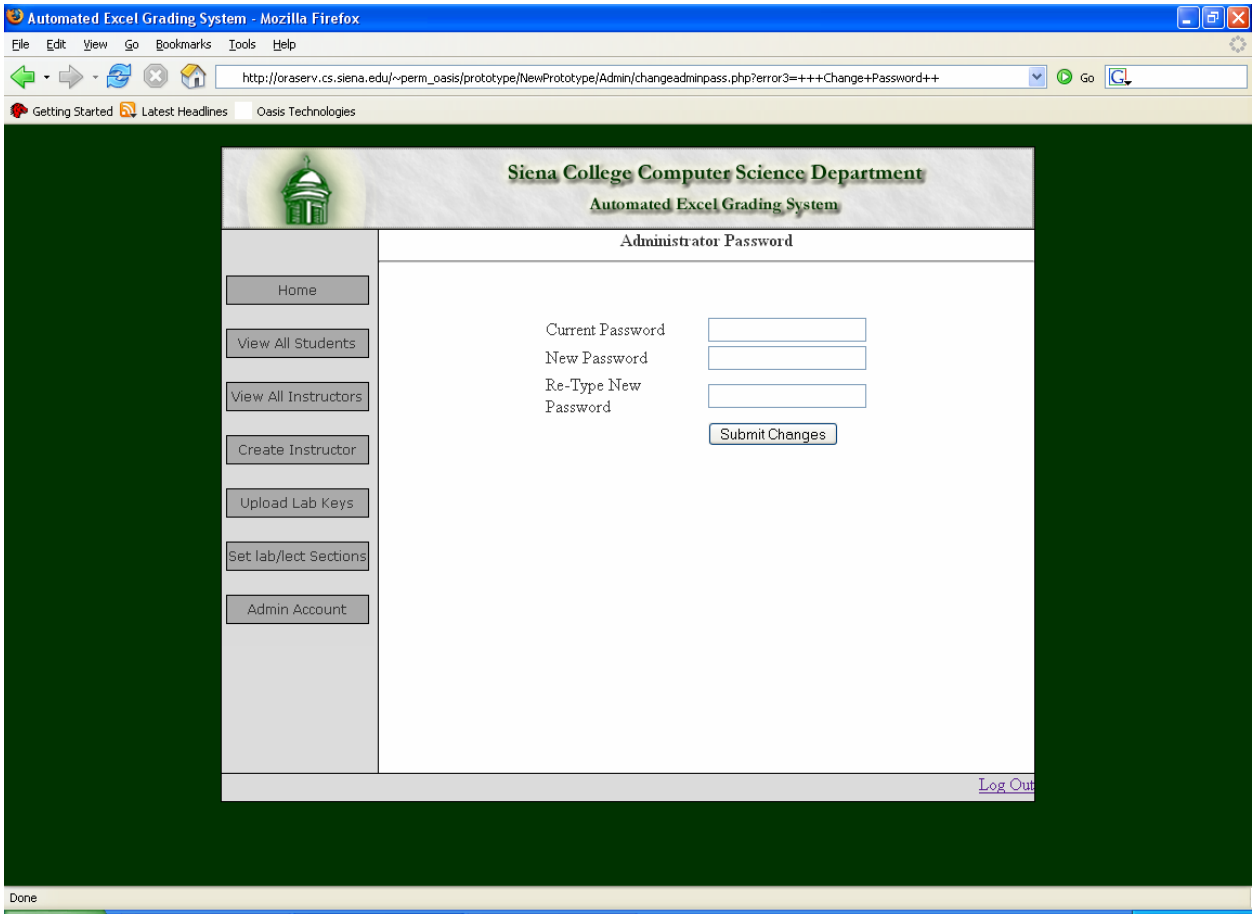
Course Administrator View Admin Account:

This screen displays the Course Administrators Name and E-Mail Address and has buttons for changing their own password and for setting the Course Administrator account to a different person. If the “Change Password” button is clicked, the “Course Administrator Change Admin Password” page loads. If the “Change Administrator” button is clicked, the “Course Administrator Change Admin” page is loaded.



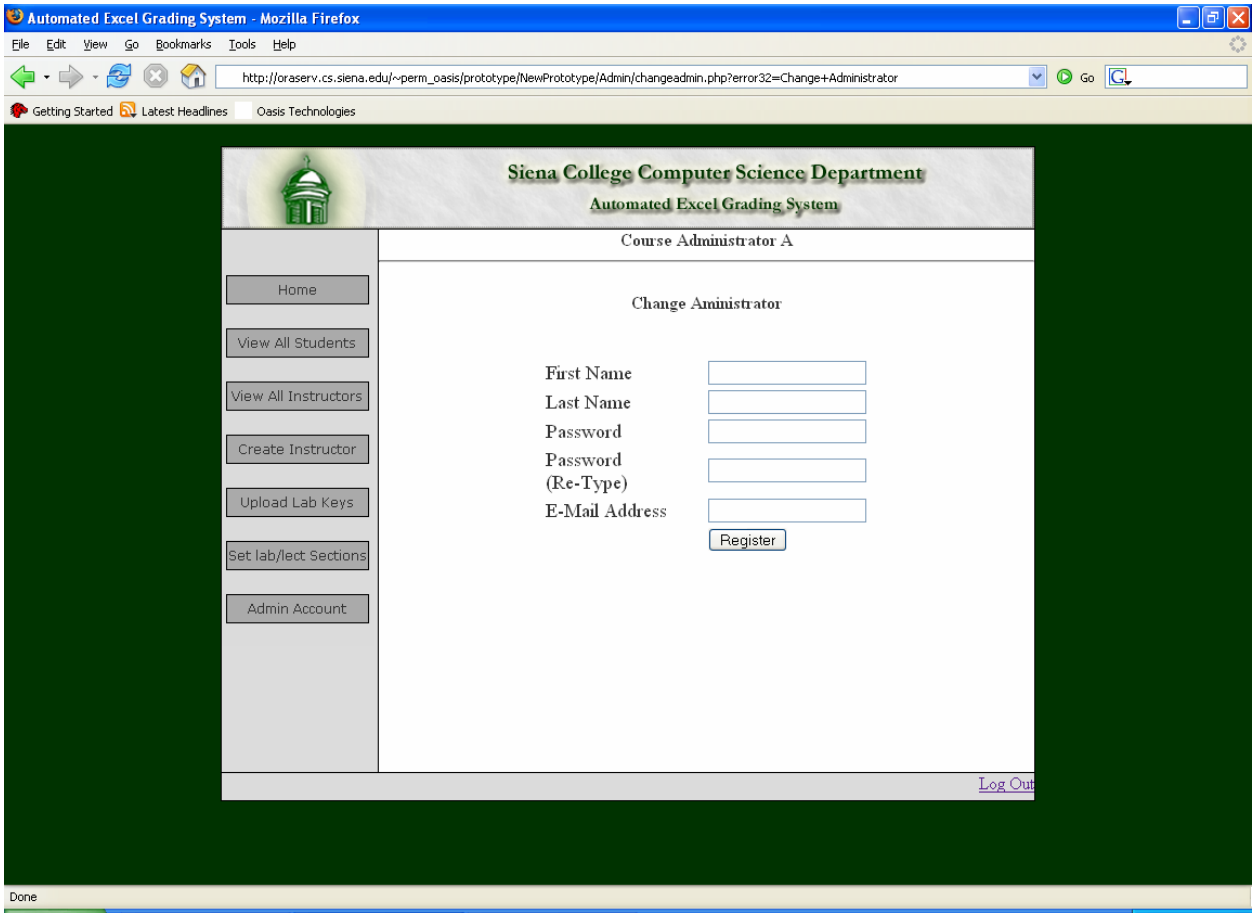
Course Administrator Change Admin Password:

This screen is where the Course Administrator can change his or her own password. They first enter their current password and then enter their new password twice for verification and then click the “Submit Changes” button.



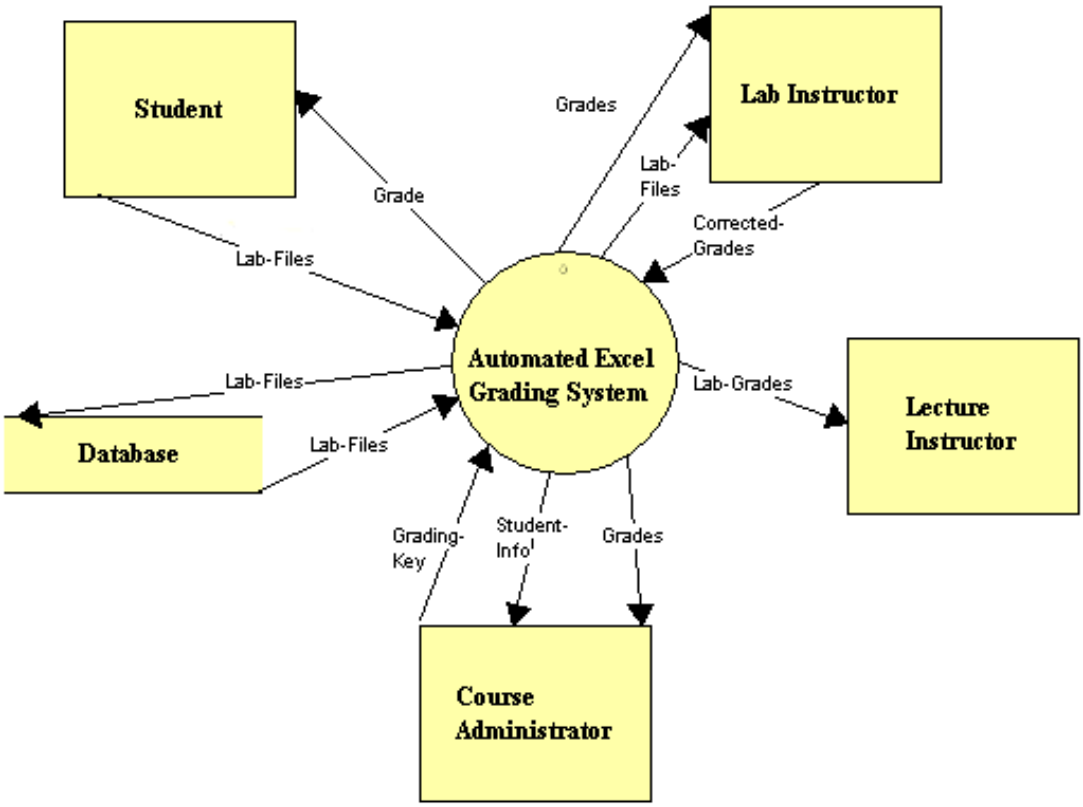
Course Administrator Change Admin:

This screen is where the Course Administrator account can be set to a different person. The current Course Administrator must fill out the new Course Administrators Name, Password (twice for verification) and their E-Mail Address and then click the “Register” button. Once they log out, the only way to log on as Course Administrator will be with the new Course Administrators information.

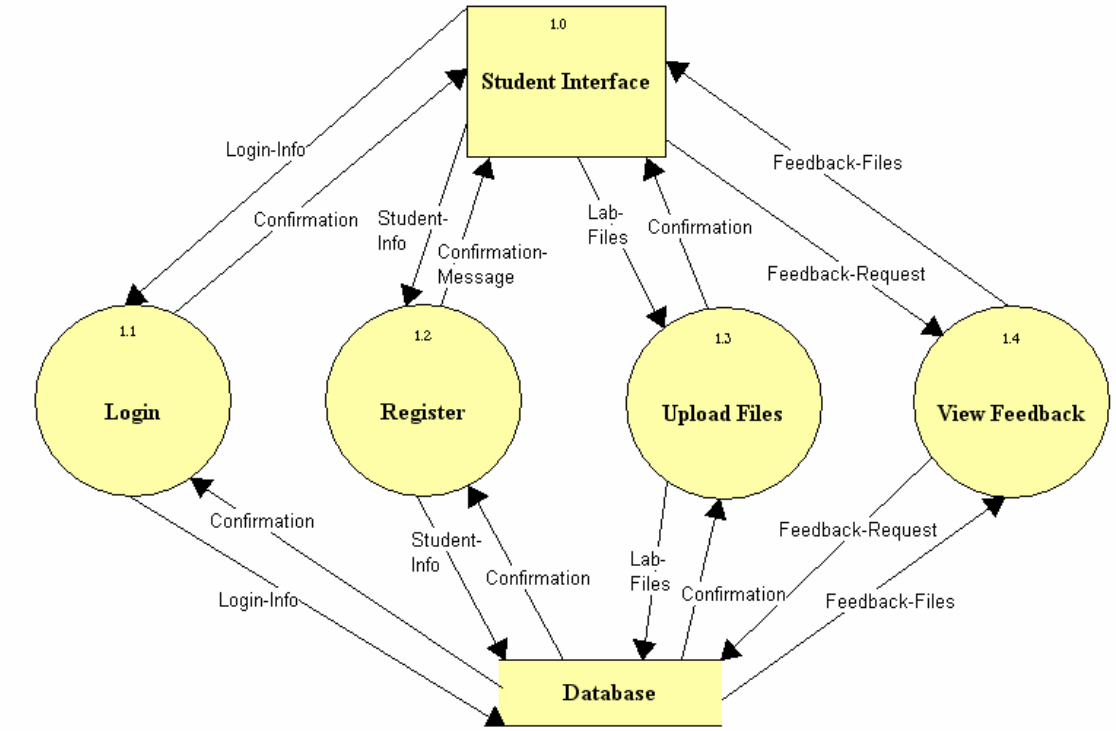


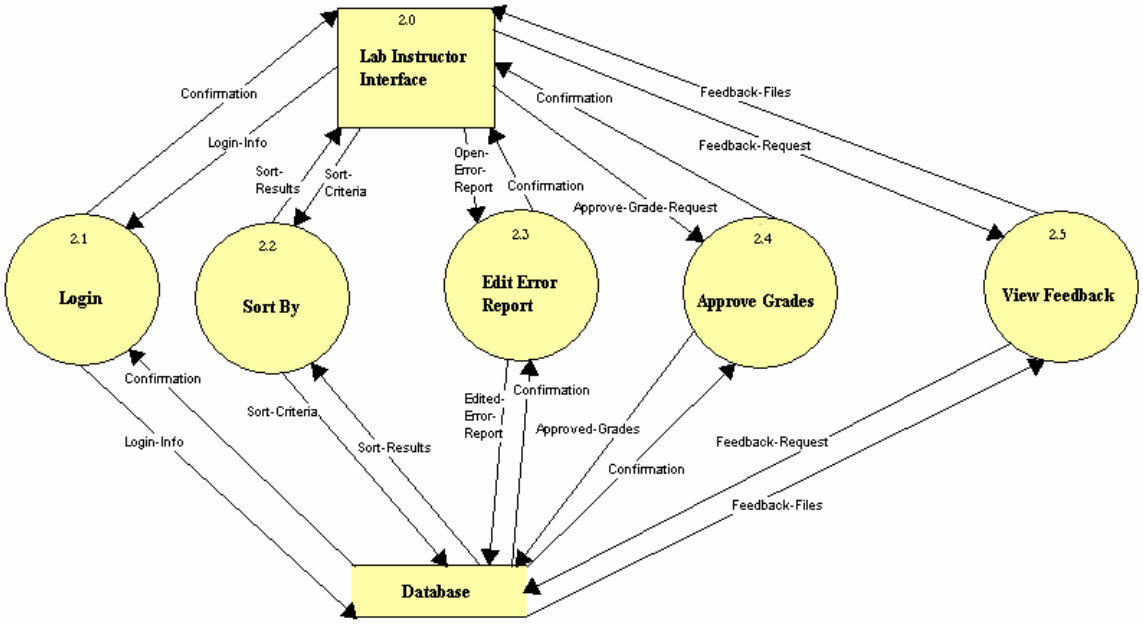
III. Detailed Data Flow Diagrams

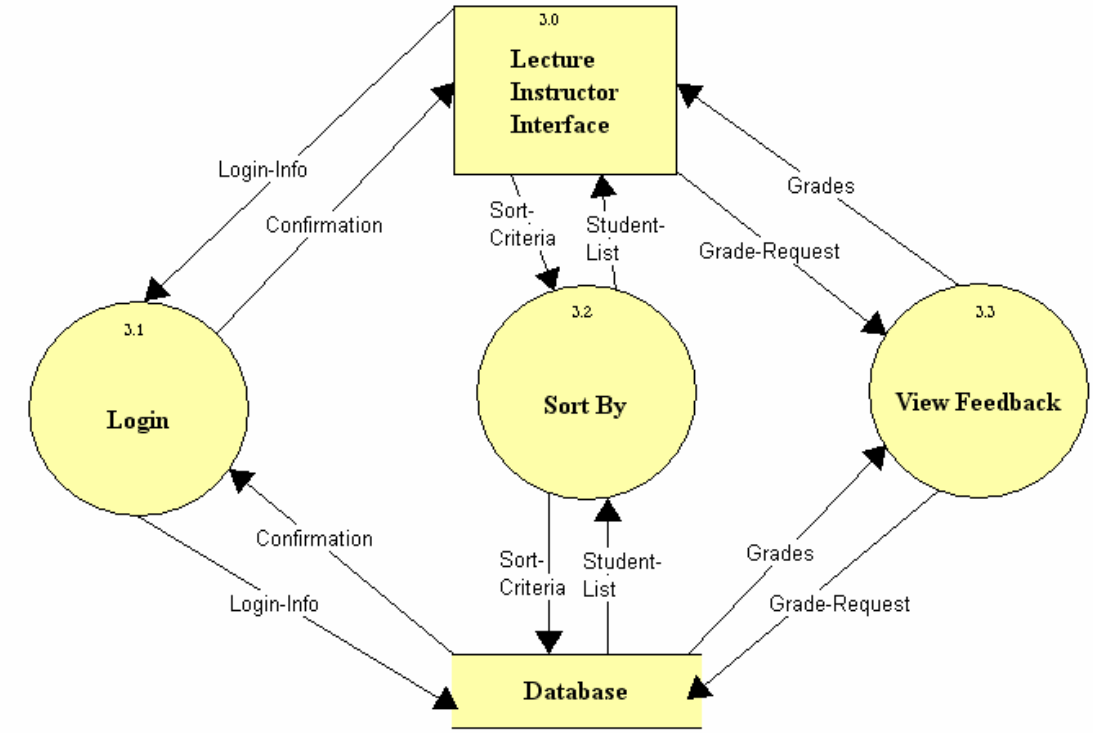
Level 0: Context Diagram

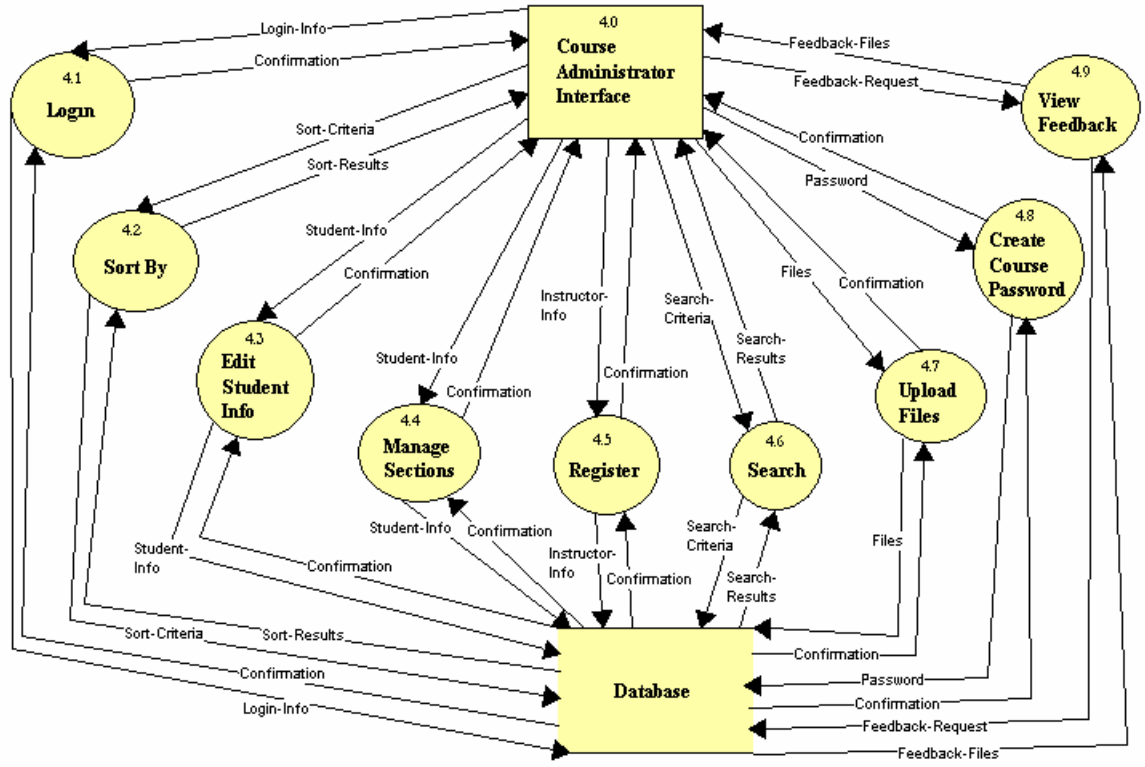


Level 1:

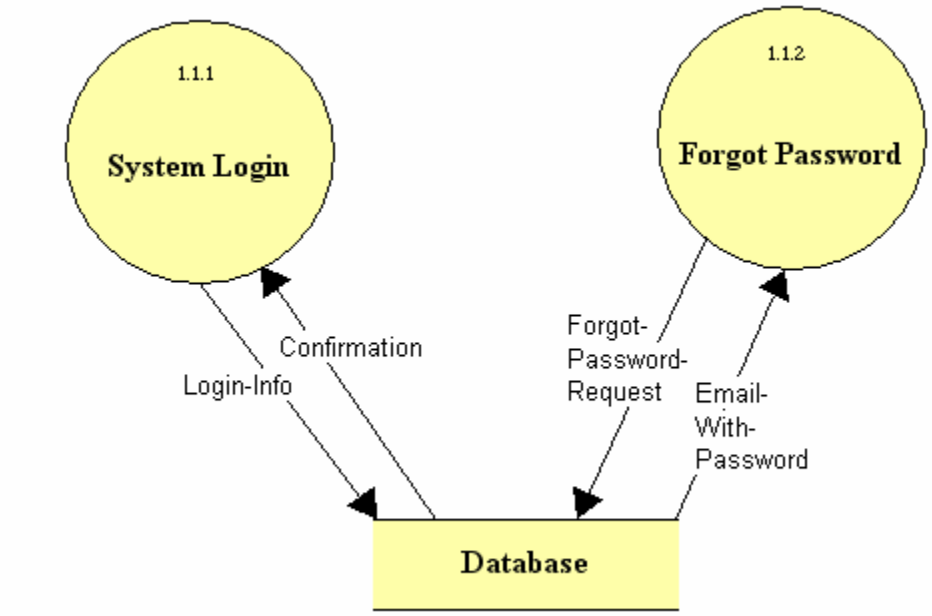

1.0
Student Interface
Login-Info
Confirmation
Student-Info
Confirmation-Message
Lab-Files
Confirmation
Feedback-Files
Feedback-Request
1.1
Login
1.2
Register
1.3
Upload Files
1.4
View Feedback
Confirmation
Login-Info
Student-Info
Confirmation
Lab-Files
Confirmation
Feedback-Request
Feedback-Files
Database

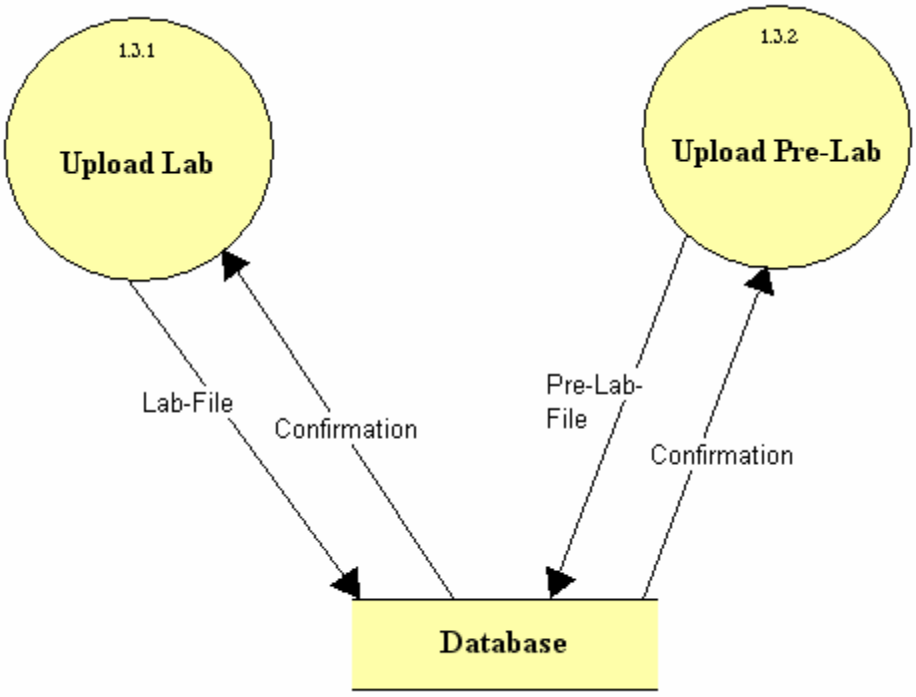

2.0
Lab Instructor Interface
Confirmation
Login-Info
Sort-Results
Sort-Criteria
Open-Error-Report
Confirmation
Approve-Grade-Request
Confirmation
Feedback-Files
Feedback-Request
2.1
Login
2.2
Sort By
2.3
Edit Error Report
2.4
Approve Grades
2.5
View Feedback
Confirmation
Login-Info
Sort-Criteria
Sort-Results
Edited-Error-Report
Confirmation
Approved-Grades
Confirmation
Feedback-Request
Feedback-Files
Database

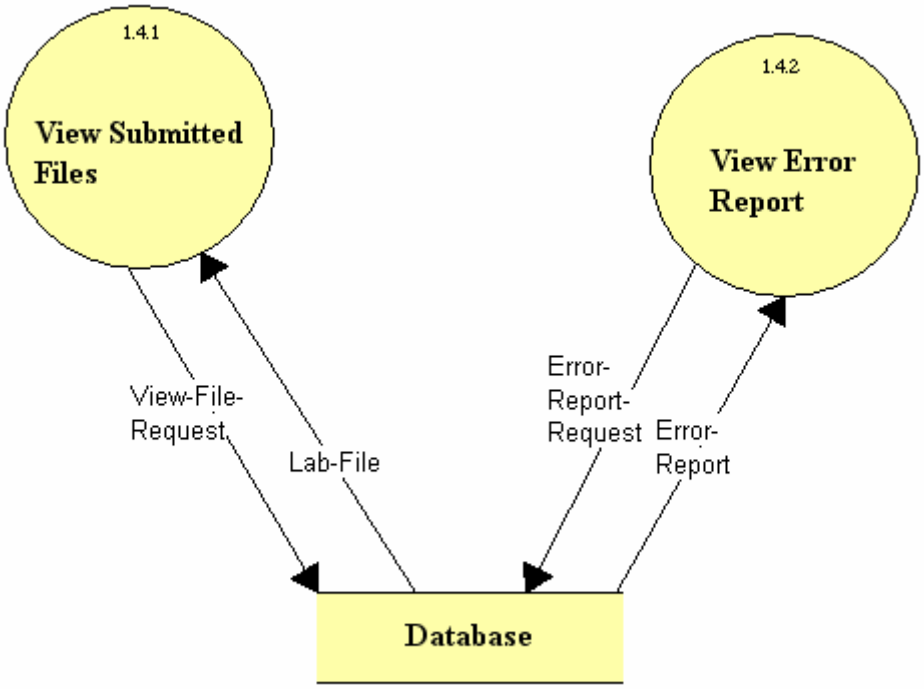

3.0
Lecture Instructor Interface
Login-Info
Confirmation
Sort-Criteria
Student-List
Grades
Grade-Request
3.1
Login
3.2
Sort By
3.3
View Feedback
Confirmation
Login-Info
Sort-Criteria
Student-List
Grades
Grade-Request
Database

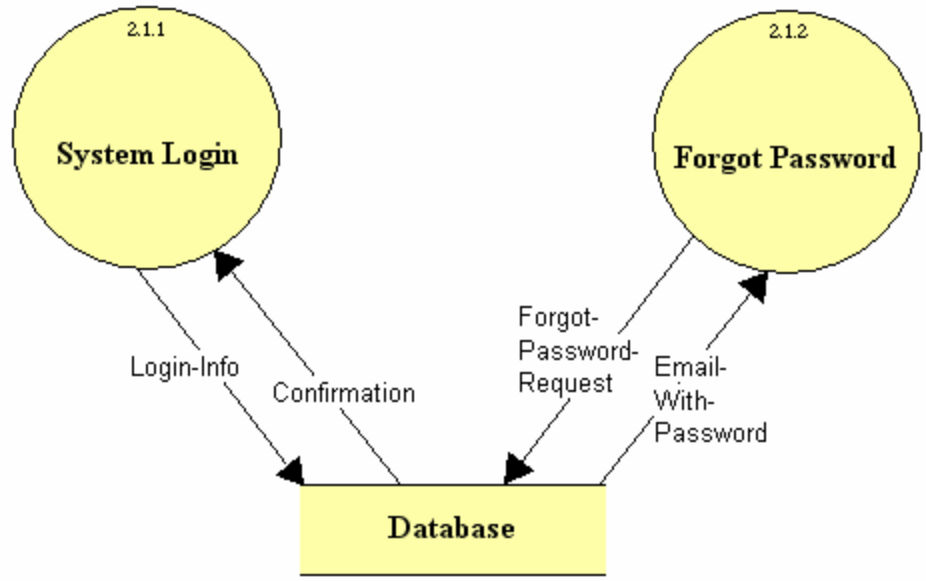

4.0
Course Administrator Interface
Login-Info
Confirmation
4.1
Login
Sort-Criteria
Sort-Results
4.2
Sort By
Student-Info
Confirmation
4.3
Edit Student Info
Student-Info
Confirmation
4.4
Manage Sections
Instructor-Info
Confirmation
4.5
Register
Search-Criteria
Search-Results
4.6
Search
Files
Confirmation
4.7
Upload Files
Password
Confirmation
4.8
Create Course Password
Feedback-Files
Feedback-Request
4.9
View Feedback
Student-Info
Confirmation
Instructor-Info
Confirmation
Search-Criteria
Search-Results
Files
Confirmation
Sort-Criteria
Sort-Results
Confirmation
Login-Info
Database
Confirmation
Password
Confirmation
Feedback-Request
Feedback-Files

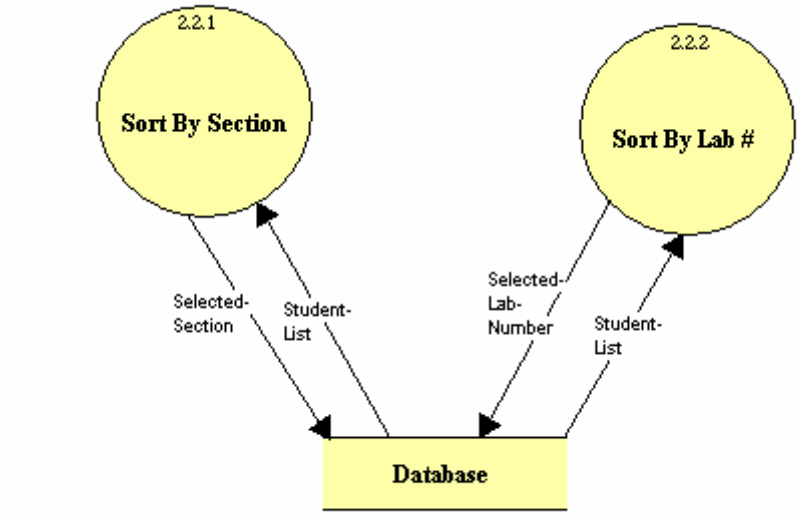
Level 2:

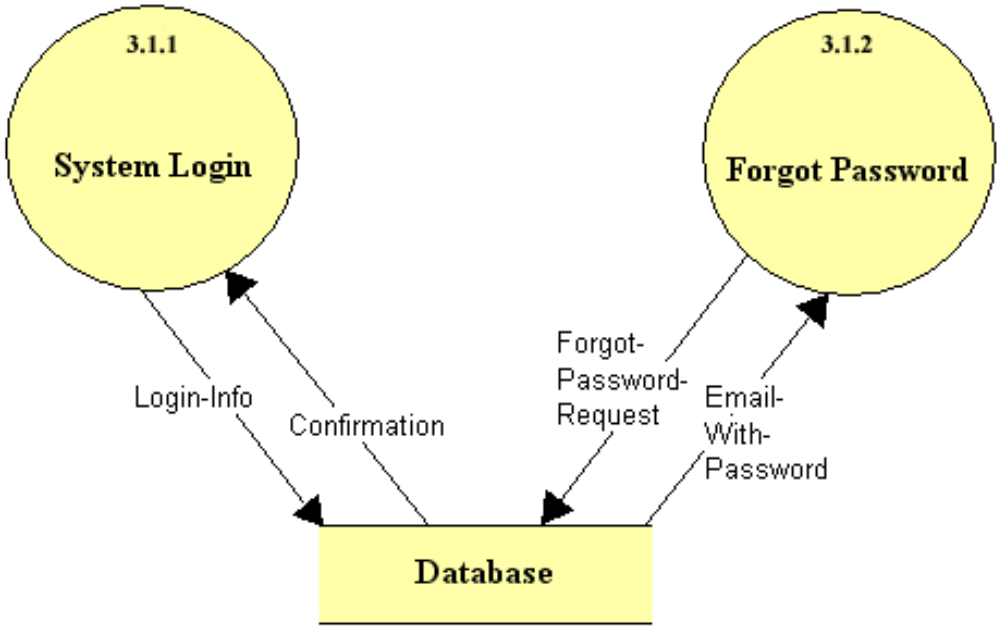

1.1.1
System Login
1.1.2
Forgot Password
Confirmation
Login-Info
Forgot-
Password-
Request
Email-
With-
Password
Database

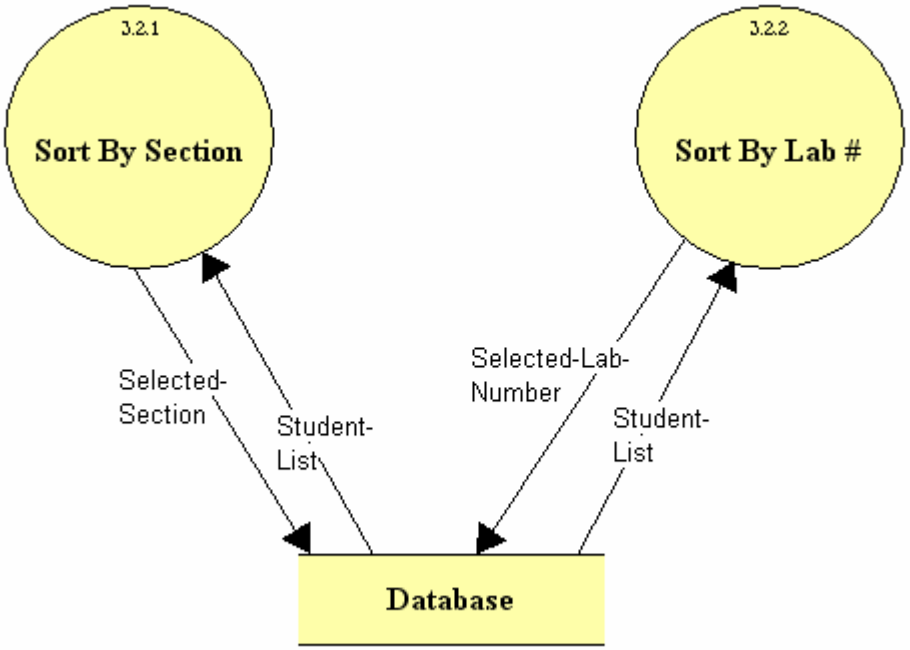

1.3.1
Upload Lab
1.3.2
Upload Pre-Lab
Lab-File
Confirmation
Pre-Lab-
File
Confirmation
Database

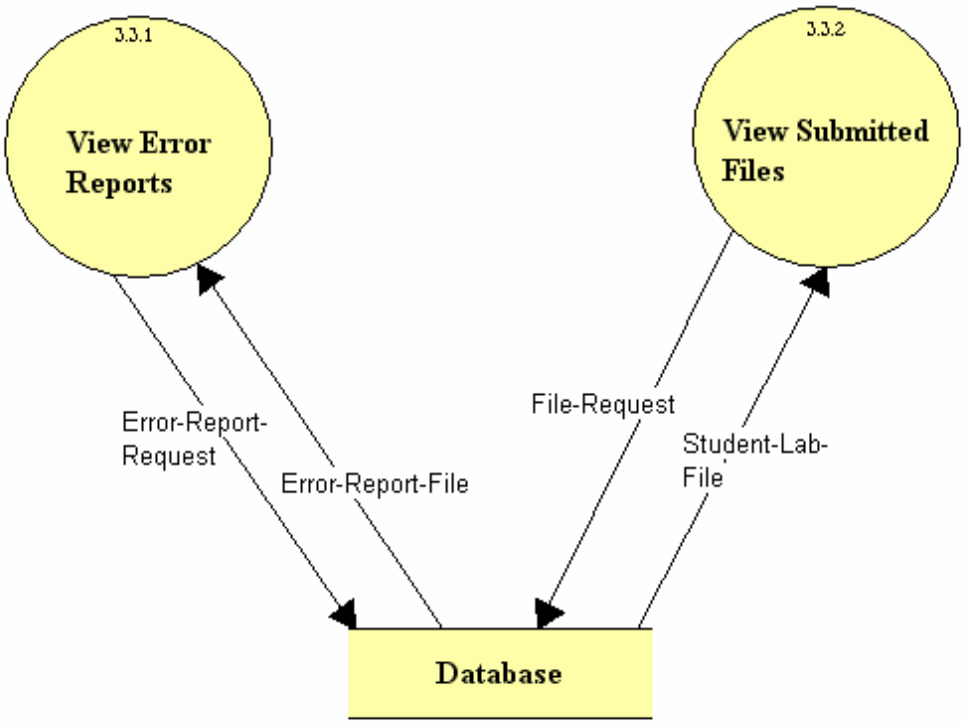

1.4.1
View Submitted Files
1.4.2
View Error Report
View-File-Request
Lab-File
Error-Report-Request
Error-Report
Database

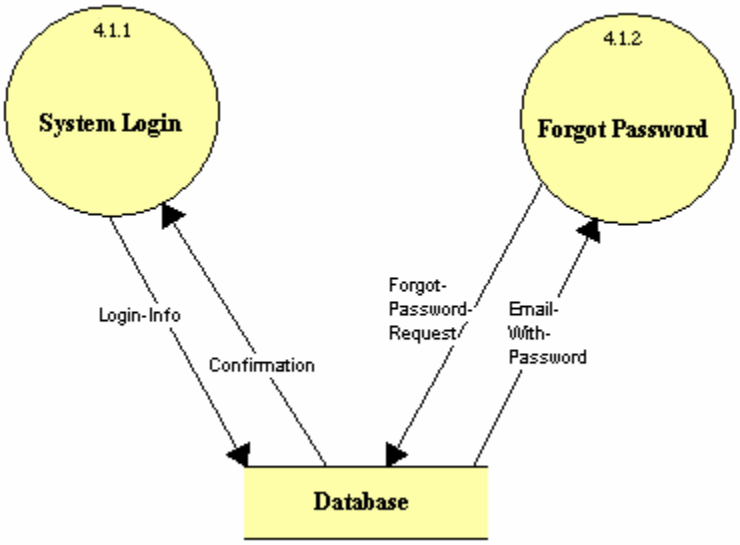

2.1.1
System Login
2.1.2
Forgot Password
Login-Info
Confirmation
Forgot-Password-Request
Email-With-Password
Database

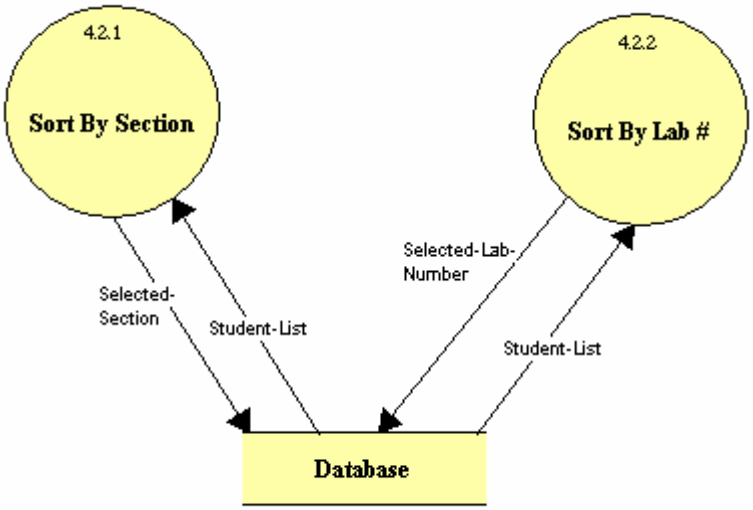

2.2.1
Sort By Section
2.2.2
Sort By Lab #
Selected-Section
Student-List
Selected-Lab-Number
Student-List
Database

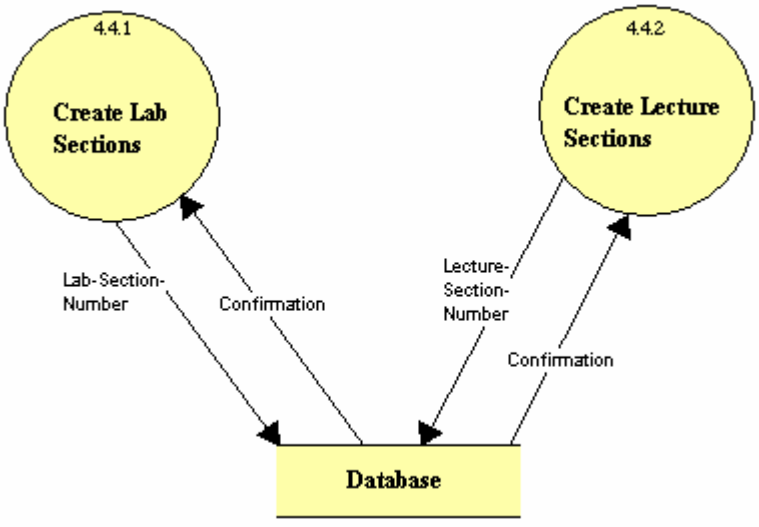

3.1.1
System Login
3.1.2
Forgot Password
Login-Info
Confirmation
Forgot-Password-Request
Email-With-Password
Database

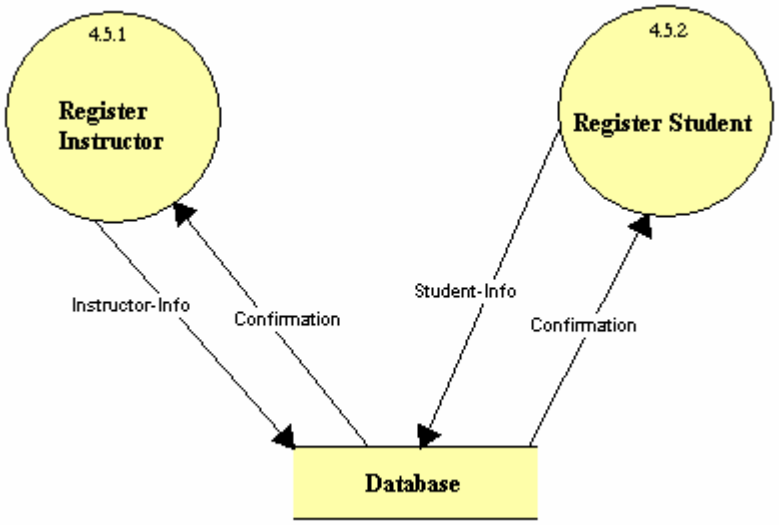

3.2.1
Sort By Section
3.2.2
Sort By Lab #
Selected-
Section
Student-
List
Selected-Lab-
Number
Student-
List
Database

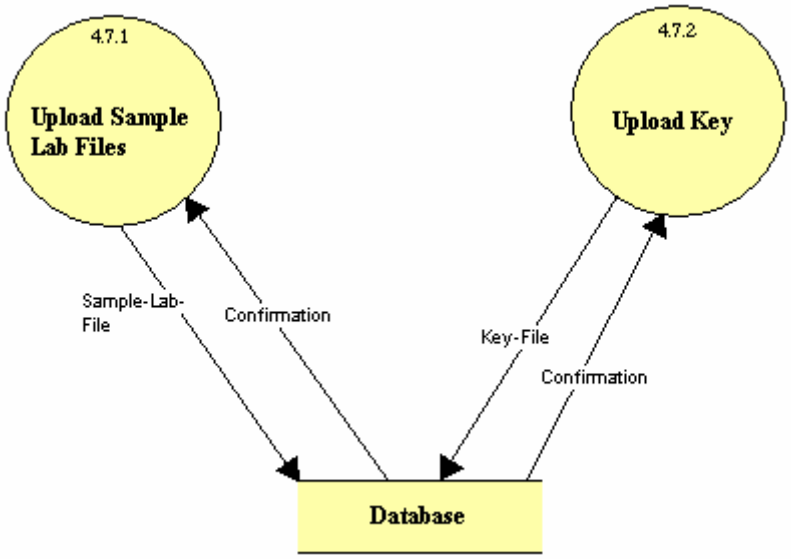

3.3.1
View Error
Reports
3.3.2
View Submitted
Files
Error-Report-
Request
Error-Report-File
File-Request
Student-Lab-
File
Database

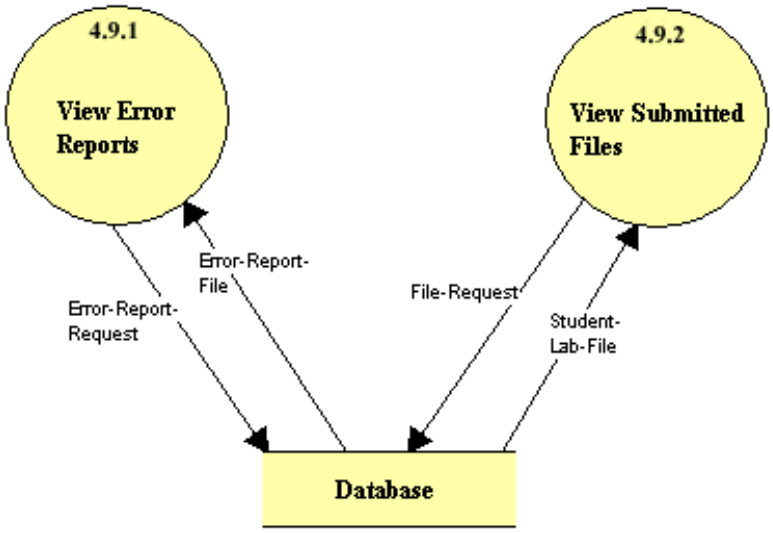

4.1.1
System Login
4.1.2
Forgot Password
Login-Info
Confirmation
Forgot-Password-Request
Email-With-Password
Database


4.2.1
Sort By Section
4.2.2
Sort By Lab #
Selected-Section
Student-List
Selected-Lab-Number
Student-List
Database


4.4.1
Create Lab Sections
4.4.2
Create Lecture Sections
Lab-Section-Number
Confirmation
Lecture-Section-Number
Confirmation
Database


4.5.1
Register Instructor
4.5.2
Register Student
Instructor-Info
Confirmation
Student-Info
Confirmation
Database


4.7.1
Upload Sample Lab Files
4.7.2
Upload Key
Sample-Lab-File
Confirmation
Key-File
Confirmation
Database


4.9.1
View Error Reports
4.9.2
View Submitted Files
Error-Report-Request
Error-Report-File
File-Request
Student-Lab-File
Database

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:

Location – Student – Level 1.0

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 – Lab Instructor – Level 2.0

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 – Lecture Instructor – Level 3.0

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 – Course Administrator – Level 4.0

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, Search Results, 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.

Level 2:

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.

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.

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.

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.

Location – Course Administrator – Sort By – Level 4.2

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.

Location – Course Administrator – Upload Files – Level 4.7

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.

Location – Course Administrator – View Feedback – Level 4.9

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: Persons first name
Key: no
Required: yes
Length: 20

last_name

Type: varchar
Description: Persons last name
Key: no
Required: yes
Length: 20

email

Type: varchar
Description: Persons email address
Key: no
Required: yes
Length: 40

password

Type: varchar
Description: Persons 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 Name: SECTIONS

section_number
Type: varchar
Description: the section number that is assigned to this lab/ lecture
Key: yes
Required: yes
Length: 10

section_type
Type: varchar
Description: lab or lecture
Key: no
Required: yes
Length: 10

instructor
Type: varchar
Description: the username of the instructor teaching this section
Key: no
Required: yes
Length: 20

semester
Type: varchar
Description: the semester the section is being taught
Key: no
Required: yes
Length: 10

Table Name: GRADING_KEY_FILES

file_name
- Type: varchar
- Description: the name of the file submitted
- Key: yes
- Required: yes
- Length: 20

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

due_date
- Type: Date
- Description: the date the file is due to be submitted by the student
- Key: no
- Required: yes
- Length: 20

file_type
- Type: varchar
- Description: type of file that was submitted- Key file or sample Excel file
- Key: no
- Required: yes
- Length: 10

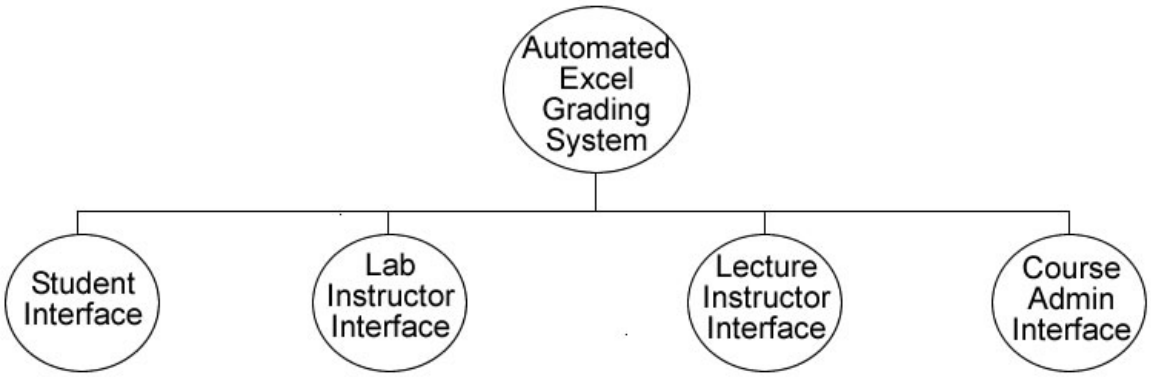
file_path
- Type: varchar
- Description: location where the file is stored
- Key: no
- Required: yes
- Length: 50

VI. Logical Format of Data Files and Databases

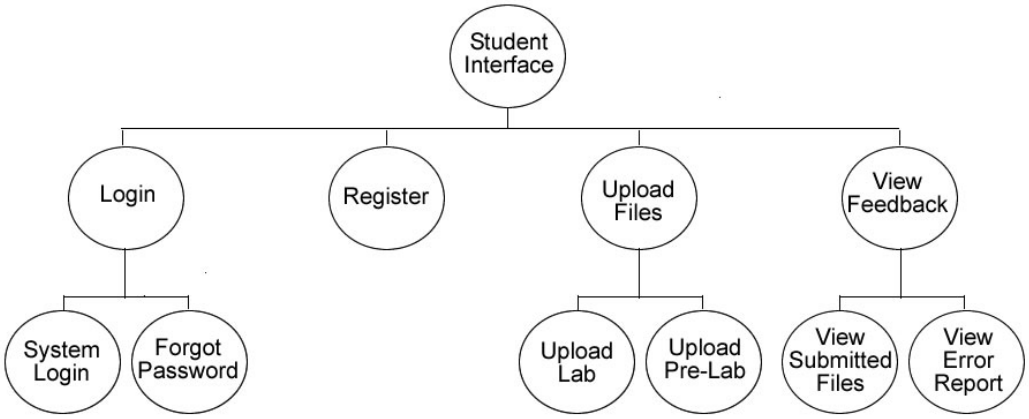
We will be using either Oracle DBMS or mySQL for our data storage. The files submitted to the system will not be stored in the tables, instead they will be stored in a separate directory and the path to the files will be stored in the database. We will be storing the following types of fields in our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

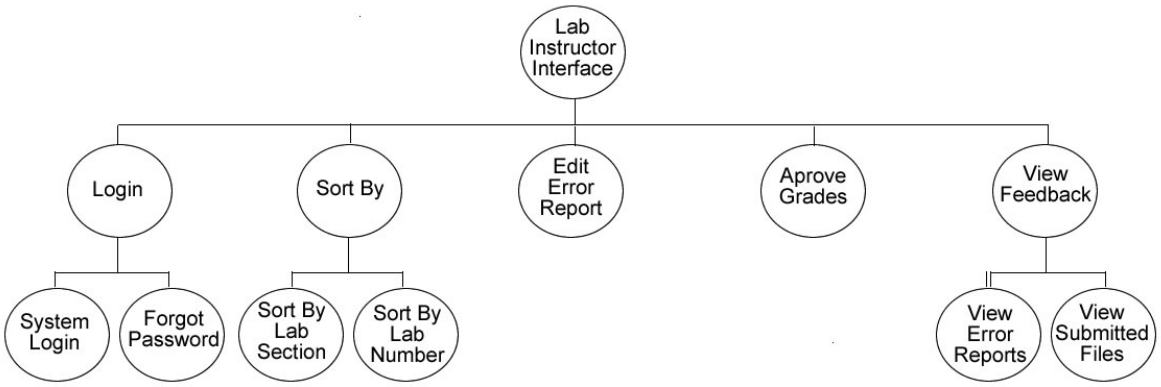
VII. Structure Diagrams

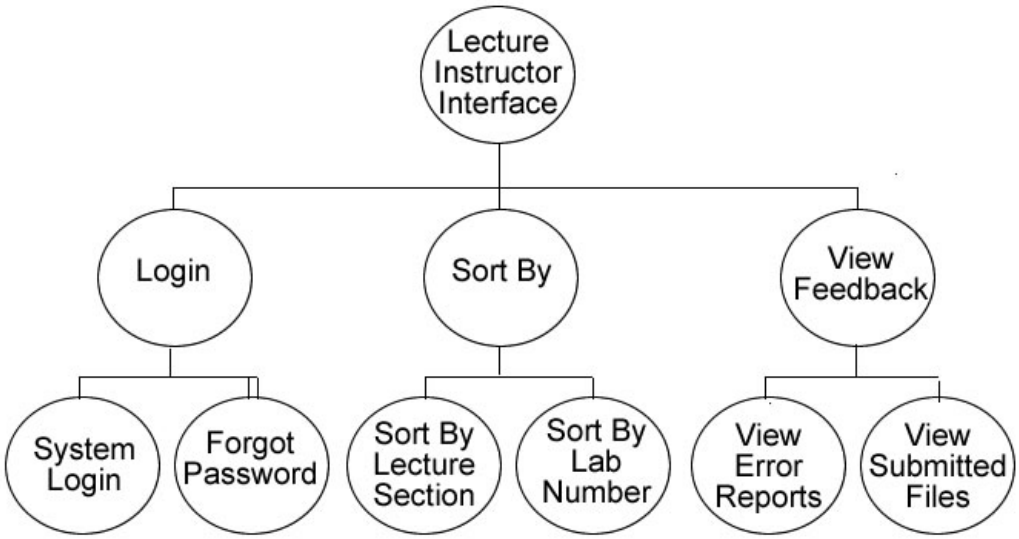
This structure diagram is a graphical representation of the structure of the Automated Excel Grading System. The first diagram displays the system itself broken down into each user type's interface:

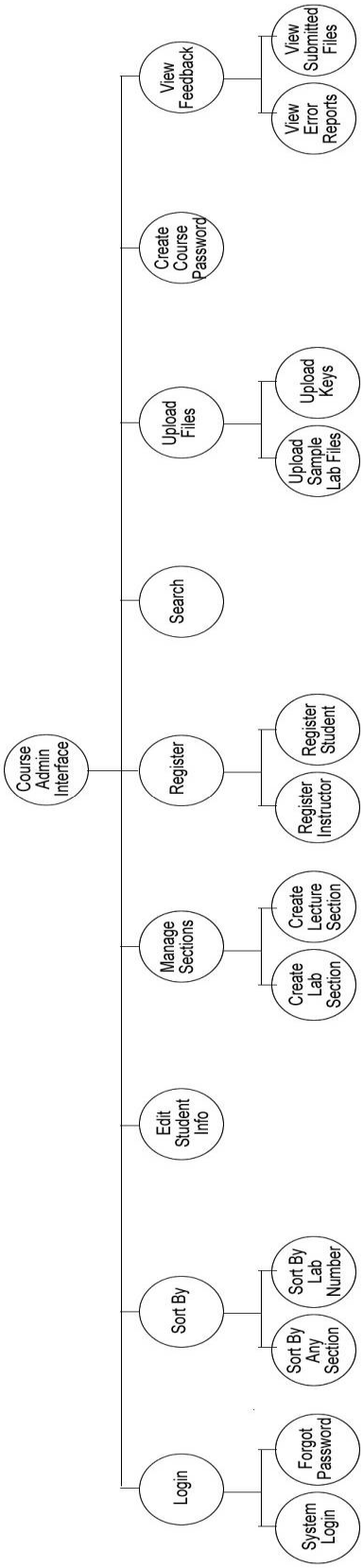


Each of the user interfaces is broken down into the tasks that can be performed by each user:






Lecture Instructor Interface
Login
Sort By
View Feedback
System Login
Forgot Password
Sort By Lecture Section
Sort By Lab Number
View Error Reports
View Submitted Files


Course Admin Interface
Login
System Login
Forgot Password
Sort By
Sort By Any Section
Sort By Lab Number
Edit Student Info
Manage Sections
Create Lab Section
Create Lecture Section
Register
Register Instructor
Register Student
Search
Upload Files
Upload Sample Lab Files
Upload Keys
Create Course Password
View Feedback
View Error Reports
View Submitted Files

VIII. Test Plan

All Testing Requirements can be found in the Automated Excel Grading System Test Plan which can be found on the Oasis Technologies Documents page. The url below will guide you to it.

http://oraserv.cs.siena.edu/~perm_oasis/documents.html

IX. Subprogram Interface Specifications

The modules included with the Automated Excel Grading System are the Student, the Lab Instructor, the Lecture Instructor, and the Course Administrator. These four modules or users work independently of one another, although some data is linked to all modules through the database. Each of these modules work to achieve the desired output for the Automated Excel Grading System.

X. Documentation Prologue for Each Routine

Function: getWorkbook()
Input: File
Output: Workbook
Description: This creates a workbook object out of the .xls file

Function: getSheet()
Input: String
Output: Sheet
Description: opens the sheet of the workbook specified by the input parameter

Function: getCell()
Input: int, int
Output: Cell
Description: opens the cell specified by the two input parameters

Function: getBackgroundColour()
Input: Cell
Output: Colour
Description: get the background color of the cell specified

Function: hasBorders()
Input: Cell
Output: boolean
Description: true if the cell specified has borders

Function: getBorderColour()

Input: Cell
Output: Colour
Description: gets the color of the borders on the cell

Function: getContents()

Input: Cell
Output: String
Description: gets the contents of the cell specified

Function: getFormula()

Input: Cell
Output: String
Description: gets the formula associated with the specified cell

Function: getComment()

Input: Cell
Output: String
Description: gets the comment associated with the specified cell

Function: getFont()

Input: Cell
Output: Font
Description: gets the font attributed associated with the cell

Function: isItalics()

Input: Font
Output: boolean
Description: true if the text in the cell is Italics

Function: isBold()

Input: Font
Output: boolean
Description: true if the text in the cell is bold

Function: getName()

Input: Font
Output: String
Description: gets the name of the font used

Function: getPointSize()

Input: Font
Output: String
Description: gets the font size of the text

Function: getColour()

Input: Font
Output: Colour
Description: gets the color attributes of the font

Function: createWorkbook()

Input: File
Output: WriteableWorkbook
Description: creates a copy of the workbook specified

Function: getSheet()

Input: WriteableWorkbook
Output: writeableSheet
Description: gets a sheet that can be edited from the workbook

Function: setComment()

Input: WriteableSheet
Output:
Description: inserts a comment into the writeable workbook

XI. Pseudo Code For Each Routine

Function: getWorkbook()

Specify a file to open
Convert the file to a workbook
Return the workbook

Function: getSheet()

Open the workbook
Specify the sheet you want to open
Return the sheet

Function: getCell()

Open the workbook and sheet
Specify the cell to open
Open and return the cell

Function: getBackgroundColour()

Specify the cell to open
Get the background color from the cell
Return the color object

Function: hasBorders()

Specify the cell to open
Get the border information from the cell
Return the boolean

Function: getBorderColour()

Specify the cell to open
Get the border color from the cell
Return the color object

Function: getContents()

Specify the cell to open
Get the contents of the cell
Return the string representation of the contents

Function: getFormula()

Specify the cell to open
Get the formula from the cell
Return the String representation of the formula

Function: getComment()

Specify the cell to open
Get the comment from the cell
Return the string representation of the comment

Function: getFont()

Specify the cell to open
Get the font object from the cell
Return the font object

Function: isItalics()

Specify the cell to open
Get the font object from the cell
Get the italics attribute from the cell
Return the Boolean value of the italics state of the text

Function: isBold()

Specify the cell to open
Get the font object from the cell
Get the bold attribute from the cell
Return the Boolean value of the bold state of the text

Function: getName()

Specify the cell to open
Get the font object from the cell
Get the font name attribute from the cell
Return the string value of the font name of the text

Function: getPointSize()

Specify the cell to open
Get the font object from the cell
Get the size attribute from the cell
Return the String value of the size of the text

Function: getColour()

Specify the cell to open
Get the font object from the cell
Get the color attribute from the cell
Return the Colour value of the color of the text

Function: getWorkbook()

Specify a file to open
Convert the file to a WriteableWorkbook
Return the WriteableWorkbook

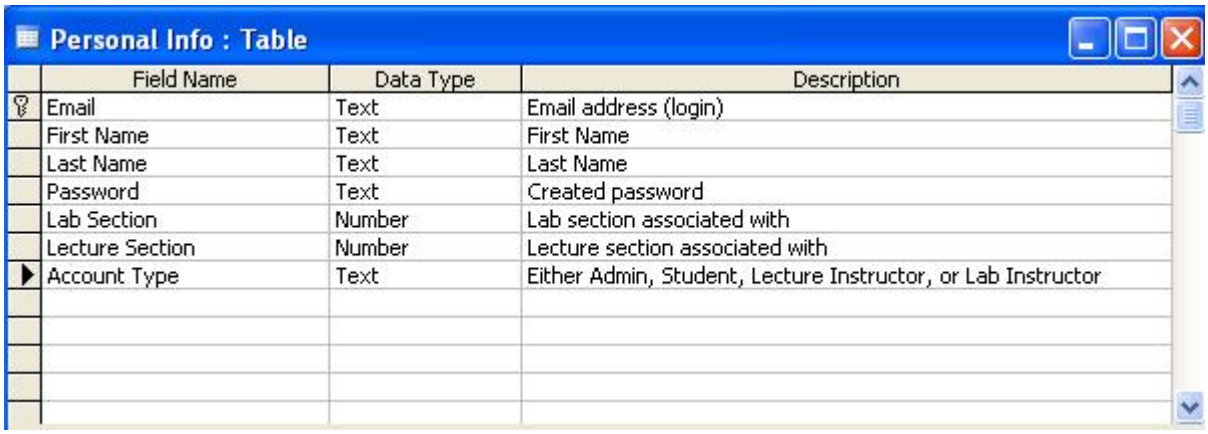
Function: getSheet()

Open the WriteableWorkbook
Specify the sheet you want to open
Return the WriteableSheet

Function: setComment()

Open the Cell
Specify the text to insert into the comment of the cell
Set the cell comment
Write the cell to the sheet

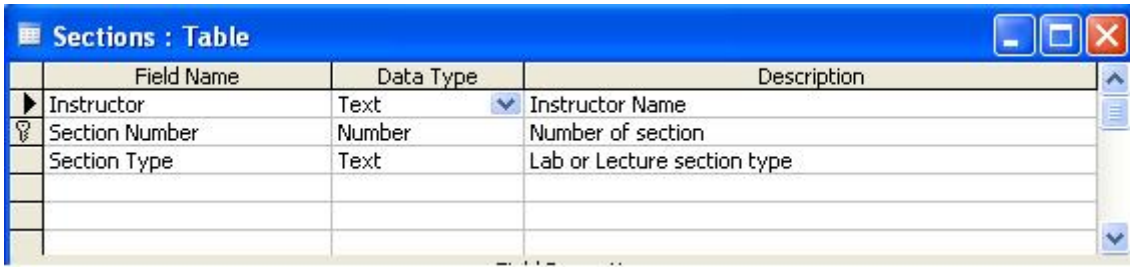
XII. Physical Data Structures and Data File Specifications



Personal Info : Table

Field Name	Data Type	Description
Email	Text	Email address (login)
First Name	Text	First Name
Last Name	Text	Last Name
Password	Text	Created password
Lab Section	Number	Lab section associated with
Lecture Section	Number	Lecture section associated with
Account Type	Text	Either Admin, Student, Lecture Instructor, or Lab Instructor

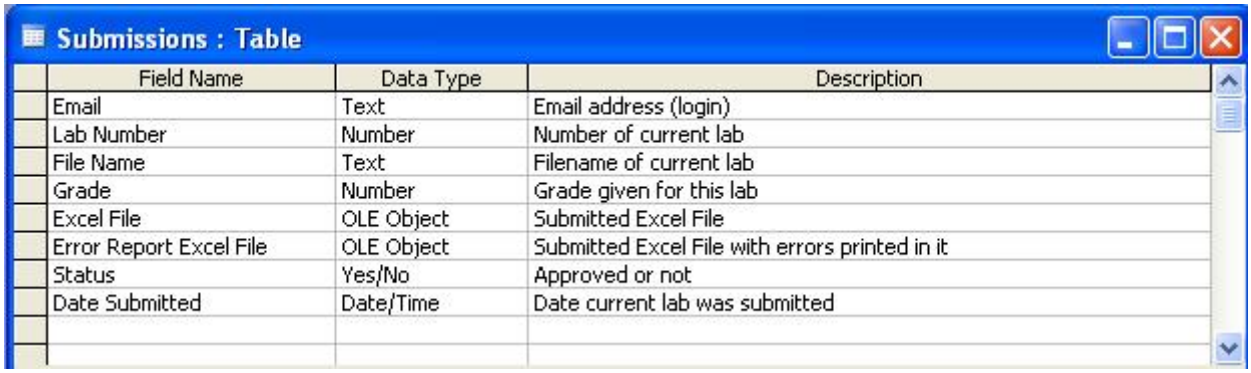
Personal Info – This table stores information about all users personal information. All users will have data stores in this table pertaining to their email, name, password, and account type (Student, Lab Instructor, Lecture Instructor, or Course Administrator). For Students there will also be information for both Lab and Lecture Section numbers. For Instructors, it will contain their Lab or Lecture Section number. The Course Administrator will not have data for the Lab and Lecture Section numbers. This table will be used to display and change information about all users in the system.



Sections : Table

Field Name	Data Type	Description
Instructor	Text	Instructor Name
Section Number	Number	Number of section
Section Type	Text	Lab or Lecture section type

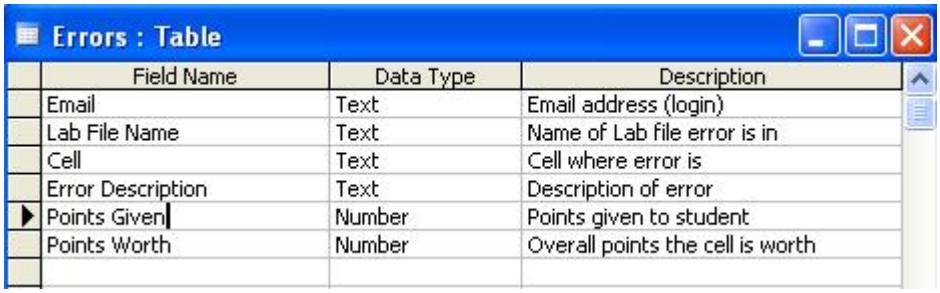
Sections – This table contains information pertaining to sections. It stores the name of the professor who teaches the section along with the Section Number and the Section Type. Section Type can be either Lab Section or Lecture Section. This table will be used to populate the lists of Students that all Instructors can view/alter.



Submissions : Table

Field Name	Data Type	Description
Email	Text	Email address (login)
Lab Number	Number	Number of current lab
File Name	Text	Filename of current lab
Grade	Number	Grade given for this lab
Excel File	OLE Object	Submitted Excel File
Error Report Excel File	OLE Object	Submitted Excel File with errors printed in it
Status	Yes/No	Approved or not
Date Submitted	Date/Time	Date current lab was submitted

Submissions – This table stores all information associated with every submitted file. It contains the Email address of the Student who submitted it along with the Lab Number, File Name, Total Grade given, the Date the file was Submitted, the file that was submitted, and the submitted file with errors printed in it. It also contains a field called "Status" which tells the system whether or not this file has been approved by the Lab Instructor for Students to view. This table will be used to populate the list of labs that each user type can view along with store the error reports that they can view.



Errors : Table

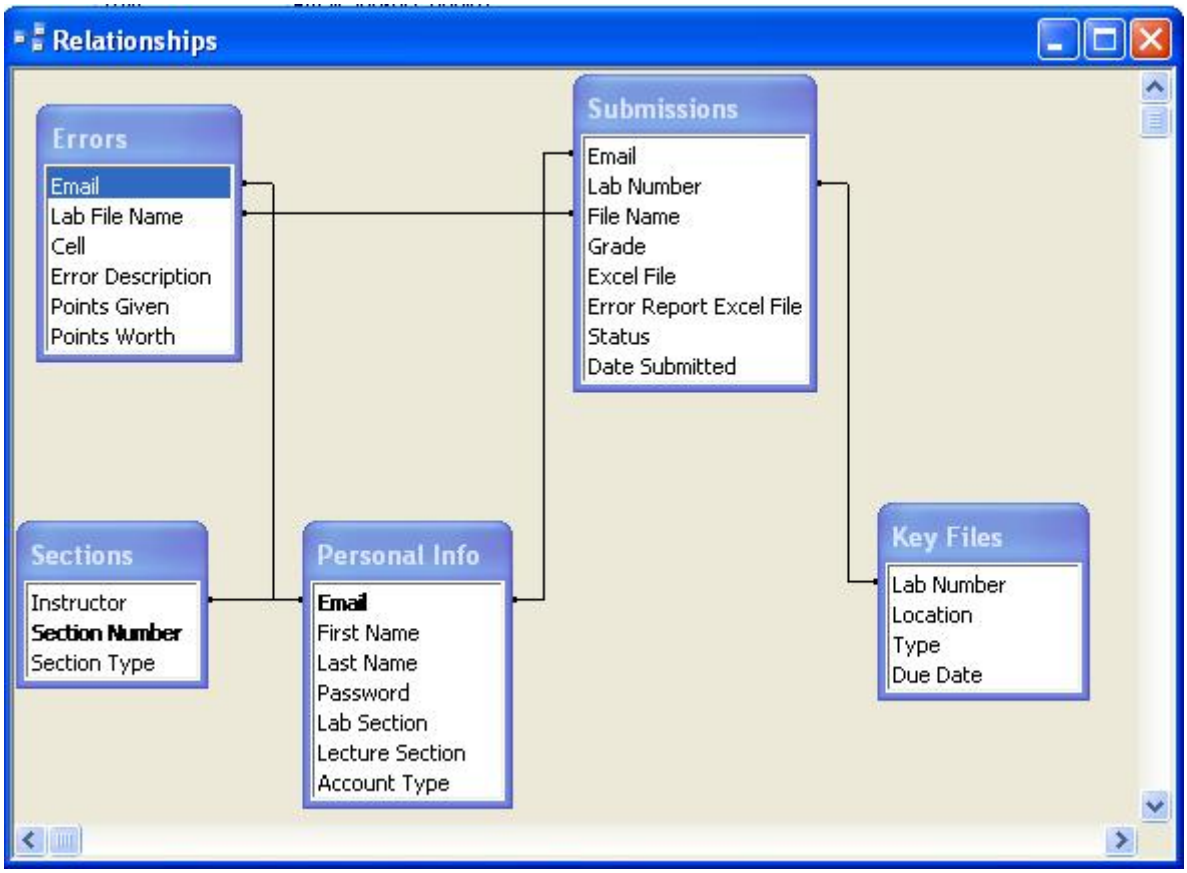
Field Name	Data Type	Description
Email	Text	Email address (login)
Lab File Name	Text	Name of Lab file error is in
Cell	Text	Cell where error is
Error Description	Text	Description of error
Points Given	Number	Points given to student
Points Worth	Number	Overall points the cell is worth

Errors – This table stores information about each error that is found in a Students submitted lab. It contains the Email address of the Student who submitted the lab along with the Lab File Name, the Cell in which the error occurred, a brief description of the error that was made, the points that were given for this area of the Lab and the total number of points this area is worth. This table will be used to display information about Students labs to Lab Instructors so that they can change or approve the grading the Automated Excel Grading System gives them.

Key Files : Table

Field Name	Data Type	Description
Lab Number	Number	Number of current lab
Location	Text	Location of file
Type	Text	Lab or Prelab
Due Date	Date/Time	Due date set by instructor

Key Files – This table stores information about the Grading Keys that the system will use to grade the Students submissions. It contains the Lab Number for each file, along with the Due Date for this lab. It also contains the Location of this file and it's Type, which is either a Key or a Sample File. This table will be used by the System to match submitted Labs with their Grading Keys so that each can be graded and sent for Lab Instructor Approval.



Relationship Diagram – This diagram shows how all of our tables are inter-related and require eachothers information.

XIII. Packaging Specifications

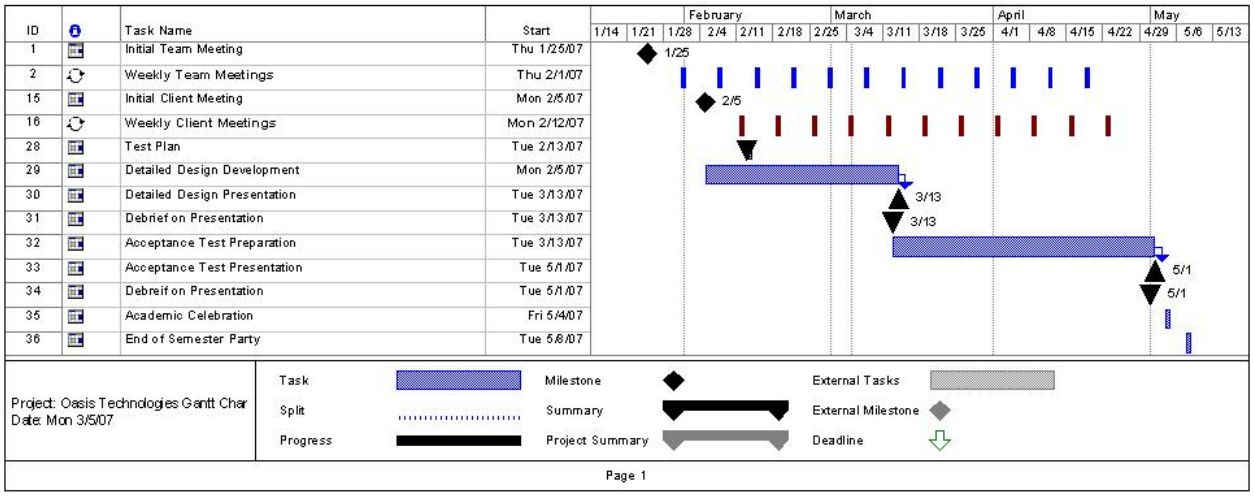
The automated excel grading system will be installed on the Siena College Computer Science Departments “Oraserv” webserver, and our database will be a mySQL database. We will provide our clients with a backup copy of our entire system including the user interface and database tables in the form of a cd. Our project will be contained entirely in one directory, with multiple subdirectories, for ease of movement in the future; therefore all paths will be relative path names. The database however will not be contained within the Oraserv directory with the rest of the system, so an absolute path to the database will be used.

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

II. Gantt Chart



III. Glossary of Terms

Cell: The smallest component of a Microsoft Excel workbook. Location is designated by it's sheet, row, and column in the workbook.

Comments: Data stored in a Microsoft Excel workbook that pertains to a particular cell but is invisible unless user chooses to view the comment on a cell.

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.

Sheet: Component of a workbook. Workbooks are composed of single or multiple sheets, each of which containing a spreadsheet. It should be noted that sheets within workbooks may access each others contents.

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

Workbook: The type of files that Microsoft Excel uses which will be submitted to the Automated Excel Grading System for grading. Has file extension ".xls"

WriteableSheet: Denoted by the Automated Excel Grading System as a sheet that can has permissions such that the system may alter its contents.

xls: File extension for Workbook. See "Workbook."