Software Requirements Specification

for

GooGrade

Version 3.5.1 approved

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BluGoo

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Revision History

Name	Date	Reason For Changes	Version
Paul Phu	01-29-09	First Draft	1.0
Hermyn Mendez	02-02-09	First Major Revision (edited section 1,2, added 3)	2.0
Hermyn Mendez	02-05-09	Added/Revised Section 4 and Appendix C (Kathy, Paul, and Kalvin). Revised sections utilizing the QA document. Synced Section 3 with Use Case List.	2.1
Paul Phu	2-10-09	Edits to all sections excluding section 3	2.2
Paul Phu	2-11-09	Add customer input on changes to all sections excluding section 3	2.3
Paul Phu	2-11-09	Revised Appendix and fixed small errors.	2.4
Hermyn Mendez	2-11-09	Updated section 3	2.5
Katherine Blizard	2-16-09	Fixed small errors. References, Glossary and Data Dictionary	2.7
Hermyn Mendez	2-17-09	Class to Course and Page to Display	2.8
Hermyn Mendez	2-17-09	Revised Section 3, mostly worked on Functional Requirements and formatting. Pasted in Data Dictionary and tried to bold Data Dictionary terms.	2.9
Paul Phu	2-25-09	Revised all Sections excluding section 4. Added revised Data Dictionary and Glossary. Added Survey.	2.9.1
Hermyn Mendez	2-25-09	Updated Section 3 by working on formatting, took out Data Dictionary redundancies, and reworded most the features and functional requirements. Included previously TBD features.	3.0
Paul Phu	3-3-09	Fixed minor errors	3.0.1
Hermyn Mendez	3-6-09	Fixed some of the comments made on peer review (sections 1, 2, 3). Completely rewrote section 3 to match the new screenshots in Appendix C.	3.5
Paul Phu	3-7-09	Fixed minor errors	3.5.1

1. Introduction

1.1 Purpose

This SRS provides specifications for the complete development of GooGrade v1.0. This document states the functionality of GooGrade v1.0. Features for future releases are noted accordingly. All GooGrade v1.0 features have a higher priority than those features noted for follow-up releases. Items in the Data Dictionary will be indicated in bold font for clarity and aid in development. This document is intended for members of the GooGrade development team, the BluGoo team, the customer Lauren Tsung and the user. The SRS contains features and information required for the release of GooGrade v1.0 and possible future releases. It should be read through thoroughly, though the table of contents may be used for immediate references. Sections 1 to 2.2 can give a quick overview of GooGrade while further down this document will give a more detailed specification.

1.2 Project Scope

GooGrade is an open source web based application designed to help teachers track and manage students and their respective grades in a course. It is also designed to allow students to track their grades and compare their progress to the rest of the peers in their course by means of grade metrics. Because GooGrade is open source, it complies with the Open Standard Requirements (OSR) for Software. The OSR states that the GooGrade must be freely available and royalty-free. GooGrade must not have any dependencies on technology that does not comply with the OSR.

For more information regarding the Business Requirements, see section 1 of the GooGrade Vision and Scope.

1.3 References

1. Open Standard Requirements for Software http://opensource.org/osr
2. Blugoo Wiki http://wiki.csc.calpoly.edu/blugoo
3. Schalch, Stephen R. *Object Oriented Classical Software Engineering*
4. BluGoo, Vision and Scope Document.
5. BluGoo, Use Case Document.
6. Wieger's SRS Example
   http://www.csc.calpoly.edu/%7Ecsturner/courses/308w09/srs_template.doc
7. *Web Content Accessibility Guidelines (WCAG) 2.0* http://www.w3.org/TR/WCAG20/
8. *Family Educational Rights and Privacy Act* (FERPA).
   http://www.ed.gov/policy/gen/guid/fpco/ferpa/index.html.

2. Overall Description

2.1 Product Perspective

GooGrade's conception is a response to many already available grading tools which do not effectively package commonly desired student/teacher functionality. Popular grading tools, such as Blackboard, are expensive and do not offer all of the features that GooGrade provides (see Appendix A in Vision and Scope document). GooGrade not only provides a means of editing and tracking grades and progress, it also provides an environment for teachers and students to exchange electronic documents. Most students turn in their assignments to teachers via physical copies. To bring the submission process to the digital world, Cal Poly's Computer Science Department created a UNIX based program called *handin* to allow students to submit electronic copies of their assignments. Though the process is functional, it can be difficult to use because it requires experience in UNIX. GooGrade offers a web based interface which not only allows students to submit their assignments to teachers, but also allows teachers to upload documents for students to download. For these reasons, we believe GooGrade could replace programs like *handin*.

Content Diagram - TBD

2.2 Product Features

GooGrade allows **Students** and **Teachers** access to a common grading application. **Teachers** are able to take attendance, add users, manage **Assignment Grades**, post **Announcements** and, in release 2, upload **Files** for **Students** to download. **Students** are able to view their grades, view assignment metrics, upload A**ssignments** for submission, and are able to project their final grade with the grade predictor.

2.3 User Types and Characteristics

Teacher	The **Teacher** is the admin for up to five **Courses**. They manage **Students**, their respective grades, **Teacher Assistants** (see below), **Assignments**, and they also have the ability to post **Announcements** and upload documents for the **Students**.
Teacher Assistant	The **Teacher Assistant** is a lower admin. They are managed and given permissions by the **Teacher**. If the **Teacher** desires, the **Teacher Assistant** may have all of the functionality that a **Teacher** has.
Student	The **Students** are able to view their grades and any **Announcements** posted by the **Teacher** and **Teacher Assistant** for a given **Course**. They are also given access to **Metrics** and also have the ability to upload **Assignments** for submission.

2.4 Operating Environment

OE-1: GooGrade will support the following web browsers: Firefox 3.0, Safari 3.0.0, and Internet Explorer 7.
OE-2: GooGrade has the ability to run on either Linux or Windows servers.

OE-3: Access to GooGrade is available anywhere there is internet access.

2.5 Design and Implementation Constraints

CO-1: GooGrade will be web based.

CO-2: All HTML shall meet the W3C XHTML 1.1 Standard.*

CO-3: All CSS shall meet the W3C CSS level 2.1 Standard*

CO-4: GooGrade must have the same functionality and look the same across all supported web browsers (see OE-1).**

CO-5 GooGrade will not display any information to an unauthorized User.***

*As recommended by the Customer
**As recommended by W3C
***As enforced by law by FERPA

2.6 User Documentation

User manuals on how to use GooGrade shall be provided online on our website (see section 1.3) and included with GooGrade.

2,7 Assumptions and Dependencies

Assumptions and dependencies may be found in GooGrade Vision and Scope section 2.3 (see section 1.3).

3. System Features

User (Role)	Section	Feature Name	Brief Description
Student	**3.1**	**View Course**	Allows the **Student** to view the **Course** information.
	3.2	**View Announcements**	Allows the **Student** to view the **Course Announcements**.
	3.3	**View Grades**	Allows the **Student** to view their grades.
	3.4	**View Assignments**	Allows the **Student** to access **Files** and descriptions for each **Assignment**.
	3.5	**Grade Predictor**	Calculates, for the student, what **Assignment Scores** they need to earn a desired grade.
Teacher and Teacher Assistant	**3.6**	**Manage Courses**	Allows the admin to add, edit, and remove **Courses**.
	3.7	**Manage Announcements**	Allows the admin to add, edit, and remove **Announcements**.
	3.8	**Manage Grades**	Allows the admin to add, edit, and remove **Student Assignment Scores**.
	3.9	**Manage Assignments**	Allows the admin to add, edit, and remove **Assignments**.
	3.10	**Manage Accounts**	Allows the admin to add, edit, and remove **Accounts**
	3.11	**Send Emai**	Allows the admin to send emails to either individuals or the entire **Course**.
	3.12	**Take Attendance**	Allows the admin to take attendance for the **Course**.
	3.13	**View Roster**	Displays, for the admin, a list of everyone enrolled in the **Course**.
	3.14	**Adjust Grading Curve**	Allows the admin to adjust the grading curve for the **Course**.
All	**3.15**	**Edit My Account**	Allows all users to edit their **Email Address** and **Password**. Only the **Teacher** may adjust their **Username**.

	3.16	**Printer Friendly Display**	Displays a “printer friendly” version of the current display.
	3.17	**Reset Password**	Randomly generates a new **Password** and sends it to the user **Email Address**.

3.1 View Course

3.1.1 Description and Priority

Description	The system displays the **Course** data items. These include all data items in the **Course** (see Appendix B: Data Dictionary).
Priority	Low

3.1.2 Stimulus/Response Sequences

Stimulus	User selects “View Course”
Response	System takes user to the “View Course” display. (see Appendix C for examples of displays)

3.1.3 Functional Requirements

REQ-1.1: When user selects “View Course,” the system displays the **Course** data items. These include all data items in the **Course** (see Appendix B: Data Dictionary).

3.2 View Announcements

3.2.1 Description and Priority

Description	The system displays a list of the 20 most recent **Announcement**(s) posted by the **Teacher** sorted with the most recently posted **Announcement** at the top of the list. All **Announcements** are collapsed into a single header except the **Announcement** at the top of the page being viewed. (See Appendix C, C-2)
Priority	High

3.2.2 Stimulus/Response Sequences

Stimulus	User selects “View Announcements”
Response	System takes user to the “View Announcements” display
Stimulus	User selects a collapsed **Announcement.**
Response	System expands **Announcement** such that the **Announcement Text** is visible under the **Announcement Date** and **Announcement Title**.
Stimulus	User selects a page number.
Response	System displays the announcements contained on that page number.
Stimulus	User selects PREV or NEXT
Response	System takes the user to either the previous or next page, respectively.

3.2.3 Functional Requirements

REQ-2.1: When user selects “View Announcements,” system displays a list of the 20 most recent **Announcement**(s) posted by the **Teacher** sorted with the most recently posted **Announcement** at the top of the list.

REQ-2.2: If no **Announcement** has been made the system displays a "No Announcements Exist.”

REQ-2.3: By default, when a page is being viewed, only the **Announcement** at the top of the list is expanded. The rest are collapsed.

REQ-2.4: If the user is currently viewing “page 1” of the **Announcements**, the “PREV” link is disabled.

REQ-2.5: If the user is currently viewing the last page of the **Announcements**, the “NEXT” link is disabled.

REQ-2.6: If there are more than 20 **Announcements**, the system creates more pages to accommodate the additional **Announcements**. By accommodate, subsequent pages are created such that each page only contains, at most, 20 **Announcements.** “Page 1” will contain the 20 most recent **Announcements** and subsequent pages will contain the, up to, 20 preceding **Announcements** until the last page contains the, up to, 20 oldest **Announcements.**

REQ-2.7: The system displays only 5 page links at one time. Initially only the first 5 are displayed. If the user moves to page 5, the system will display page links 2-6. Beyond that, if the user moves to page “n,” the system will display page links “n-3” to “n+1”. If page “n” is the last page, then page links “n-4” to “n” are displayed instead.

3.3 View Grades

3.3.1 Description and Priority

Description	The system displays a table containing the **Student's Assignment Grades** in chronological order with the **Total Grade** at the bottom of the table. It will also contain the **Assignment Metrics** for any **Assignment** displayed. Above this table is a **Course** grade distribution bar graph and the **Student's** current grade in the **Course**. Current grade is based only on **Assignments** with **Assignment Scores.**(see Appendix C, C-4)
Priority	High

3.3.2 Stimulus/Response Sequences

Stimulus	User selects "View Grade"
Response	System takes user to the "View Grade" display. (see Appendix C, C-4 for example)
Stimulus	User selects a column on the table displayed
Response	System sorts the table with respect to the column selected.

3.3.3 Functional Requirements

REQ-3.1: When user selects "View Grade," the system displays a table containing the **Student's Assignment Grades** in chronological order with the **Total Grade** at the bottom of the table. It will also contain the **Assignment Metrics** for any **Assignment** displayed. Above this table is a **Course** grade distribution bar graph and the **Student's** current grade in the **Course**. Current meaning grade based only on **Assignments** with **Assignment Scores** (see Appendix C, C-4)

REQ-3.2: If the user selects a column header, the system sorts the table with respect to that column. If the column contains numbers, it will be sorted in ascending numerical order (highest on top). Otherwise, it will be sorted in descending alphabetical order (A/a on top).

REQ-3.3: **Total Grade** will always be kept at the bottom of the table (design choice by BluGoo).

REQ-3.4: If an **Assignment** has no **Assignment Score**, the system displays the **Assignment** name with the **Assignment Score** field blank.

REQ-3.5: If an **Assignment** has no **Assignment Metrics**, the system displays the **Assignment Metrics** fields blank.

REQ-3.6: If no **Assignments** exist yet, the system displays the words "No Assignments Exist."

REQ-3.7: The "bar" in the bar graph in which the **Student's** current grade or **Assignment** grade (see REQ 3-8) lies in will be colored (highlighted) differently than the rest (see Appendix C, C-4 for example).

REQ-3.8: If the user selects an **Assignment Name** from the table, the **Course** distribution graph will change to a distribution graph for the **Assignment**, and the display will move to the top to put the graph in view. It will display a distribution of letter grades for the **Assignment** and the caption below the graph will change to "[**Assignment Name**] Grade Distribution."

3.4 View Assignments

3.4.1 Description and Priority

Description	The system displays a table containing the **Course's Assignments** in chronological order with the most recently posted **Assignment** at the bottom of the table. The **Assignment Name** of the **Assignment** is a link to the **Assignment Description**. All other **Assignment** data items and links to upload and download **Files** are shown in the table. (see Appendix C, C-3)
Priority	Medium Low

3.4.2 Stimulus/Response Sequences

Stimulus	User selects "View Assignments"
Response	System takes user to the "View Assignments" display.
Stimulus	User selects an **Assignment Name**.
Response	System displays the **Assignment Description**.
Stimulus	User selects "Download."
Response	System prompts the user for a location to save the **Files** for the **Assignment**.
Stimulus	User selects "Upload."
Response	System prompts the user for a location of the **File** being submitted for that **Assignment**.

3.4.3 Functional Requirements

REQ-4.1: When user selects "View Assignments," the system displays a table containing the **Course's Assignments** in chronological order with the most recently posted **Assignment** at the bottom of the table. (See Appendix C, C-3)

REQ-4.2: When user selects an **Assignment Name**, the system opens a new display (new pop-up window) which contains the **Assignment Description**.

REQ-4.3: When user selects "Download," the system prompts the user for a location to save the **Files** for the **Assignment**.

REQ-4.4: When user selects "Upload," the system prompts the user for the location of the **File** to be submitted for that **Assignment**.

REQ-4.5: If there are **Files** for the **Assignment**, a "Download" link will be displayed for that **Assignment**.

REQ-4.6: The system displays the total of the **Assignment Totals** at the bottom of the table.

Others: REQ-3.6

3.5 Grade Predictor

3.5.1 Description and Priority

Description	The system displays the grades possible called "desired grades" (excluding "F"), the **Students** current grade, and two tables; one containing **Assignments** with **Assignment Scores** and one containing **Assignments** with no **Assignment Scores**. (see Appendix C, C-5)
Priority	Medium Low

3.5.2 Stimulus/Response Sequences

Stimulus	User selects "Grade Predictor"
Response	System takes user to the "Grade Predictor" display. This display contains a selection of desired grades
Stimulus	User selects a desired grade (see Appendix C, C-5 for example).
Response	System displays the needed **Assignment Scores** for **Assignments,** without **Assignment Scores,** to get a desired final grade.

3.5.3 Functional Requirements

REQ-5.1: When user selects "Grade Predictor," the system displays the grades possible called "desired grades" (excluding "F"), the **Student's** current grade, and two tables; one which contains **Assignments** with **Assignment Scores** and one which contains **Assignments** with no **Assignment Scores**. (see Appendix C, C-5)

REQ-5.2: When user selects a desired grade, the system runs the algorithm described in section 3.3.4 to obtain a one possible set of **Assignment Scores** that would earn the **Student** the desired grade.

REQ-5.3: If there are no more **Assignments** without **Assignment Scores**, the system displays the student's final grade and "No More Ungraded Assignments."

REQ-5.4: If no **Assignments** have **Assignment Scores**, system displays "No Graded Assignments Exist."

REQ-5.5: If the desired grade is no longer possible based upon the algorithm describe in section 3.5.4, the system displays "Grade Not Possible."

Others: REQ-3.6

3.5.4 Grade Predictor Algorithm (for example in Appendix C, C-5)

```
lowerBoundC = 0.7;    // 70% is the lowest "C"
totalPointsPossible = 320;
totalPointsToDate = 169;

lowestC = lowerBoundC * totalPointsPossible;     //224
pointsNeeded = lowest – totalPointsToDate;      //55
quiz2PredictedScore = quiz2TotalPointsPossible;    //10
midterm2PredictedScore = midterm2TotalPointsPossible;    //100


while(pointsNeeded > 0)
{
        if(quiz2PredictedScore > 0)
                quiz2PredictedScore -= 1;
        if(pointsNeeded == 0)
                Break;
        if(midterm2PredictedScore > 0)
                midterm2PredictedScore -= 1;
        if(pointsNeeded == 0)
                Break;
        if(quiz2PredictedScore == 0 && midterm2PredictedScore == 0 )
                return "Grade Not Possible";
}

return quiz2PredictedScore, midterm2PredictedScore;      //0, 55
```

3.6 Manage Courses

3.6.1 Description and Priority

Description	The system displays a selection of icons, at all times, which allow the user to add, edit, remove, import and export **Courses**. (see Appendix C, C-8)
Priority	Low

3.6.2 Stimulus/Response Sequences

Stimulus	User is logged in the system.
Response	System displays a selection of icons to add, edit, remove, import and export **Courses**.
Stimulus	User selects to edit a **Course.**
Response	System displays the **Course** and the data items it editable fields.
Stimulus	User edits the **Course** and selects "Accept"
Response	System returns to the display from which the edit **Course** was selected.
Stimulus	User selects to remove a **Course.**
Response	System prompts the user to confirm removal (see C-10 sample prompt)
Stimulus	User selects "Remove"
Response	System returns to the display from which the remove **Course** was selected.
Stimulus	User selects to add a **Course.**
Response	System displays **Course** data items it editable fields.
Stimulus	User enters the **Course** data items and selects "Accept"
Response	System returns to the display from which the add **Course** was selected.
Stimulus	User selects to import a **Course.**
Response	System prompts user for a file containing a **Course**.
Stimulus	User selects the location of the **File** and selects "Accept"
Response	System returns to the display from which the import **Course** was selected.
Stimulus	User selects to export a **Course.**
Response	System prompts user to enter a location to save the **File**.
Stimulus	User select a location for **File** and selects "Accept"
Response	System returns to the display from which the export **Course** was selected.

3.6.3 Functional Requirements

REQ-6.1: The system displays a selection of icons, at all times, which allow the user to add, edit, remove, import and export **Courses**. (see Appendix C, C-8)

REQ-6.2: When user selects to edit a **Course**, the system displays the data items in editable data fields. If the user selects "Accept," the system will save the **Course** and system returns to the display from which the edit **Course** was selected.

REQ-6.3: When user selects to remove a **Course**, the system prompts the user to confirm the removal (see Appendix C, C-10). If the user selects "Remove," the system returns to the display from which the remove **Course** was selected.

REQ-6.4: When user selects to add a **Course**, the system displays the data items in editable data fields. If the user selects "Accept," the system will save the **Course** and system returns to the display from which the add **Course** was selected.

REQ-6.5: When user selects to import a **Course**, the system prompts the user for a **File** containing a **Course**. Once the user has entered the **File**, the system will save the **Course** and system returns to the display from which the add **Course** was selected.

REQ-6.6: When user selects to export a **Course**, the system prompts the user for a location to save a **File** containing the **Course**. Once the user has entered the location, the system returns to the display from which the add **Course** was selected.

REQ-6.7: If user selects "Accept" while adding, importing, or editing a **Course** and all of the **Course** has not been entered, the system displays "The Following information is Missing: "and lists the fields that are empty.

REQ-6.8: If user selects "Accept" while adding, importing, or editing a **Course** and the **Course Title**, **Course Section**, or **Course Number** already exist, the system displays "Course Already Exists: " and displays the existing **Course**.

3.7 Manage Announcements

3.7.1 Description and Priority

Description	The system displays "View Announcements" (see section 3.2) with added management features. These features include add, edit, and remove **Announcements**. (see Appendix C, C-9)
Priority	High

3.7.2 Stimulus/Response Sequences

Stimulus	User selects "Manage Announcements"
Response	System takes user to the "View Announcements" display with added features (see description)
Stimulus	User selects to edit an **Announcement.**
Response	System displays the **Announcement** and the data items it editable fields.
Stimulus	User edits the **Announcement** and selects "Accept"
Response	System saves the **Announcement** and returns to "Manage Announcements."
Stimulus	User selects to remove an **Announcement.**
Response	System prompts the user to confirm removal (see Appendix C, C-10)
Stimulus	User selects "Remove"
Response	System removes the **Announcement** and returns to "Manage Announcements."
Stimulus	User selects to add an **Announcement.**
Response	System displays **Announcement** data items it editable fields.
Stimulus	User enters the **Announcement** data items and selects "Accept"
Response	System saves the **Announcement** and returns to "Manage Announcements."

3.7.3 Functional Requirements

REQ-7.1: When user selects "Manage Announcements," system displays "View Announcements" (see section 3.2) with added management features. These features include add, edit, and remove **Announcements**. (see Appendix C, C-9)

REQ-7.2: When user selects to edit an **Announcement**, the system displays the data items in editable data fields. If the user selects "Accept," the system will save the **Announcement** and system returns to the "Manage Announcements" display.

REQ-7.3: When user selects to remove an **Announcement**, the system prompts the user to confirm the removal (see Appendix C, C-10). If the user selects "Remove," the system will remove the **Announcement** and system returns to the "Manage Announcements" display.

REQ-7.4: When user selects to add an **Announcement**, the system displays the data items in editable data fields. If the user selects "Accept," the system will save the **Announcement** and system returns to the "Manage Announcements" display.

REQ-7.5: If user selects "Accept" while adding, importing, or editing an **Announcement** and all of the **Announcement** has not been entered, the system displays "The Following information is Missing: "and lists the fields that are empty.

Others: REQ-2.2, REQ-2.3, REQ-2.4, REQ-2.5, REQ-2.6

3.8 Manage Grades

3.8.1 Description and Priority

Description	The system displays a table of fields (a grid) with the **Course's Students** on the right and the **Course's Assignments** on the top. The fields are editable, though the user must select "Save" to save the changes. Above the table is the **Course** grade distribution graph (identical to the graph in "View Grades") (see Appendix C, C-13).
Priority	High

3.8.2 Stimulus/Response Sequences

Stimulus	User selects "Manage Grades"
Response	System takes user to the "Manage Grades" display.
Stimulus	User enters **Assignment Scores** into the table and selects "Save."
Response	System saves the **Assignment Scores** and returns to "Manage Grades"

3.8.3 Functional Requirements

REQ-8.1: The system displays a table of fields (a grid) with the **Course's Students** on the right and the **Course's Assignments** on the top. The fields are editable, though the user must select "Save" to save the changes. Above the table is the **Course** grade distribution graph (identical to the graph in "View Grades") (see Appendix C, C-13).

REQ-8.2: If no **Assignments** exist, the system displays "No Assignments Exist," and displays a link to add **Assignment**.

REQ-8.3: If no **Students** exist, the system displays "No Students Exist" and displays a link to add **Student**.

3.9 Manage Assignments

3.9.1 Description and Priority

Description	The system displays "View Assignments" (see section 3.4) with added management features. These features include add, import, edit, and remove **Assignments**. The user has the ability to upload **Files** to for the **Assignment**, and download those **Files**. Lastly, the user may also download **Files** that are submitted by **Students** (see Appendix C, C-11)
Priority	High

3.9.2 Stimulus/Response Sequences

Stimulus	User selects "Manage Assignments"
Response	System takes user to the "View Assignments" display with added features (see description)
Stimulus	User selects to edit an **Assignment.**
Response	System displays the **Assignment** and the data items it editable fields.
Stimulus	User edits the **Assignment** and selects "Accept"
Response	System saves the **Assignment** and returns to "Manage Assignments."
Stimulus	User selects to remove an **Assignment.**
Response	System prompts the user to confirm removal (see Appendix C, C-10)
Stimulus	User selects "Remove"
Response	System removes the **Assignment** and returns to "Manage Assignments."
Stimulus	User selects to add an **Assignment.**
Response	System displays **Assignment** data items it editable fields.
Stimulus	User enters the **Assignment** data items and selects "Accept"
Response	System saves the **Assignment** and returns to "Manage Assignments."
Stimulus	User selects to import an **Assignment.**
Response	System prompts the user for the location of a **File** that contains an **Assignment**
Stimulus	User enters the location of the file.
Response	System saves the **Assignment** and returns to "Manage Assignments."
Stimulus	User selects to "Upload"
Response	System prompts the user for the location of a **File** for the **Assignment**
Stimulus	User selects to "Download Assignment Files"
Response	System prompts the user for the location to save the **Assignment Files.**
Stimulus	User selects to "Download Student Files"
Response	System prompts the user for the location to save the **Files** submitted by **Students** for the **Assignments**.

3.9.3 Functional Requirements

REQ-9.1: When user selects “Manage Assignments,” system displays “View Assignments” (see section 3.2) with added management features. These features include add, import, edit, and remove **Assignments**. (see Appendix C, C-11)

REQ-9.2: When user selects to edit an **Assignment**, the system displays the data items in editable data fields (see Appendix, C-12). If the user selects “Accept,” the system will save the **Assignment** and system returns to the “Manage Assignments” display.

REQ-9.3: When user selects to remove an **Assignment**, the system prompts the user to confirm the removal. If the user selects “Remove,” the system will remove the **Assignment** and system returns to the “Manage Assignments” display.

REQ-9.4: When user selects to add an **Assignment**, the system displays the data items in editable data fields. If the user selects “Accept,” the system will save the **Assignment** and system returns to the “Manage Assignments” display.

REQ-9.5: When user selects to import an **Assignment**, the system displays prompts the user to select a **File**. When the user selects a **File** containing an **Assignment**, the system will save the **Assignment** and system returns to the “Manage Assignments” display.

REQ-9.6: When user selects to “Upload,” the system prompts the user for the location of a **File** for the **Assignment**. When the user enters the location, the **File** is saved and the system returns to “Manage Assignments.”

REQ-9.7: When user selects to “Download Assignment Files,” the system prompts the user for the location to save the **Files** for the **Assignment**.

REQ-9.8: When user selects to “Download Student Files,” the system prompts the user for the location to save the **Files** by the **Students** for the **Assignment**.

REQ-9.9: If user selects “Accept” while adding, importing, or editing an **Assignment** and all of the **Assignment** has not been entered, the system displays “The Following information is Missing: “and lists the fields that are empty.

REQ-9.10: If user selects “Accept” while adding, importing, or editing a **Assignment** and the **Assignment Title**, **Assignment Section**, or **Assignment Number** already exist, the system displays “**Assignment** Already Exists: ” and displays the existing **Assignment**.

REQ-9.11: The “Download Assignment Files” is displayed when there are **Files** for that **Assignment.**

REQ-9.12: The “Download Student Files” is displayed when there are **Files** submitted by the **Students** for that **Assignment.**

Others: REQ3.6, REQ-4.2, REQ-4.6

3.10 Manage Accounts

3.10.1 Description and Priority

Description	The system displays table of **Students** and **Teacher Assistants** in the **Course**, and their data items (including what **Courses** they are in). The user may add, import, edit, and remove **Accounts**. (see Appendix C, C-14)
Priority	High

3.10.2 Stimulus/Response Sequences

Stimulus	User selects "Manage Accounts"
Response	System takes user to the "Manage Accounts" display (see Appendix C, C-14)
Stimulus	User selects to edit an **Account.**
Response	System displays the **Account** and the data items it editable fields. (see Appendix C, C-15)
Stimulus	User edits the **Account** and selects "Accept"
Response	System saves the **Account** and returns to "Manage Accounts."
Stimulus	User selects to remove an **Account.**
Response	System prompts the user to confirm removal
Stimulus	User selects "Remove"
Response	System removes the **Account** and returns to "Manage Accounts."
Stimulus	User selects to add an **Account.**
Response	System displays **Account** data items it editable fields.
Stimulus	User enters the **Account** data items and selects "Accept"
Response	System saves the **Account** and returns to "Manage Accounts."
Stimulus	User selects to import an **Account.**
Response	System prompts the user for the location of a **File** that contains an **Account**
Stimulus	User enters the location of the file.
Response	System saves the **Account** and returns to "Manage Accounts."

3.10.3 Functional Requirements

REQ-10.1: When user selects “Manage Accounts,” system displays table of **Students** and **Teacher Assistants** in the **Course**, and their data items (including what **Courses** they are in). The user may add, import, edit, and remove **Accounts**. (see Appendix C, C-14)

REQ-10.2: When user selects to edit an **Account**, the system displays the data items in editable data fields (see Appendix, C-15). It also contains a list of **Courses** to which the **Account** may be added to by checking the box next to the **Course Name**. If the **Account** is a **Teacher Aid**, the system displays a list of **Permissions** which may be edited by checking or un-checking the respective boxes (see Appendix C, C-15).

REQ-10.3: When user selects to remove an **Account**, the system prompts the user to confirm the removal. If the user selects “Remove,” the system will remove the **Account** and system returns to the “Manage Accounts” display.

REQ-10.4: When user selects to add an **Account**, the system displays the data items in editable data fields. If the user selects “Accept,” the system will save the **Account** and system returns to the “Manage Accounts” display.

REQ-10.5: When user selects to import an **Account**, the system displays prompts the user to select a **File**. When the user selects a **File** containing an **Account**, the system will save the **Account** and system returns to the “Manage Accounts” display.

REQ-10.9: If user selects “Accept” while adding, importing, or editing an **Account** and all of the **Account** has not been entered, the system displays “The Following information is Missing: “and lists the fields that are empty.

REQ-10.10: If user selects “Accept” while adding, importing, or editing an **Account Name, Username,** or **Email** Address already exist, the system displays “**Account** Already Exists: ” and displays the existing **Account**.

REQ-10.11: If the user attempts to add a **Teacher Assistant** to a **Course** which already has one, the system displays “A Teacher Assistant already exists in: “ and displays the **Course Name.**

REQ-10.12: If the user attempts to add a **Teacher Assistant** or **Student** without assigning then to, at least, one **Course,** the system displays “The account must be enrolled in, at least, one course.”

REQ-10.13: If no A**ccounts** exist, the system displays “No Accounts Exist” and provides a link to add an **Account**.

3.11 Send Email

3.11.1 Description and Priority

Description	The system prompts the user for information required for an **Email** to be sent. Once the user enters the information and selects "Send," then system sends the **Email.**
Priority	Medium Low

3.11.2 Stimulus/Response Sequences

Stimulus	User selects "Send Email"
Response	System takes user to the "Send Email" display. This prompts the User to information about the **Email** being sent.
Stimulus	User inputs information
Response	System displays confirmation.

3.11.3 Functional Requirements

REQ-11.1: When user selects "Send Email," the system displays blank fields which represent a new **Email**.

REQ-11.2: When user selects "Send" and all the information has been entered, the system sends the **Email**.

REQ-11.3: When user selects "Send" and all of the information has not been entered, the system displays "The Following Information is Missing: "and lists the fields that are empty.

REQ-11.4: If the user selects **"**Send" with an invalid **Username, Course Name** or **EmailAddress**, the system displays "Invalid Recipient(s)."

REQ-11.5: If user selects "Send" while all of the **Email** has not been entered, the system displays "The Following information is Missing: "and lists the fields that are empty.

3.12 Take Attendance

3.12.1 Description and Priority

Description	The system displays a table of **Students** and the current week's calendar dates (a grid). The table is a grid of check-boxes and the user may mark **Students** present by checking the check-boxes. (See Appendix C, C-16)
Priority	Medium Low

3.12.2 Stimulus/Response Sequences

Stimulus	User selects "Take Attendance"
Response	System takes user to the "Take Attendance" display. The system displays a table of **Students** and the current week's calendar dates.
Stimulus	User edits the attendance records by checking or un-checking the boxes and selects "Accept."
Response	System saves the attendance records.
Stimulus	User selects to move forward, or backward a calendar week.
Response	System displays the table with the next, or previous week's dates.

3.12.3 Functional Requirements

REQ-12.1: When user selects "Take Attendance," The system displays a table of **Students** and the current week's calendar dates (a grid). The table is a grid of check-boxes and the user may mark **Students** present by checking the check-boxes. (See Appendix C, C-16)

REQ-12.2: When user selects "Next," the system changes the calendar week, which is being displayed in the table, to 1 week ahead of what is currently being displayed. The week's displayed "starting date" is also changed.

REQ-12.2: When user selects "Prev," the system changes the calendar week, which is being displayed in the table, to 1 week before what is currently being displayed. The week's displayed "starting date" is also changed.

REQ-12.3: When user selects "Accept," the system stores the changes.

REQ-12.4: If no **Students** exist, the system displays "No Students Exist."

3.13 View Roster

3.13.1 Description and Priority

Description	The system a list of **Students** who are in the **Course**. This list includes the **Student's Name, Username, Email, and Courses.** It will not display their **Password**.
Priority	Medium High

3.13.2 Stimulus/Response Sequences

Stimulus	User selects "View Roster"
Response	**System** displays a **Course** roster.

3.13.3 Functional Requirements

REQ-13.1: When user selects "View Roster," the system displays a list of **Students** in the **Course**. This list includes the **Student's Name, Username, Email, and Courses.** It will not display their **Password**.

REQ-13.2: If no **Students** exist, the system displays "No Students Exist."

3.14 Adjust Grading Curve

3.14.1 Description and Priority

Description	The system displays two pie graphs, side by side, and below those is a box to adjust the grading curve. One graph is a pie chart split into sections which represent letter grade percentage ranges (i.e. 90% to 100% is an A for many **Courses**). The other is a **Course** grade distribution graph, each section representing a letter grade and showing how many students have that grade based upon the current grading curve. (see Appendix C, C-17).
Priority	Medium

3.14.2 Stimulus/Response Sequences

Stimulus	User selects "Adjust Grading Curve"
Response	System takes user to the "Adjust Grading Curve" display. System displays the two pie graphs described in the description, and the **Course** curve adjustment interface. (See Appendix C, C-17 for sample interface).
Stimulus	User edits curve and selects "Save."
Response	The system saves the grading curve.

3.14.3 Functional Requirements

REQ-14.1: When user selects "Adjust Grading Curve," the system displays two pie graphs, side by side, and below those is a box to adjust the grading curve. (see description and Appendix C, C-17 for information about the graphs).

REQ-14.2: When user adjusts the lower bounds of a grade by selecting the "+" or "-"icons, the system changes the graphs (in real time) to show this adjustment.

REQ-14.3: If the user selects "Cancel," the system will return to the "Adjust Grading Curve" display without saving any current adjustments.

REQ-14.4: If the user selects "Save," the system will save the curve adjustment.

REQ-14.5: If the user sets the lower bound of a grade to "1" or 1 plus the lower bound of the grade below, then the "-" icon for that grade is disabled. (example: "C" is set to 71 and "D" is set to 70, then C's "-" is disabled)

REQ-14.6: If the user sets the lower bound of a grade to "100" or 1 minus the lower bound of the grade above, then the "+" icon for that grade is disabled. (example: "C" is set to 71 and "D" is set to 70, then D's "+" is disabled)

3.15 Edit My Account

3.15.1 Description and Priority

Description	The system displays the user's **Username, Email Address,** and **Password** (**Password** is simply shown as "*****") at all times. If the user selects any of these, the fields will become editable and there will appear "Save" and "Cancel" icons below these fields. (See Appendix C, C-6)
Priority	Medium Low

3.15.2 Stimulus/Response Sequences

Stimulus	User selects one of the **Account** fields.
Response	System makes the fields editable (text boxes) and replaces the **Password** field with 3 distinct **Password** fields (old, new, and confirm).
Stimulus	User edits their information and selects "Save"
Response	System saves the new **Account** information.

3.15.3 Functional Requirements

REQ-15.1: When user selects the **Account** fields, the fields will become editable and there will appear "Save" and "Cancel" icons below these fields. The **Password** field is replaced with 3 distinct **Password** fields (old, new, and confirm). ONLY THE **TEACHER** CAN EDIT THEIR **USERNAME** (See Appendix C, C-6)

REQ-15.2: When user selects "Save," the system saves the user's **Account** information.

REQ-15.3: If the **Email Address** is already in use, system displays "EmailAddress Already Exists" and user must correct the error to continue.

REQ-15.4: If **Email Address** isn't valid, the system displays "The EmailAddress is Invalid."

REQ-15.5: If **Password** does not comply with SE-4 (see Section 5.3 in SRS), the system displays "The Password is Invalid."

REQ-15.6: If New **Password** field does not match the confirm **Password** field, the system displays "Password Does Not Match" and asks the user to re-enter the **Password.** (See Appendix C, C-7)

REQ-15.7: If Old **Password** field does not match the user's **Password**, the system displays, "Old Password is incorrect."

3.16 Printer Friendly Display

3.16.1 Description and Priority

Description	The system minimizes color usage by displaying the feature display without the left navigation column (see Appendix C for screenshots), displays in only grayscale, and text is formatted to be fit 8.5” x 11” margin. Tables and images are scaled to fit the 8.5” x 11 margin”. (Approved by Customer)
Priority	Low

3.16.2 Stimulus/Response Sequences

Stimulus	User selects “Printer Friendly Display”
Response	System takes user to the “Printer Friendly” version of the display from which the “Printer Friendly Display” feature was selected. (See Appendix C for screenshots)

3.16.3 Functional Requirements

REQ-16.1: When user selects “Printer Friendly Display,” the system minimizes color usage by displaying the feature display without the left navigation column (see Appendix C for screenshots), displays in only grayscale, and text is formatted to be fit 8.5” x 11” margin. Tables and images are scaled to fit the 8.5” x 11 margin”. (Approved by Customer)

3.17 Reset Password

3.17.1 Description and Priority

Description	The system randomly generates a **Password**, changes the user's **Password** to the newly generated **Password** and sends the **Password** to the user's **EmailAddress**. Note that this feature is available before login.
Priority	Medium Low

3.17.2 Stimulus/Response Sequences

Stimulus	User selects "Reset Password"
Response	System takes user to the "Reset Password" display, which displays confirmation and the user's **EmailAddress**.

3.17.3 Functional Requirements

REQ-17.1: When user selects "Reset," the system randomly generates a Password, changes the user's **Password** to this, and sends the **Password** to the user's **EmailAddress**.

4. External Interface Requirements

4.1 User Interfaces

UI-1: The system conforms to the *Web Content Accessibility Guidelines (WCAG) 2.0*

UI-2: The system provides a help page for every interface that requires user input to explain how to use that interface.

UI-3: The user should be able to navigate to any display they are permitted to view in fewer than four intermediate displays.

UI-4: The system doesn't use any design elements that force a display to take more than 8 seconds to download on a DSL/Cable Connection.

UI-5: The system doesn't use more than two fonts or font colors to display text paragraphs.

UI-6: The system layout doesn't change if the window is resized or font size is changed.

UI-7: The system labels all hyperlinks with underline text. If the hyperlink is in a sentence, the system underlines it. The system only underlines hyperlinks.

4.2 Hardware Interfaces

GooGrade runs on a web server accessible via the user's computer using a keyboard and mouse.

4.3 Software Interfaces

GooGrade server-side interface consists of a Linux or Window OS with an Apache web server. A storage server is needed. The user is able to interact with GooGrade using the any of the supported web browsers.

4.4 Communications Interfaces

The main communication interface is HTTP and HTTPS as the GooGrade is web based. Any supported web browser (see OE-1) is able to interact with GooGrade. The system can send **Email** to users. As of version 2 a **Teacher** can compose **Email** and send them to users through the system. Transport Layer Security (TLS) is implemented. All information stored in the system is encrypted.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

PE-1: GooGrade accommodates 200 users during any given time.

PE-2: Displays load within 8 seconds or less on a DSL/Cable Connection.

As recommended by the Customer.

5.2 Safety Requirements

No safety requirements are required at this time.

5.3 Security Requirements

SE-1: **User** must be valid (**Account** exists) and needs to be authenticated by the system in order to use GooGrade.

SE-2: GooGrade must comply by law with Family Educational Rights and Privacy Act (FERPA). FERPA is viewable online at http://www.ed.gov/policy/gen/guid/fpco/ferpa/index.html.

SE-3: **Student** directory information, such as name, address, and telephone number, must not be shown to other unless consent of **Student** or **Student**'s parents as stated by FERPA

SE-4: After 5 failed login attempts, the **User** is required to wait 10 minutes in order to attempt to log in again.

SE-5: User **Password** must contain at least 6 characters and must include the following: at least 1 number, at least 1 capital character and the **Password** may not be the same as the **Username**.

SE-6: User will be able to reset **Password** by answering identifying question that will prove that the User is the **Account** holder.

5.4 Software Quality Attributes

QA-1: GooGrade should be simple enough for a first time computer user to adapt within the first week of using it. Simplicity will be measured with a survey (see Appendix C for survey).

Appendix A: Glossary

A-B

- **Admin** - A User with administrative abilities. There are two kinds: Teacher and Teacher Assistant.
- **Application** - the software package to be installed by a host machine.
- **Attached File** - A File Attachment is a document that a user has uploaded onto the system to be distributed to other users.
- **Browser** - A Web Browser, an application like Internet Explorer, Firefox, and Safari to download an interpret web pages.

C-E

- **Core [modules]** - The central part of the software managing authorization of users, database connection, external modules etc.
- **Course** - A group of Students representing a college class. A Course is managed by at least one Teacher and can be assigned any number of Assistants.
- **Email** - A method of private communication between two or more people by sending messages to each user's inbox.
- **Exported Statistics** - A list of classes or students the teacher wishes to save to another format on his or her computer.

F

3 **Features** - Actions that the system can take with data. Features can only be requested from users with appropriate permissions.
4 **File Attachment** - An external file which is uploaded into the system to be downloaded by another user. For Instance, homework or a class reading.

G

5 **Grade** - A value indicating a student's proficiency and rank in their class. An Assignment Grade is a score for a single, particular assignment while the Total Grade is their average.
6 **Grading Rules** - A set of guidelines set by a teacher for the system to compute the total grade from.

H

- **Host Machine** - The computer in which software is installed and run.

I

7 **Inbox - A storage place for all email messages.** Grade is a score for a single, particular assignment while the Total Grade is their average.
8 **Interface** - Also known as a Graphical User Interface (GUI). The graphical, non-functional side of the system.
9 **Imported Statistics** - A list of classes or students a teacher wises to import into the system for use.

L

Logged In User - A user who has entered his or her password and is interacting with the system.

Logged Out User - A user who is not interacting with the system or whose username and password has not been accepted by the system.

M

Metrics - Five statistical values of grades: Maximums, Minimums, Quartiles, Medians, and Modes.

Module - Package of code designed for one or a few related features.

O-P

- **OS** - Acronym for Operating System.
- **Password** - A string of characters that the user inputs with a username to log into the system and gain permissions that user has.
- **Permission** - Determines whether or not a Feature is available to an Account or a User.

R-S

Roster - A list of students in a single class.

Software - The final package of code we have produced which can be installed in separate instances.

Student - A person enrolled in the class and who will be graded.

String - A series of one or more alphanumeric characters and special characters.

System - The local instance of the Software and all of its stored data. It does not include its users.

T

Teacher - The Teacher represents the one responsible for the class and grading.

Teacher Assistant - A person brought in by a Teacher to assist the Teacher in some of the Teacher's tasks.

U-W

Unregistered User - A human who attempts to access the system without any permissions.

User - Any human with an Account within the System.

Appendix B: Data Dictionary

Account = Username
+ Name
+ Password
+ Permission
+ UserType
+ EmailAddress

Username = *A string of user's login name, maximum length of 40 characters*

Name = *A string of item's full name. The maximum string length is 200 characters.*

Password = *A password that grants access to a user. It is at least 6 characters long and encrypted*

Permission = *An array of booleans indicating what following features a user is permitted to use: Sending Emails, Upload Files, View Own Grades, Manage Classes, Manage Metrics, Manage Grades, Manage Rosters, Manage Announcements and Manage Users.*

EmailAddress = *A email address format, represented by a string of 321 characters. that each user has that can be contacted by. The name of the address, the
part before the @ sign, must be no longer than 65 characters and the domain, the part after the @ sign, must be no longer than 255 characters. *

UserType = ["Teacher" | "TeacherAssistant" | "Student"]

TeacherAssistant = *A User type that has permissions equal to or less than a Teacher and more than a Student*

Teacher = 1:5{Course}
+ 1:100{Announcement}
+ Files

Course = 1:200{Student}
+ 0:10{TeacherAssistant}
+ GradingRules
+ CourseTitle
+ CourseSection
+ CourseNumber

CourseTitle = *A string of 100 characters indicating the title of class, such as "Introduction to Welding"*

CourseSection = *A positive integer indicating the section number of the class, if the integer

is single digit than a leading zero is displayed. *

CourseNumber = *A string of 32 characters indicating the short class name, "CSC308"*

GradingRules = Percentages
+ CourseCurve

CourseCurve = *Five numbers indicating the minimum Total Grade required to obtain an A, B, C, and D*

Percentages = * An array of integers indicating the percentage of the Total Grade different types of Assignment Grade make up. There are 6 numbers, each for Homework, Test, Quiz, Final, Participation and Other. All numbers in the array have a sum of 100*

Announcement = AnnouncementTitle
+ AnnouncementText
+ AnnouncementDate

AnnouncementDate = *A date and time in the default date and time format on the Host computer when the Announcement was published*

AnnouncementText = *A long string of 10,000 characters that indicated text body of announcement post*

AnnouncementTitle = *A string of 200 characters that indicates the title of the announcement

Files = *A list of 100 files the user has uploaded onto the system*

Student = 1:100{AssignmentGrade}
+ TotalGrade
+ Files

TotalGrade = *A calculated floating point number, the total score of AssignmentGrades, and a character, representing the letter grade, based on the AssignmentGrade*

AssignmentGrade = Assignment
+ AssignmentScore

AssignmentScore = *A floating point number and letter grade, represented by a char, depicting the score of the assignment.*

Assignment = [Test | Quiz | Homework | Participation | Other]
+ DueDate
+ Name
+ AssignmentTotal
+ Description

DueDate = *The date, using the host machine default for time and date, when the Assignment must be turned in to the Teacher*

Description = *A string, maximum length at 1,000, that contains a description entered by the Teacher when he creates an assignment *

AssignmentTotal = *A floating point number and a char depicting the total possible score points on this assignment*

Email = EmailBody
+ EmailTitle
+ EmailAttachment
+ EmailRecipients

EmailBody = *A string of text written by a user that acts as the body of the email. It holds a maximum of 10,000 characters.*

EmailTitle = *A string of 100 characters for the title of email*

EmailAttachment = *A string address of file to be uploaded and sent. It is no longer than 255 characters*

EmailRecipients = *A list of email addresses of the destinations. Each list item is a string of 321 characters.*

Appendix C: Analysis Models

Survey

Name:

Date:

Are you a teacher or student?

How many weeks have you been using GooGrade for? (round to nearest whole number)

Please rate your overall experience with GooGrade on a 1-10 scale (1 = poor, 10 = excellent)

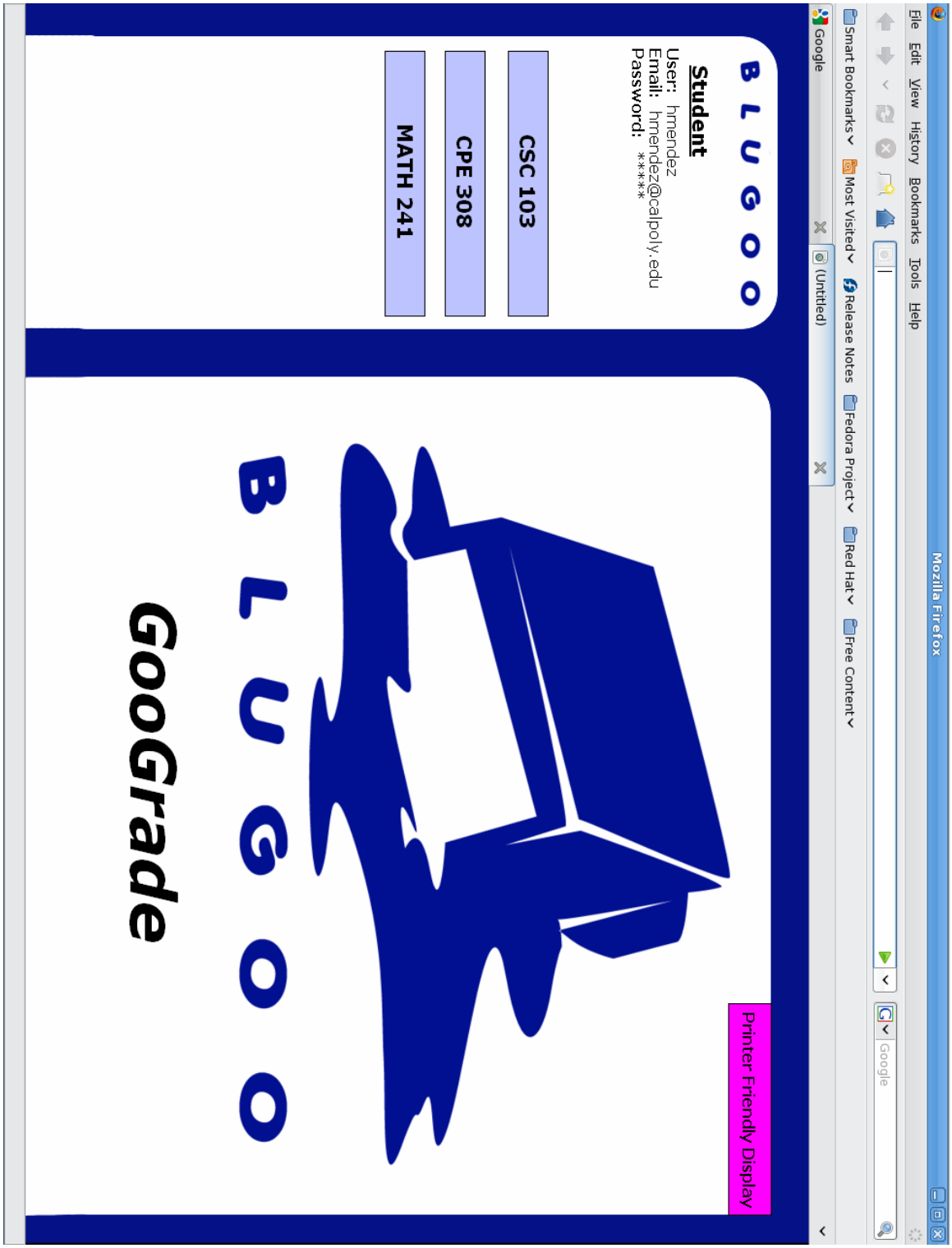
Please rate the GooGrade's features list on a 1-10 scale (1 = poor, 10 = excellent)

Please rate the ease of use of GooGrade on a 1-10 scale (1 = difficult, 10 = easy)

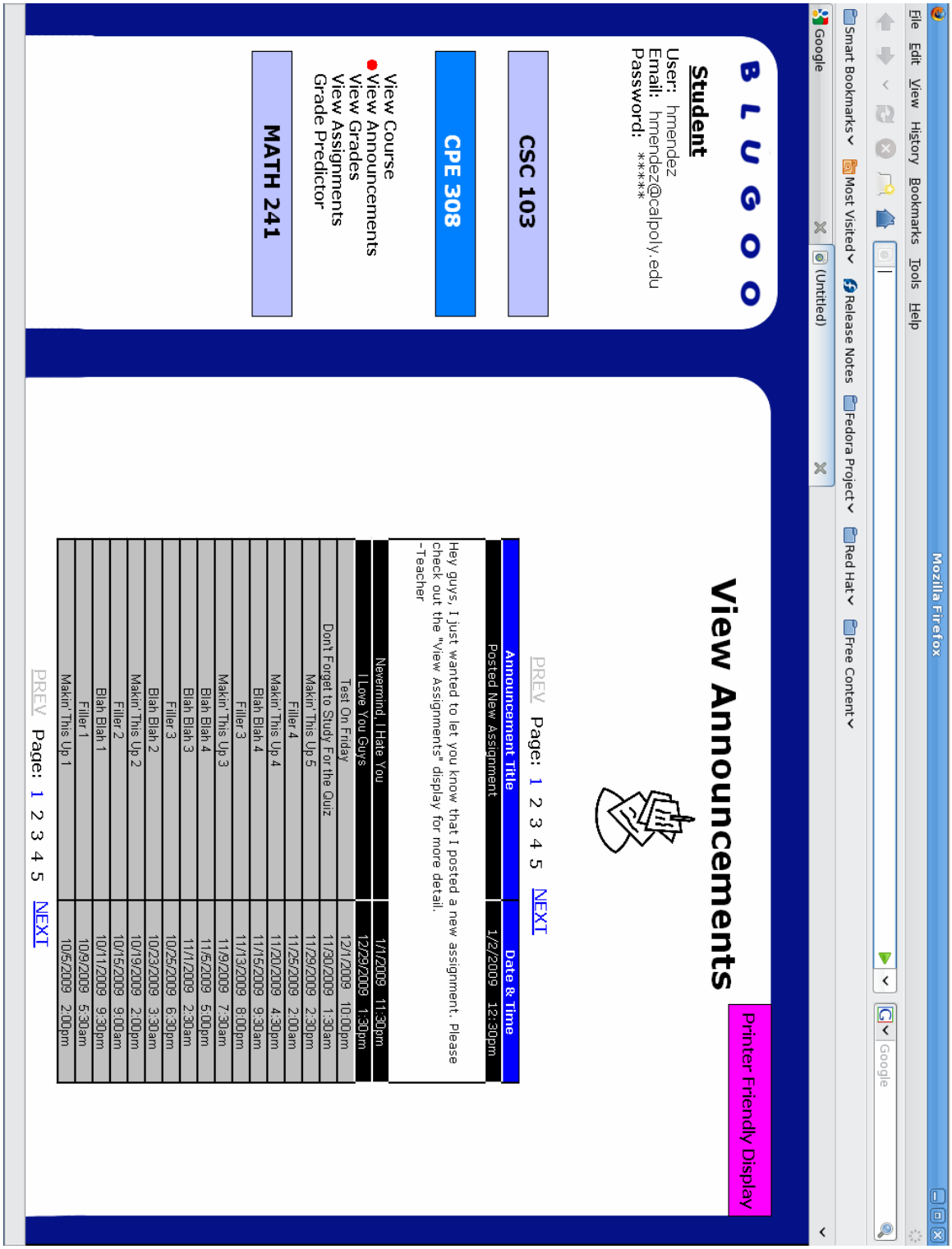
Please rate the GooGrade's graphical user interface on a 1-10 scale (1 = poor, 10 = excellent)

Storyboards

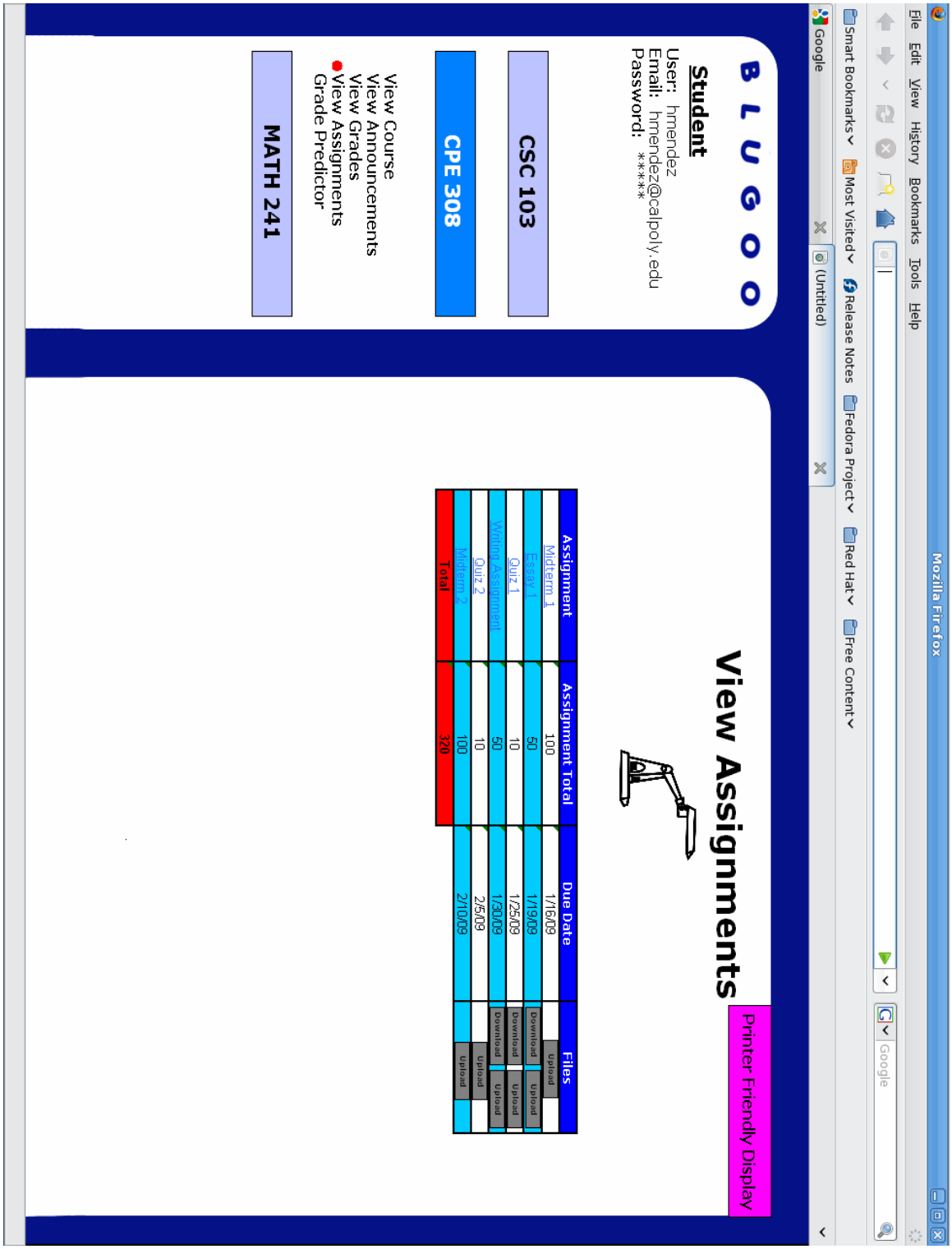
C-1: Student Homescreen



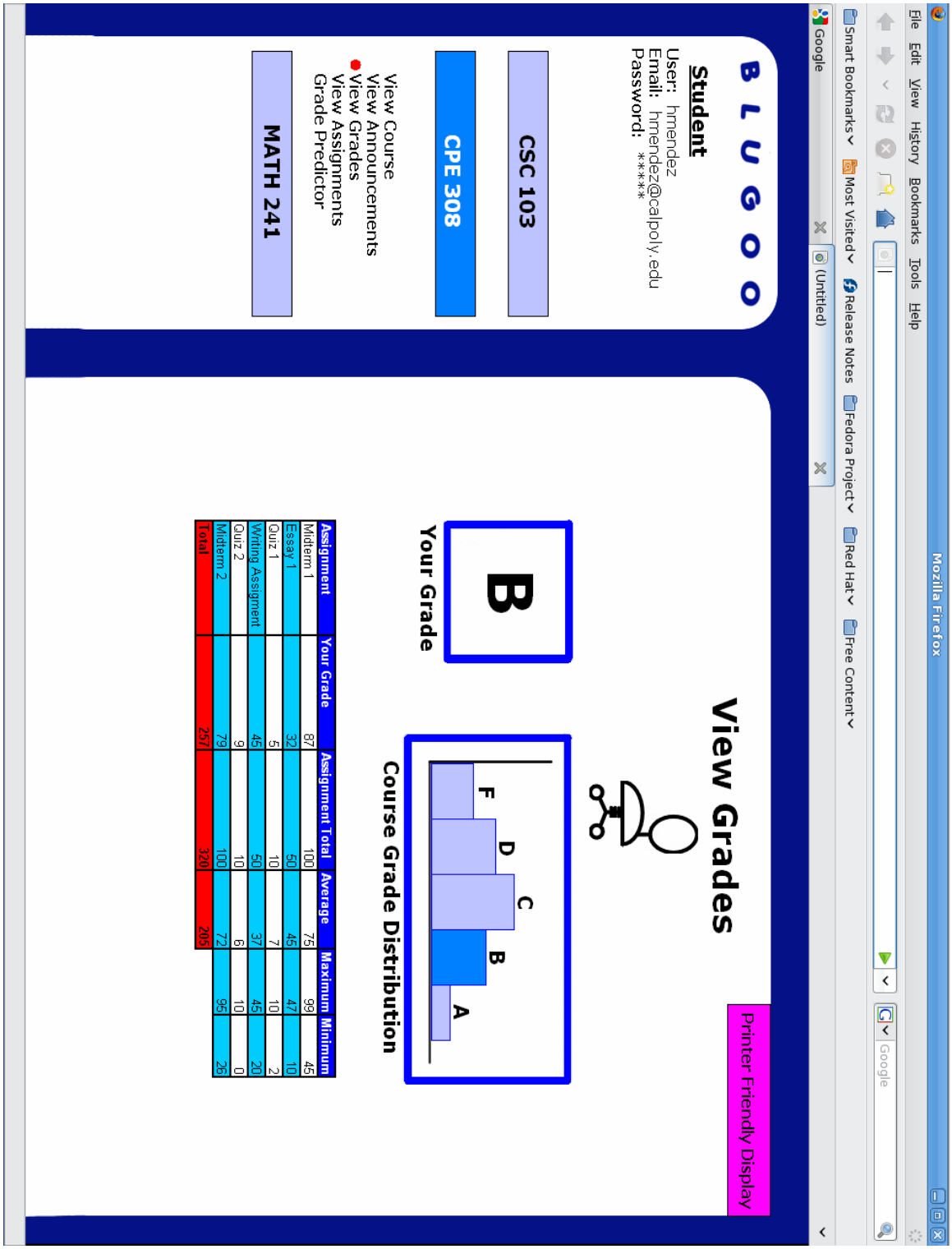
C-2: Student View Announcement



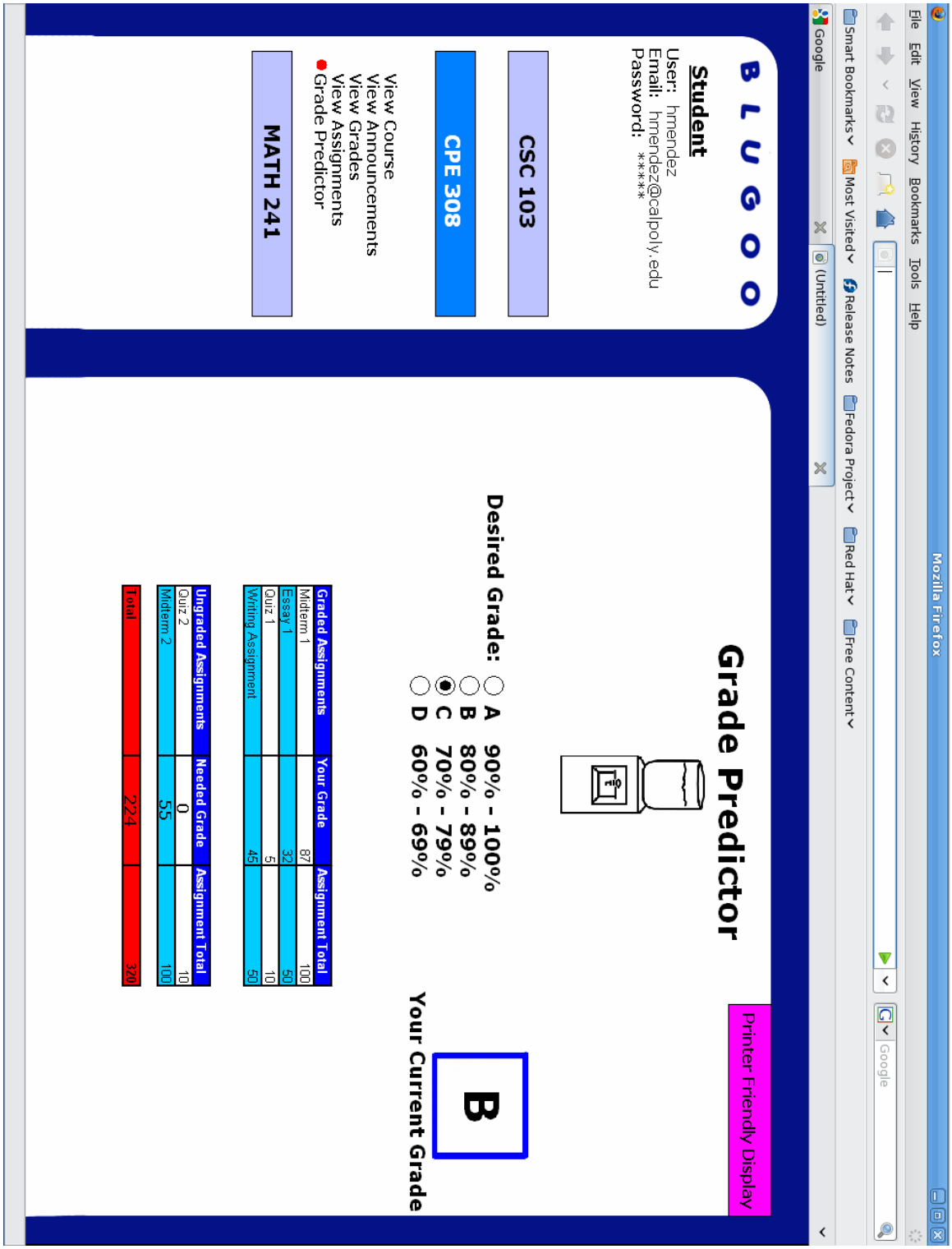
C-3: Student View Assignments



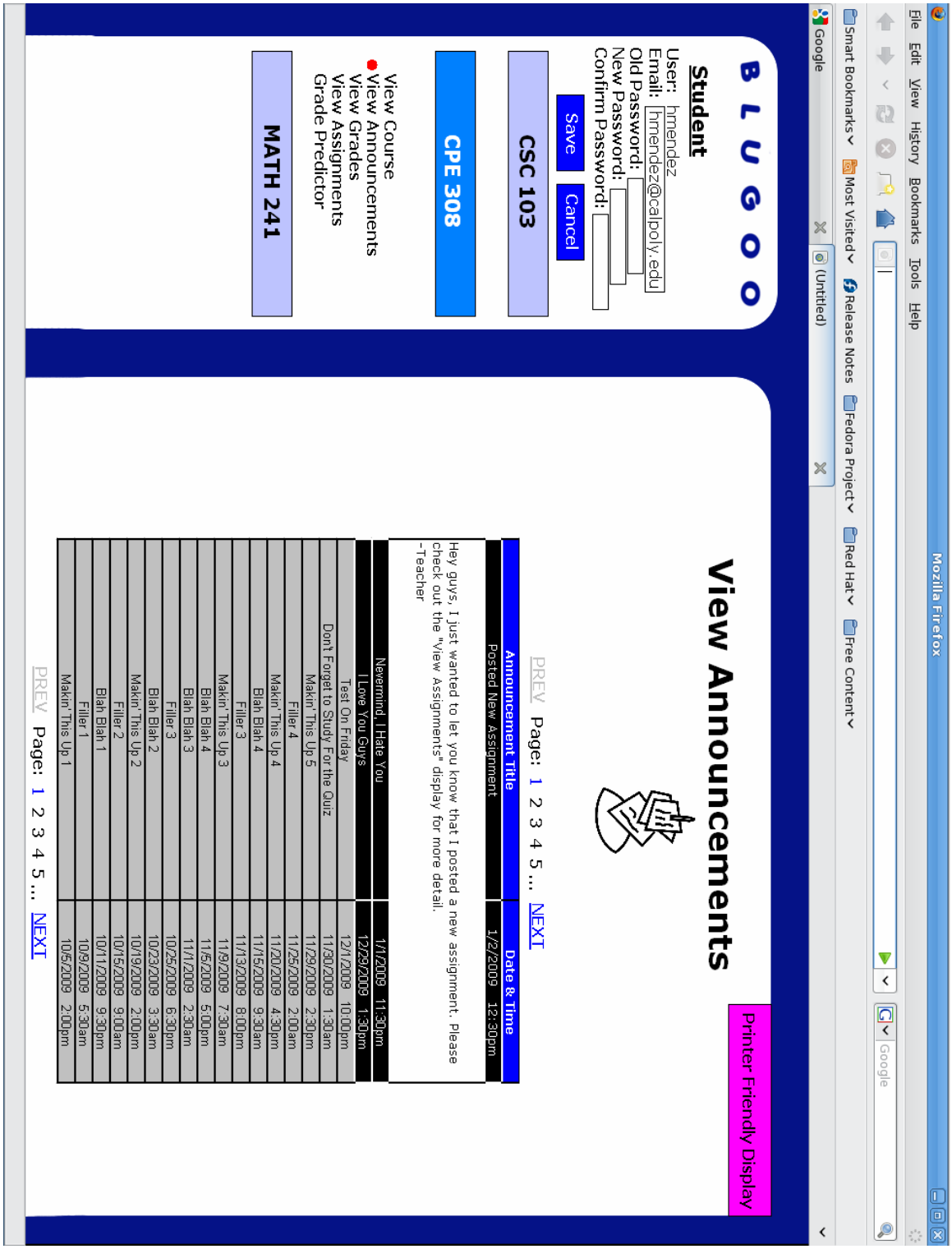
C-4: Student View Grades



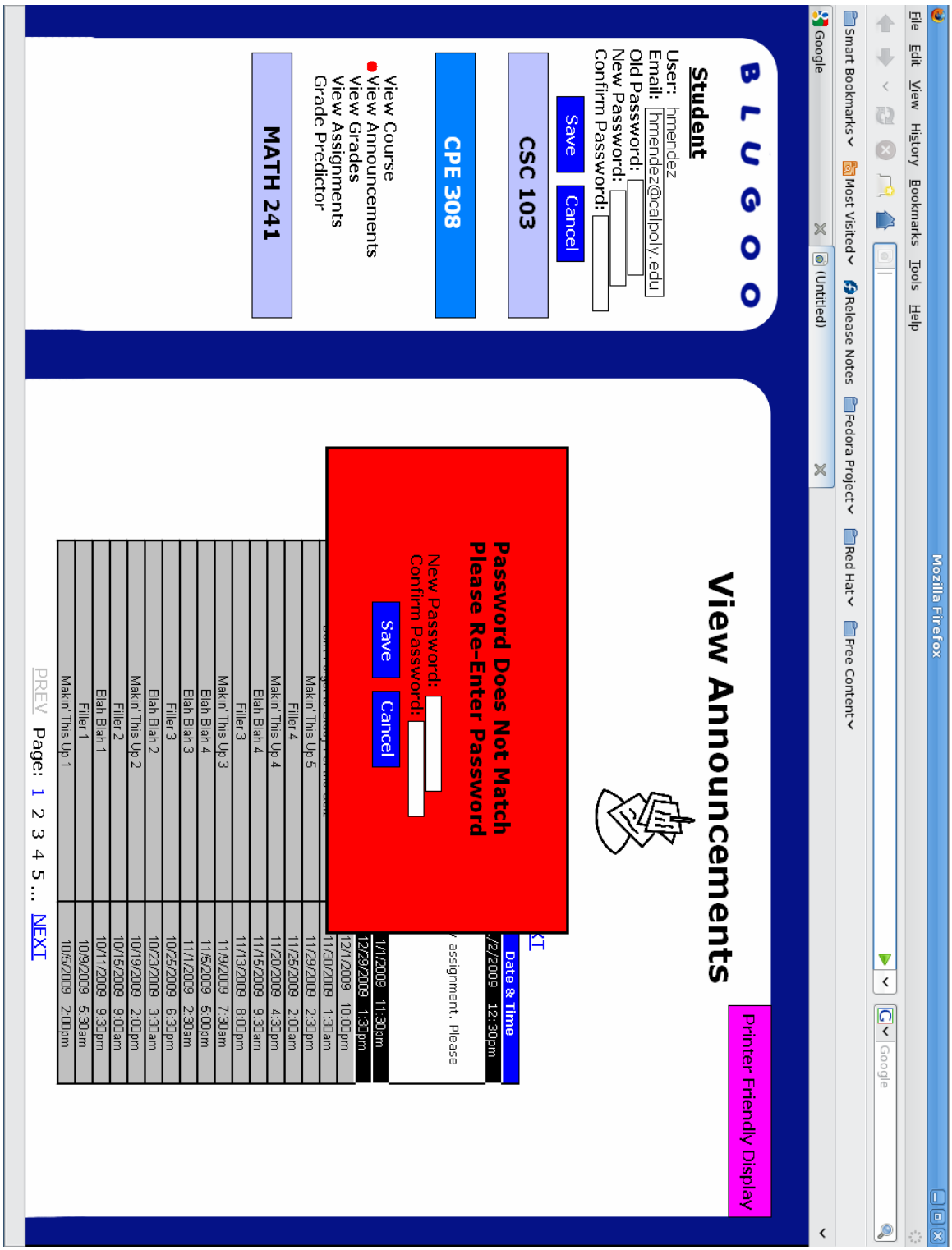
C-5: Student Grade Predictor



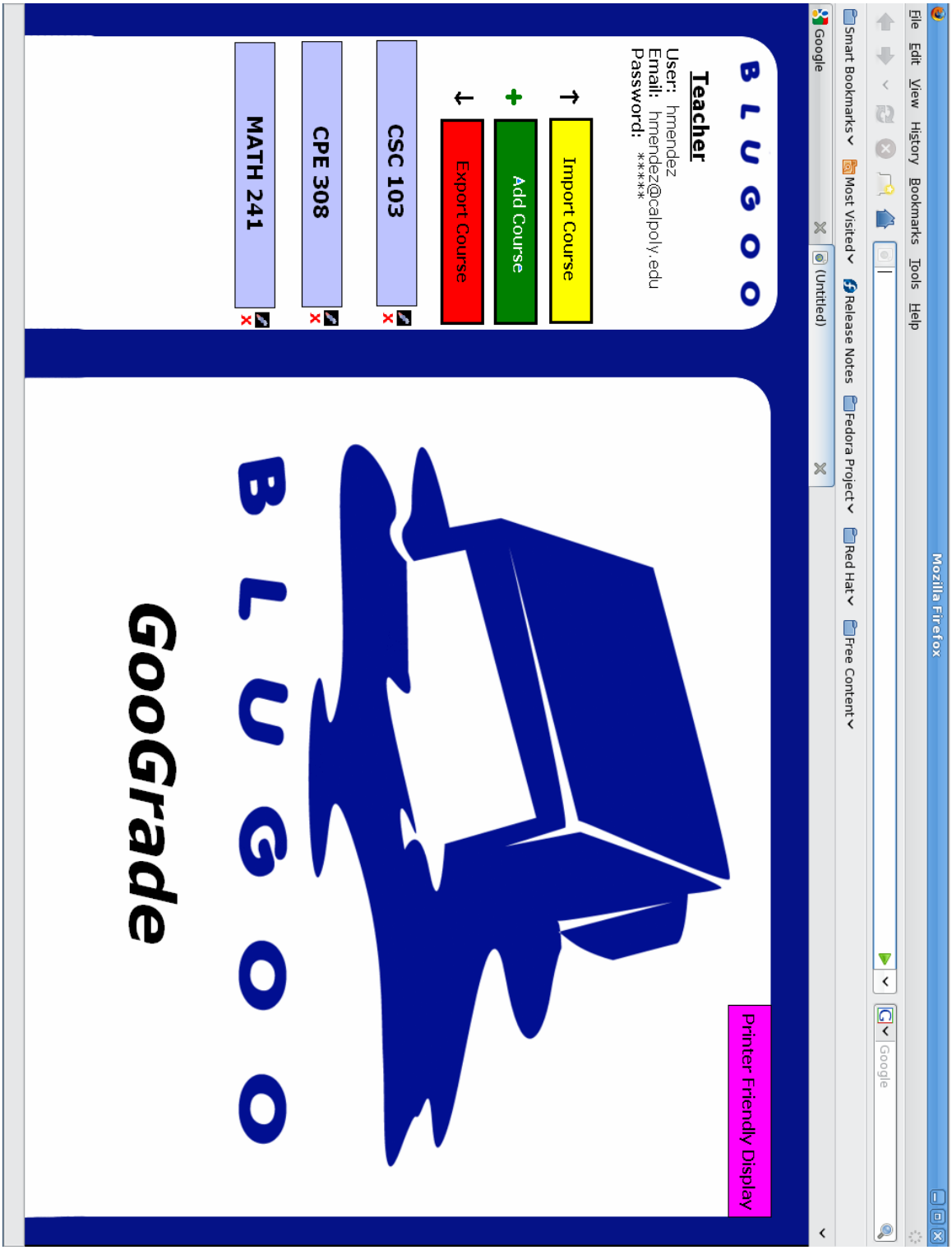
C-6: Student Edit Account



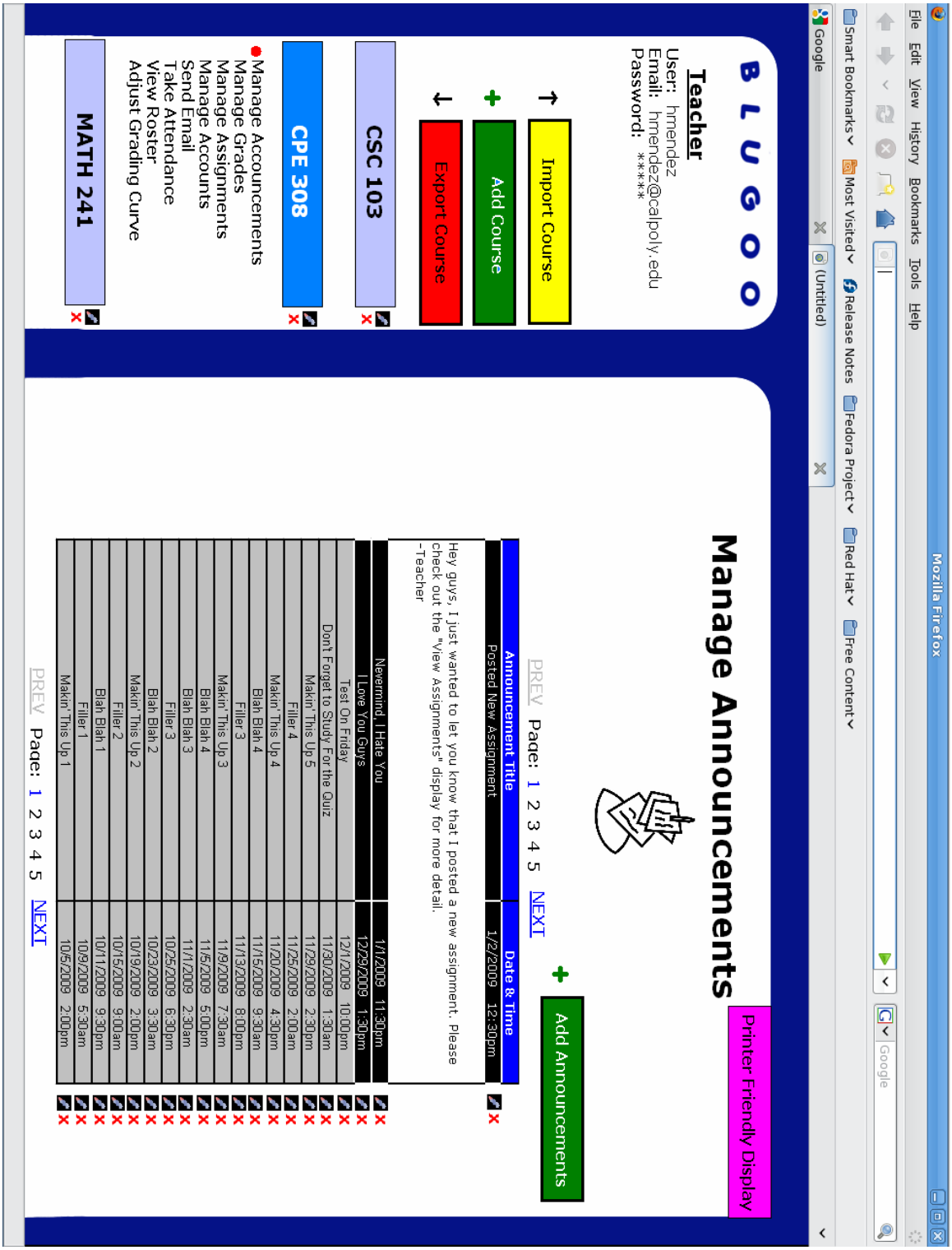
C-7: Student Edit Account Error



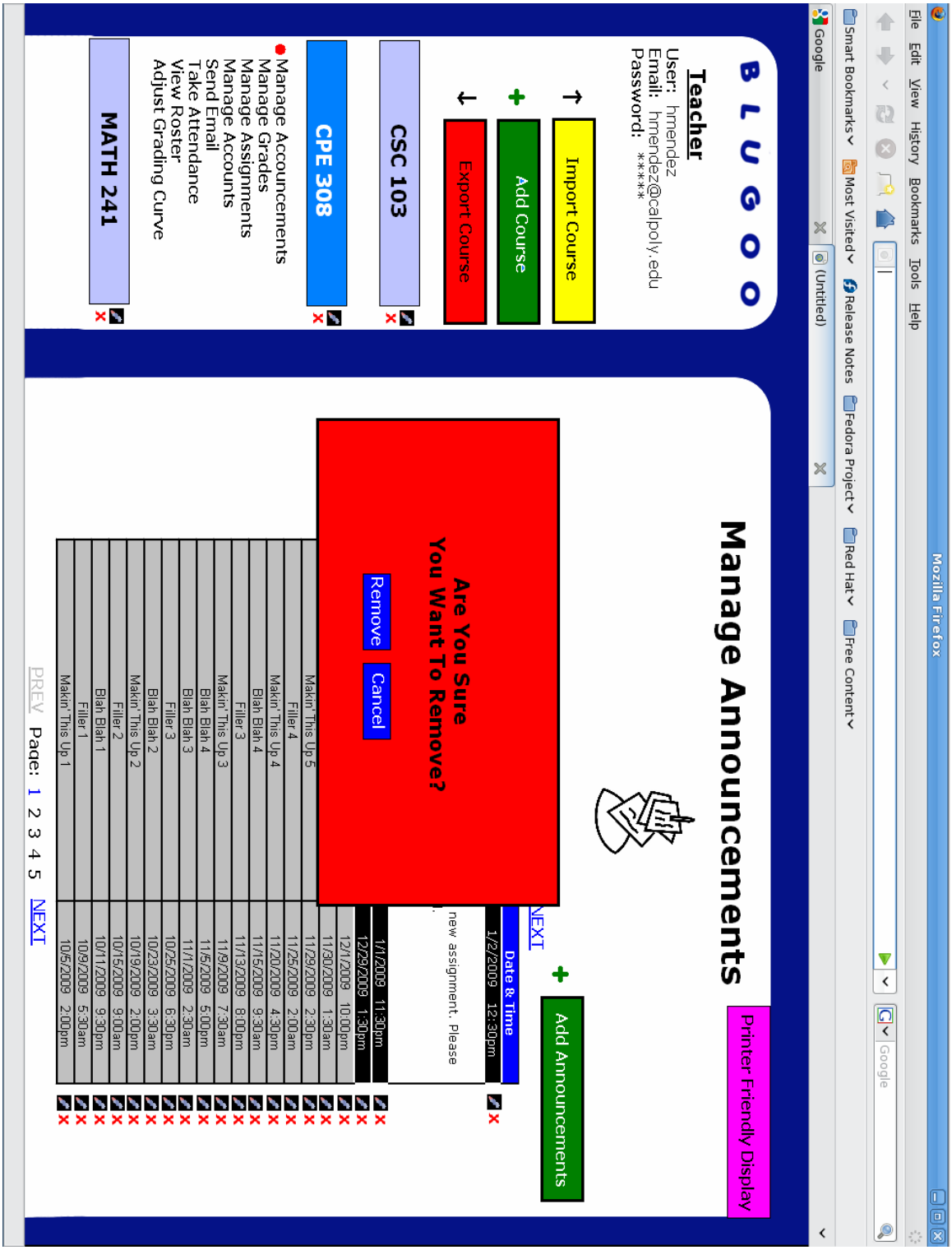
C-8: Teacher Homescreen



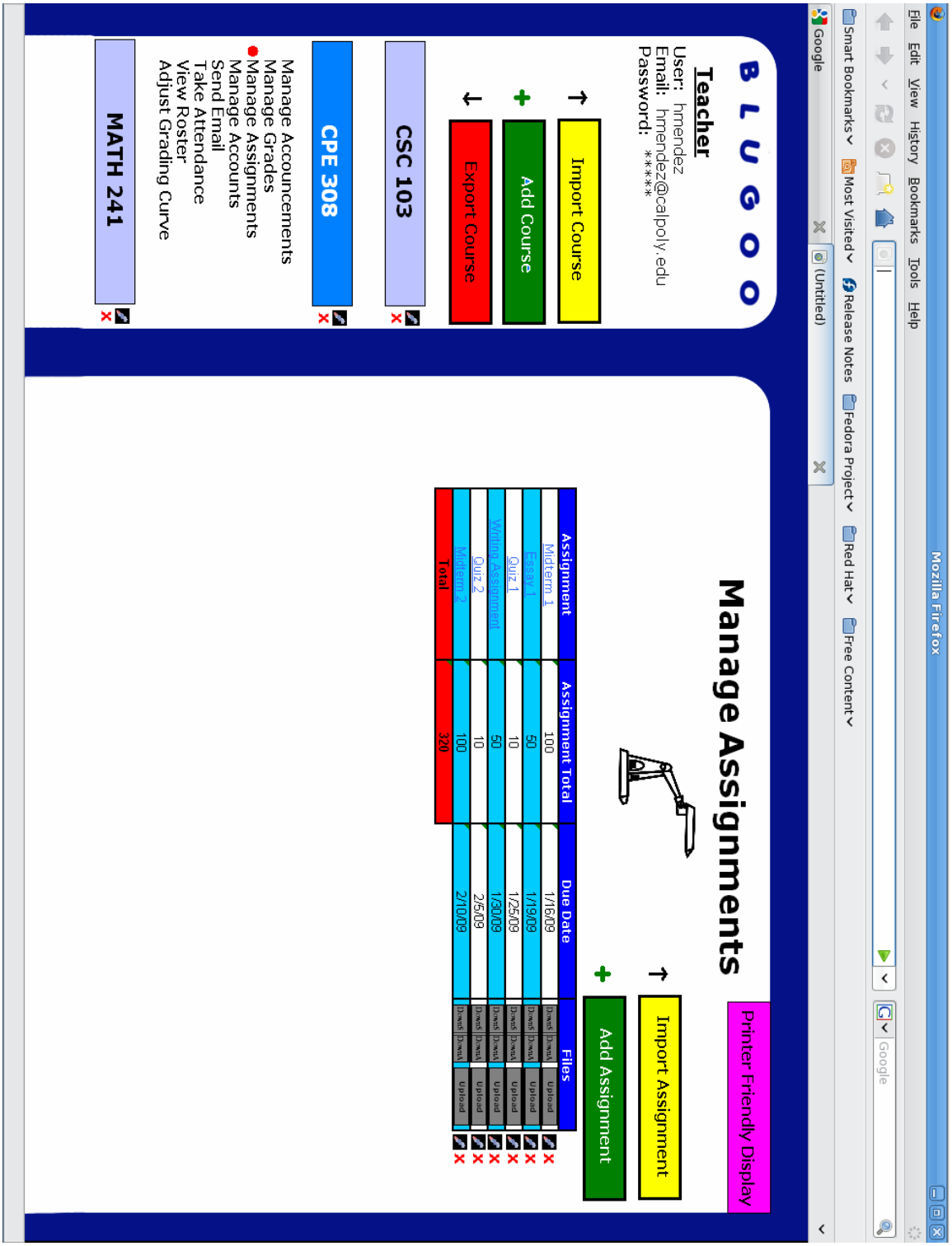
C-9: Teacher Manage Announcement



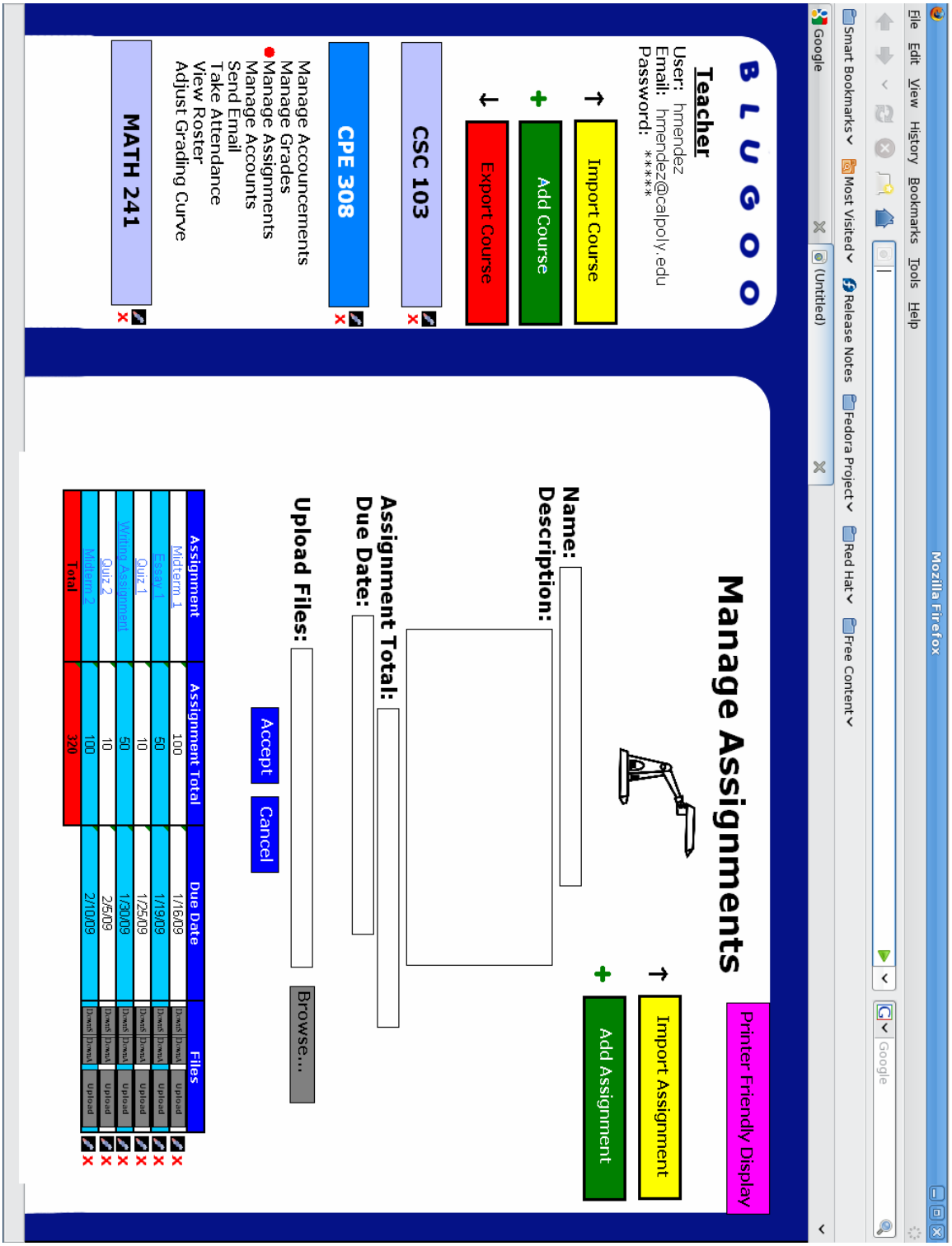
C-10: Teacher Manage Announcement Error



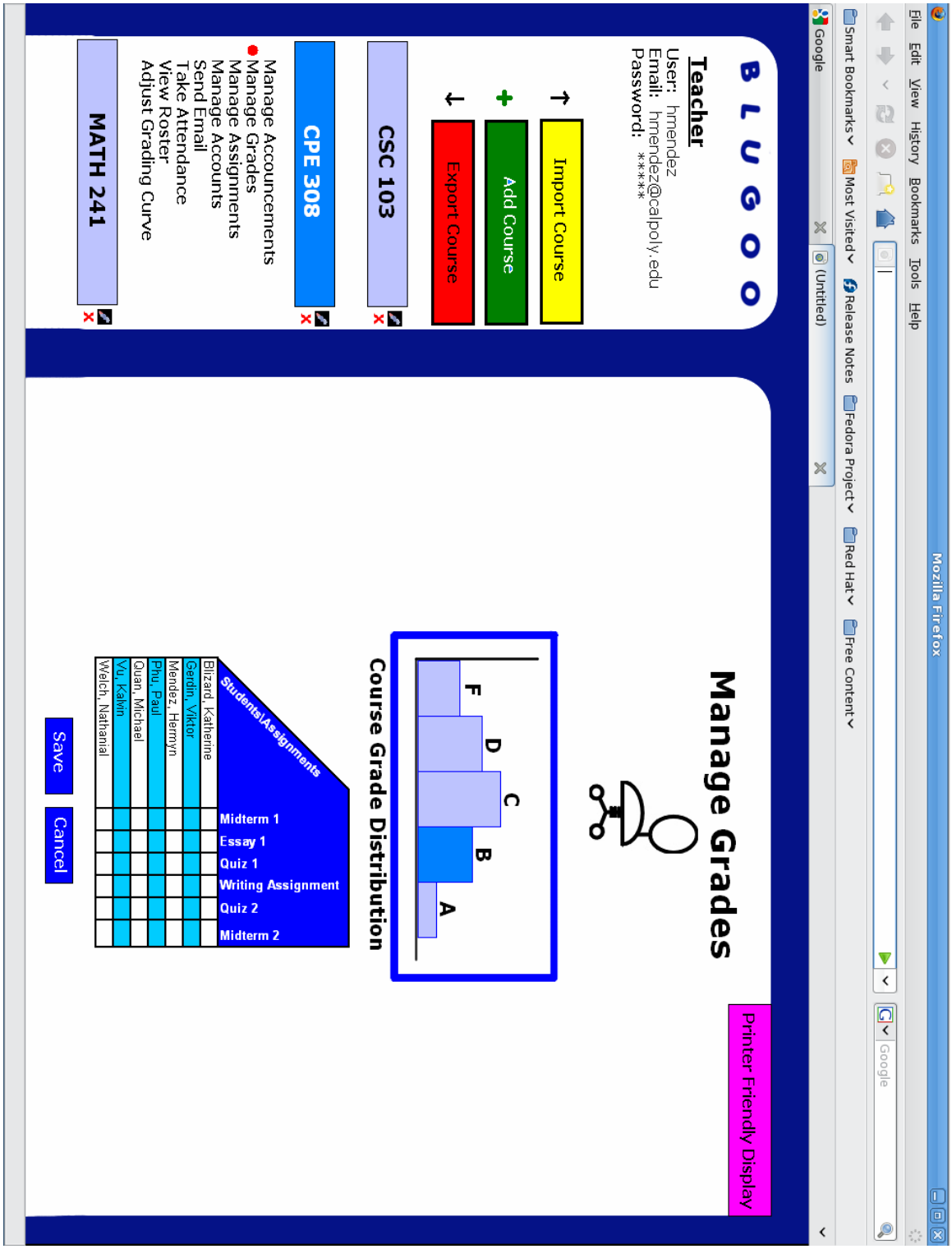
C-11: Teacher Manage Assignments



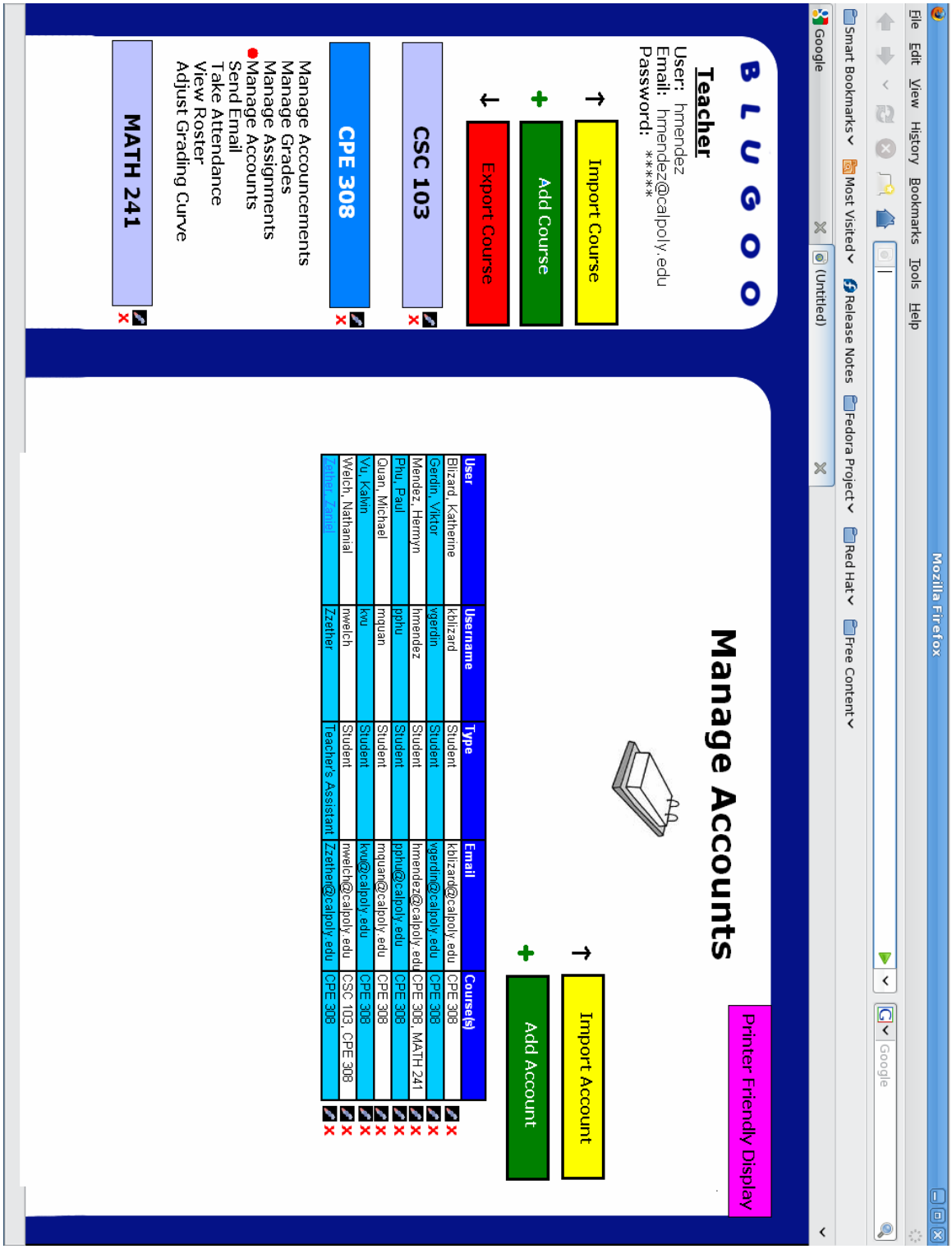
C-12: Teacher Manage Assignments Add



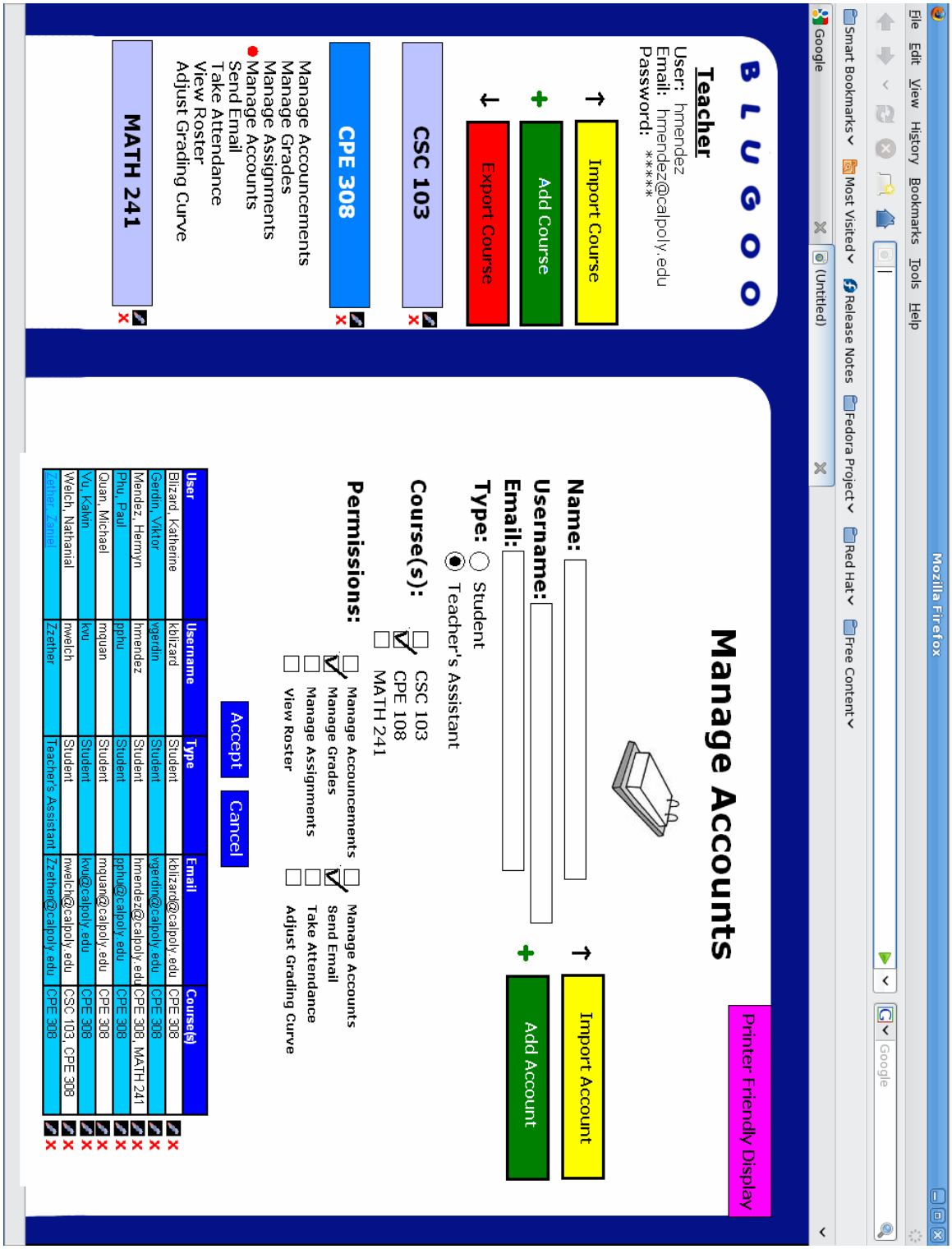
C-13: Teacher Manage Grades



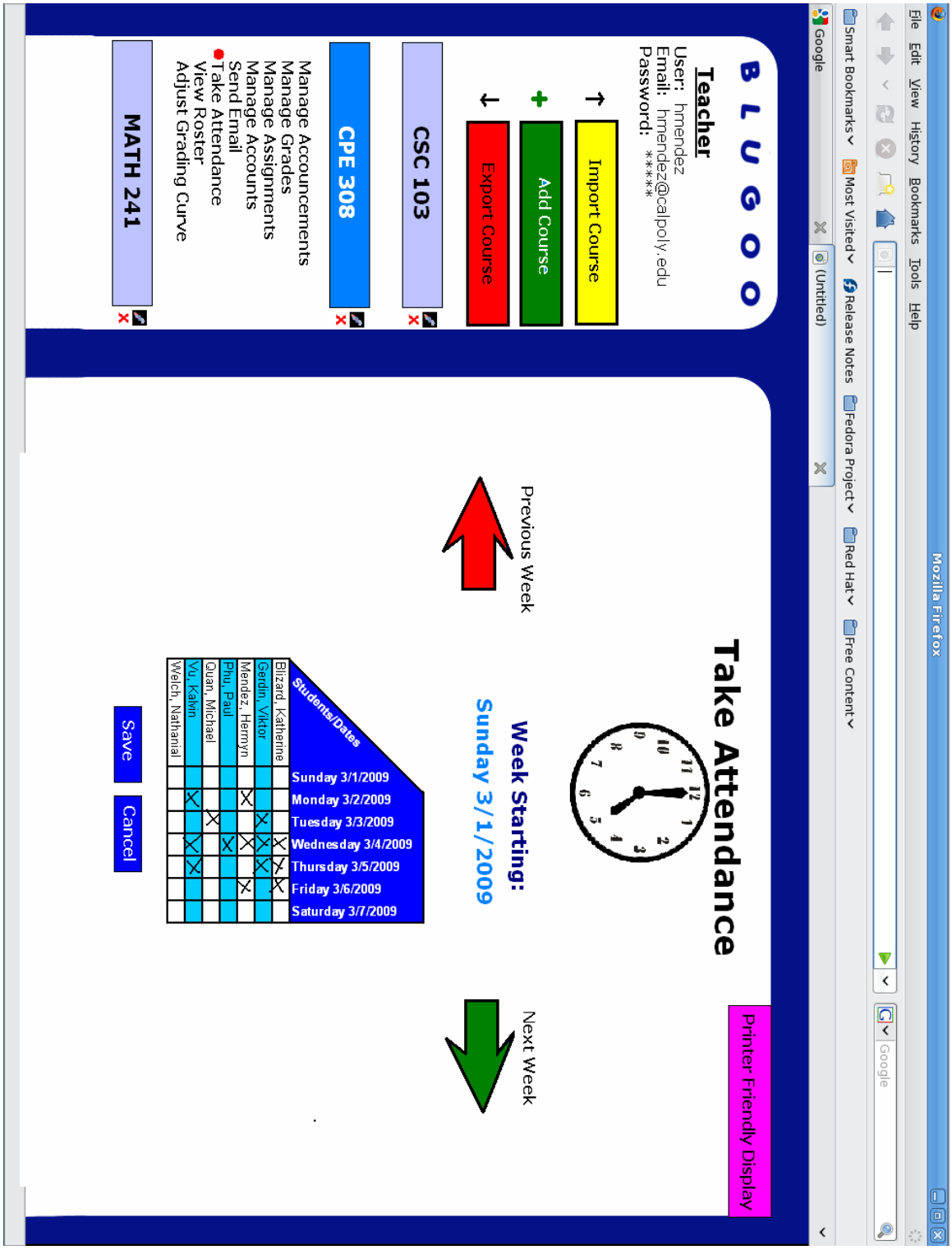
C-14: Teacher Manage Accounts



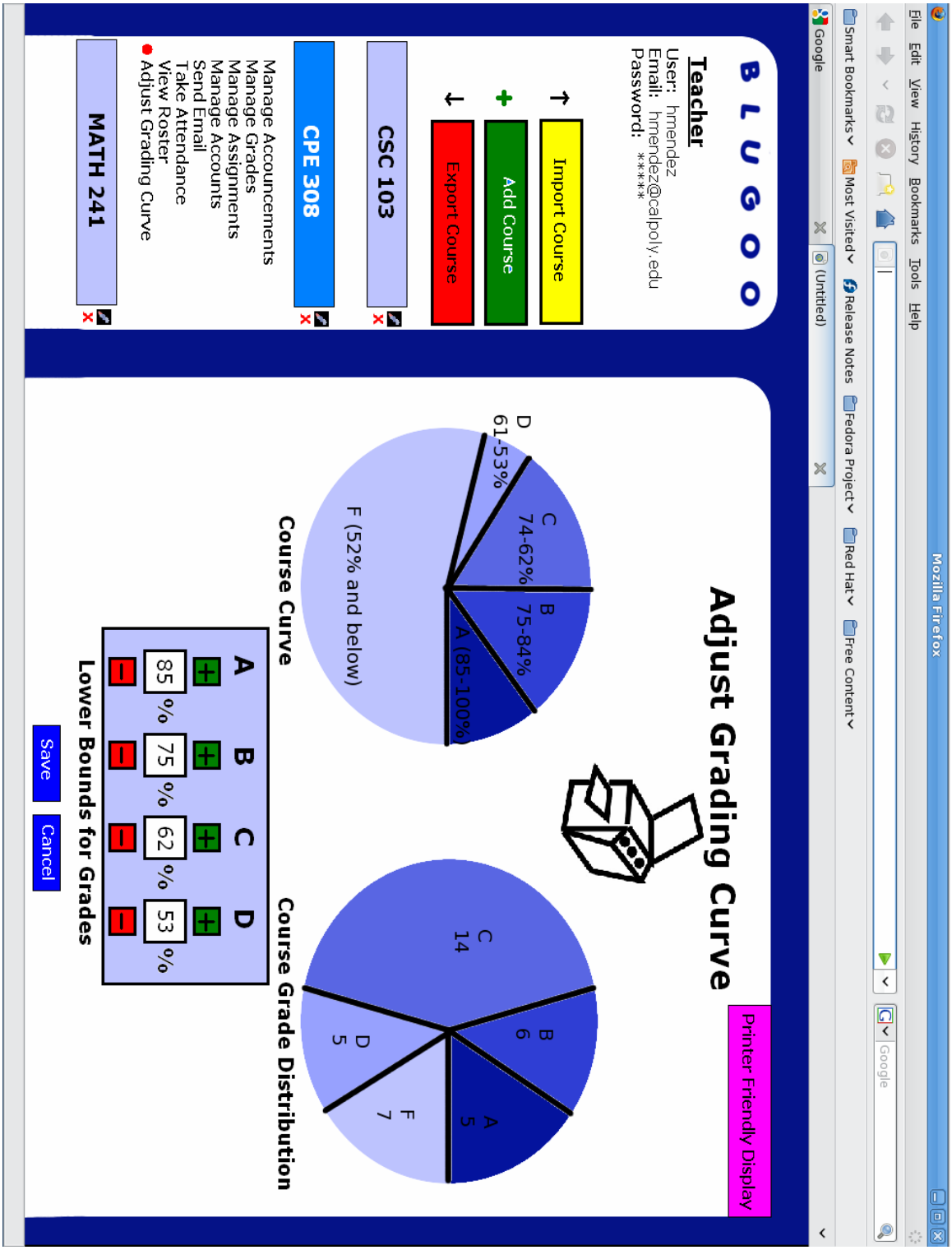
C-15: Teacher Manage Accounts Edit



C-16: Take Attendance



C-17: Teacher Adjust Grading Curve



Appendix D: Issues List

Issue-1: File-size limitations on uploads
Issue-2: File format support
Issue-3: Use case document format
Issue-4: Review nonfunctional requirements