Preliminary Design

Automated Grading System for Microsoft Excel Spreadsheets

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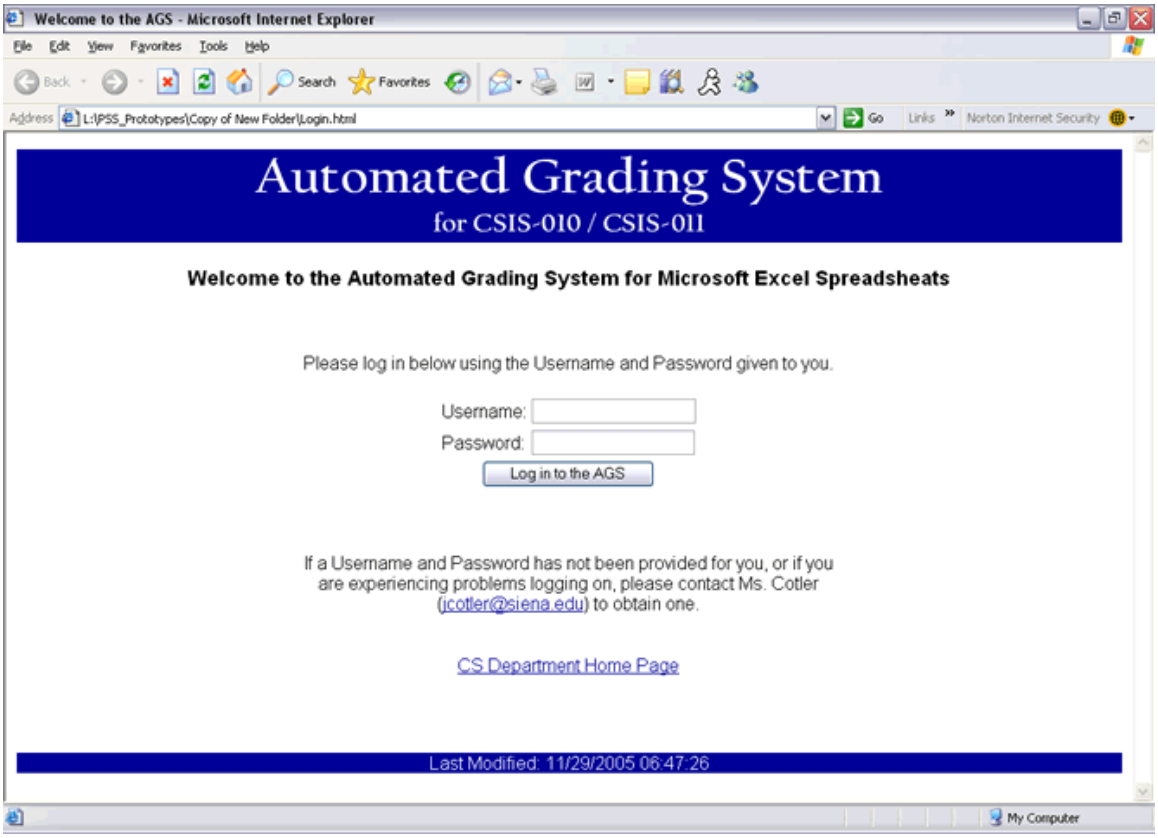
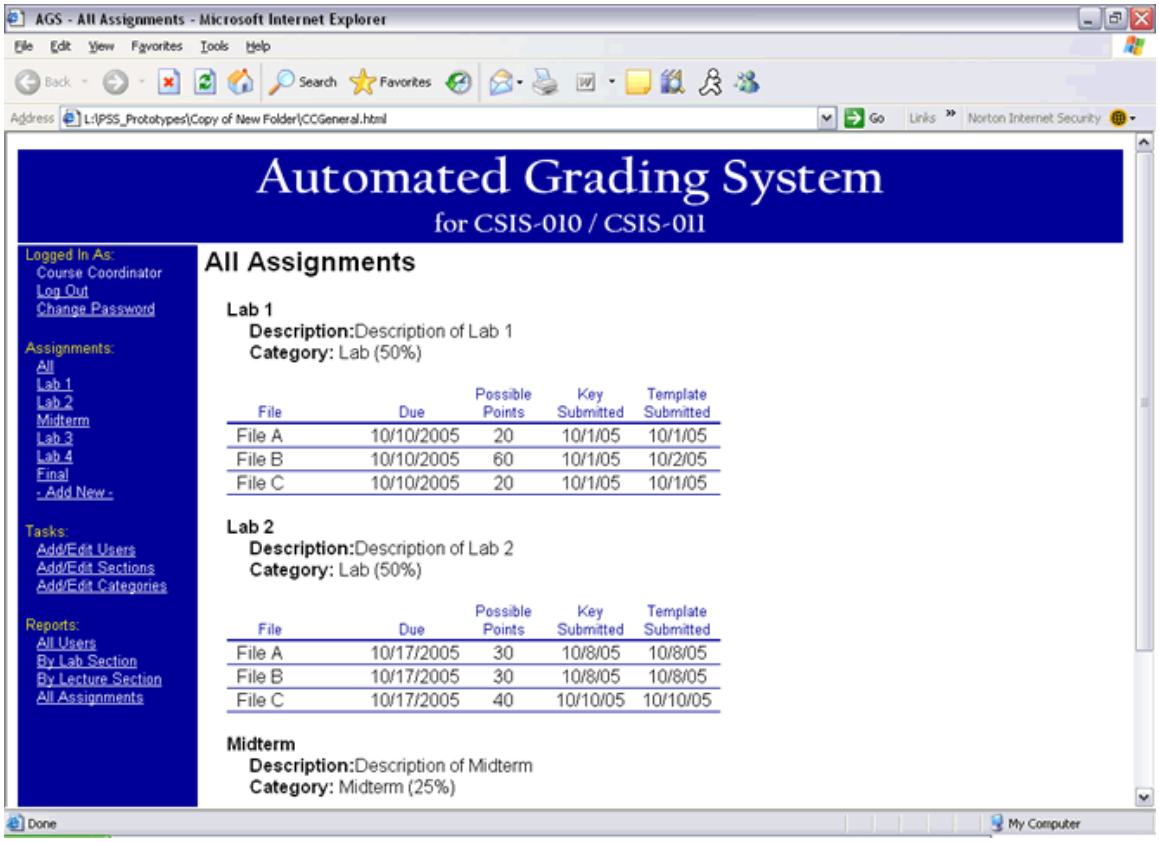
Section 1.1: User Displays and Command Summary

Log In Screen



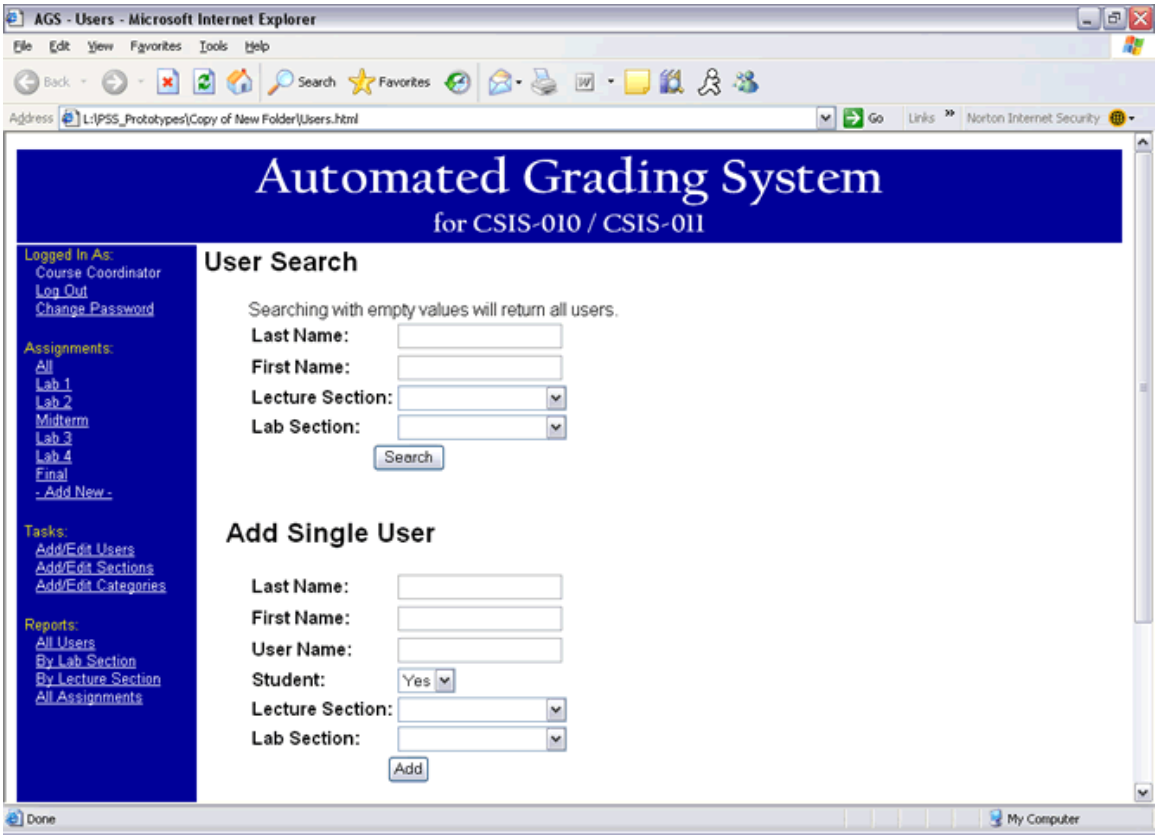
This is the generic log in screen that all users of the system will interact with. The user will enter their username and password and then click on the "Log in to the AGS" to proceed to their appropriate landing page.

Course Coordinator Landing Page – All Assignments



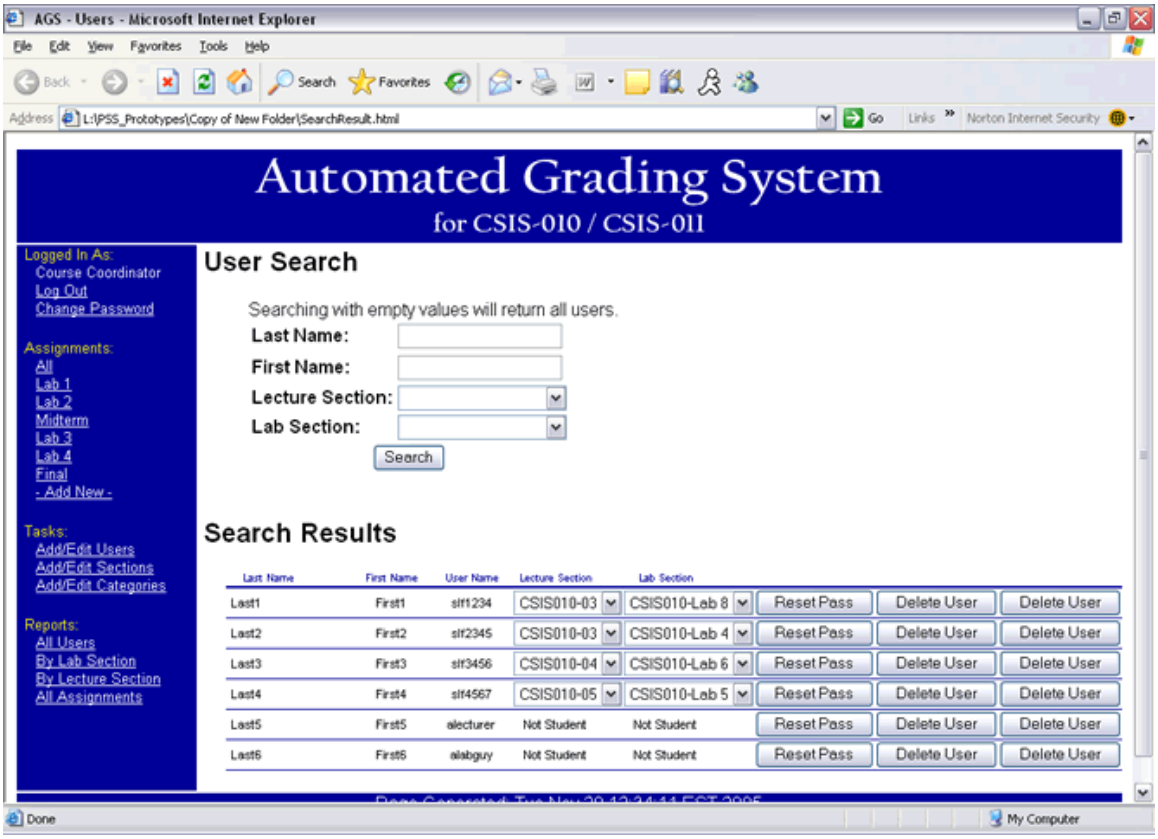
After logging in, the Course Coordinator will be taken to this landing page.

Course Coordinator – User Tasks (Search, Add, Batch Add)



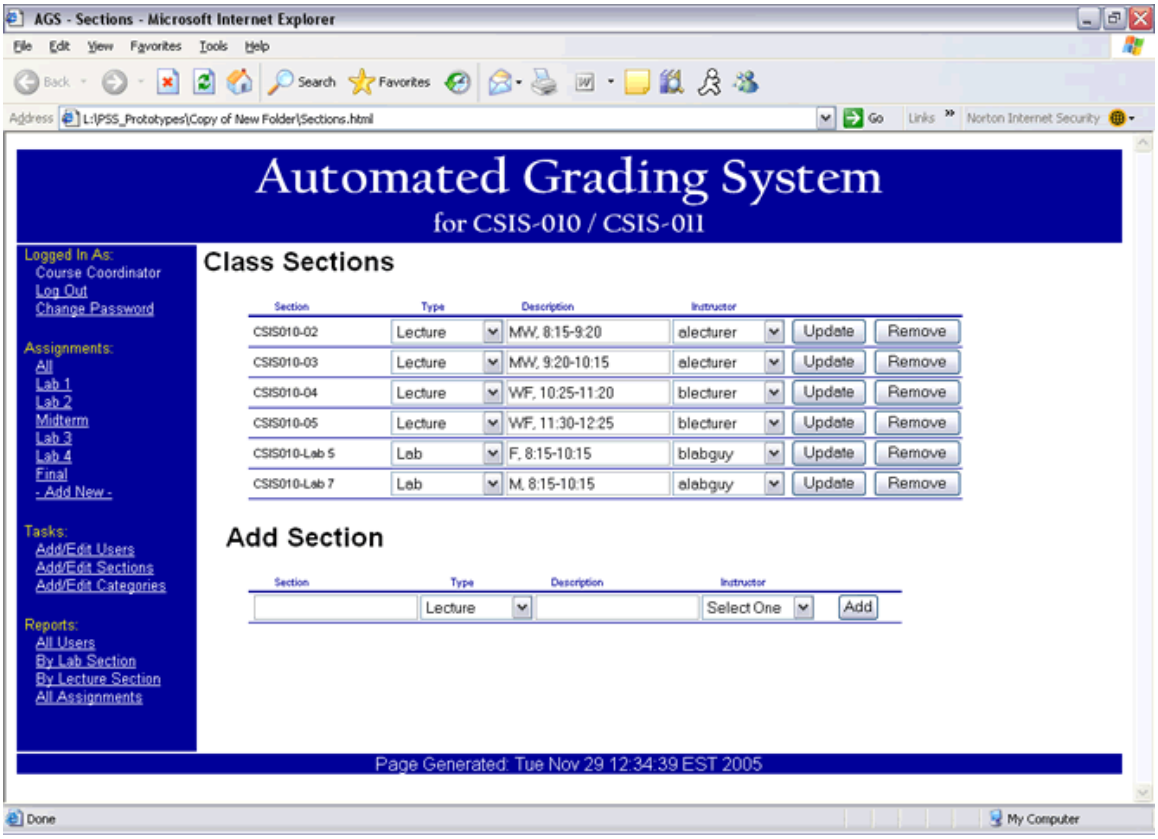
After selecting to Add/Edit Users from the Tasks menu, the Course Coordinator will be taken to this page. The Course Coordinator has the ability to search for users and add users.

Course Coordinator – User Search Results and Editing



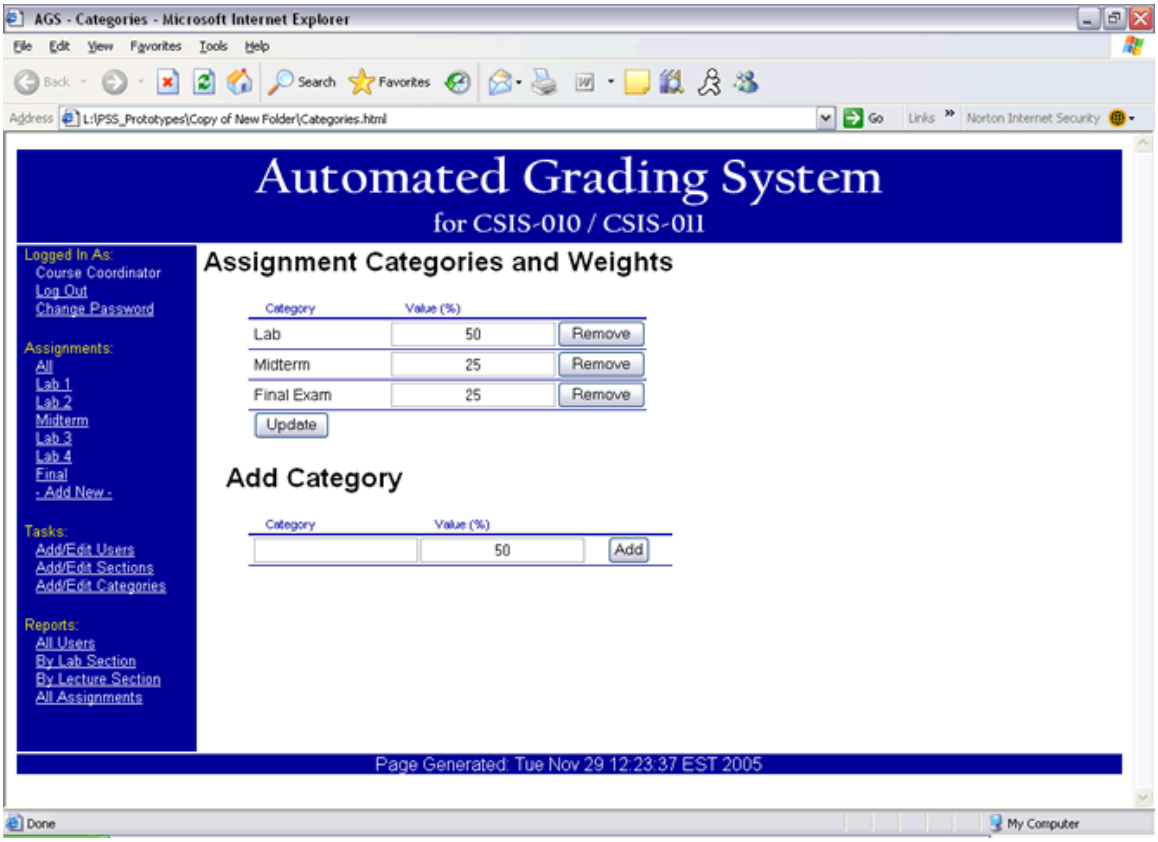
This page is displayed after the Course Coordinator clicks on the Search button on the User Search page. The Search Results are displayed and the Course Coordinator has the option of performing another search.

Course Coordinator – Class Section Creation and Editing



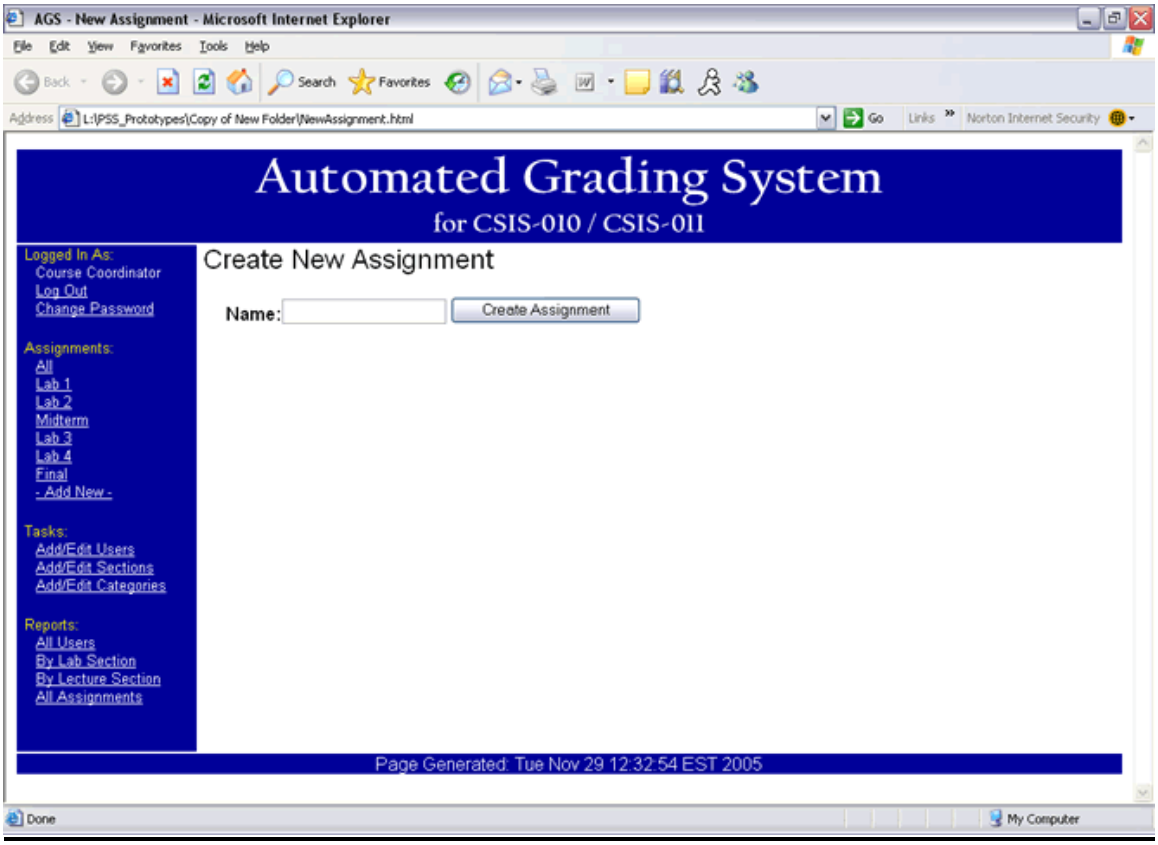
After selecting Add/Edit Sections from the Tasks menu, the Course Coordinator will be taken to this page. The Course Coordinator has the ability to edit the type (lecture or lab), the description (date and time), and the instructor for each section. The Course Coordinator also has the option of adding a section.

Course Coordinator – Assignment Category Creation and Editing



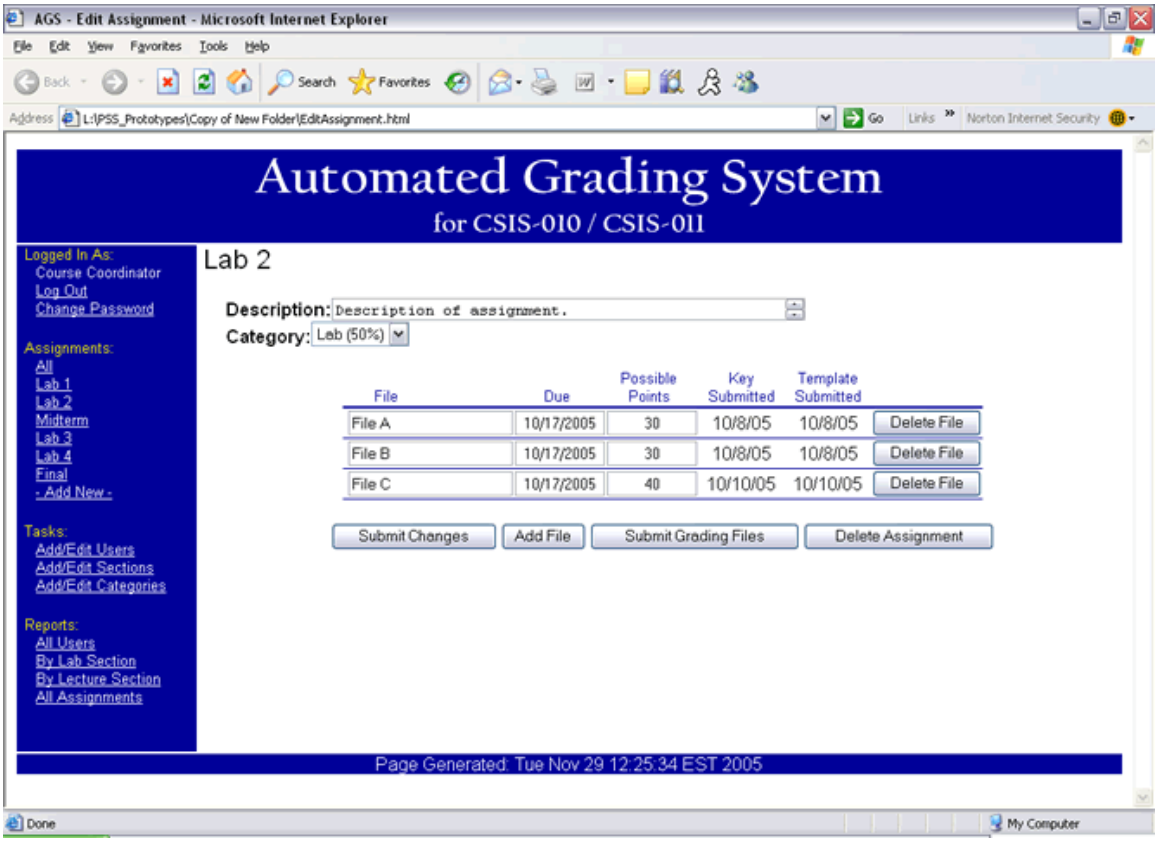
After selecting Add/Edit Categories from the Tasks menu, the Course Coordinator will have the option of removing categories from courses and also creating new categories with specific weights.

Course Coordinator – Create New Assignment Shell



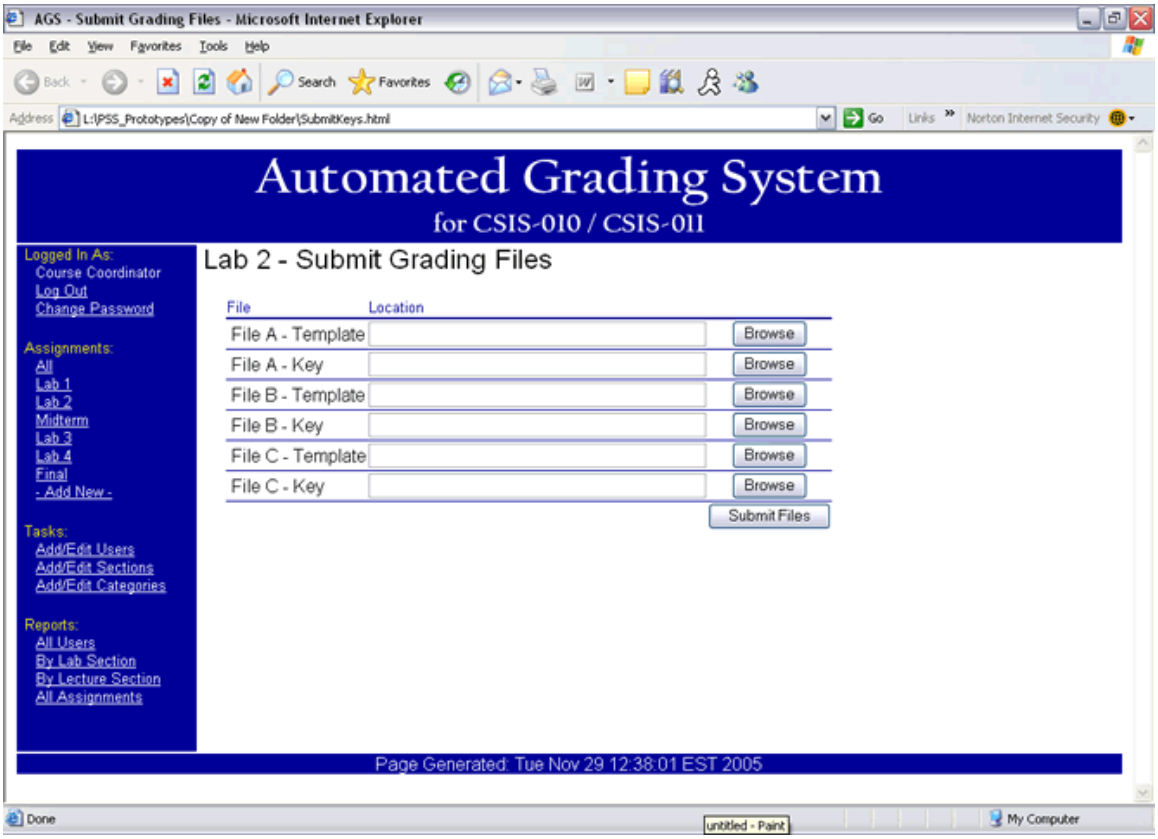
After selecting Add New from the Assignments column in the Tasks bar, the Course Coordinator will be able to choose a name for the new assignment and submit it to the database.

Course Coordinator – Edit Assignment



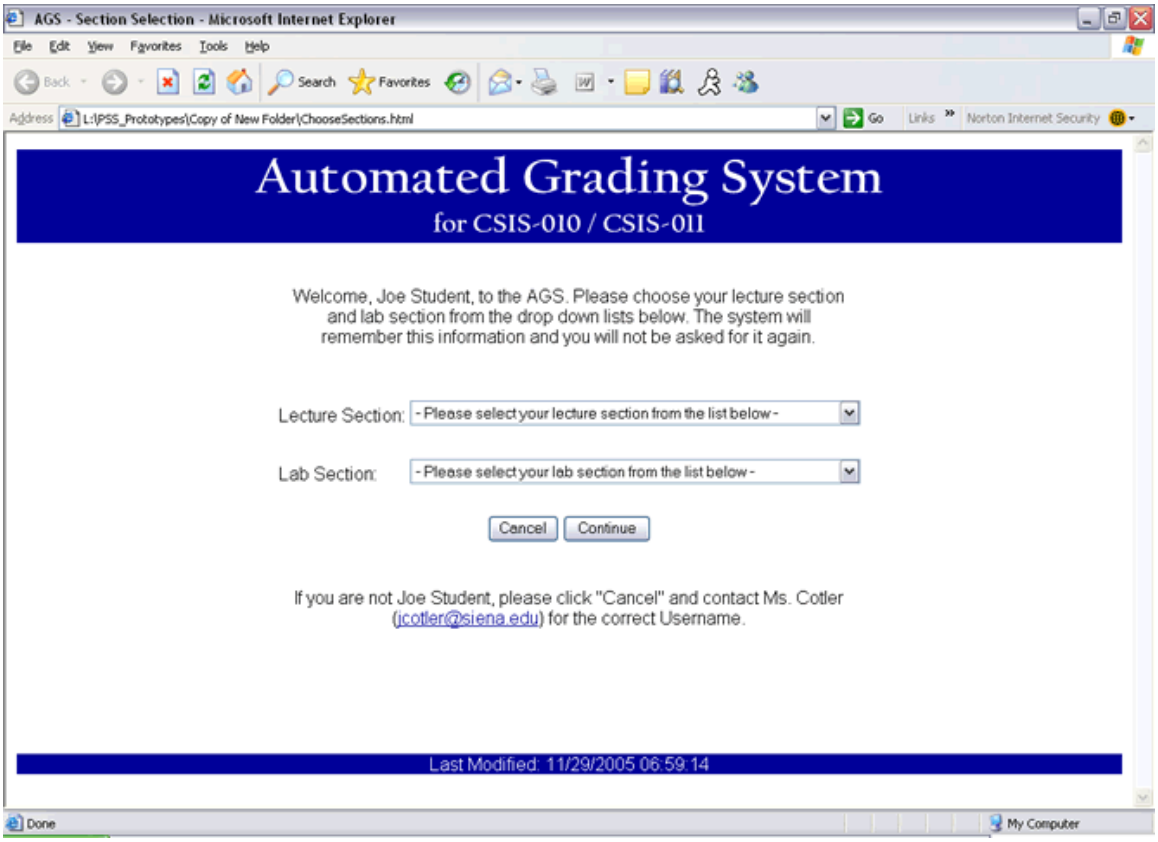
After creating a name for the new assignment, the Course Coordinator is allowed to edit its properties. Here, the assignment description may be chosen and also it's category which in turn has a corresponding weight. Below this it may be specified how many files this assignment has and their weights. In addition to this the grading files for the assignment may be submitted by clicking "Submit Grading Files".

Course Coordinator – Grading Files Submission



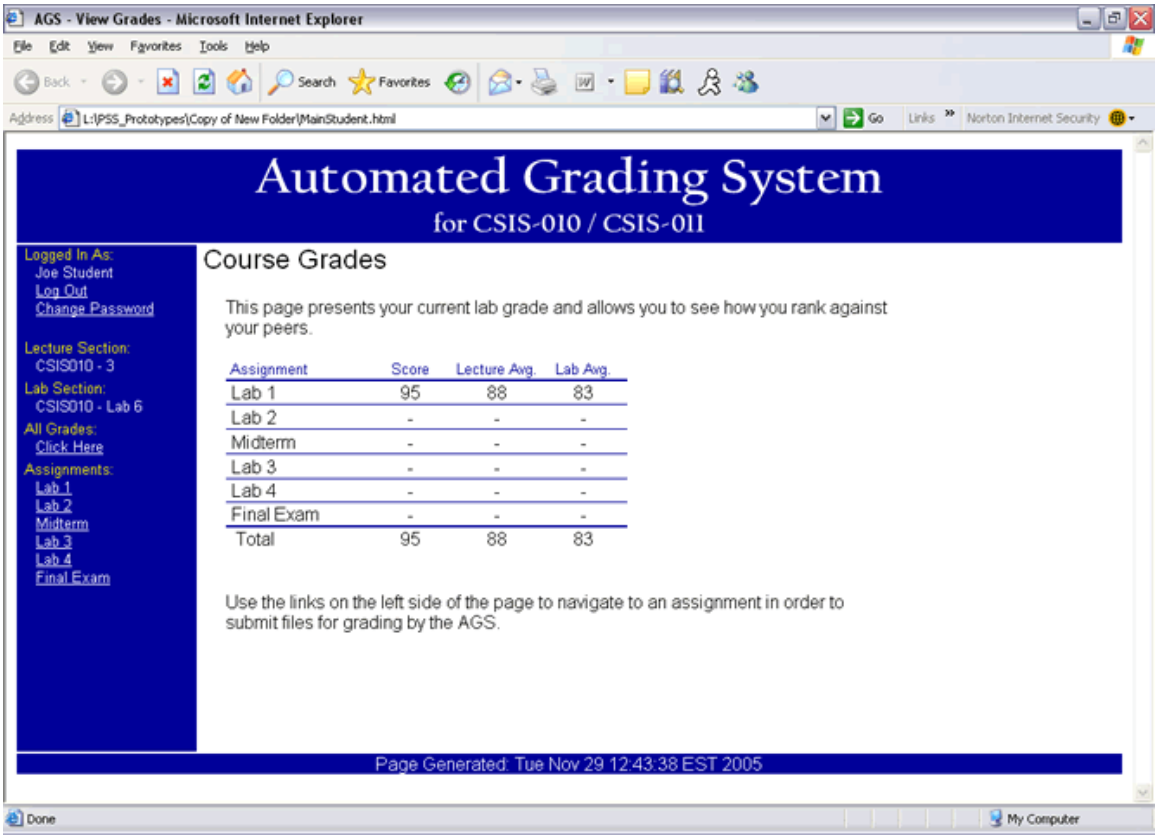
Here, the Course Coordinator has selected "Submit Grading Files" from the previous screen. The number of files that the assignment contains shows up with an option for the selection of a grading Template and grading Key for each. After selecting all files the Course Coordinator may submit the files via the "Submit Files" button.

Student – Section Identification



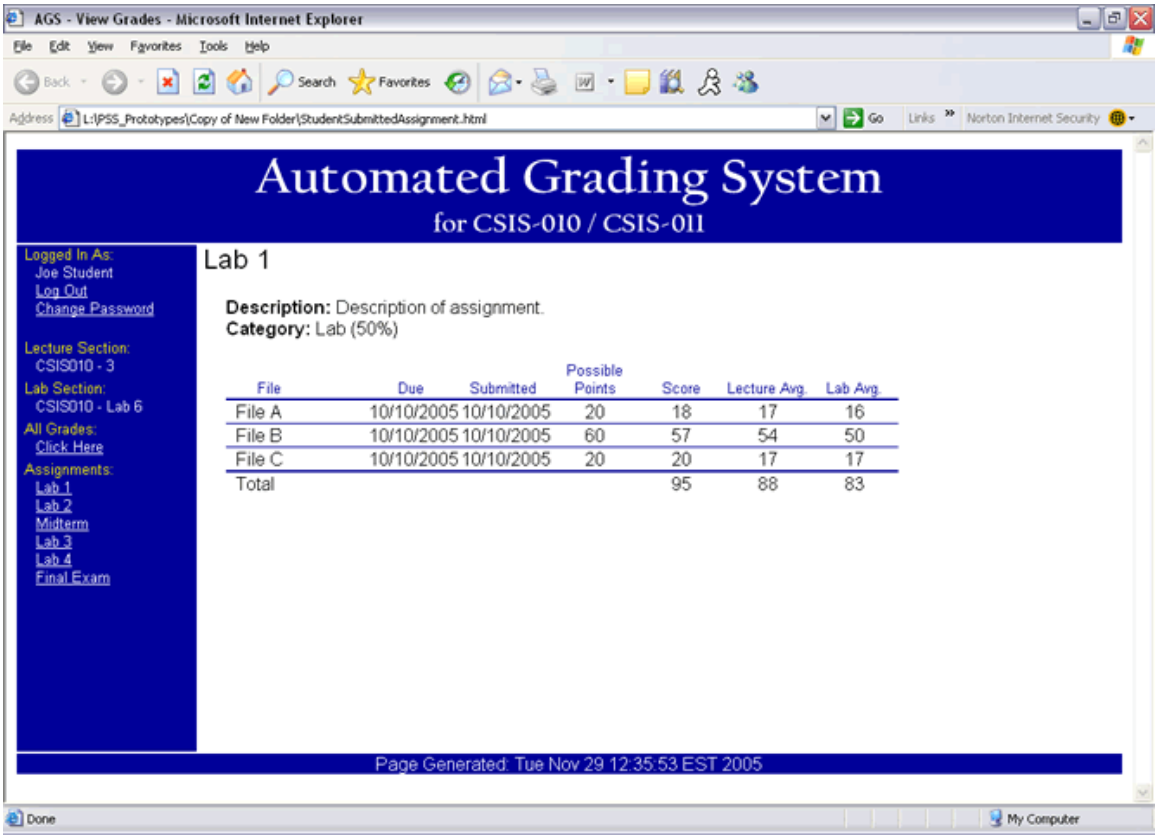
This screen is presented to the student the first time they attempt to login. Here they are asked to choose both their Lecture Section and Lab Section, this information is then submitted to the database.

Student Landing Page – Grade Overview



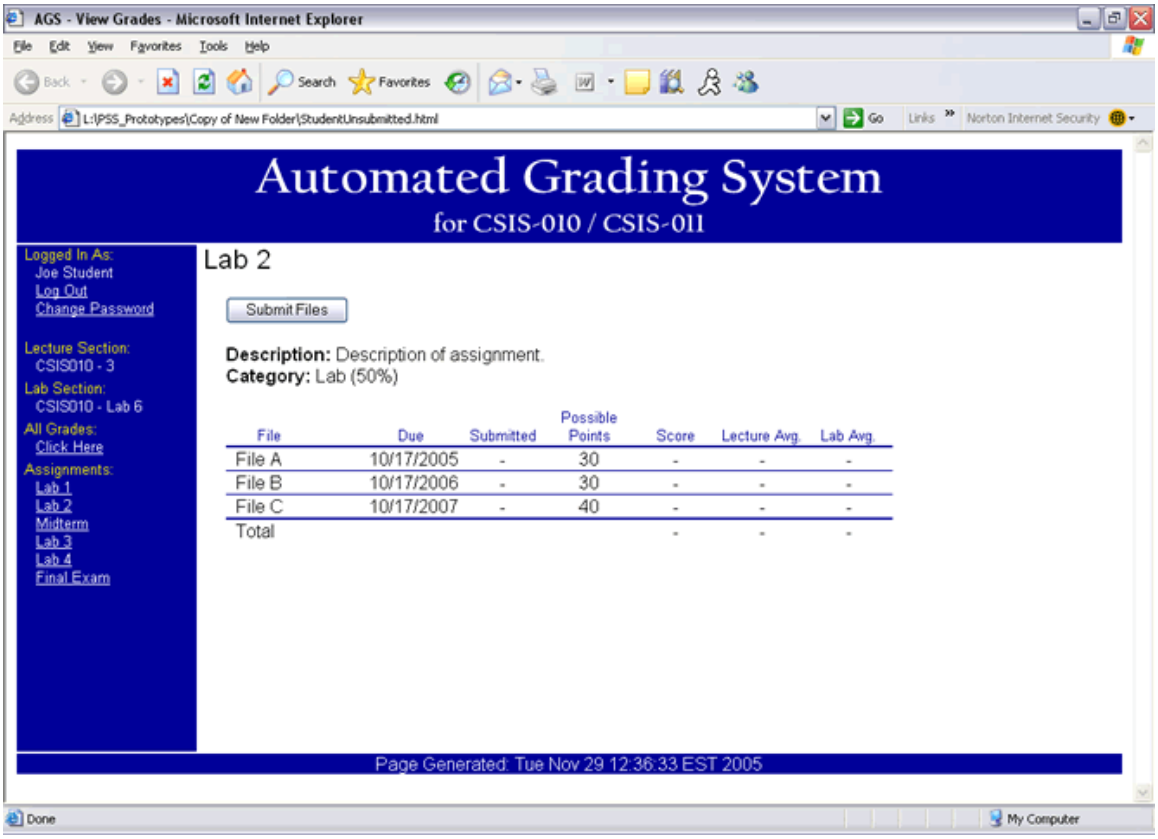
Here we see the student interface where grades for various pieces of work they have done in the course of the semester are populated from the database. In this example the "All Grades" option was selected.

Student – View Graded Assignment Details



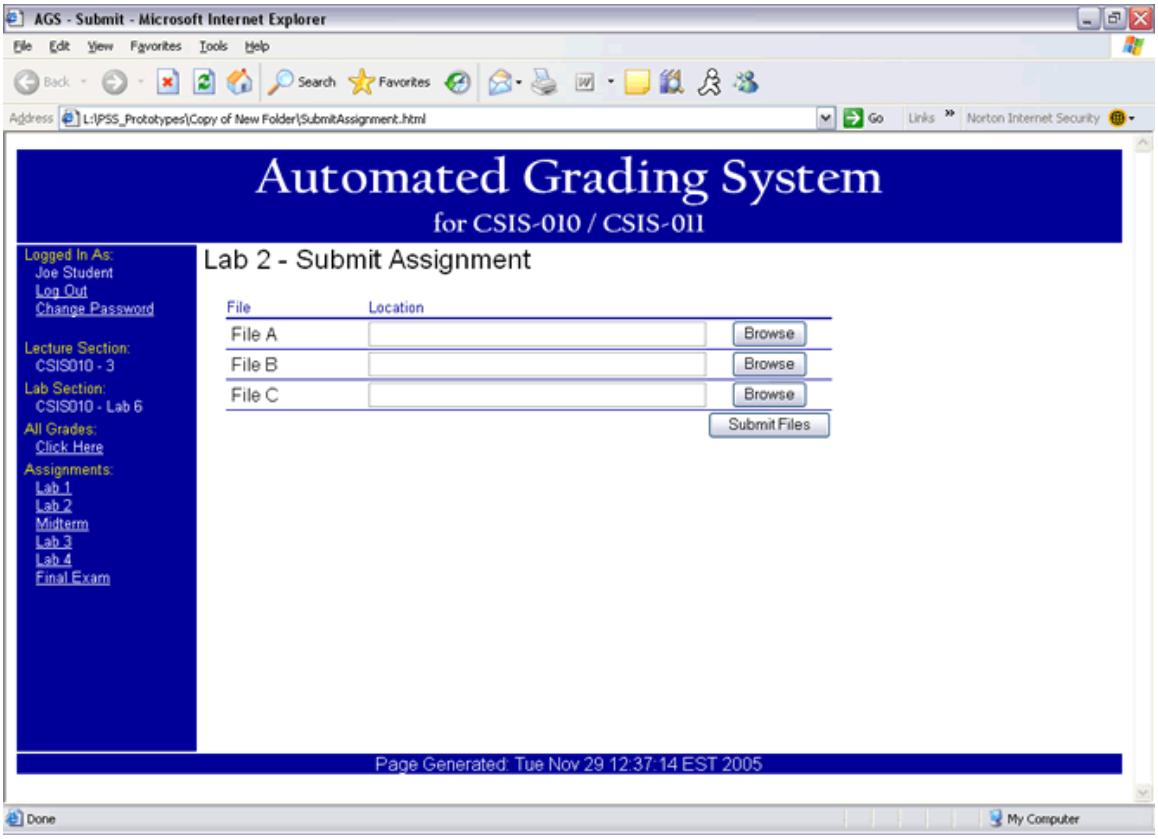
Upon selecting a particular assignment, the student will then be able to view information on the specific files. Here we see that Lab 1 contained three files each with specific scores and weights which correspond to the student's grade for that assignment.

Student – View Ungraded Assignment Details



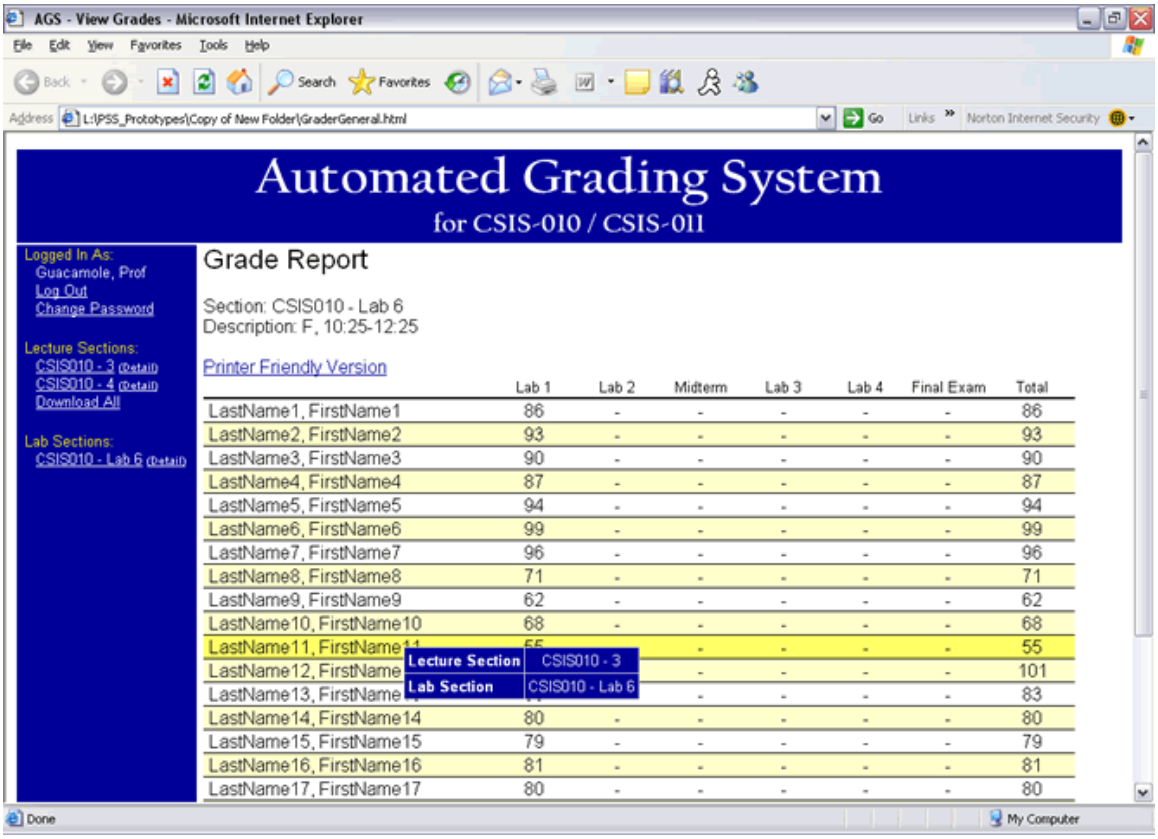
Here the student has the option to view specific grade details for assignments that have not been submitted yet. This allows the student to be aware of the due dates and the weights of the various files.

Student – Submit Assignment Files



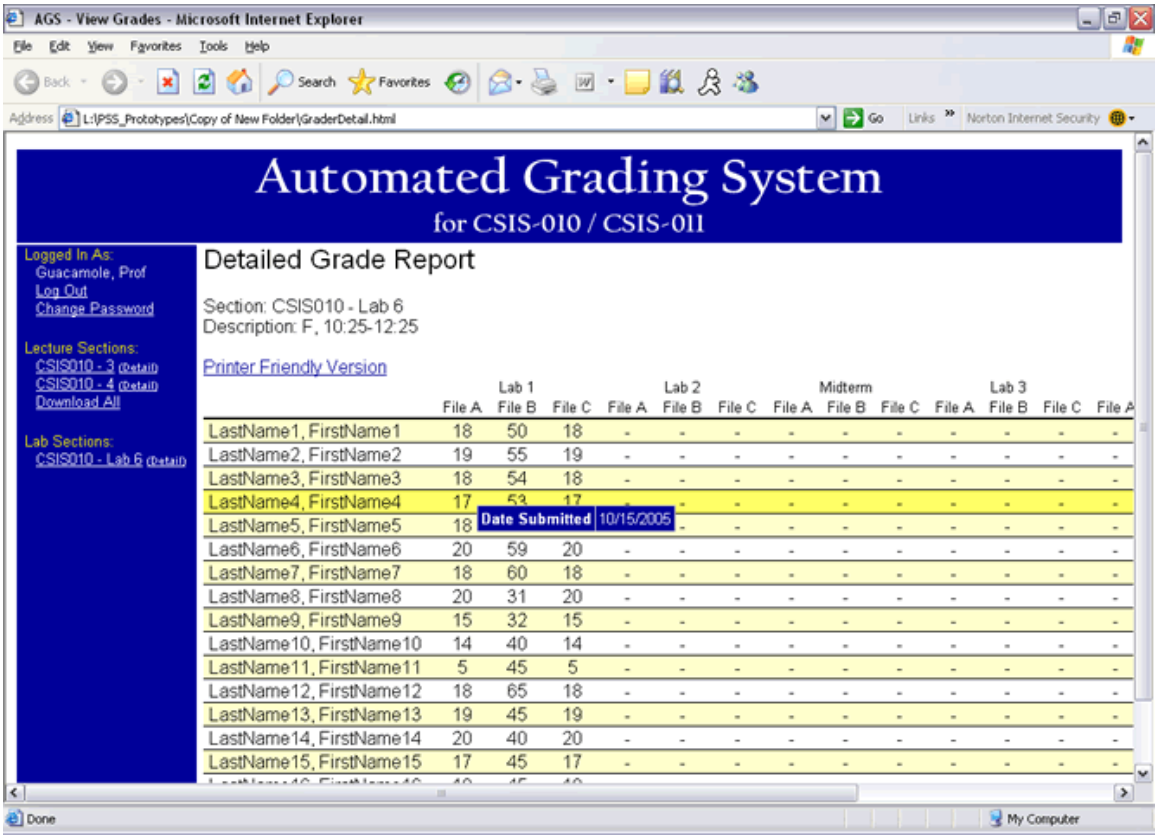
The student submission form is accessed by choosing to submit a particular assignment. The number of files required shows up and the student may browse their system for each one individually before submitting them.

Lab Instructor Landing Page – Lab Section Overview



The Lab Instructor is logged in here and has access to the grades of everyone from their specific course as well as from individual sections.

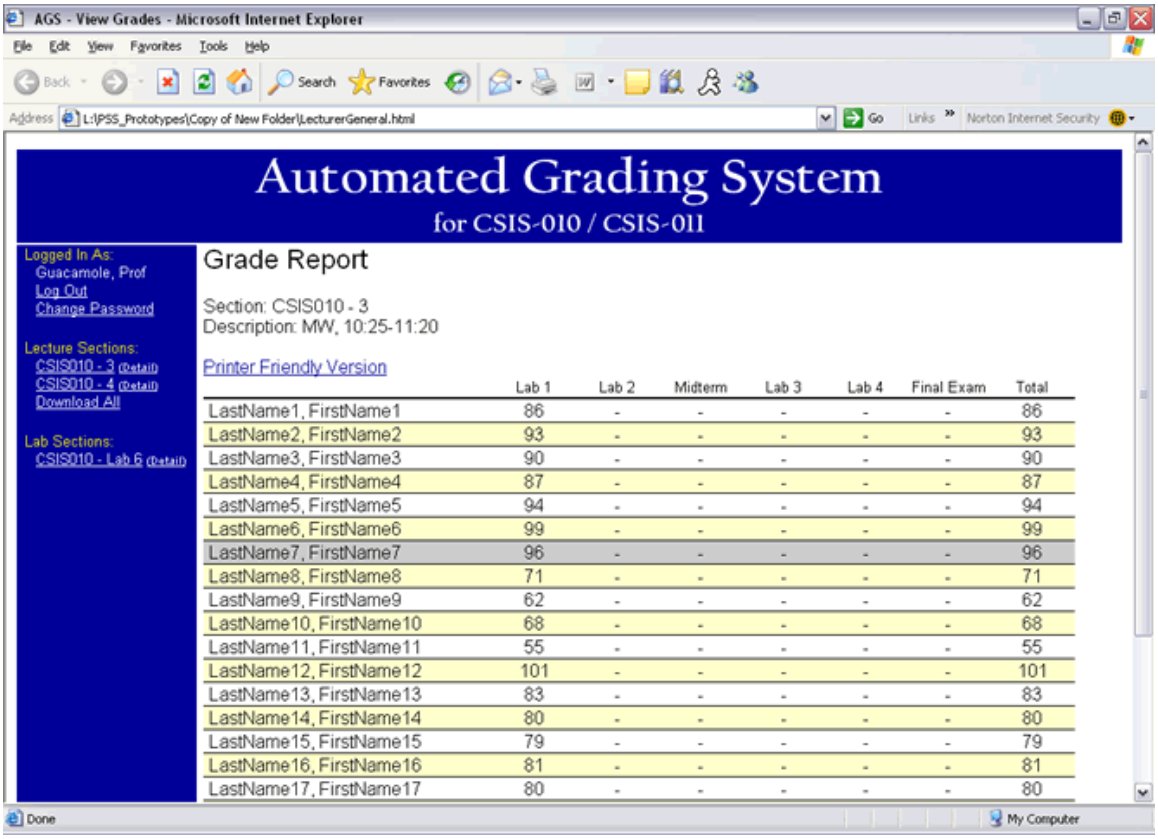
Lab Instructor – Lab Section Detail



	Lab 1			Lab 2			Midterm			Lab 3			
	File A	File B	File C	File A	File B	File C	File A	File B	File C	File A	File B	File C	File A
LastName1, FirstName1	18	50	18	-	-	-	-	-	-	-	-	-	-
LastName2, FirstName2	19	55	19	-	-	-	-	-	-	-	-	-	-
LastName3, FirstName3	18	54	18	-	-	-	-	-	-	-	-	-	-
LastName4, FirstName4	17	53	17	-	-	-	-	-	-	-	-	-	-
LastName5, FirstName5	18			-	-	-	-	-	-	-	-	-	-
LastName6, FirstName6	20	59	20	-	-	-	-	-	-	-	-	-	-
LastName7, FirstName7	18	60	18	-	-	-	-	-	-	-	-	-	-
LastName8, FirstName8	20	31	20	-	-	-	-	-	-	-	-	-	-
LastName9, FirstName9	15	32	15	-	-	-	-	-	-	-	-	-	-
LastName10, FirstName10	14	40	14	-	-	-	-	-	-	-	-	-	-
LastName11, FirstName11	5	45	5	-	-	-	-	-	-	-	-	-	-
LastName12, FirstName12	18	65	18	-	-	-	-	-	-	-	-	-	-
LastName13, FirstName13	19	45	19	-	-	-	-	-	-	-	-	-	-
LastName14, FirstName14	20	40	20	-	-	-	-	-	-	-	-	-	-
LastName15, FirstName15	17	45	17	-	-	-	-	-	-	-	-	-	-

After choosing to see either the entire course or the specific sections in detail the Lab Instructor is presented with this screen. Here individual files are shown as opposed to just the overall grade for the assignment.

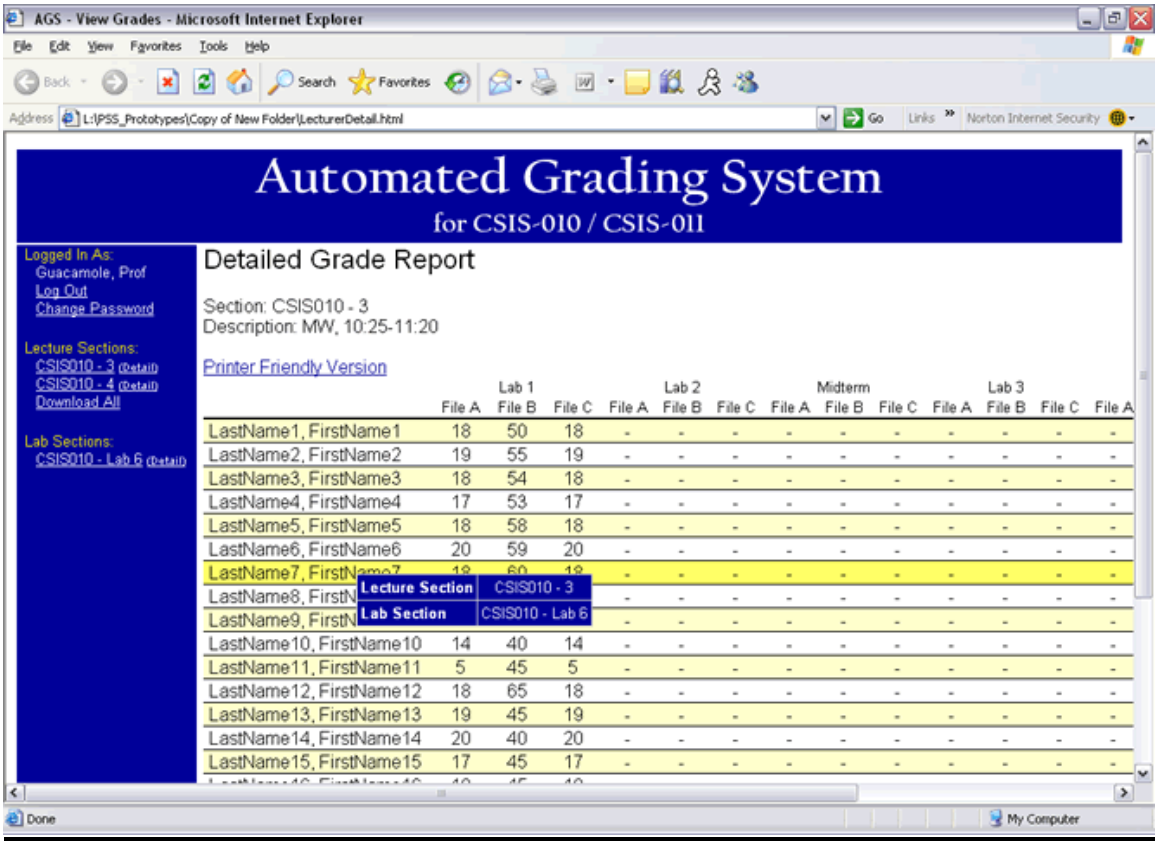
Lecture Instructor Landing Page – Lecture Section Overview



	Lab 1	Lab 2	Midterm	Lab 3	Lab 4	Final Exam	Total
LastName1, FirstName1	86	-	-	-	-	-	86
LastName2, FirstName2	93	-	-	-	-	-	93
LastName3, FirstName3	90	-	-	-	-	-	90
LastName4, FirstName4	87	-	-	-	-	-	87
LastName5, FirstName5	94	-	-	-	-	-	94
LastName6, FirstName6	99	-	-	-	-	-	99
LastName7, FirstName7	96	-	-	-	-	-	96
LastName8, FirstName8	71	-	-	-	-	-	71
LastName9, FirstName9	62	-	-	-	-	-	62
LastName10, FirstName10	68	-	-	-	-	-	68
LastName11, FirstName11	55	-	-	-	-	-	55
LastName12, FirstName12	101	-	-	-	-	-	101
LastName13, FirstName13	83	-	-	-	-	-	83
LastName14, FirstName14	80	-	-	-	-	-	80
LastName15, FirstName15	79	-	-	-	-	-	79
LastName16, FirstName16	81	-	-	-	-	-	81
LastName17, FirstName17	80	-	-	-	-	-	80

Here the Lecture Instructor is logged in and has access to all of the student's grades in their classes or in just specific sections.

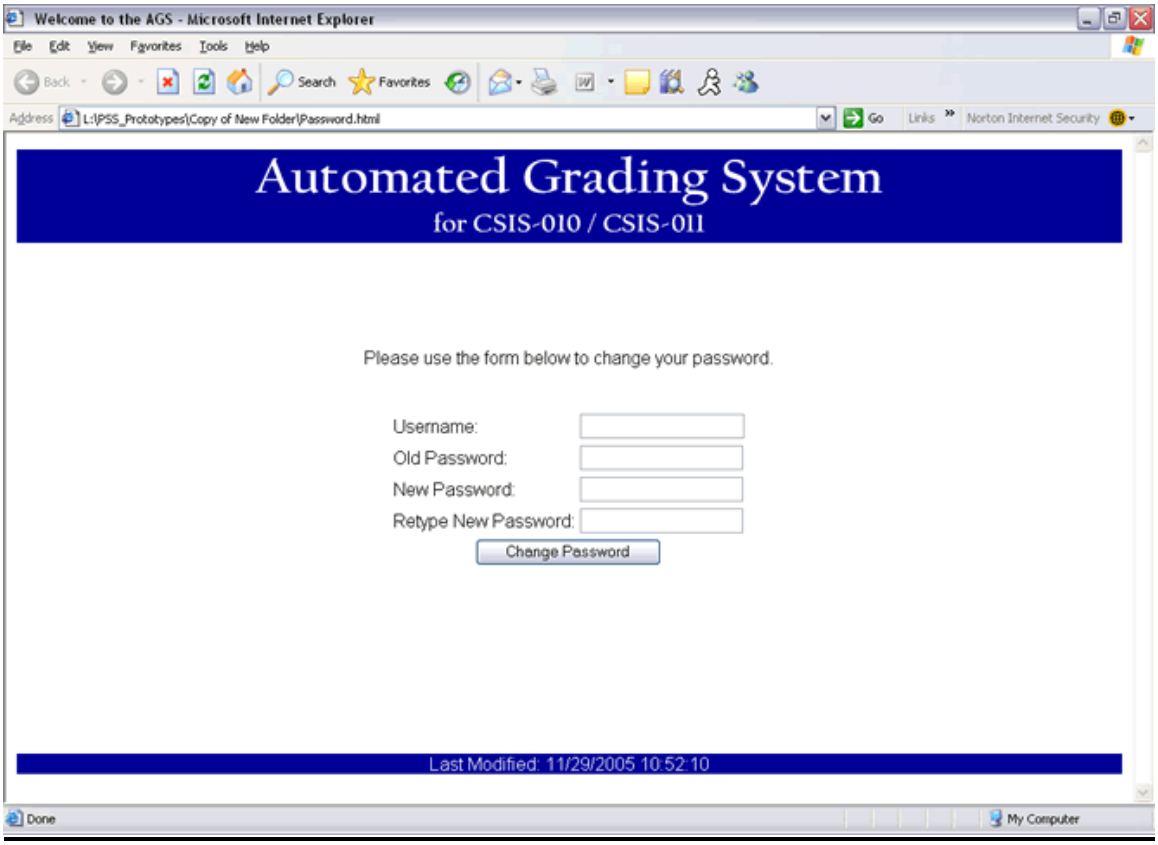
Lecture Instructor – Lecture Section Detail



	Lab 1			Lab 2			Midterm			Lab 3			
	File A	File B	File C	File A	File B	File C	File A	File B	File C	File A	File B	File C	File A
LastName1, FirstName1	18	50	18	-	-	-	-	-	-	-	-	-	-
LastName2, FirstName2	19	55	19	-	-	-	-	-	-	-	-	-	-
LastName3, FirstName3	18	54	18	-	-	-	-	-	-	-	-	-	-
LastName4, FirstName4	17	53	17	-	-	-	-	-	-	-	-	-	-
LastName5, FirstName5	18	58	18	-	-	-	-	-	-	-	-	-	-
LastName6, FirstName6	20	59	20	-	-	-	-	-	-	-	-	-	-
LastName7, FirstName7	18	60	18	-	-	-	-	-	-	-	-	-	-
LastName8, FirstN				-	-	-	-	-	-	-	-	-	-
LastName9, FirstN				-	-	-	-	-	-	-	-	-	-
LastName10, FirstName10	14	40	14	-	-	-	-	-	-	-	-	-	-
LastName11, FirstName11	5	45	5	-	-	-	-	-	-	-	-	-	-
LastName12, FirstName12	18	65	18	-	-	-	-	-	-	-	-	-	-
LastName13, FirstName13	19	45	19	-	-	-	-	-	-	-	-	-	-
LastName14, FirstName14	20	40	20	-	-	-	-	-	-	-	-	-	-
LastName15, FirstName15	17	45	17	-	-	-	-	-	-	-	-	-	-

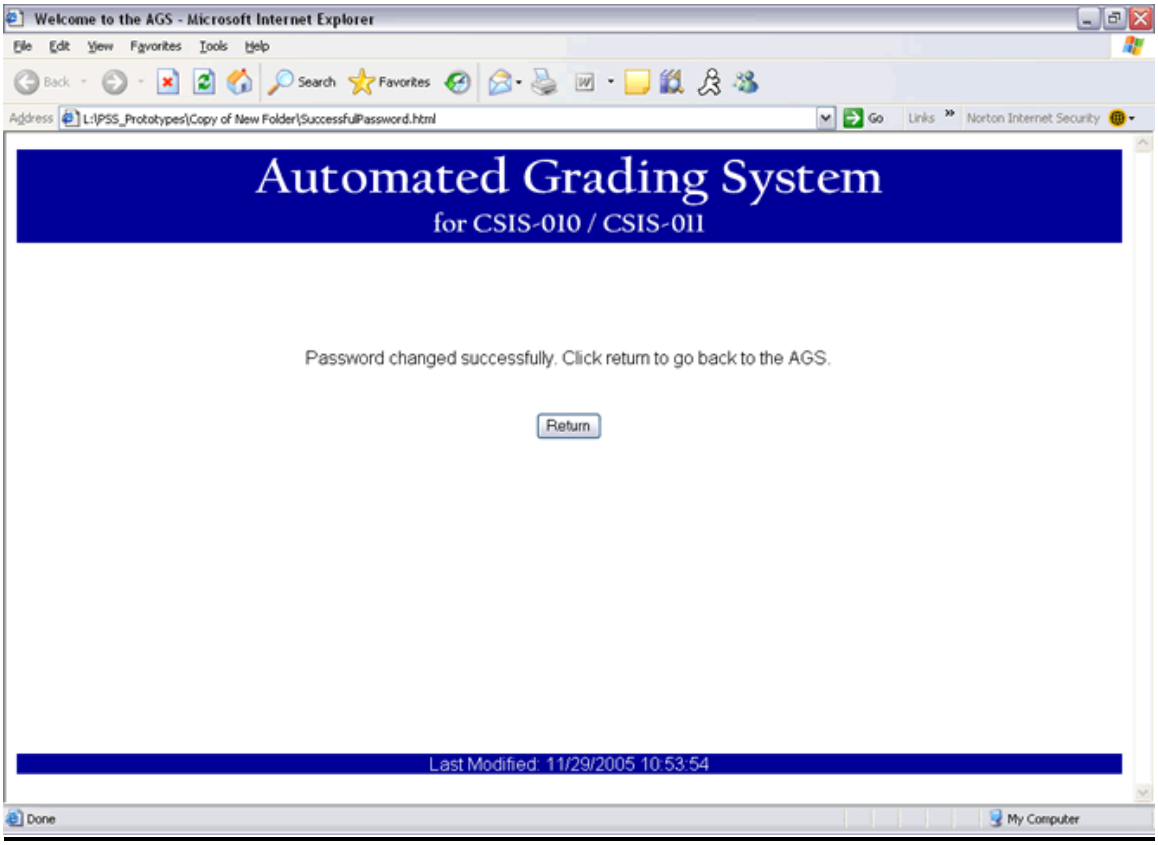
Here the Lecture Instructor has chosen to see detailed information about the students so the individual files as opposed to just the assignment grade are shown.

All Users – Change Password



This is the form for which all users will see upon choosing to change their password from the side menu. A Username, Old Password, and New Password must be submitted to change a user's password in the database.

All Users – Successful Password Changes



If the information entered in the new password form was correct and verified by the database the user is brought to this screen confirming the change.

Course Coordinator Downloadable Report

Course Coordinator Report
CSIS-010

				Lab1		Lab2			Lab3	Lab4	
				80	20	20	30	50	100	50	50
Last Name	**First Name**	**Lecturer**	**Grader**	**File1**	**File2**	**File1**	**File2**	**File3**	**File1**	**File1**	**File2**
Sitterly	Nicholas	Dr. Albright	Dr. Phisher	56%	78%	94%	95%	95%	87%	86%	76%
Navarette	Raymond	Dr. Albright	Dr. Phisher	95%	69%	87%	76%	76%	95%	45%	77%
Strube	Joe	Dr. James	Dr. Mueller	97%	56%	87%	68%	76%	76%	95%	87%
Durham	Patrick	Dr. James	Dr. Phisher	87%	76%	57%	97%	84%	87%	65%	98%
Cave	Whitney	Dr. James	Dr. Phisher	56%	67%	98%	100%	87%	99%	76%	67%
Hall	Christopher	Dr. James	Dr. Mueller	100%	54%	34%	99%	68%	77%	98%	65%
Steffinson	Matthew	Dr. Larry	Dr. Mueller	88%	76%	67%	45%	48%	67%	67%	87%
Falitico	Carl	Dr. Larry	Dr. Alger	86%	57%	38%	96%	98%	45%	56%	98%
Morse	Robert	Dr. Larry	Dr. Alger	87%	67%	56%	100%	78%	65%	45%	23%
Summerfield	Trevor	Dr. Larry	Dr. Alger	85%	100%	84%	99%	86%	76%	56%	43%
Heiser	Travis	Dr. Larry	Dr. Alger	56%	22%	98%	88%	83%	95%	67%	54%
Cane	Kevin	Dr. Larry	Dr. Phisher	76%	96%	78%	78%	95%	0%	78%	88%
Miller	Robert	Dr. Larry	Dr. Mueller	67%	78%	100%	98%	54%	56%	89%	67%
Clark	John	Dr. Melbroy	Dr. Alger	87%	67%	98%	67%	87%	77%	90%	87%
Austin	Ashley	Dr. Melbroy	Dr. Mueller	89%	87%	78%	98%	97%	43%	78%	56%
Vaughan	Megan	Dr. Melbroy	Dr. Mueller	77%	98%	98%	56%	76%	56%	98%	76%
Volpi	Hannah	Dr. Melbroy	Dr. Mueller	77%	67%	99%	87%	67%	95%	76%	78%
Petty	Brenden	Dr. Melbroy	Dr. Phisher	67%	87%	89%	77%	88%	87%	66%	9%
Nellis	Jennifer	Dr. Melbroy	Dr. Phisher	87%	98%	87%	89%	77%	95%	56%	22%
Peck	Scott	Dr. Melbroy	Dr. Alger	87%	99%	88%	67%	66%	98%	45%	98%

Here we have the downloadable report which will be presented to the Course Coordinator, displaying all of the grade information for the students registered in the courses.

Lecture Instructor Downloadable Report

Lecture Instructor Report
Dr. Melbroy
Lecture Section:CSIS 010-01
Lecture Description:MWF 11:30-12:25pm

First Name	Last Name	Lab Section	Lab1	Lab2	Lab3	Lab4	Lab5	Avg
Peck	Scott	CSIS 010-8H	87%	99%	88%	67%	66%	81.4%
Clark	John	CSIS 010-8H	87%	67%	98%	67%	87%	81.2%
Austin	Ashley	CSIS 010-9H	89%	87%	78%	98%	97%	89.8%
Vaughan	Megan	CSIS 010-9H	77%	98%	98%	56%	76%	81%
Volpi	Hannah	CSIS 010-9H	77%	67%	99%	87%	67%	79.4%
Petty	Brenden	CSIS 010-10H	67%	87%	89%	77%	88%	81.6%
Nellis	Jennifer	CSIS 010-10H	87%	98%	87%	89%	77%	87.6%

Here is the report for which the Lecture Instructor will have access to download which will provide grade information for everyone in their classes.

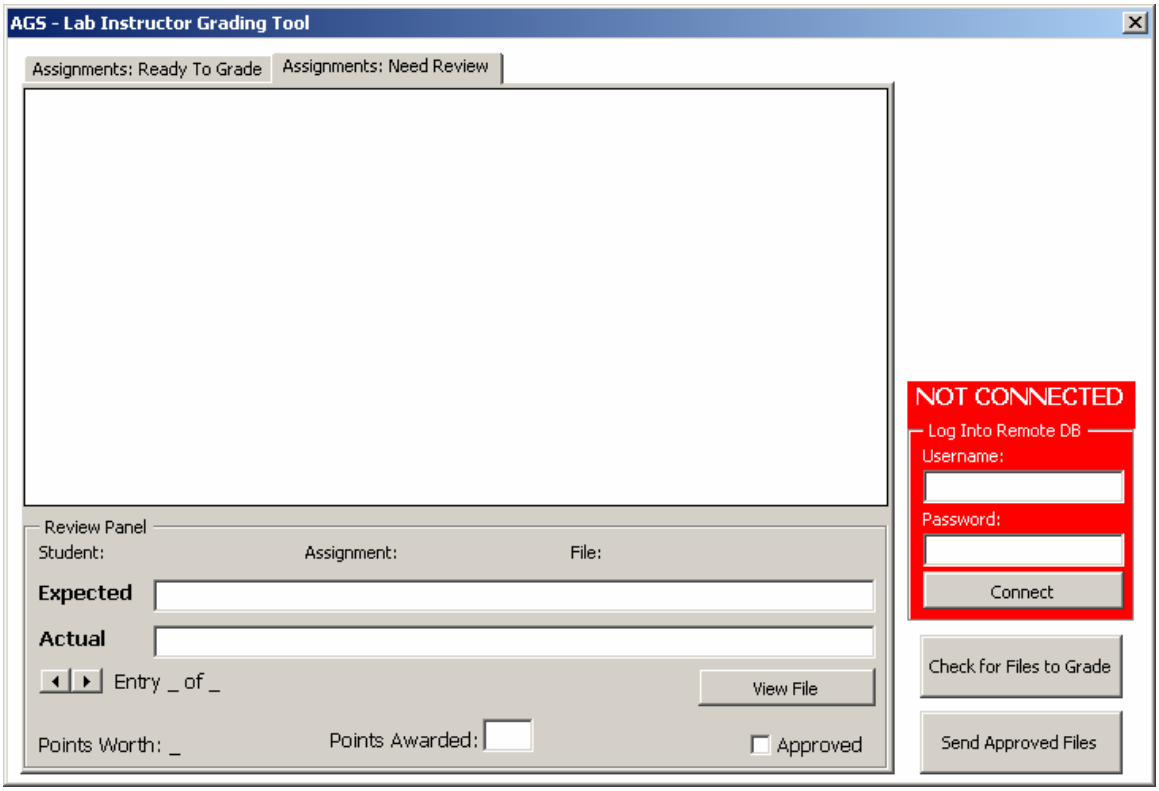
Lab Instructor Downloadable Report

Lab Instructor Report
Dr. Phisher
Course:CSIS 010
Lab Description:T 1:30-3:30pm

Last Name	First Name	Lecture Section	Lab1	Lab2	Lab3	Lab4	Lab5	Avg
Sitterly	Nicholas	CSIS 010-01	56%	78%	94%	95%	95%	83.6%
Navarette	Raymond	CSIS 010-01	95%	69%	87%	76%	76%	80.6%
Durham	Patrick	CSIS 010-02	87%	76%	57%	97%	84%	97%
Cave	Whitney	CSIS 010-02	56%	67%	98%	100%	87%	81.6%
Cane	Kevin	CSIS 010-03	76%	96%	78%	78%	95%	84.6%
Petty	Brenden	CSIS 010-03	67%	87%	89%	77%	88%	81.6%
Nellis	Jennifer	CSIS 010-03	87%	98%	87%	89%	77%	87.6%

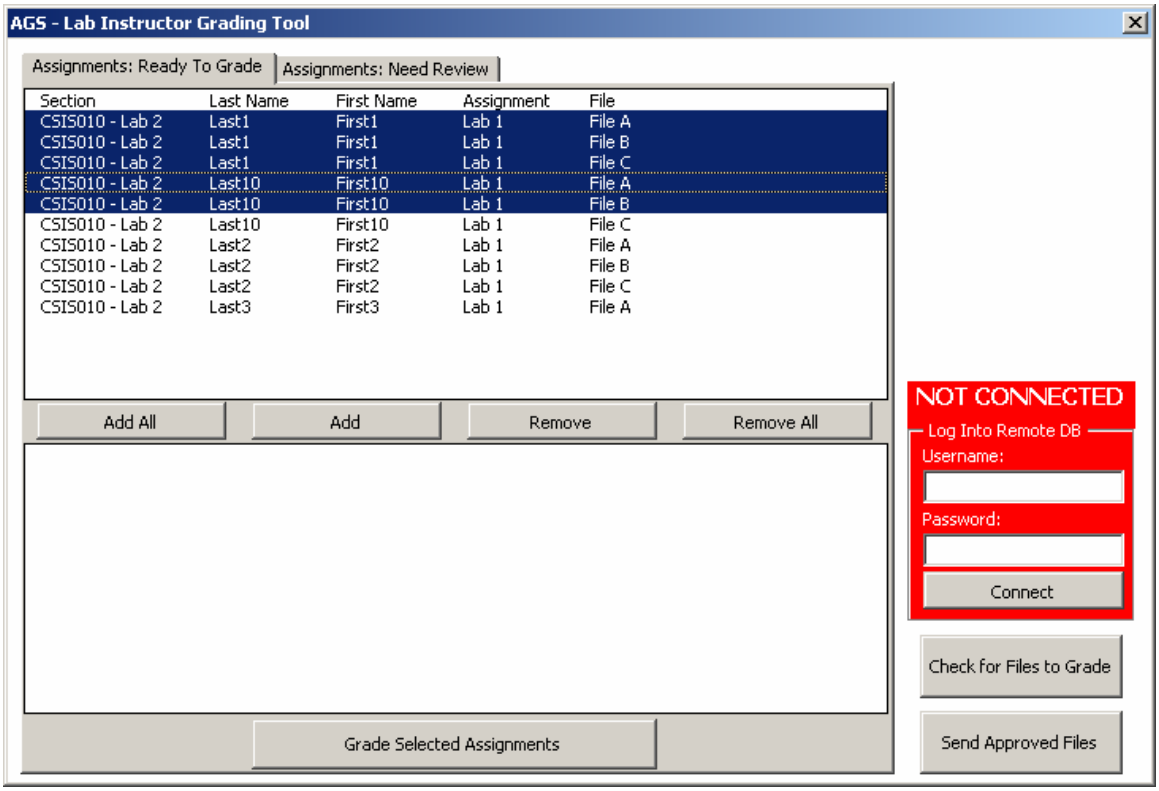
Here is the report for which the Lab Instructor will have access to download which will provide grade information for everyone in their labs.

Lab Instructor – Grading Software



Here we have a view of the grading system software. The Lab Instructor uses this software to query the database and initialize grading.

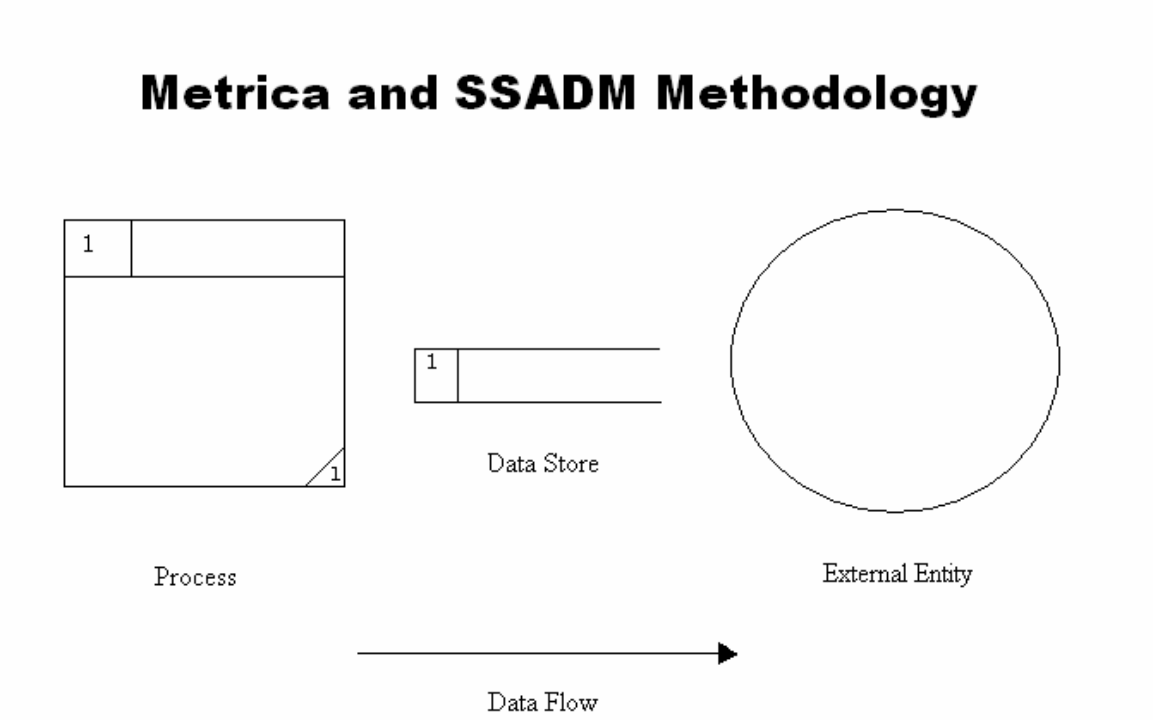
Lab Instructor – Lab Section Detail



The Lab Instructor uses the red login box shown here to connect to the system database. Once connected, the database is queried and the results are presented in the window.

Section 1.2: Detailed Data Flow Diagrams

A data flow diagram (DFD) is graphic representation of the "flow" of data through Sources or processes. More generally, a data flow diagram is used for the visualization of data processing. It illustrates the processes, data stores, external entities, data flows in a system and the relationships between these things.



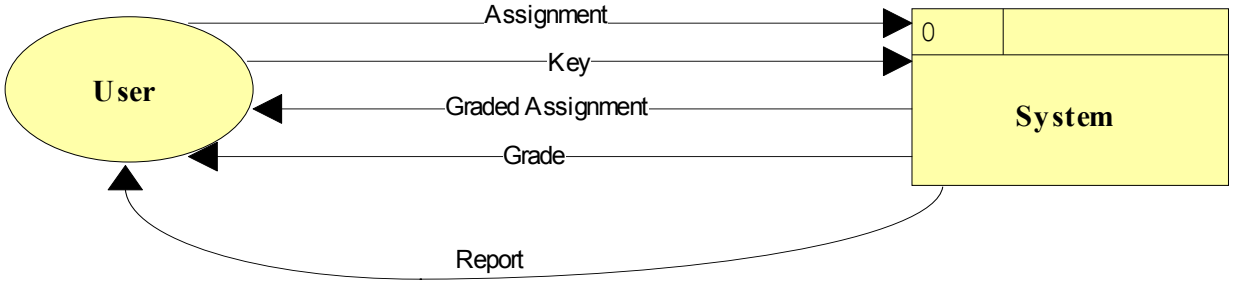
A **Process** signifies that something is happening to transform data. Processes have numbers, and those numbers reflect the decomposition hierarchy.

A **Data Store** is a place where data is kept while it is not actively being processed. Data can only enter a data store from a process and can only leave a data store to a process.

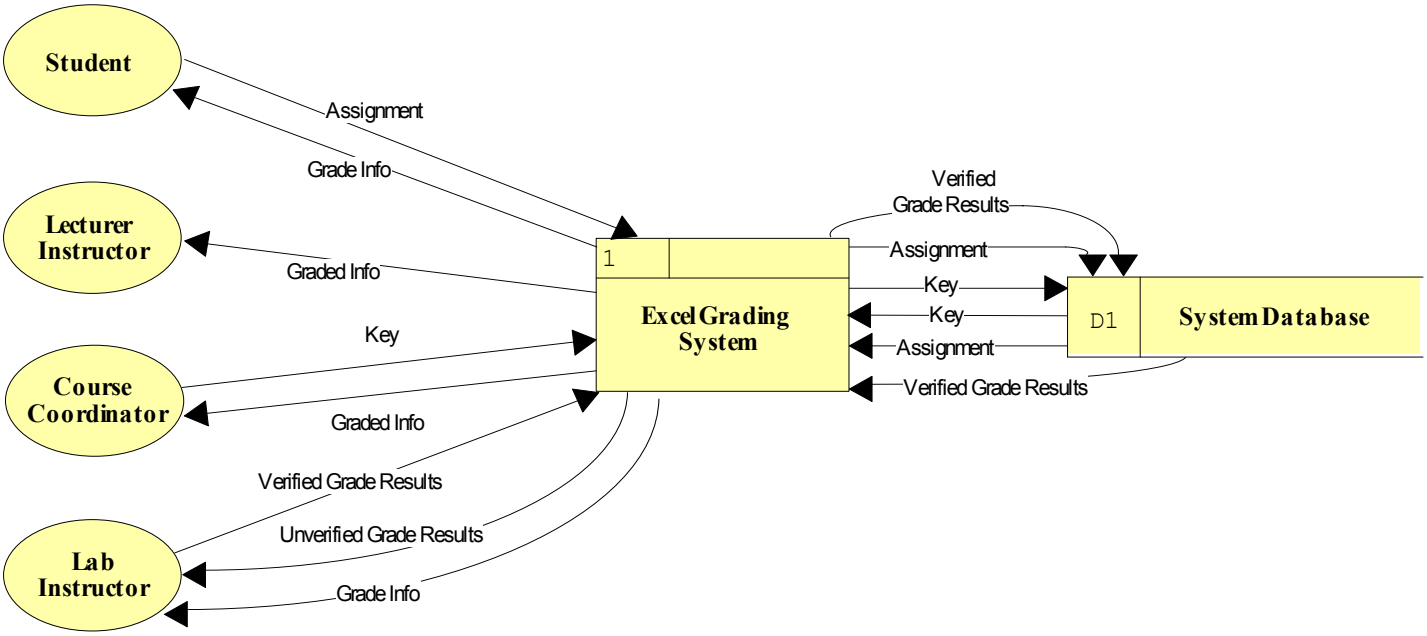
An **External Entity** is something outside the boundary of the system you are modeling that either sends data to your system or receives data from it. External entities are optional.

A **Data Flow** depicts the movement of one to many items of data. Data can enter a system from the outside.

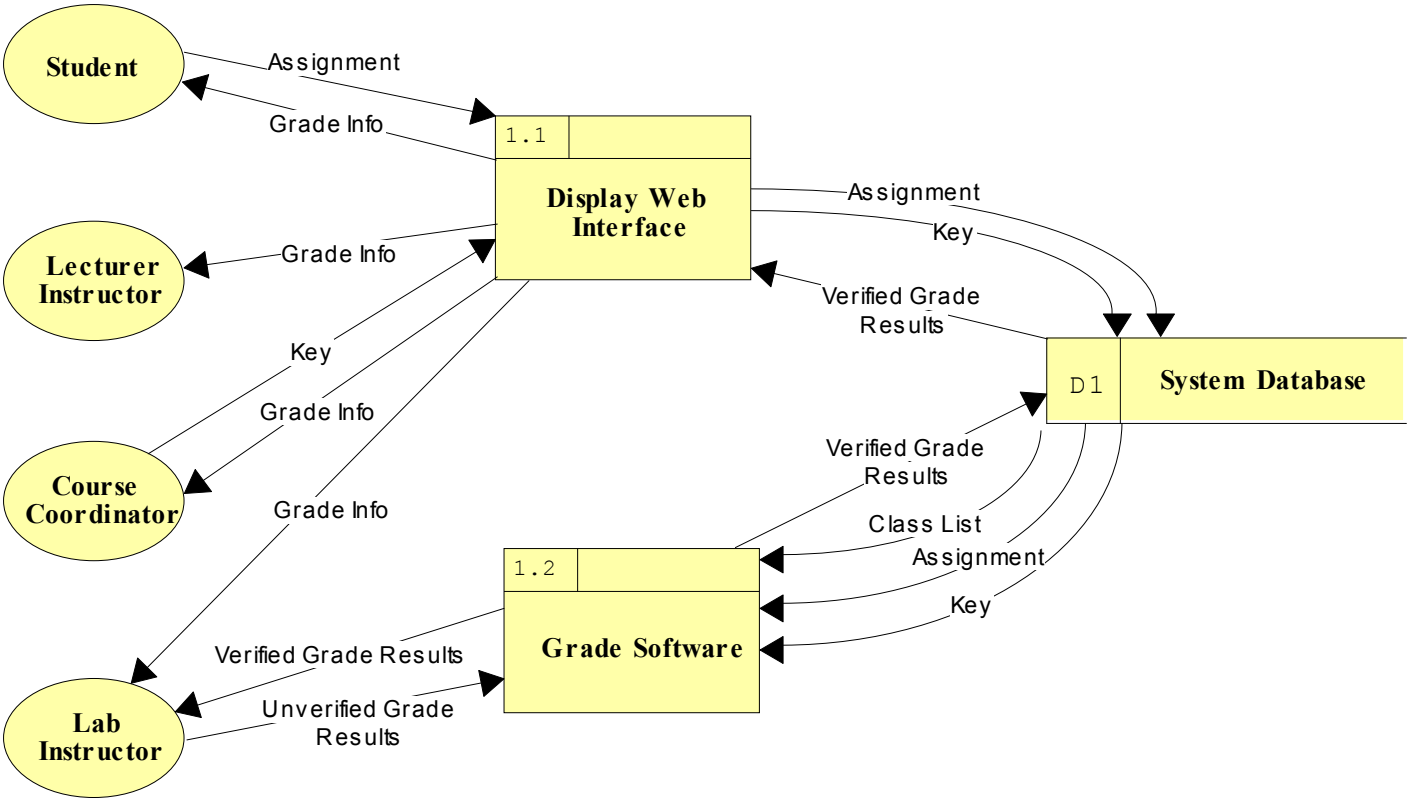
Context Diagram:



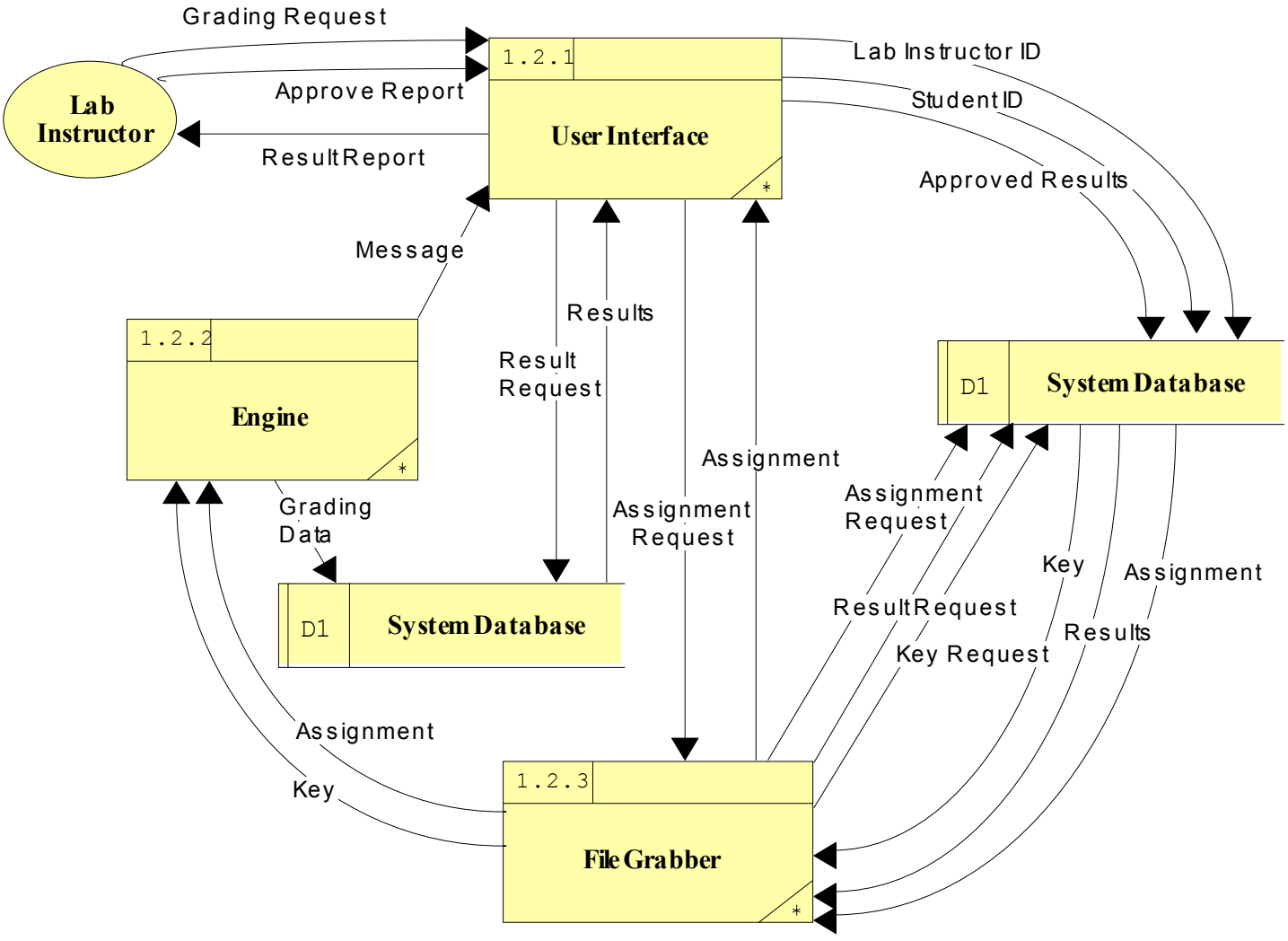
Level 1 Diagram:



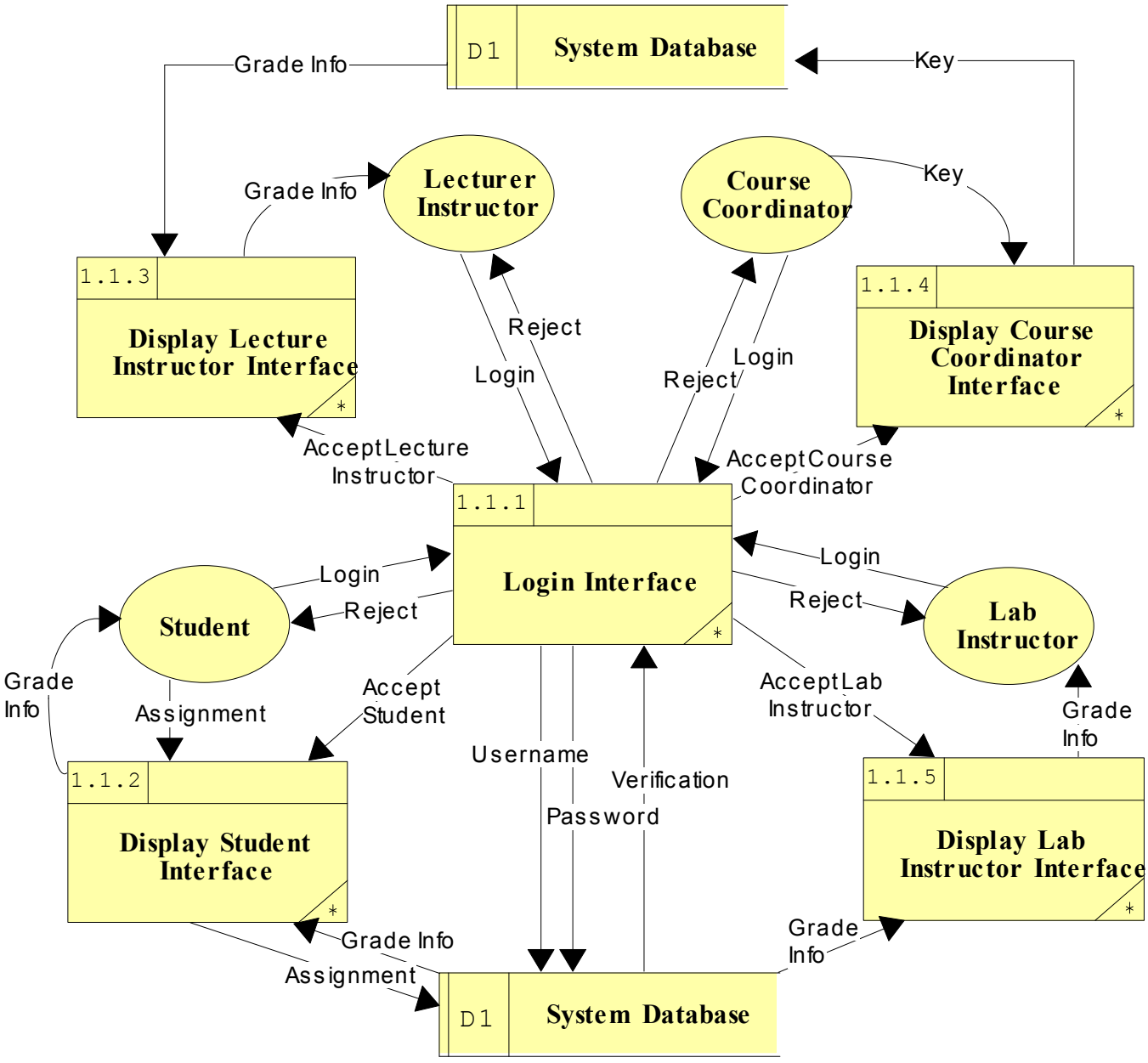
Level 2 Diagram:



Level 3 Diagram: Decomposition of Grade Software



Level 3 Diagram: Decomposition of Display Web Interface



Section 1.3: Logical Data Dictionary

Location – Context Diagram:

Assignment Data Flow

Description:

Lab assignments can be submitted to the system.

Source: User (Source/Sink)

Dest: System (Process)

Grade Data Flow

Description:

The final Grade can be viewed by the users.

Source: System (Process)

Dest: User (Source/Sink)

Graded Assignment Data Flow

Description:

Graded Assignment can be viewed by the users.

Source: System (Process)

Dest: User (Source/Sink)

Key Data Flow

Description:

Grading Key can be submitted to the system.

Source: User (Source/Sink)

Dest: System (Process)

Report Data Flow

Description:

Reports can be viewed by users.

Source: System (Process)

Dest: User (Source/Sink)

System Process

Description:

Allows for grading of lab assignments and viewing of student grades.

Input Flows:

Assignment
Key

Output Flows:

Graded Assignment
Grade
Report

User Source/Sink

Description:

Represents the users of the system; Student, Lecture Instructor, Course Coordinator, and Lab Instructor.

Input Flows:

Graded Assignment
Grade
Report

Output Flows:

Assignment
Key

Location – Level 1 Diagram:

Assignment Data Flow

Description:

Student submits the lab assignment to the system for grading.

Source: 1) Student (Source/Sink)
2) Excel Grading System (Process)
3) System Database (Data Store)

Dest: 1) Excel Grading System (Process)
2) System Database (Data Store)
3) Excel Grading System (Process)

Course Coordinator Source/Sink

Description:

The Course Coordinator is responsible for creating user accounts and for submitting the key and template files to be used for grading each lab assignment.

Input Flows:

Grade Information

Output Flows:

Key

Excel Grading System Process

Description:

Allows for submission of lab assignments, submission of key files, grading of lab assignments, and viewing of student grades.

Input Flows:

Assignment
Key
Verified Grade Results

Output Flows:

Assignment
Grade Info
Key
Unverified Grade Results
Verified Grade Results

Grade Info Data Flow

Description:

The Excel Grading System returns the grade information for viewing.

Source: Excel Grading System (Process)

Dest: Student (Source/Sink)
Lecture Instructor (Source/Sink)
Course Coordinator (Source/Sink)
Lab Instructor (Source/Sink)

Key Data Flow

Description:

Key is submitted to the system to serve as criteria for grading the lab assignments.

Source: 1) Course Coordinator (Source/Sink)
2) Excel Grading System (Process)
3) System Database (Data Store)

Dest: 1) Excel Grading System (Process)
2) System Database (Data Store)
3) Excel Grading System (Process)

Lab Instructor Source/Sink

Description:

The Lab Instructor teaches lab sections and is in charge of grading their students' labs. The Lab Instructor can also view their students' grades.

Input Flows:

Grade Information
Unverified Grade Results

Output Flows:

Verified Grade Results

Lecture Instructor Source/Sink

Description:

The Lecture Instructor teaches one or more lecture sections and can view the grades of all students enrolled in their lecture sections.

Input Flows:

Grade Information

Student Source/Sink

Description:

Student that is enrolled in a lab section.

Input Flows:

Grade Information

Output Flows:

Assignment

System DB Data Store

Description:

Data store; Database containing software usernames, software passwords, submitted lab files, graded lab files, grading key, and the grading template.

Input Flows:

Assignment
Verified Grade Results
Key

Output Flows:

Assignment
Verified Grade Results
Key

Unverified Grade Results Data Flow

Description:

The Unverified Grade Results display what the Excel Grading System marked incorrect on each student's lab. The Unverified Grade Results can be overridden by the Lab Instructor.

Source: Excel Grading System (Process)

Dest: Lab Instructor (Source/Sink)

Verified Grade Results Data Flow

Description:

The Verified Grade Results are the final graded lab assignment for the student.

Source: 1) Lab Instructor (Source/Sink)
2) Excel Grading System (Process)
3) System Database (Data Store)

Dest: 1) Excel Grading System (Process)
2) System Database (Data Store)
3) Excel Grading System (Process)

Location – Level 2 Diagram:

Assignment Data Flow

Description:

Student submits the lab assignment to the system for grading.

Source: 1) Student (Source/Sink)
2) Display Web Interface (Process)
3) System Database (Data Store)

Dest: 1) Display Web Interface (Process)
2) System Database (Data Store)
3) Grade Software (Process)

Class List Data Flow

Description:

List of students in each lab section.

Source: System Database (Data Store)

Dest: Grade Software (Process)

Course Coordinator Source/Sink

Description:

The Course Coordinator is responsible for creating user accounts and for submitting the key and template files to be used for grading each lab assignment.

Input Flows:

Grade Information

Output Flows:

Key

Display Web Interface Process

Description:

Deals with user registration, user permission verification, submission of files, and access to reports, grades, and assignments.

Input Flows:

Verified Grade Results
Assignment
Key

Output Flows:

Assignment
Grade Info
Key

Grade Info Data Flow

Description:

The Excel Grading System returns the grade information for viewing.

Source: Excel Grading System (Process)

Dest: Course Coordinator (Source/Sink)
Lab Instructor (Source/Sink)
Lecture Instructor (Source/Sink)
Student (Source/Sink)

Grade Software Process

Description:

Handles the grading of lab assignments.

Input Flows:

Assignment
Class List
Key
Verified Grade Results

Output Flows:

Unverified Grade Results
Verified Grade Results

Key Data Flow

Description:

Key is submitted to the system to serve as criteria for grading the lab assignments.

Source: 1) Course Coordinator (Source/Sink)
2) Display Web Interface (Process)
3) System Database (Data Store)

Dest: 1) Display Web Interface (Process)
2) System Database (Data Store)
3) Grade Software (Process)

Lab Instructor Source/Sink

Description:

The Lab Instructor teaches lab sections and is in charge of grading their students' labs. The Lab Instructor can also view their students' grades.

Input Flows:

Grade Information
Unverified Grade Information

Output Flows:

Verified Grade Information

Lecture Instructor Source/Sink

Description:

The Lecture Instructor teaches one or more lecture sections and can view the grades of all students enrolled in their lecture sections.

Input Flows:

Grade Information

Results Data Flow

Description:

Grade Results generated by the Grade Software.

Source: Grade Software (Process)

Dest: System Database (Data Store)

Student Source/Sink

Description:

Student that is enrolled in a lab section.

Input Flows:

Grade Information

Output Flows:

Assignment

System DB Data Store

Description:

Data store; Database containing software usernames, software passwords, submitted lab files, graded lab files, grading key, and the grading template.

Input Flows:

Assignment
Verified Grade Results
Key

Output Flows:

Assignment
Verified Grade Results
Key

Unverified Grade Results Data Flow

Description:

The Unverified Grade Results display what the Excel Grading System marked incorrect on each student's lab. The Unverified Grade Results can be overridden by the Lab Instructor.

Source: Grade Software (Process)
Dest: Lab Instructor (Source/Sink)

Verified Grade Results Data Flow

Description:

The Verified Grade Results are the final graded lab assignment for the student.

Source: 1) Lab Instructor (Source/Sink)
2) Excel Grading System (Process)
3) System Database (Data Store)

Dest: 1) Excel Grading System (Process)
2) System Database (Data Store)
3) Display Web Interface (Process)

Location – Level 3 Diagram - *Decomposition of Display Web Interface*

Accept Course Coordinator Data Flow

Description:

If a valid Course Coordinator login is entered, user is taken to Display Course Coordinator Interface

Source: Login Interface (Process)
Dest: Display Course Coordinator Interface (Process)

Accept Lab Instructor Data Flow

Description:

If a valid Lab Instructor login is entered, user is taken to Display Lab Instructor Interface

Source: Login Interface (Process)
Dest: Display Lab Instructor Interface (Process)

Accept Lecturer Data Flow

Description:

If a valid Lecturer login is entered, user is taken to Display Lecturer Interface

Source: Login Interface (Process)

Dest: Display Lecturer Interface (Process)

Accept Student Data Flow

Description:

If a valid Student login is entered, user is taken to Display Student Interface

Source: Login Interface (Process)

Dest: Display Student Interface (Process)

Assignment Data Flow

Description:

Student submits assignment through the Display Student Interface, which in turn sends the assignment to the System Database

Source: Student (Source)

Dest: Display Student Interface (Process)
System Database (Data Store)

Course Coordinator Source/Sink

Description:

The Course Coordinator is responsible for creating user accounts and for submitting the key and template files to be used for grading each lab assignment.

Input Flows:

Grade Information

Output Flows:

Key

Display Course Coordinator Interface Process

Description:

Interface that gives the Course Coordinator all the capabilites that they are allowed

Input Flows:

Key
Accept Course Coordinator

Output Flows:

Key

Display Lab Instructor Interface Process

Description:

Interface that gives the Lab Instructor all the capabilities that they are allowed

Input Flows:

Accept Lab Instructor
Grade Info

Output Flows:

Grade Info

Display Lecturer Interface Process

Description:

Interface that gives the Lecturer all the capabilities that they are allowed

Input Flows:

Accept Lecturer
Grade Info

Output Flows:

Grade Info

Display Student Interface Process

Description:

Interface that gives the Student all the capabilities that they are allowed

Input Flows:

Assignment
Accept Student
Grade Info

Output Flows:

Grade Info
Assignment

Grade Info Data Flow

Description:

The System Database returns the grade information for viewing.

Source: System Database (Data Store)

Dest: Display Lab Instructor Interface (Source)
Display Lecture Interface (Source)
Display Student Interface (Source)
Lab Instructor (Process)
Lecturer (Process)
Student (Process)

Key Data Flow

Description:

Key is entered by the Course Coordinator, through the Display Course Coordinator Interface, and entered into the System Database

Source: Course Coordinator (Source)

Dest: Display Course Coordinator Interface (Process)

Lab Instructor Source/Sink

Description:

The Lab Instructor teaches lab sections and is in charge of grading their students' labs. The Lab Instructor can also view their students' grades.

Input Flows:

Grade Information
Unverified Grade Results

Output Flows:

Verified Grade Results

Lecture Instructor Source/Sink

Description:

The Lecture Instructor teaches one or more lecture sections and can view the grades of all students enrolled in their lecture sections.

Input Flows:

Grade Information

Login Data Flow

Description:

User enters a login, it is then accepted or rejected by the Login Interface Process

Source: Lecturer Instructor (Source)
Course Coordinator (Source)
Student (Source)
Lab Instructor (Source)

Dest: Login Interface (Process)

Password Data Flow

Description:

Login sends a Username and Password to the System Database for validation

Source: Login Interface (Process)

Dest: System Database (Data Store)

Reject Data Flow

Description:

If an incorrect Username and Password are entered, this user will be rejected from the System

Source: Login Interface (Process)

Dest: Lecturer Instructor (Source)
Course Coordinator (Source)
Student (Source)
Lab Instructor (Source)

Student Source/Sink

Description:

Student that is enrolled in a lab section.

Input Flows:

Grade Information

Output Flows:

Assignment

System Database Data Store

Description:

Data Store that holds, Assignments, Grade Info, Usernames, Passwords, Keys

Input Flows:

Assignments
Username
Password
Key

Output Flows:

Grade Info
Verification

Username Data Flow

Description:

Login sends a Username and Password to the System Database for validation

Source: Login Interface (Process)

Dest: System Database (Data Store)

Verification Data Flow

Description:

When a Username and Password are entered, the System Database will check to see if they are valid, if so the Login will be verified

Source: System Database (Data Store)

Dest: Login Interface (Process)

Location – Level 3 Diagram - *Decomposition of Grade Software*

Approve Report Data Flow

Description:

When a Grade Report is returned to the Lab Instructor they must validate its contents

Source: Lab Instructor (Source)

Dest: User Interface (Process)

Approved Results Data Flow

Description:

Grading results are sent to the Lab Instructor to be approved, after they are approved they are sent to the System Database

Source: User Interface (Process)

Dest: System Database (Data Store)

Assignment Data Flow

Description:

User Interface requests an Assignment from the File Grabber Process

Source: User Interface (Process)

Dest: File Grabber(Process)

Assignment Data Flow

Description:

File Grabber Process pulls the assignment from the System Database

Source: File Grabber (Process)

Dest: System Database (Data Store)

Assignment Request Data Flow

Description:

User requests an assignment to be graded

Source: User Interface (Process)

Dest: File Grabber (Process)

Engine Process

Description:

Process that does the actual grading of assignments, based on the assignment entered and the key for that assignment

Input Flows:

Assignment

Key

Output Flows:

Grading Data

Message

File Grabber Process

Description:

Process that gets the assignments that are to be graded from the System Database

Input Flows:

Assignment Request
Key
Results
Assignment

Output Flows:

Assignment
Key
Assignment Request
Result Request
Key Request

Grading Data Data Flow

Description:

After the grading has been completed, the Engine gives all the Grade Data to the System Database

Source: Engine (Process)
Dest: System Database (Data Store)

Grading Request Data Flow

Description:

The Lab Instructor requests to grade a variable number of assignments to be graded

Source: Lab Instructor (Source)
Dest: User Interface (Process)

Key Data Flow

Description:

Upon a request from the File Grabber, the System Database sends the Key

Source: System Database (Data Store)
Dest: File Grabber (Process)

Key Request Data Flow

Description:

File Grabber process sends a request to the System Database for the Key

Source: File Grabber (Process)
Dest: System Database (Data Store)

Lab Instructor ID Data Flow

Description:

A Lab Instructor ID can be entered to find a list of students in the Lab Instructors lab section(s)

Source: User Interface (Process)

Dest: System Database (Data Store)

Lab Instructor Source

Description:

Any Lab Instructor has the ability to initiate the grading process

Input Flows:

Result Report

Output Flows:

Grading Request

Approved Report

Message Data Flow

Description:

A message is sent to the interface that alerts Lab Instructor users that grades are completed and are waiting validation

Source: Engine (Process)

Dest: User Interface (Process)

Results Data Flow

Description:

Grading results are sent to the File Grabber upon request

Source: System Database (Data Store)

Dest: File Grabber (Process)

Result Report Data Flow

Description:

A report containing all the grade results is sent to the Lab Instructor to be validated

Source: User Interface (Process)

Dest: Lab Instructor (Source)

Result Request Data Flow

Description:

File Grabber process sends a request to the System Database for the grading results

Source: File Grabber (Process)

Dest: System Database: (Data Store)

Student ID Data Flow

Description:

Student ID can be entered to do a search for a specific student

Source: User Interface (Process)

Dest: System Database (Data Store)

System Database Data Store

Description:

Data Store that holds, Assignments, Grade Info, Usernames, Passwords, Keys

Input Flows:

Student ID
Lab Instructor ID
Approved Results
Assignment Request
Result Request
Key Request
Grading Data

Output Flows:

Assignment
Key
Results

User Interface Process

Description:

Interface that allows the Lab Instructor the capabilites to search for, and grade specific lab assignments

Input Flows:

Grading Request
Approved Report
Message
Results
Assignment

Output Flows:

Student ID
Lab Instructor ID
Approved Results
Result Request
Assignment Request
Result Report

Section 1.4: Logical Data Stores

The following is a list of tables, their elements, and the modules for which they will be used within the Excel Grading System. Field corresponds to the variable name the elements are expected to have within that actual database.

StudentUser Table

Modules:

Web Interface User Login, Grading Application User Login.

field: username
type: varchar size: 20
*must be alphanumeric, being with character and be <= 20 varchars
field: password
type: varchar size: 255 *size large for encryption
*must be alphanumber and be <=20 varchars
field: firstname
type: char size: 40
*must be only characters, <=40 chars
field: lastname
type: char size: 50
*must be only characters, <=50 chars
field: lecturesection
type: int size: 10
*user generated lecture section, <=10 decimal value
field: labsection
type: int size: 10
*user generated lab section, <=10 decimal value
field: lastlogin
type: datetime
field: attempts
type: int size: 4
*if Attempts > 3 username will be locked out of system

OtherUser Table

Modules:

Web Interface User Login, Grading Application User Login.

field: username
type: varchar size: 20
*must be alphanumeric, being with character and be <= 20 varchars
field: password
type: varchar size: 255 *size large for encryption
*must be alphanumber and be <=20 varchars
field: firstname

type: char size: 40
*must be only characters, <=40 chars
field: lastname
type: char size: 50
*must be only characters, <=50 chars
field: lastlogin
type: datetime
field: attempts
type: int size: 3
*if Attempts > 3 username will be locked out of system
field: admin
type: Boolean
*0 for non-admin, 1 for admin

Sections Table
Modules:
StudentUser and OtherUser Tables for Web Interface and Grading Software.

field: sectionid
type: int size: 10
field: sectiontype
type: int size: 10
field: instructor
type: varchar size: 20
*username of instructor
field: description
type: varchar size: 255
*user specified course description

Key Table
Modules:
Grading Application.

field: filename
type: varchar size: 50
field: labname
type: varchar size: 50
field: templatelocation
type: varchar size: 100
*address of the actual file
field: templatesubmitdate
type: datetime
field: keylocation
type: varchar size: 100
*address of the actual file
field: keysubmitdate

type: datetime
field: pointsworth
type: int size: 10

StudentSubmissions Table
Modules:
Web Interface, Grading Application.

field: labname
type: varchar size: 50
field: username
type: varchar size: 20
field: originalfile
type: varchar size: 50
field: submitted
type: datetime
field: finalized
type: boolean
field: processedfile
type: varchar size: 50
field: submitted
type: datetime
field: grade
type: decimal size: 101

Assignment Table
Modules:
Web Interface, Grading Application.

field: labname
type: varchar size: 50
field: category
type: varchar size: 50
field: created
type: datetime

Category Table
Modules:
Assignment Table.

field: category
type: varchar size: 50
field: weight
type: int size: 100
*all assignment files add up to 100

Release Table
Modules:
Web Interface

field: section
type: int size: 10
field: assignment
type: varchar size: 50
field: released
type: Boolean

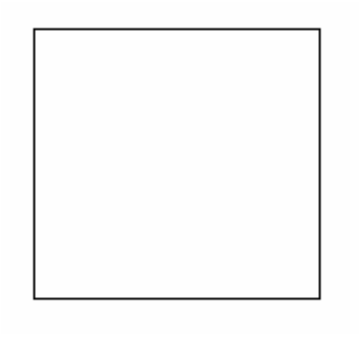
Section 1.5: Logical Format of Data Stores and Databases

The information for the Excel Grading System will be contained in an Oracle database. As we have determined from our clients we will need to store the submitted Excel files, grading keys, and grading specifications in a separate directory. The Oracle database will then contain the locations of these specific files as opposed to containing the files directly in the database. This means we will only require the storage of Decimals, VarChars, and Booleans.

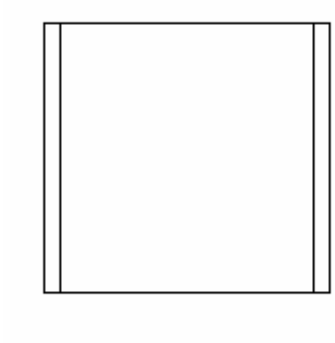
Section 1.6: Structure Charts

Structure charts are graphical representations of the subroutine and function hierarchy in the program's Procedure Division. By viewing structure charts, you can identify and fully understand the strengths and weaknesses of the program structure.

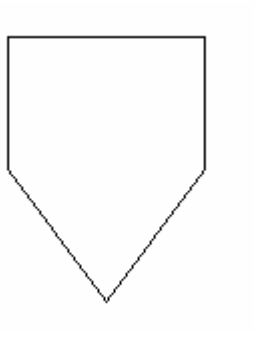
Structure Chart Methodology



Module



Library Module

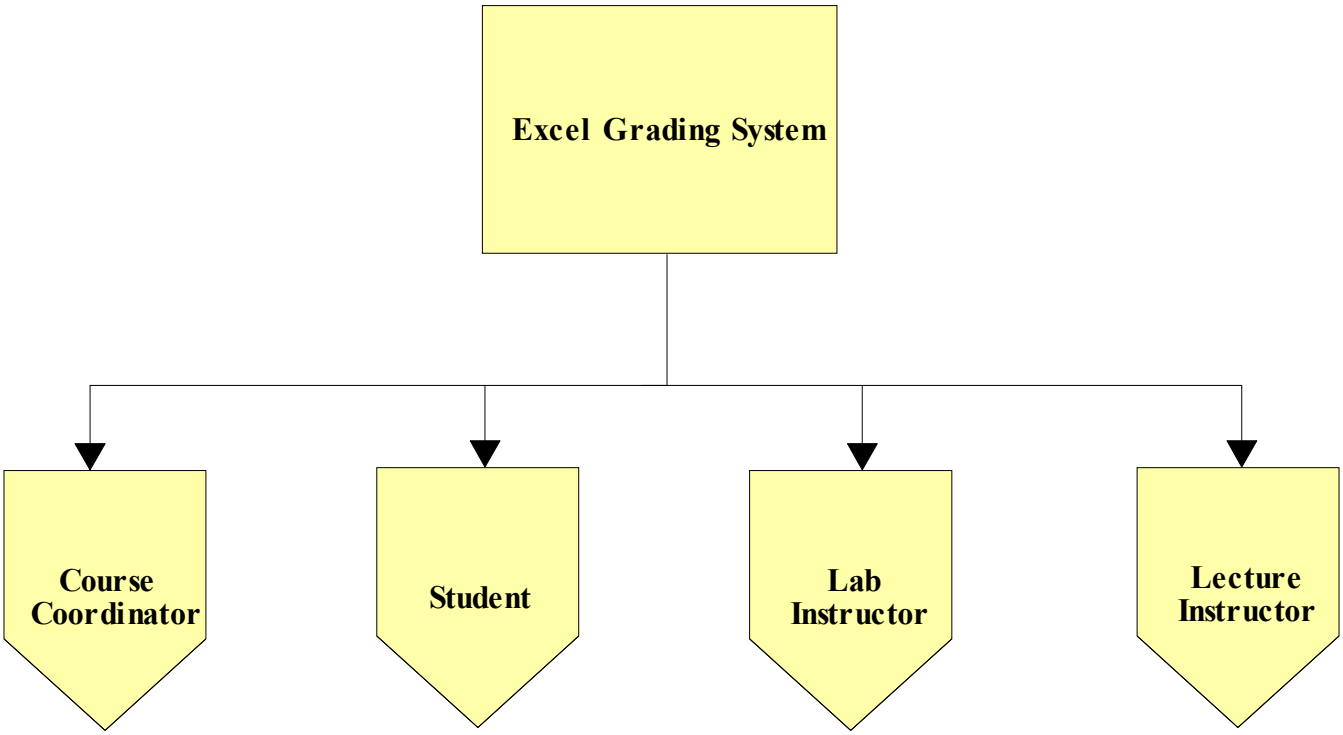


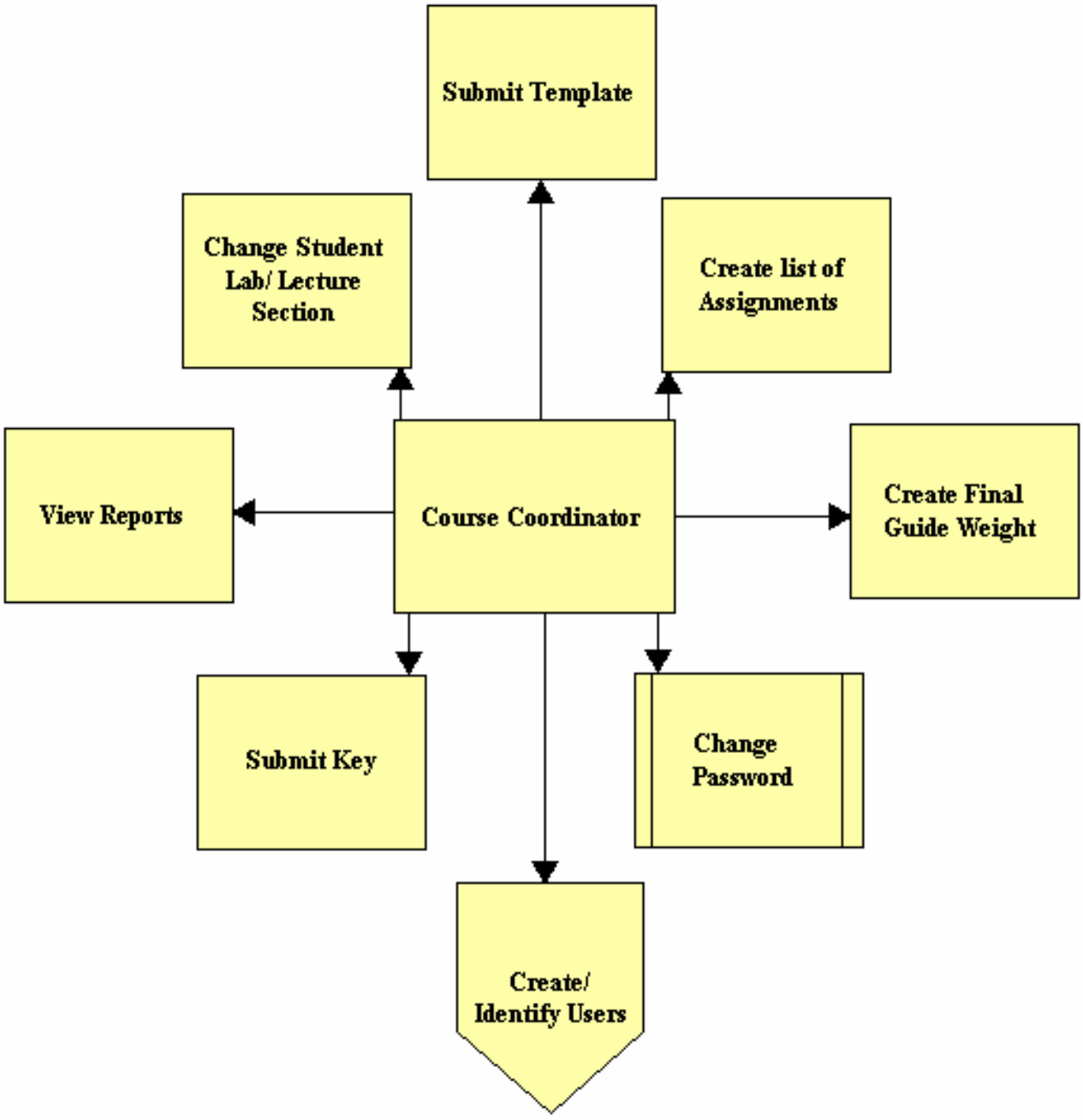
Off-Page Connector

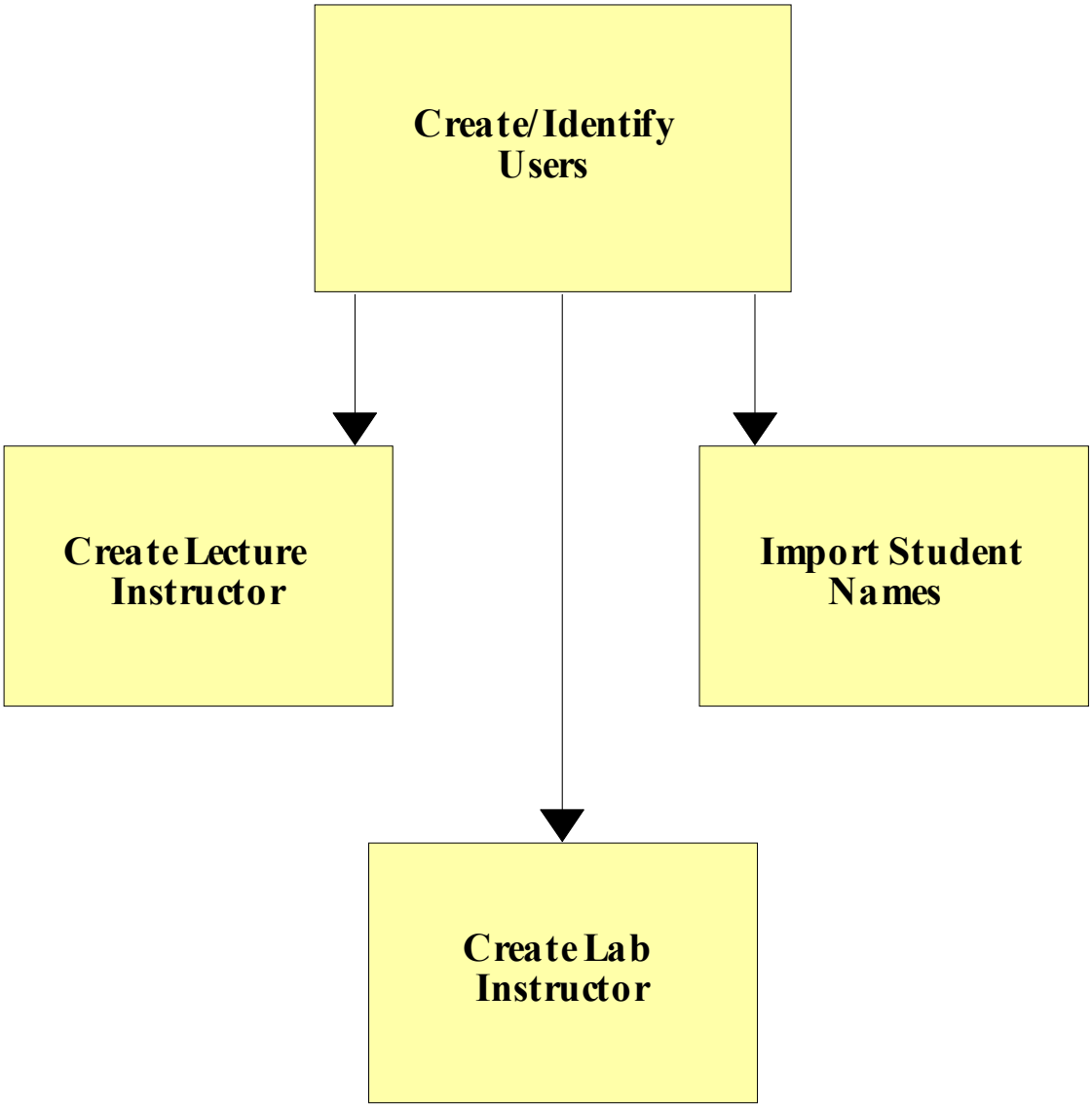
A **Module** represents a group of instructions that carry out an operation, such as a computer program or subroutine.

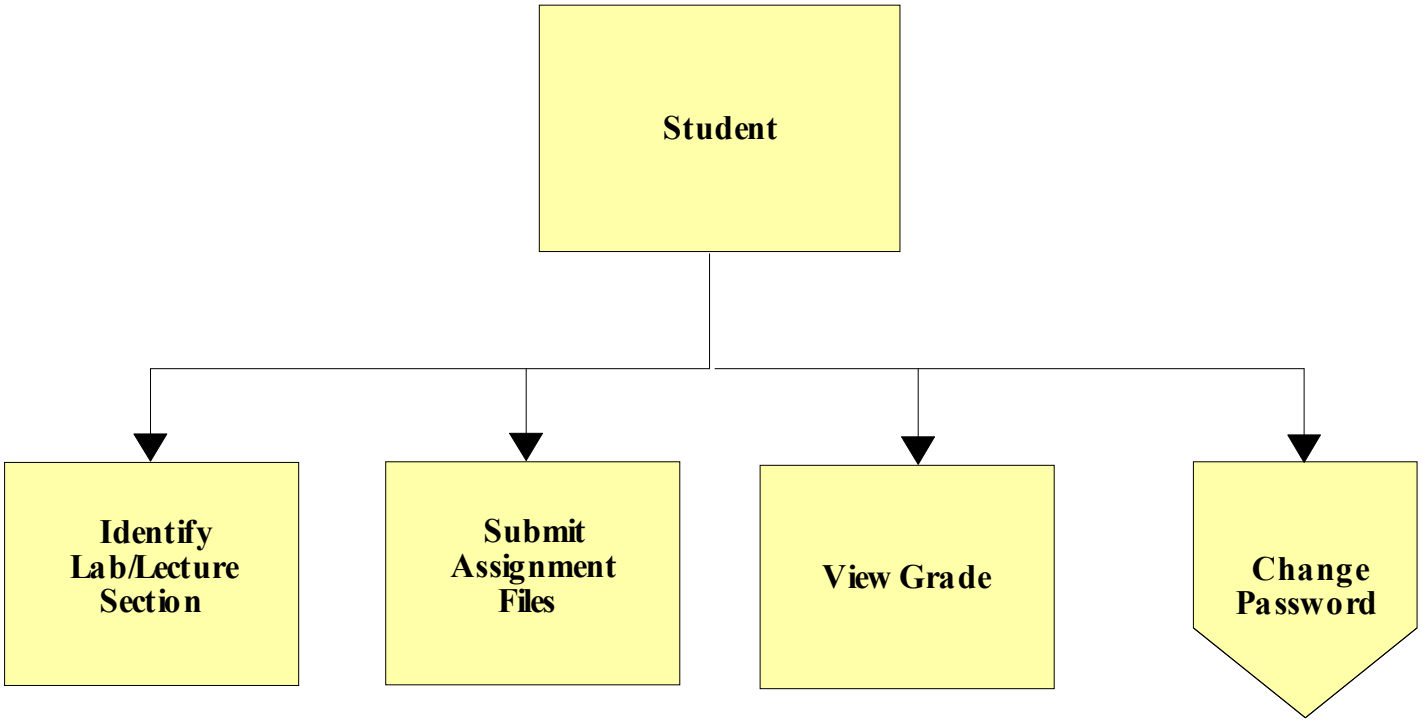
A **Library Module** behaves in the same manner every time that it is called upon.

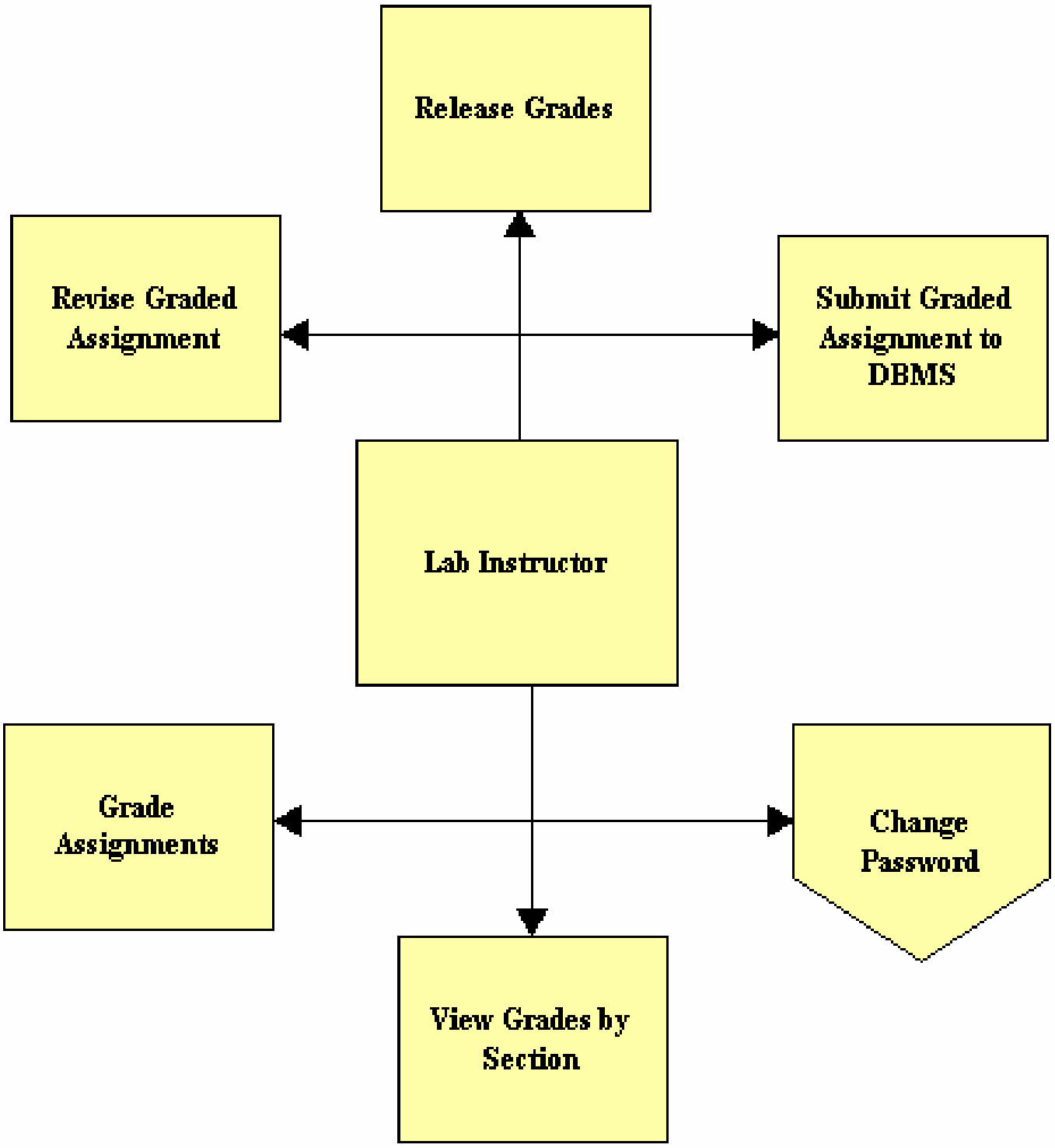
An **Off-Page Connector** is used to link charts that span multiple pages.

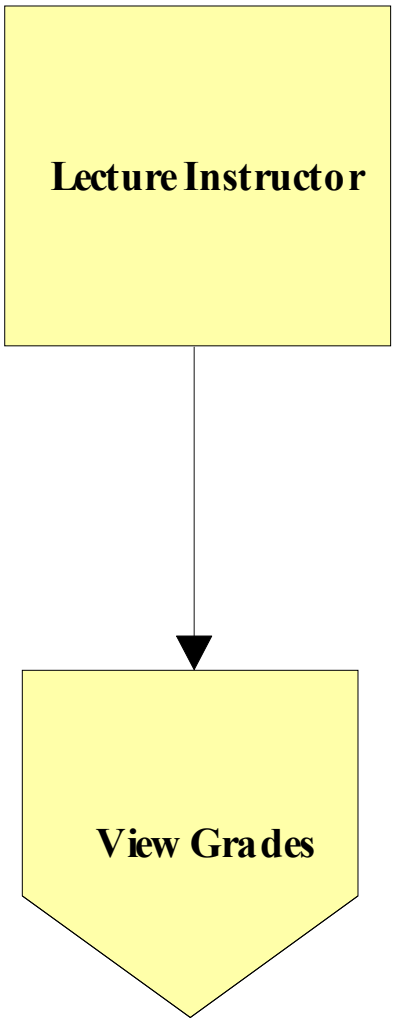


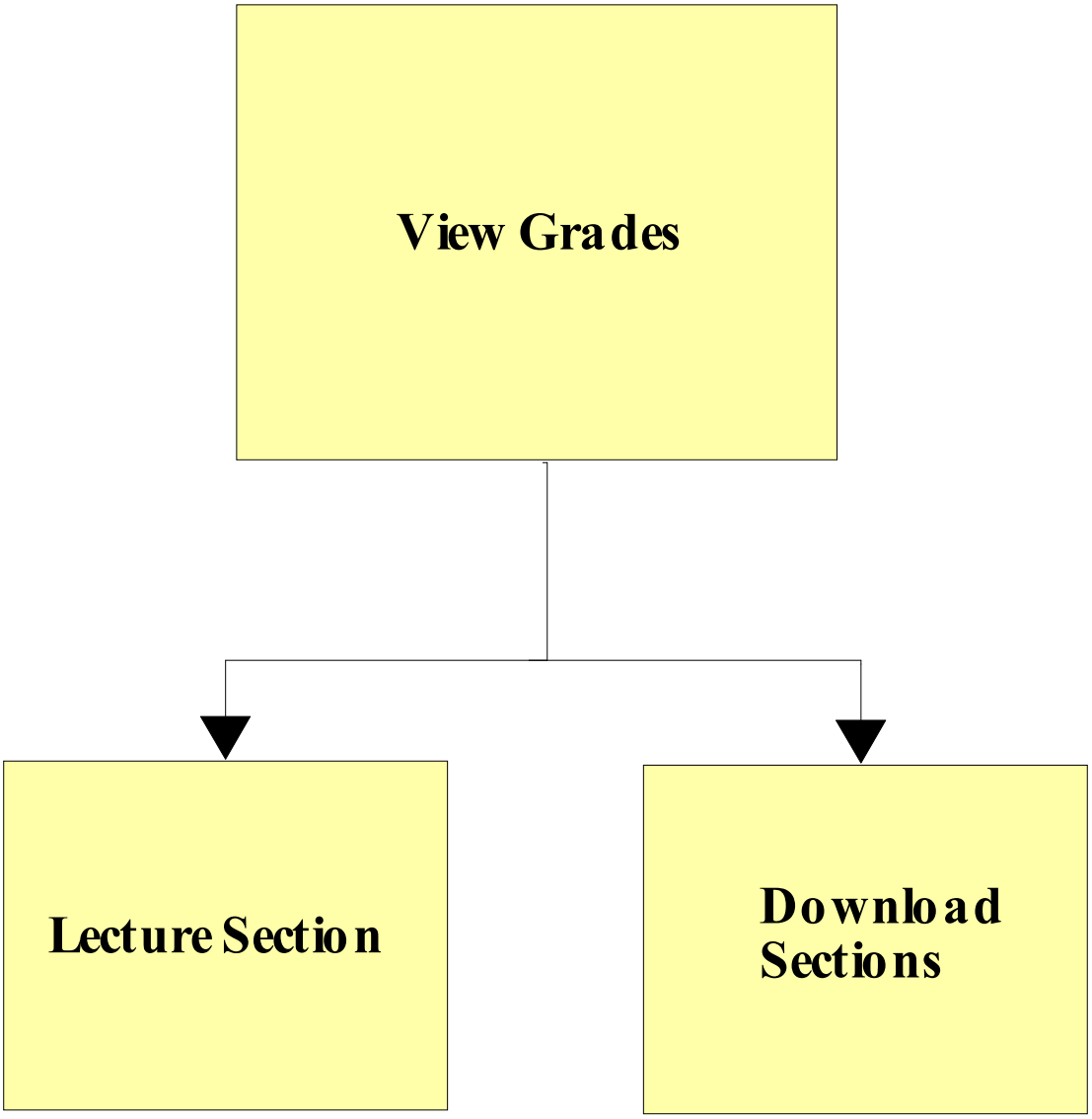

Submit Template
Change Student Lab/ Lecture Section
Create list of Assignments
View Reports
Course Coordinator
Create Final Guide Weight
Submit Key
Change Password
Create/ Identify Users


Create/Identify Users
Create Lecture Instructor
Import Student Names
Create Lab Instructor


Student
Identify Lab/Lecture Section
Submit Assignment Files
View Grade
Change Password


Release Grades
Revise Graded Assignment
Submit Graded Assignment to DBMS
Lab Instructor
Grade Assignments
Change Password
View Grades by Section


Lecture Instructor
View Grades


View Grades
Lecture Section
Download Sections

Section 2: System User Specifications

Section 2.1: User Case Scenarios

This section describes the functions of each user in the EGS (Excel Grading System) fully and in detail. The abilities of each user are laid out in entirety to specify exactly what capabilities each user will have in the system.

Course Coordinator:

The Course Coordinator (CC) will be administrator of the EGS. This user will log into an account created by the developers. Once logged into the system, the CC has many tasks to perform, including management of users, setup of lab and lecture sections, setup of assignment list, submission of grading keys and template files, and report generation.

The CC is responsible for creating a system profile for each instructor. This profile is independent of what type of section (lecture or lab) that instructor leads. The CC must also import a list of student users so that the system can create user profiles for the students. The CC will have the ability to reset passwords for all users in the system and to change the assignment of student user lab and lecture sections. (Note: If the system ends up implementing the LDAP protocol, the CC ability would be limited only to importing user lists, identifying which users are instructors, and changing student lab and lecture sections.)

The CC must create Lecture and Lab sections. During the creation process, the CC will identify what type of section is being made (lab or lecture), the details of the class (this includes meeting day(s), time, section number), and assign an instructor user to the class. This process identifies the instructor as a Lab Instructor or Lecture Instructor. Keep in mind that an instructor may be assigned multiple sections, and so may end up being both a Lab Instructor and Lecture Instructor.

To begin the process of setting up the assignment list, the CC must set up assignment categories and category weights. This allows the system to track student grades based on the CC specified weight criteria. Categories may be added at any time; however, an assignment cannot be created for a category that does not exist. Categories not designated to any assignments may be deleted. Percentage weights to existing categories may be changed. The percentages must add up to 100%. A typical set of category/weight pairs may be:

{Regular Labs: 50%; Midterm: 25%; Final:25%;}

The CC will set up assignments in the system. For a new assignment, this process includes choosing to create a new assignment, choosing a category for the assignment, identifying what files will be expected from the students for submission, and assigning a point value for each file in the assignment. The CC will have the ability to modify or remove created assignments from the system.

The CC must submit template files and key files for each expected file in an assignment. The template file will be a correct copy of the assignment that is submitted by the

students. The key file will describe what will be checked in the students' submitted labs and what point values each part of the template is worth.

Reports will be available for the CC to view. Some possible reports include lists of students by section (lab or lecture) and class averages by section (lab or lecture).

The ability to change the user password will be formed so that the Course Coordinator may enter the Course Coordinator's current password and the new password twice for confirmation. There will be further precautions placed on this process for the Course Coordinator to ensure security.

Student:

The Student will be a user of the EGS. This user will log in through the web interface using an account previously established by the Course Coordinator. Once logged into the system the Student will have the option of submitting a lab, viewing graded labs, viewing individual lab grades, as well as overall course grades, and changing the student's password.

The Student's ability to submit a lab will include a view of what lab is currently due and the deadline for submission. Once this deadline is reached the system will no longer accept the lab from this user. Lab submissions may include multiple files which will be uploaded individually through a submission box by the student.

The ability to view graded labs will allow the student to see labs which have been graded and approved by the Lab Instructor. These grades will come in the form of the submitted lab assignment file that has been measured against a key provided by the Course Coordinator as well as any comments provided by the Lab Instructor.

A section in the Student user account will be included that will contain a table of the labs and the separate lab files the student has submitted. This table is where the student will go to open and view a graded lab, but the grade of each file will also be visible from the table. Along with this there will be a table which includes both lab grades as well as other course grades and therefore gives the student's entire course grade, as well as the lab and lecture section averages the student is enrolled in.

The ability to change the user password will be a form where the student may enter the student's current password and the new password twice for confirmation.

Lab Instructor:

The Lab Instructor will be a user of the EGS. The lab instructor is an instructor who teaches either a CS 010 or CS 011 lab section. This user will log in through the web interface using an account previously established by the Course Coordinator. Once logged into the system the Lab Instructor will have the option of viewing graded labs, changing the lab instructor's password, grading a specific set of labs or grading all labs, leaving comments on graded labs, manually overriding our software grade, viewing

reports of the lab instructor's class averages and individual student grades, and including outside grades.

The ability to view graded labs will allow the lab instructor to see labs which have been graded and approved for each student. These grades will come in the form of submitted lab assignment file that has been measured against a key provided by the Course Coordinator.

The ability to change the user password will be a form where the lab instructor may enter the lab instructor's current password and the new password twice for confirmation.

The lab instructor will have the option of grading a specific set of labs or grading all the labs that have been submitted. When the lab instructor logs onto the system the lab instructor will see a list of all the labs that have been submitted by students. At this point the lab instructor will have the option to select all of the labs that are waiting to be graded, or to select a specific set of labs that are to be graded using check boxes next to each assignment.

The lab instructor will have the ability to leave comments on labs that have been graded. After an assignment has been graded by our system, the lab instructor will have the ability to view the lab to see what has been marked wrong. At this time the lab instructor will have the option of leaving comments on an assignment telling the student any pertinent information.

The lab instructor will be able to manually override our software. After a lab has been graded the lab instructor will be able to view the assignment, seeing what has been marked as wrong and where a student has lost points. At this time the lab instructor will be able to select certain portions of an assignment and override what our grading system has marked as being wrong.

The lab instructor will have a sidebar with the lab instructor's lab sections listed. Upon clicking on a section a list of the students enrolled in this section will appear in a table format. Along side each student's name will be the labs the students have submitted and the scores the students have received for those labs. The bottom of the table will show the class average for each lab, as well as for all the labs together.

The lab instructor will be able to include outside grades. An instructor will be able to manually enter grades into our system without the submission of a file. The system will allow for lab instructor to enter grades that are not excel documents, and include nothing but a grade, this will allow lecture instructors to view all of a students grades in the course, not just the student's excel lab grades.

Lecture Instructor:

The lecture instructor is a user of the EGS. After logging into the system, under the account setup by the Course Coordinator, the user will be able to change the lecture

instructor's password, view the students in each of the lecture instructor's lecture sections and also download student grades.

To view the student information, the lecture instructor will select the desired lecture section link from the left menu pane. After choosing a section to view, the lecture instructor will see a list of the lecture instructor's students and the lab section that the students are in. The lecture instructor will also be able to view the total score that each student received on each lab and the score that the student received on each individual part of the lab.

To download the student grades, the lecture instructor will select the link in the left menu pane. A file will be downloaded to the lecture instructor's computer containing the student grades for all of the sections that the lecture instructor teaches. The file that is downloaded will either be an excel document or some form of text document.

The ability to change the user password will be a form where the lecture instructor may enter the lecture instructor's current password and the new password twice for confirmation.

Section 2.2: Functional Requirements

This section describes the functions of each user in the EGS and what abilities are involved within each function. It summarizes the above User Case Scenarios.

Course Coordinator Functions:

- Log in under an account created by the developers
- Create a system profile for each instructor
    - Change instructor account passwords
    - Remove profiles already created
- Import a list of students to be used by the system to create student profiles
    - Change student account passwords
    - Change lab and/or lecture sections chosen by the students at initial login
    - Remove profiles already created
- Create lecture and lab sections
    - Identify if the section is lab or lecture
    - Identify details of the section (meeting days, time, and section number of each)
    - Identify instructor of each section
    - Change or remove sections already created
- Set up assignment categories and category weights
    - Specify the type of assignment being accepted and the percentage of the overall class grade it will count for
    - Modify or remove empty categories
- Set up assignments for the system
    - Choose the category for the assignment to fall under

    - Identify expected files for grading
    - Assign point value for each file
    - Modify or remove the assignments already created
- Submit template files and key files for each expected file in assignments
    - The Template file is the correct version of the files that will be submitted by the students
    - The Key file will specify which parts of each file are to be graded and the point values for each
- View reports
    - Lists of students by lab or lecture sections
    - Class average based on lab or lecture sections
- Change current password

Student Functions:

- Login to an account established by Course Coordinator
- Submit a lab
    - View deadlines for the lab
    - Multiple files in each lab will be uploaded separately
- View graded labs
    - See submitted lab file as compared to the key lab submitted by Course Coordinator, as well as see comments from instructor
- View table of lab grades
    - This is where the files can be opened, and grade is visible from table
    - Table includes tests and other course grades so overall grade found here
- Change current password

Lab Instructor Functions:

- Login to an account established by Course Coordinator
- Choose to grade a specified set of labs, or all the labs ready for grading
    - Select all files ready to grade or specify with check boxes
    - View files in the grading process, waiting to be graded, or already graded, but not yet reviewed
- Review the labs graded by software
    - Override the answers given by the grading system
    - Make comments about the lab for the individual student
- Manually enter grades into the system without submission of a file
    - These may not be excel files and may include only a grade specified by instructor
- View graded labs for each student
    - View submitted lab file with corrections corresponding to key lab submitted by Course Coordinator, as well as comments made
- View grades of each student
    - When clicking on class section on sidebar table is opened with list of students

    - In table includes all grades for individual students on each lab file
- Change current password

Lecture Instructor Functions:

- Login to an account established by Course Coordinator
- Select a lecture section of students to view
- View lab section of each student and individual scores of each submitted lab, as well as each section of the lab
- Download the students' grades
    - A file will be downloaded to the instructor's computer containing the grades
- Change current password

Section 3: Testing Requirements

Section 3.1: Project Testing

The testing that we will be conducting in order to ensure a complete and correct working system will include several specific types of analysis.

The first of these four testing steps will be Unit Testing, and for convenience and further understanding of this stage we have included an example of a Unit Test in the following section (Section 3.2) of this document. Unit Testing is used to make certain the system has no data, logic, or standard errors. It checks that each function that the users should be able to perform can be performed with the correct outcome.

The next stage of testing will be Integration Testing. This step combines the Unit Testing to ensure that the separate functions that were tested in Unit Testing follow through correctly when connecting them throughout the system. So a test that may affect another part of the system is checked not only in the present section of the system, but also all other affected portions.

The third stage is System Testing. This stage involves testing that everything that was promised of the system by the software developers is in tact and working correctly. The Requirements Specification document, which has been completed previously, will be a guideline for this stage of testing, and everything that was specified in that document will be tested to be in working order at this point.

The final stage of testing is Acceptance Testing. This stage of testing provides certainty for our clients, Dr. Hunter and Ms. Cotler, that all techniques for building the software promised were enforced, the Requirements Specification was met, and the final product is as it should be. Also, in this stage we test not only for success, but for failure. Therefore, we make sure that when we perform a function that should not allow work (i.e. logging in under the wrong username) the system will not perform the function. All in all, this stage guarantees that our clients are satisfied with the outcome of the system, and feel their requests were met.

Performance Software
Automated Grading System for Microsoft Excel Spreadsheets
UNIT TEST

Unit Category: **Log-In Screen**

ID	Name	Description	Input	Expected Output	Pass	Comments
1.1	Proper Log-In (Student)	Attempt Log-In using valid *student* username and its corresponding password.	Student Username & Password	Generate web page for the student.		
1.2	Proper Log-In (Lecture Instructor)	Attempt Log-In using valid *lecture instructor* username and its corresponding password.	Lecture Instructor Username & Password	Generate web page for the lecture instructor having all of their classes.		
1.3	Proper Log-In (Lab Instructor)	Attempt Log-In using valid *lab instructor* username and its corresponding password.	Lab Instructor Username & Password	Generate web page for the lab instructor having all of their classes.		
1.4	Proper Log-In (Lecture & Lab Instructor)	Attempt Log-In using valid *lecture & lab instructor* username and its corresponding password.	Lecture & Lab Instructor Username & Password	Generate web page for the lecture & lab instructor having all of their classes.		
1.5	Proper Log-In (Course Coordinator)	Attempt Log-In using valid *course coordinator* username and its corresponding password.	Course Coordinator Username & password	Generate web page for the Course Coordinator.		
1.6	Invalid Username	Attempt Log-In using invalid username.	Invalid Username and any password.	Generate message saying that either username or password is incorrect.		
1.7	Invalid Password	Attempt Log-In using valid username and invalid password.	Valid Username & invalid password	Generate message saying that either username or password is incorrect.		
1.8	3 Invalid Passwords	Attempt to Log-In 3 times using valid username and invalid password.	Same username each time and any incorrect password	Generate message saying that either username or password is incorrect and that the account has been locked.		
1.9	Proper Username and Password to locked account	Attempt Log-In to a locked account using valid username and password.	Valid username & password where username is an account that has been locked (see 1.8).	Generate message saying that the account has been locked.		

Section 3.3: Acceptance Test

This section describes each function that each user in the EGS will be allowed to perform and describes what should happen upon performing these specific functions. This is how we will go about testing our software in our final testing step.

Course Coordinator Acceptance Test Criteria:

Function Preformed:	**Necessary Outcome:**
Log into system	Successfully brings user to opening page An incorrect username produces an error message saying either username or password is incorrect Locks account after three incorrect passwords
Create a system profile for each instructor	The account is created in the system The instructor has all required capabilities
Change instructor account passwords	The instructor's previous password no will log the instructor into the system The new password now logs the instructor into the system
Remove instructor profiles in existence	The instructor username and password are no longer recognized upon attempted login No students are listed as members in any lab or lecture sections of this instructor
Import a list of students to create student profiles	A profile is successfully created for each student in the list All students have the ability to login, submit labs, and view grades
Change student account passwords	The student's previous password no will log the student into the system The new password now logs the student into the system

Change lab and/or lecture section chosen by the students at initial login	The student no longer sees the student as enrolled in the original lab/lecture section under the student's account The student sees the student as enrolled in the new lab/lecture section under the student's account The instructor(s) of the original lab/lecture section no longer see the student in their list of that section or have the ability to view or grade labs The instructor(s) of the new lab/lecture section now see the student in the instructor(s) list of that section or have the ability to view or grade labs
Remove student profiles in existence	The student username and password are no longer recognized upon attempted login No instructors see the deleted student as a member of the instructor's sections
Create lecture and lab sections	The section is created in the system and identified as either lab or lecture The section has all required information (meeting days, time, section number, and instructor) The section is included as a choice in the drop down menu upon initial login for students The section can be viewed by the instructor on the instructor's sidebar when logged into the system, as well as accessed by clicking

Change or remove sections already created	If the instructor is changed: the change is applied to all relevant parts of the system (dropdown menu for students' initial login, and the listed instructor in student and course coordinator accounts), the instructor no longer has access to the section in the instructor's profile, and the new instructor does have access If the change is applied to meeting days, time, section number, or whether the section is lab or lecture: the change is applied to all relevant parts of the system (dropdown menu for students' initial login, the listed change in student profiles, and the listed change in instructor and course coordinator account) If the change is a removal: the section is no longer visible as a section in any instructor's account
Set up assignment categories and category weights	A new category of the course is created (i.e. labs, midterm, final) and included in all accounts upon viewing student grades When submitting files the files are sent to the specified category The grades within each category are weighted to account for the specified percentage of the final grade and this is represented through the final grade
Modify or remove empty categories	The category is removed from view in all accounts of the system The category no longer has any affect over the final course grade, or if the percentage is modified, it affects the course grade correctly
Set up assignments for the system	The assignment is entered into the correct category in the system and weighted accordingly for the students' final grade The expected files are identified and prepared for accepting Each file in the assignment has a point value attached to it

Modify or remove the assignments already created	The modifications are made correctly so that there is a file added, or a point value changed, etc., and the changes apply accordingly to the grade of the assignment The removal of the assignment makes the users unable to view it any longer and no longer counts toward the students' grades
Submit template files and key files for each expected file in assignments	The template file is added into the system and can be compared correctly to a submitted file by the student The key file is added into the system and can be used correctly to create the grade outcome using point values of the different parts to the assignment
View reports	The reports are shown with correct and up to date grades and averages of students based on either section of lab/lecture or on class average of section
Change current password	The Course Coordinator's previous password no will log the Course Coordinator into the system The new password now logs the Course Coordinator into the system

Student Acceptance Test Criteria:

Function Preformed:	**Necessary Outcome:**
Log into system	Successfully brings student to opening page An incorrect username produces an error message saying either username or password is incorrect Locks account after three incorrect passwords Initial login requires the student to specify lecture and lab sections
Submit a lab	The files for each lab are uploaded separately into the system The lab instructor sees the submitted files as ready for grading The student sees the files were submitted successfully by having the ability to click on them
View graded labs	When clicking on the date of the desired file, it is opened and the incorrect portions of the file are marked for visibility A comment section is included for the student to see specific notes from the instructor
View grades	When click on lab section the table of labs submitted already, and those yet to be submitted is shown, along with grades of submitted labs
Change current password	The student's previous password no will log the student into the system The new password now logs the student into the system

Lab Instructor Acceptance Test Criteria:

Function Preformed:	**Necessary Outcome:**
Log into system	Successfully brings lab instructor to opening page An incorrect username produces an error message saying either username or password is incorrect Locks account after three incorrect passwords
Choose to grade a specified set of labs, or all the labs ready for grading	The labs ready to be graded will be viewable when logged in Check boxes are provided to indicate which should be graded by system; a select all option is included Once marked and entered the files are graded by the system
Review the labs graded by software	Opens specified file when clicking on the date submitted Incorrect portions are marked visibly Comments can be seen that were added upon grading Answers marked correct or incorrect by the software can be overridden by instructor
Manually enter grades into the system without submission of a file	A file is shown that is not an excel file and may or may not be opened, but is included as part of the final grade (the percentage of which is specified by what category it is entered under)
View graded labs for each student	Can open submitted and graded files by clicking on date submitted by student in the table of students and view graded files with comments
View grades for each student	Reports of the grades for each student are visible with by clicking on the section the student is in and looking on the corresponding row of the student table
Change current password	The lab instructor's previous password no will log the lab instructor into the system The new password now logs the lab instructor into the system

Lecture Instructor Acceptance Test Criteria:

Function Preformed:	**Necessary Outcome:**
Log into system	Successfully brings lecture instructor to opening page An incorrect username produces an error message saying either username or password is incorrect Locks account after three incorrect passwords
Select a lecture section of students to view	Clicking on the section on the sidebar brings up the list of students in that section to the screen, including the students' information
View lab section of each student and individual scores of each submitted lab, as well as each section of the lab	The list of students in each section includes a table which shows the grades of each file in the lab
Download the students' grades	A file is downloaded to the instructor's computer containing the grades of the students'
Change current password	The lecture instructor's previous password no will log lecture instructor into the system The new password now logs lecture instructor into the system

Section 4: Performance Requirements

Section 4.1: Development/ Production Environment

For the production of our Excel Grading Software, we will be using two machines. Our first machine is a Dell Dimension 4550, running the Windows XP operating system, currently updated with Service Pack 2. This machine has a 2.4-GHz Pentium 4 processor, a 37.2-gigabyte hard drive, and 512 MB of Ram.

The second machine is a Gateway, running the Microsoft Windows 2000 operating system, equipped with Service Pack 3. This machine has a 1300-MHz Pentium 4 processor, a 35.4-gigabyte hard drive, and 654,640 KB of Ram.

We will be using **Oraserve**, a server located in the CS Department. A server is a computer that handles requests for data, email, file transfers, and other network services from other computers (i.e., clients). We are using Oraserve version # 2.4.21-4.el.

We will be using the following software to assist in the creation of our software:

Apache – is open-source (source code is freely available and can be shared) HTTP Web server software. Apache is currently the most popular web server on the Net. Conveniently it supports the PHP language. We will be using Apache version # 2.0.46

Microsoft Visual Basic for Applications (VBA) - is an embeddable programming environment designed to enable developers to build custom solutions using the full power of Microsoft Visual Basic. We will be using VBA version #6.4

Oracle - a relational database management system (RDBMS) developed and copyrighted by the Oracle Corporation. We will be using Oracle version #10G

PHP (PHP Hypertext Pre-processor) - a HTML-embedded scripting language. The goal of the language is to allow web developers to write dynamically generated pages quickly. We will be using PHP version #4.3.11

Section 5: Sources of Information

Our information was gathered from meetings with our clients, Ms. Jami Cotler and Dr. Scott Hunter in addition to Dr. Lederman's class lectures, the Software Engineering class textbook Software Engineering: A Practitioner's Approach by Roger S. Pressman, and various Software Engineering teams' projects from previous years located at: http://www.cs.siena.edu/~lederman/csis410/csis410.html

Section 6: Glossary of Terms

Code:
A system of symbols and rules used to represent instructions to a computer.

Course Coordinator (CC):
A user in the EGS which is the only account created by the software developers. This user is responsible for creating student and instructor accounts, and adding key and template files to be used to grade the submitted student labs.

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

Data Flow:
Depicts the movement of one to many items of data. Data can enter a system from the outside.

Data Store:
A place where data is kept while it is not actively being processed. Data can only enter a data store from a process and can only exit a data store to a process.

EGS:
Excel Grading System

External Entity:
An entity that is outside the boundary of the system that is being modeled. It can either send data to the system or receive data from it. External entities are optional.

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

GUI - Graphical User Interface:
A user interface based on graphics (icons, pictures, and menus) instead of text; uses a mouse as well as a keyboard as an input device.

Internet:
An interconnected system of networks that connects computers around the world via the TCP/IP protocol.

Key File:
This is a file added to the system by the Course Coordinator, which is used to specify what parts of the submitted student files to grade and how much each part is worth.

Lab Assignment:
The full assignment of lab included multiple files that all are put together to be one lab assignment as a portion of the final grade.

Lab Instructor:
A user of the EGS, the lab instructor account is set up by the Course Coordinator and has the ability to grade the labs submitted by the students in their lab sections, as well as view the grades of these students. The lab instructor can also override the grading done by the system and make comments on graded labs to their students.

Lab Assignment File:
One file of the lab assignment, each of which will be submitted separately by the students to make up one full lab assignment.

Lecture Instructor:
A user of the EGS, the lecture instructor account is set up by the Course Coordinator and has the ability to view the grades of all the students that are enrolled in their lecture courses.

Process:
Signifies that something is happening to transform the data. Processes have numbers that reflect the decomposition hierarchy.

Software:
Written programs, procedures, or rules and associated documentation pertaining to the operation of a computer system and that are stored in read/write memory.

Student:
A user of the EGS, the student account is set up by the Course Coordinator and has the ability to submit labs to the system, as well as view their graded assignments.

System:
A group of independent but interrelated elements comprising a unified whole.

Template File:
This is file added to the system by the Course Coordinator, and is a correct copy of the files submitted by the students. It is used by the system to compare the student answers to the template file answers.

Section 7: Gantt Chart