

ISYS 540

# VBA Final Project

Grading for ISYS 100/101

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# Executive Summary

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This program was designed as a solution for the very time consuming process that previously existed for calculating grades for Isys 100/101. The Isys 100/101 classes are mandatory prerequisites for every major offered by the Marriott School. Because of that, each block there are roughly 600 students enrolled between the two classes. To handle this many students with just one professor, the class utilizes a third party software called Myitlab. Students complete assignments on this website which can be rather inconsistent with its grading (quite a few glitches exist in the software). The previous process was to download the grade book from myitlab.com then manually manipulate the data to determine which students passed based on the class criteria and which failed. Then grades must manually be entered into route y. This program allows the user to select the file downloaded from myitlab, then formats it correctly, and then creates the report along the side that Dr. McKell likes. In addition to this, it has a button that will present a login screen for the user to enter route y login information and then enters student's grades into route y. It leaves that internet explorer screen open without submitting the grades to allow the user to do a manual audit to make sure there is nothing wrong before submitting it. All in all, this program saves the TAs for the class roughly 5 hours every single block.

# Implementation

## Step 1

The first step to in order to use the program is to log into Myitlab.com and download grades for a certain section. One of the problems that was addressed by this project was the fact that myitlab stores some grades as a percent, and others as raw scores. While the user can manually change this, the program was created to handle either form of data.

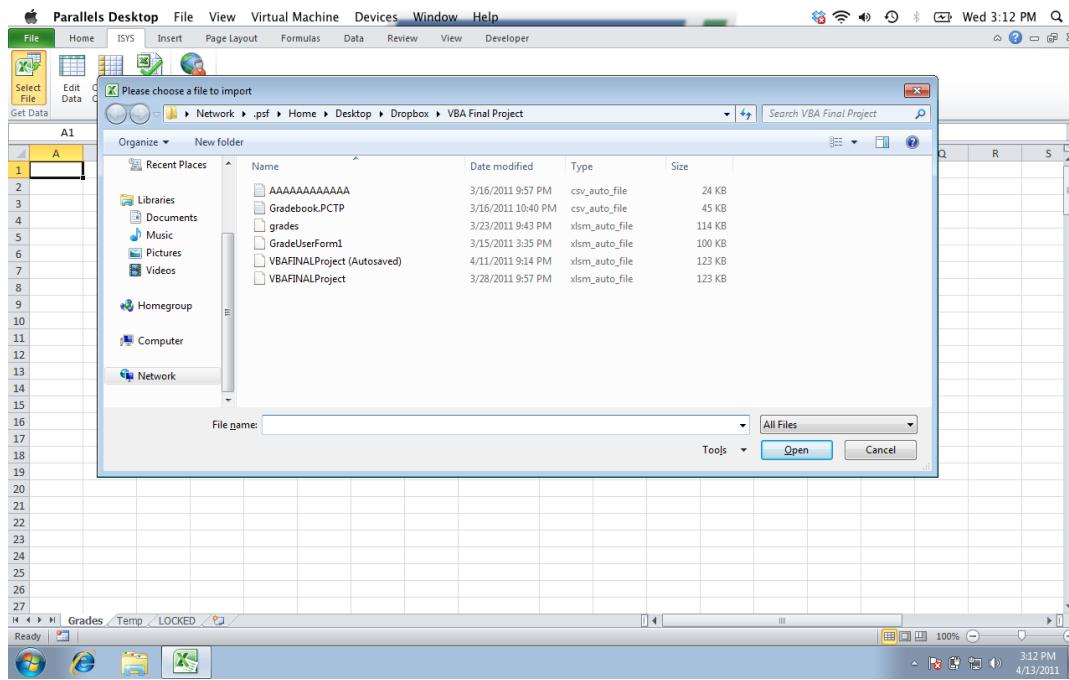
The screenshot shows a web browser displaying the myitlab Gradebook. The URL is <http://myitlab.pearsoned.com/Pegasus/Modules/Gradebook/GBDefault.aspx?SubTab=1>. The page displays a grid of student grades across four quizzes. Two specific cells are highlighted with blue boxes and arrows pointing to them:

- This is a percent:** A cell containing "95" with a circled "95" above it, located in the "Lesson 1 Quiz" column for student "Adams, Ashley".
- This is a raw score:** A cell containing "13/15" with a circled "13/15" above it, located in the "Lesson 2 Quiz" column for student "Adams, Ashley".

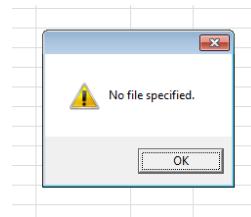
The grid also includes columns for "Student Name" (Show ID), "Grade-to", and other quiz results like "Lesson 3 Quiz" and "Lesson 4 Quiz". The bottom of the page shows navigation links for "First Page", "Previous", "Showing Page 1 of 5", "Next", "Last Page", and "Last Page".

## Step 2

The next step is to open the Excel file and go to the ISYS tab. There are five buttons on the tab that are used. The first button used is the 'Select File' button. This opens the dialog box shown below where the user can select the file that was downloaded on myitlab.

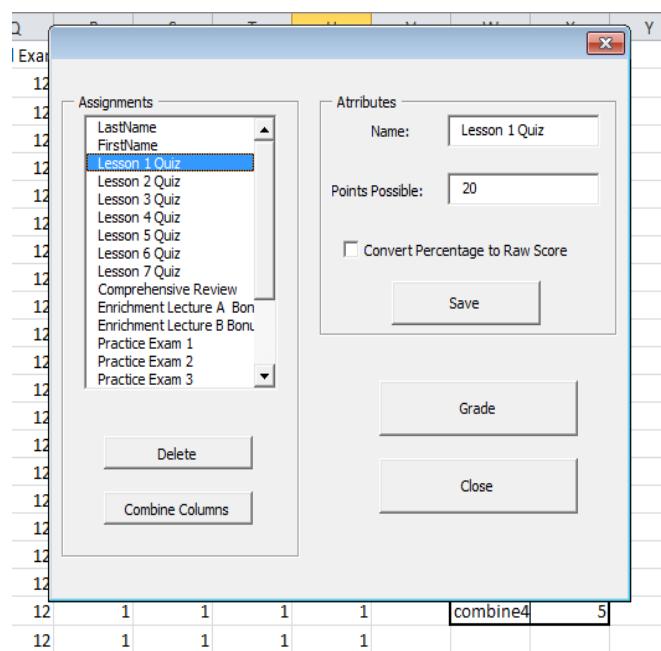


If no file is selected, then the following error message is displayed.



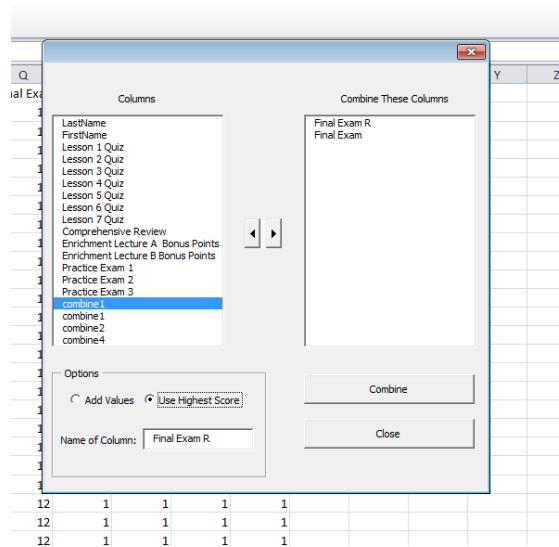
## Step 3

When the file is selected, all of the data on the spreadsheet as well as any formatting is cleared, and the data from the selected file is imported. Part of the imported process includes ordering the assignments in a specific order. Quizzes first, then enrichment lectures, then practice exam, then final exams, then any other assignment. After that, a userform is displayed which contains a list of all of the column headings. The user can then delete any of the assignments if they are not going to be graded. On this form the user can also change the name of the assignment, how many points it was out of, indicate whether or not the grade is in percent form and needs to be converted to raw form, and a button to open a userform that will allow two columns to be combined. Data entered into the “Attributes” frame is not saved unless the save button is pressed. When the Grade button is pressed, all of the percents are converted to raw scores and the statistics for the class are created. If cancel is pressed, the form is closed and nothing in the data is changed. The user can still make any changes through the other buttons on the ISYS ribbon.



## Step 4

Sometimes due to varies reasons, there will be multiple versions of an individual assignment. This is common with the final because there are often students who need to take a version of the final with an extended time limit. When this happens, only two or three students will have a grade for the assignment and everyone else has a zero. So this userform allows the user to select two versions of an assignment, add it to the list on the right, then combine those two assignments. The user can select one of two radio buttons which determine if the scores of the two assignments should be added together or if the highest score should be saved. The user can also enter the name of the assignment. By default, the name of the first assignment is used.



## Step 5

Once the user clicks the 'Grade' button, any grade that is in percent form is converted to a raw score, and additional columns are made which indicated whether or not they passed the Homework section of the class, the Final Exam, and the class as a whole. In addition to this, a summary chart is created with varies statistics such as total enrolment, pass percentage, and percent of students who took the final and passed the class. There is also a table that contains the minimal score for the homework and the final that is needed to pass the class. These numbers can be adjusted to see how it affects the various percentages. In addition to this, conditional formatting is applied to easily spot students who failed the class for various reasons (students in red failed the homework and the final).

The screenshot shows a Microsoft Excel spreadsheet within a Parallels Desktop window. The spreadsheet is titled "Grades" and has the following structure:

	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
4	0	0	0	0	0	0	0	0	0	FAIL	FAIL	FAIL						
5	18	15	29	0	0	10	20	165	28	PASS	PASS	PASS						
6	19	17	33	0	0	10	20	184	29	PASS	PASS	PASS						
7	17	17	31	0	0	10	20	171	26	PASS	PASS	PASS						
8	20	18	40	5	5	10	20	185	29	PASS	PASS	PASS						
9	13	17	26	0	0	10	20	167	26	PASS	PASS	PASS						
10	15	15	19	5	5	10	20	153	24	PASS	PASS	PASS						
11	0	0	0	0	0	0	0	0	0	FAIL	FAIL	FAIL						
12	19	16	29	0	0	10	20	169	27	PASS	PASS	PASS						
13	18	13	26	0	0	10	20	168	29	PASS	PASS	PASS						
14	19	18	31	5	5	10	20	181	29	PASS	PASS	PASS						
15	16	19	40	5	5	10	20	199	26	PASS	PASS	PASS						
16	20	17	33	0	0	10	20	184	29	PASS	PASS	PASS						
17	19	16	26	0	0	10	20	162	29	PASS	PASS	PASS						
18	18	19	34	5	5	10	20	193	30	PASS	PASS	PASS						
19	18	19	30	5	0	10	20	171	30	PASS	PASS	PASS						
20	18	14	25	0	0	10	20	157	30	PASS	PASS	PASS						
21	16	16	23	5	5	10	20	167	25	PASS	PASS	PASS						
22	19	16	32	0	0	10	20	177	30	PASS	PASS	PASS						
23	18	19	36	5	5	10	20	200	29	PASS	PASS	PASS						
24	19	16	28	5	0	10	20	179	30	PASS	PASS	PASS						
25	19	17	29	0	0	10	20	178	27	PASS	PASS	PASS						
26	18	10	24	0	0	10	20	157	27	PASS	PASS	PASS						
27	20	17	31	5	5	10	20	193	30	PASS	PASS	PASS						
28	0	0	0	0	0	0	0	0	0	FAIL	FAIL	FAIL						
29	17	14	39	5	0	10	20	182	28	PASS	PASS	PASS						
30	19	15	31	0	0	10	20	167	29	PASS	PASS	PASS						

Summary Statistics (Requirements and Stats sections):

Requirements	
HW	140
Final	23

Stats	
Total Enrolled	234
Total Passed	206
Total Failed	28
Pass %	88.0%
Never Signed up for MyLab	
Didn't Take Final	23
Passed HW Failed Final	5
Passed Final Failed HW	1
Passed HW Took Final	208
Pass % of Students Who Passed Homework and Took Final	99.0%

## Step 6

The next step is to upload the grades to route y. The user can click the ‘Send to Route Y’ button and they will be prompted to enter their username and password along with information regarding which class and section the grades are for.

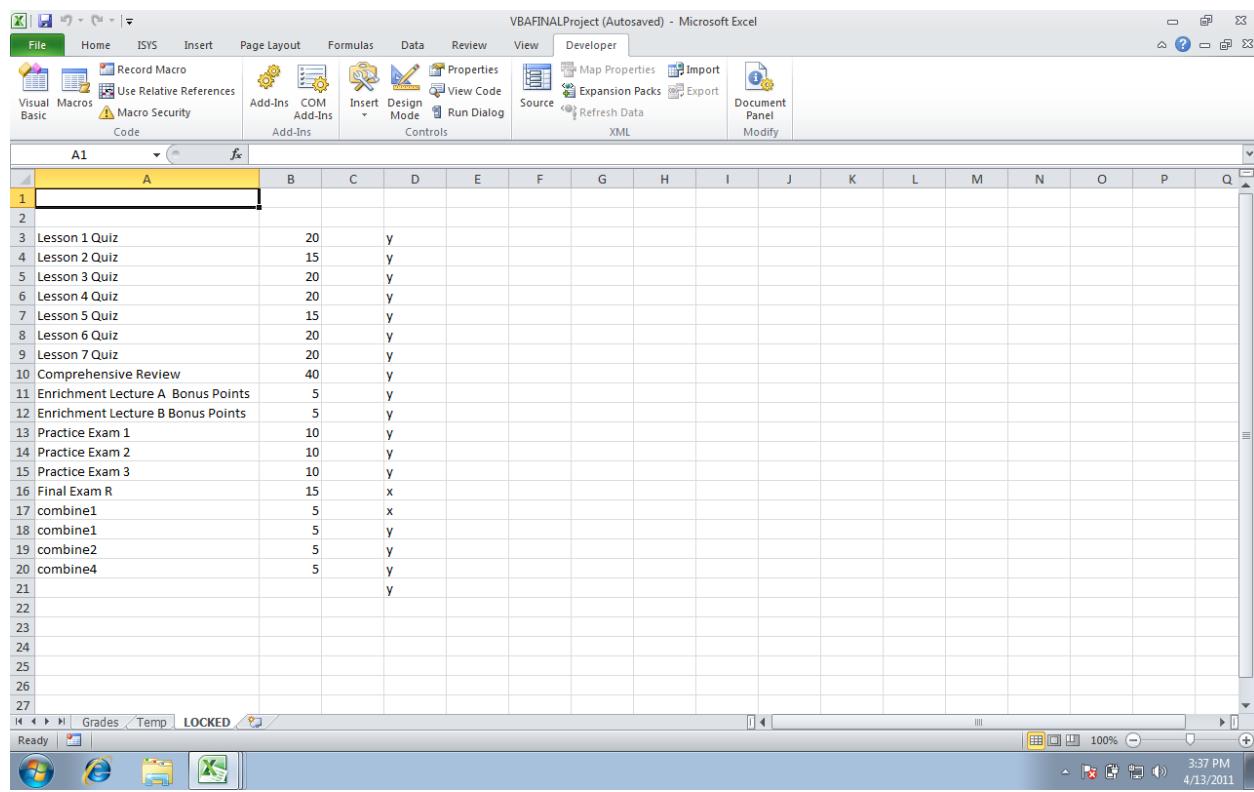
10	20	171	26	PASS	PASS	PASS
10	20	185	29	PASS	PASS	PASS
Route Y Login				<input type="button" value="X"/>	PASS	PASS
Login					PASS	PASS
Username:		<input type="text"/>			FAIL	FAIL
Password:		<input type="password"/>			PASS	PASS
Section Info					PASS	PASS
<input type="radio"/> Excel		<input type="radio"/> Powerpoint			PASS	PASS
Section Number:		<input type="text"/>			PASS	PASS
<input type="button" value="OK"/>		<input type="button" value="Cancel"/>			PASS	PASS
10	20	175	30	PASS	PASS	PASS
10	20	178	27	PASS	PASS	PASS
10	20	157	27	PASS	PASS	PASS
10	20	193	30	PASS	PASS	PASS
0	0	0	0	FAIL	FAIL	FAIL

At this point the agent class is used to log into route y with the information provided. The class information is then used to get to the correct webpage where students grades can be entered. At that point the agent class is used to enter grades for the students in the class.

# Challenges and Solutions

## Challenge 1

One of the challenges faced with this program is how save information for the userform to use once the form is closed. To solve this, I created a sheet called “LOCKED” that contains information that gets saved and changed as various activities occur. This sheet indicates which assignments belong to the homework portion of the class and which ones belong to the “Final” portion of the class. It also indicates if the assignment should be marked to convert to a raw score. This sheet is locked and hidden and is only accessed through the userforms.



The screenshot shows a Microsoft Excel spreadsheet titled "VBAFINALProject (Autosaved) - Microsoft Excel". The ribbon is visible at the top with tabs like File, Home, Insert, Page Layout, Formulas, Data, Review, View, and Developer. The Developer tab is selected, showing various VBA-related tools. The main worksheet, "Locked", contains data in columns A and B. Column A lists assignment names and types, and column B lists their point values. The data includes quizzes, comprehensive reviews, enrichment lectures, and practice exams. Some entries have a 'Y' or 'x' in column B, likely indicating if they are raw scores or percentages. The spreadsheet is in a standard grid format with rows numbered 1 to 27.

		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1																		
3	Lesson 1 Quiz		20															
4	Lesson 2 Quiz		15															
5	Lesson 3 Quiz		20															
6	Lesson 4 Quiz		20															
7	Lesson 5 Quiz		15															
8	Lesson 6 Quiz		20															
9	Lesson 7 Quiz		20															
10	Comprehensive Review		40															
11	Enrichment Lecture A Bonus Points		5															
12	Enrichment Lecture B Bonus Points		5															
13	Practice Exam 1		10															
14	Practice Exam 2		10															
15	Practice Exam 3		10															
16	Final Exam R		15															
17	combine1		5															
18	combine1		5															
19	combine2		5															
20	combine4		5															
21			Y															
22																		
23																		
24																		
25																		
26																		
27																		

## Challenge 2

Another challenged face was how to decide how many points the assignments were out of and how to decide if the grade was a percent or a raw score. In order to do this, a number of if statements were used to test the nature of the data. Since no assignment is worth more than 40 points, it can be assumed that any assignment that has a grade from anyone over 40, it means the grade would have to be a percent. Logic similar to that was employed to decide if the percent score should be out of 15 or 20 point. Each score for an assignment was tested with a mod 5 function because if it is out of 15, the result should always be 0. Any assignment that had scores whose mod 5 was not 0 means it was out of 20.

## **Challenge 3**

Uploading grades to route y proved to be challenging. The solution to this of course was using the agent class received from Dr. Allen. The login credentials were gained from the userform as well as the class information. After connecting to route y, the page with the grade rolls on it was displayed. Then the moveTo method was used to get to the link for the page where grades could be entered. The method followLinkByText was used to open the actual page. At this point that challenge became how to enter the right grades for the right students. An embedded loop was used to go through each student on the spreadsheet and for each student loop through every record on the website. The instrg function was used to see if the student's name appeared anywhere on that row. If so, their grade was entered on that row. The logic took a while to figure out, but it works great.

## **Challenge 4**

Lastly was the challenge of creating a dynamic program that can handle any number of students and any number of assignments. The easiest way to do this was to use variables in all of the cell references. Functions were created to determine the last row with data as well as the last column with data. This was very helpful when creating loops and formatting the spreadsheet.

# Recap

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To recap this assignment, here is a list of the various techniques and methods used successfully in this assignment:

- For Loops, Do While Loops, IF statements, Functions, and Sub Procedures
- Conditional Formatting
- Userforms, ComboBox, Lists, CheckBox, OptionButton, ScrollBar, and TextBox
- The Agent class, Login to Website, Website Navigation, Entering Data into Website
- Custom Ribbons, Custom Groups, Custom Buttons
- Locked sheet, Hidden Sheet

All of these things combined to accomplish the following:

- Import data from separate workbooks
- Delete Columns, Combine Columns
- Change names of assignments, Points possible, and concert percent to raw score
- Analyze data with relevant statistics
- Login to Route y
- Upload data to Route y