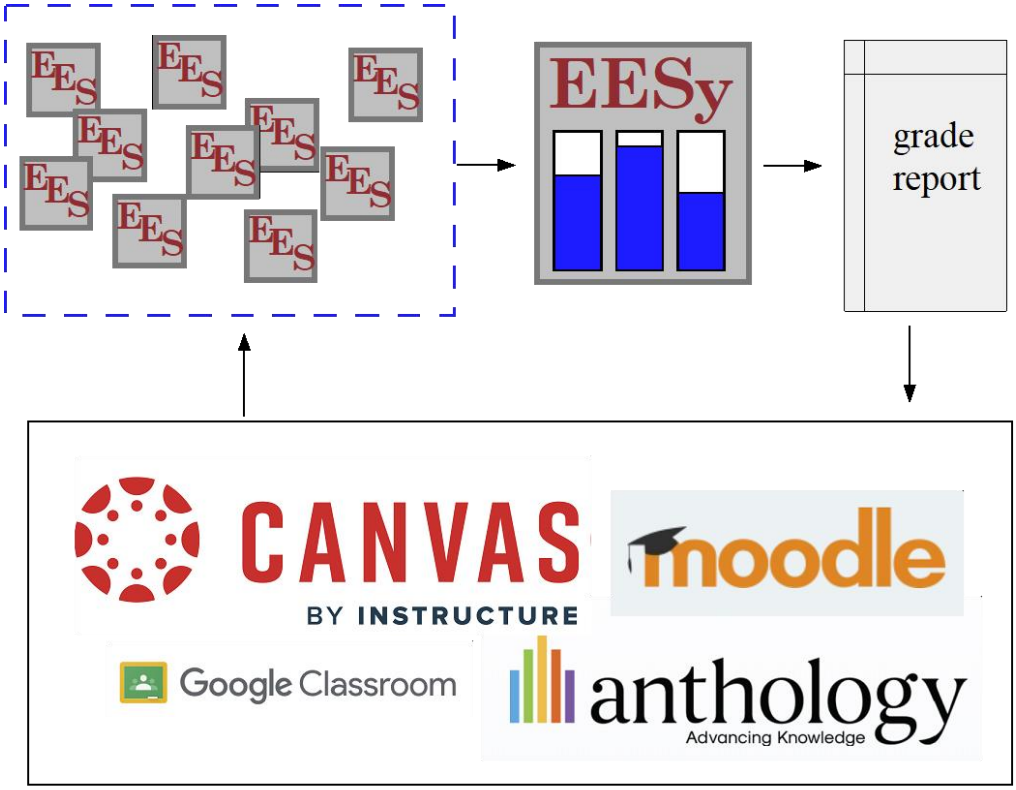
F-Chart Software

EESyGrader Manual



Learning Management System

F-Chart Software

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1. Introduction to EESyGrader

EES (pronounced 'ease') is an acronym for Engineering Equation Solver. The basic function provided by EES is the numerical solution of linear and non-linear algebraic and differential equations. EES is used at many universities in order to provide students with the opportunity to use powerful, professional software to solve real-world engineering problems.

EESyGrader provides a tool that allows instructors to automatically grade large numbers of EES programs that are submitted by students in large enrollment classes such as Statics, Thermodynamics, and Heat Transfer. Providing students with many chances to solve problems is fundamental to their growth as an engineer. This is typically done using low-stakes homework assignments together with projects and exams. In order to motivate their progress it is important that these assessments be accurately graded. However, grading large numbers of homework assignments by hand is tedious and has limited pedogical value.

The EESyGrader program provides a solution to this problem. Students submit their EES files to your normal Learning Management System. These submissions can be downloaded to a directory where the EESyGrader program opens each one and grades them according to a rubric you have set up. The results are summarized in a grade report that can be uploaded to your Learning Management System.

EESyGrader streamlines your ability to grade problems that were done using the Engineering Equation Solver (EES) software. By automating the grading process your time or your student assistants' time can be redirected from grading to helping students when they get stuck via office hours, problem solving sessions, and online discussion forums. You can take advantage of the autograding to provide students with answers to one or more test cases so that they know if they are on the right track or should get help **before** they submit the assignment. EES will automatically generate a starter code and rubric for a solution and also allows students to automatically check that all required output variables are present in order to help prevent student submission errors. These features make EESyGrader a powerful tool that will allow you to include real-world problems in your engineering classes and provide fast and accurate feedback to students.

1.1 Acquiring and Installing EESyGrader

This section provides information about obtaining and installing the EESyGrader program. In order to use EESyGrader it is necessary that you are using an Academic version of EES that has an up to date Academic Update Service (AUS). Students can submit EES programs to be graded using any license of EES.

Installing EESyGrader is relatively straightforward. EESyGrader is a free program distributed by FChart Software LLC. Navigate to the download page:

https://fchartsoftware.com/ees/eesygrader.php

and select Download Now. You will be prompted to enter your name, EES License Number, and University and then asked for information about the class you intend to use it for. Provided the Academic Update Service (AUS) is up to date for the EES license number you submit, you will then be allowed to download the setup program: setup_EESyGrader.exe.

To install the program, execute the setup_EESyGrader.exe program and click the Next button from the Welcome screen. Continue to click the Next button until you see the Destination Location dialog, shown in Figure 1-1.

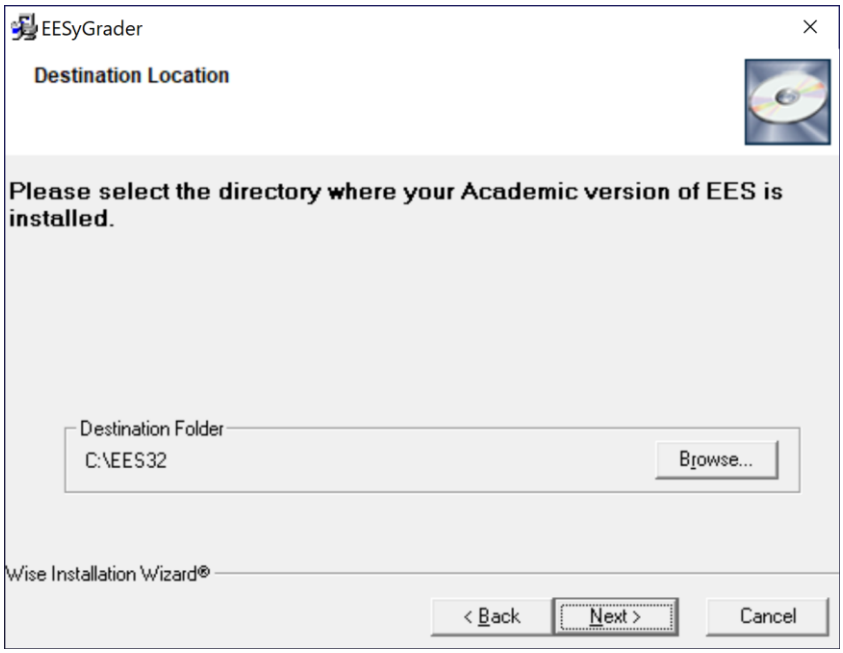


Figure 1-1: Select Destination Directory dialog.

You must instrall EESyGrader into the directory that contains your Academic License of EES. The default directory that EESyGrader will be installed into is named EES32. You can change the directory name, if you wish, by clicking the Browse button. Select Next to install the program. If successful you will see the dialog shown in Figure 1-2.

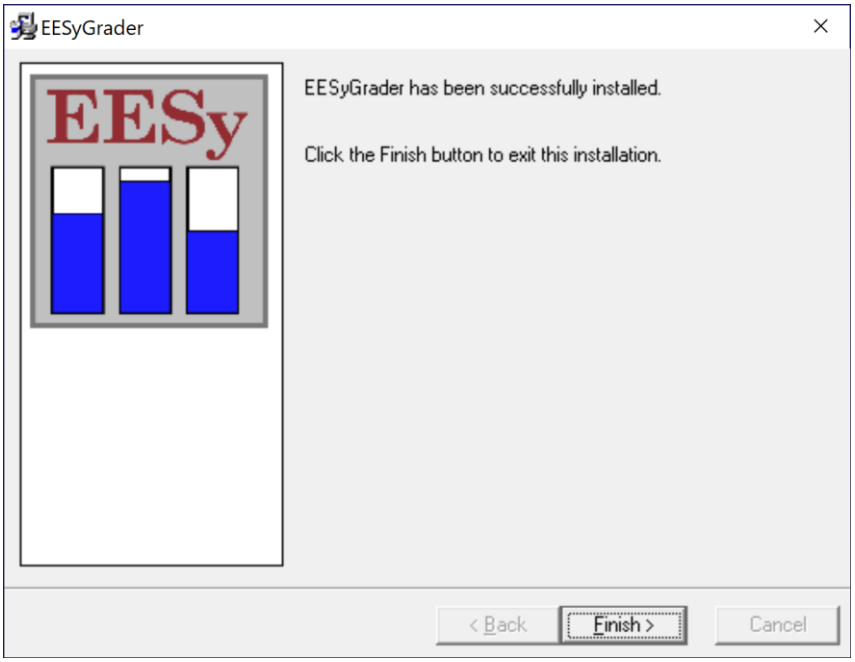


Figure 1-2: Successful Installation.

Note that the EESyGrader program has been installed in a folder called EESyGrader that resides in the Userlib folder in your EES installation. You should check to ensure that this folder contains a program called EESyGrader.exe.

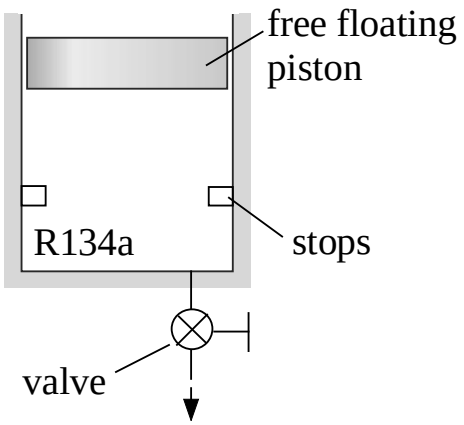
2. EESyGrader Starter Code and Rubric

2.1 Problem Statement

The first step to using EESyGrader is to prepare your assignment as you normally would. Here we will demonstrate the process using a typical undergraduate Thermodynamics problem. The problem statement is below.

Problem Statement

The figure below illustrates a free-floating piston equipped with stops. Initially, at state 1, the piston is not resting on the stops and the volume is Vol_1 = 1 m^3. The mass of the piston is sufficient to keep the pressure within the device at P_1_kPa = 300 kPa. The device contains the fluid R134a at 20°C.



a.) What is the mass of R134a in the piston, m_1 (kg)?

A valve is opened and R134a slowly escapes. Heat transfer keeps the temperature in the device always at 20°C. At state 2, the piston just touches the stops (at which point the volume in the cylinder has been reduced to 20% of its original value).

b.) What mass of R134a **has been removed** from the container at the moment that the piston touches down on the stops, m_out_12 (kg)?

The valve is opened again and 50% of the remaining mass of R134a in the device (i.e., half of the mass at state 2) is slowly removed. Again, heat transfer keeps the temperature in the device always at 20°C.

c.) What is the pressure at state 3 (after 50% of the remaining mass is removed), P_3_kPa (kPa)?

The valve is kept closed now and the device is cooled until R134a just starts to condense, at state 4.

d.) What is the temperature in the device at the moment that the first droplet of liquid starts to form, T_4_C (°C)?

e.) What is the pressure in the device at the moment that the first droplet of liquid starts to form, P_4_kPa (kPa)?

The valve continues to be kept closed and the device is cooled until R134a reaches a temperature at state 5 of -35°C.

f.) What is the quality of the R134a in the cylinder at state 5, x_5?

Note that a starter code is available on the website for you to use – it's called HW_starter.ees. Please download this from the website and do not alter anything in the header region.

Note that the problem is explicit about the variable names that must be used for the two inputs (Vol_1 and P_1_kPa) and each of the requested outputs (m_1, m_out12, P_3_kPa, T_4_C, P_4_kPa, and x_5) as well as the units that must be used for each of these quantities. Also the question refers the students to an EES starter code (HW_starter.ees) that will help the student ensure that their solution conforms to the EESyGrader format.

2.2 Problem Solution

Next, you need to develop a solution to the problem in EES that uses the variable names and units called out in the problem statement. My solution is below.

```
$UnitSystem SI Mass J K Pa
$TabStops 4 in

"Inputs"
P_1_kPa = 300 [kPa]
Vol_1 = 1 [m^3]

"Part a: what is the mass, m_1 (kg)"
P_1=P_1_kPa*Convert(kPa,Pa)                    "initial pressure"
T_1=ConvertTemp(C,K,20 [C])                    "initial temperature"
v_1=Volume(R134a,T=T_1,P=P_1)                  "specific volume"
m_1=Vol_1/v_1                                  "initial mass"

"Part b: how much mass is removed, m_out_12 (kg)"
Vol_2=Vol_1*0.2                                "volume at state 2"
P_2=P_1                                        "pressure at state 2"
T_2=ConvertTemp(C,K,20 [C])                    "temperature at state 2"
v_2=Volume(R134a,T=T_2,P=P_2)                  "specific volume"
m_2=Vol_2/v_2                                  "mass at state 2"
0=m_out_12+m_2-m_1                             "mass balance, m_out_12 is the mass
extracted during process 1 to 2"

"Part c: pressure after 50% of the remaining mass is removed, P_3_kPa (kPa)"
m_out_23=0.5*m_2                               "half of the remaining mass is extracted"
0=m_out_23+m_3-m_2                             "mass balance"
Vol_3=Vol_2
T_3=ConvertTemp(C,K,20[C])                     "temperature"
v_3=Vol_3/m_3                                  "specific volume"
P_3=Pressure(R134a,T=T_3,v=v_3)                "pressure"
P_3_kPa = P_3*Convert(Pa,kPa)                  "pressure in kPa"

"Part d: temperature when condensation begins T_4_C (C)"
"Part e: pressure when condensation begins P_4_kPa (kPa)"
v_4=v_3                                        "specific volume"
x_4=1                                          "quality"
P_4=Pressure(R134a,x=x_4,v=v_4)                "pressure"
P_4_kPa = P_4*Convert(Pa,kPa)                  "pressure in kPa"
T_4=Temperature(R134a,x=x_4,v=v_4)             "temperature"
```

```
T_4_C = ConvertTemp(K,C,T_4)                    "temperature in C"

"Part f: quality when temperature reaches -35 C"
T_5 = ConvertTemp(C,K,-35 [C])                  "temperature"
v_5 = v_4                                       "specific volume"
x_5 = Quality(R134a,T=T_5,v=v_5)                "quality"
```

The solution is shown in Figure 2-1.

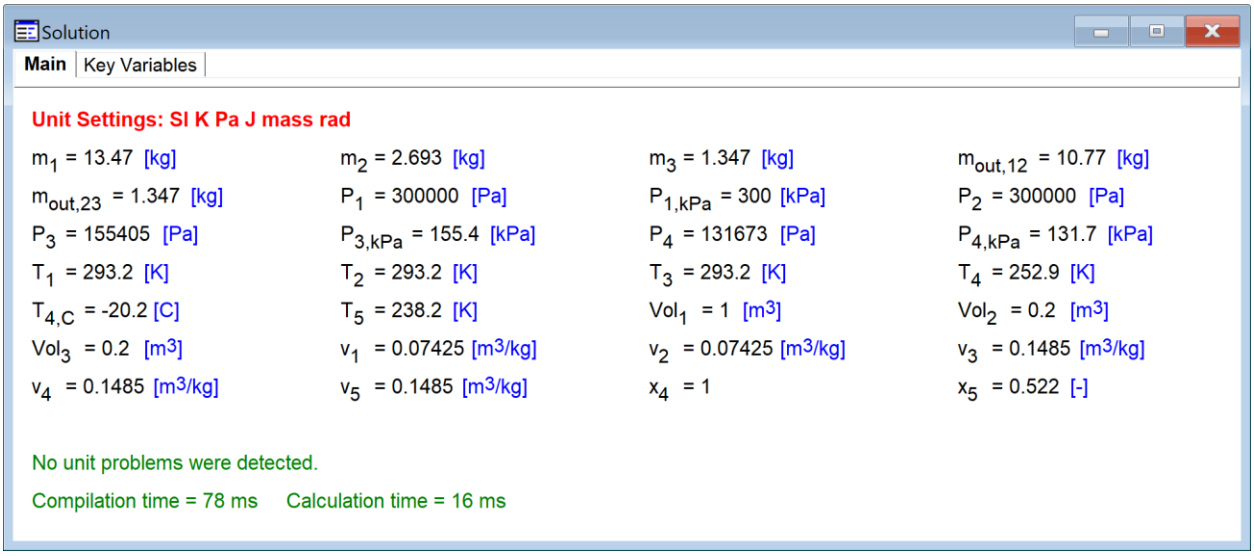


Figure 2-1: Problem Solution.

2.3 Create an EESyGrader Rubric

Once the solution is created we can develop a rubric for the problem. Select Create EESyGrader Rubric from the Options menu in EES to access the EESyGrader Rubric Dialog, shown in Figure 2-2.

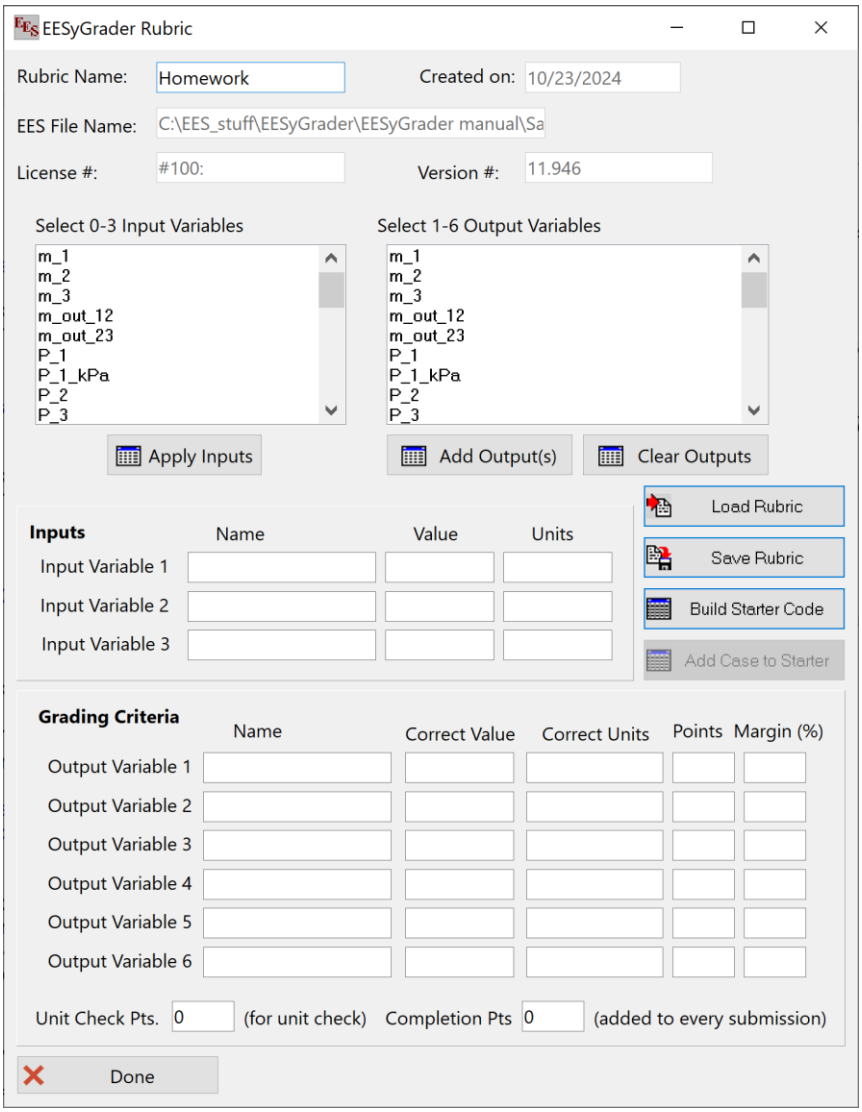


Figure 2-2: EESyGrader Rubric Dialog.

You can provide the rubric with a name (e.g., Homework, as in Figure 2-2). Next you need to identify the inputs and outputs. For this homework problem the inputs include the variables Vol_1 and P_1_kPa, so these variables should be selected from the list on the left. Select the Apply Inputs button to push these down to the inputs list in the rubric, as shown in Figure 2-3. Note that each input variable is assigned the value and units that it currently has in the EES solution.

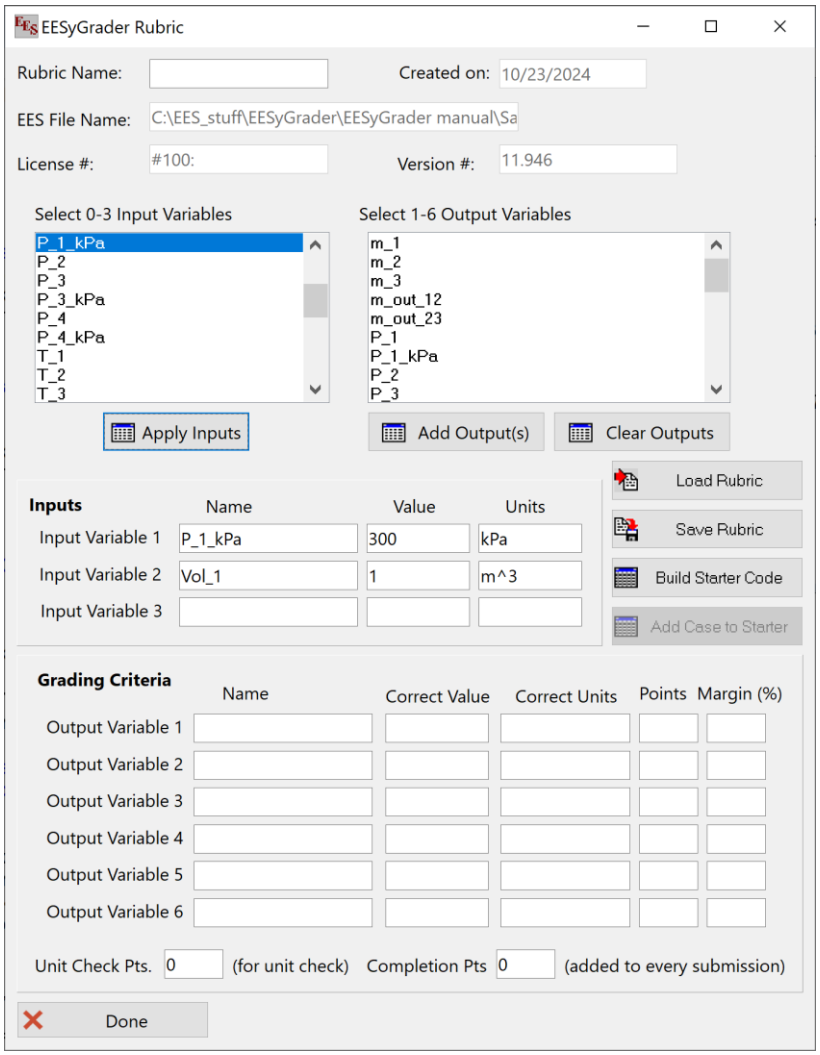


Figure 2-3: EESyGrader Rubric Dialog with inputs selected.

Next we need to list the outputs that will be graded. These can be done one (or more) at a time by selecting them from the list of variables in the right box and then selecting the Add Output(s) button. By selecting the outputs one at a time you can order them in a way that is consistent with the problem statement (e.g., parts a through f). If you select them all at once they will be ordered alphabetically. The result for the problem statement considered here is shown in Figure 2-4. Note that the current value and units of each of the outputs is assigned as well. You can select the Clear Outputs button to remove all outputs and start over.

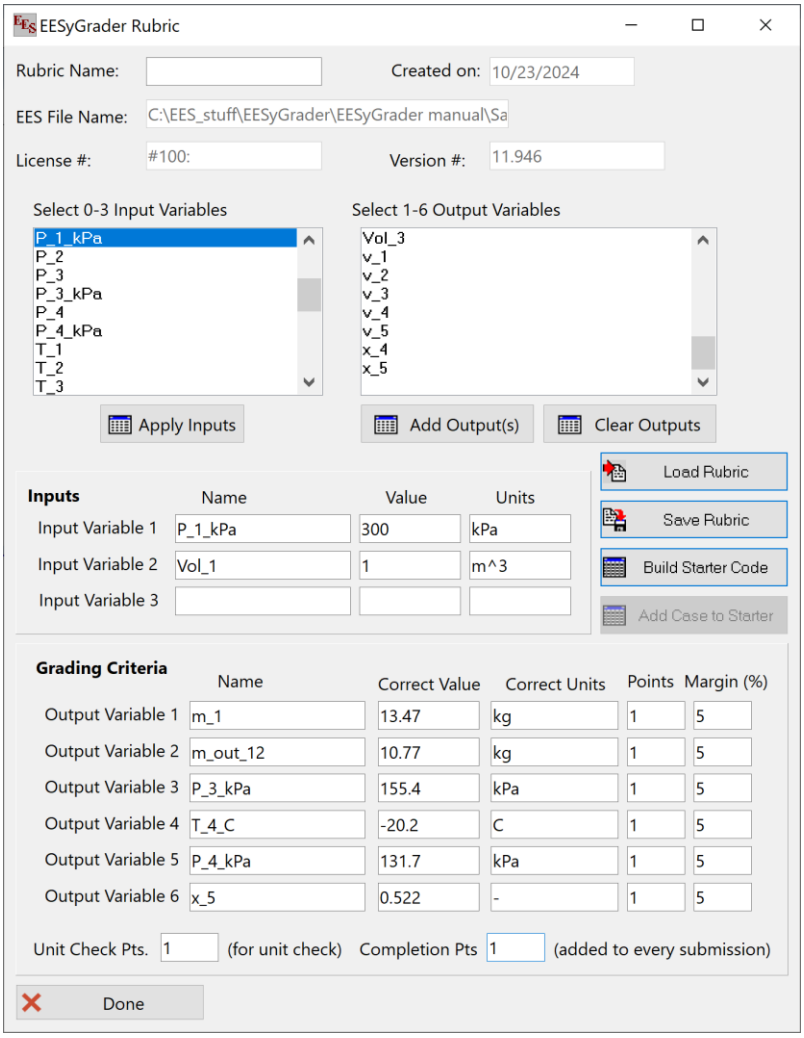


Figure 2-4: EESyGrader Rubric Dialog with inputs and outputs selected.

Each of the outputs should be assigned some number of points for the grading process and you also need to specify the range of values that will be accepted as being correct during the grading process (labeled margin in Figure 2-4 and provided in %). By default, each output is assigned 1 point and any value within 5% of the correct value will be accepted, but you can adjust each of these selections. At the bottom of the dialog you can assign additional points for submissions based on whether they have any unit warnings. Finally you can assign additional completion points for every student that submits a program regardless of its correctness.

2.4 Create an EESyGrader Starter Code

It is important to provide students with a starter .ees code that will prevent them from making formatting mistakes in their code that will prevent it from being graded properly. The starter code also gives you the opportunity to provide the students with one or more test cases that they can use to understand whether their program is working or not. To do this, select the Build Starter Code button to access the EESyGrader Starter Code Dialog shown in Figure 2-5.

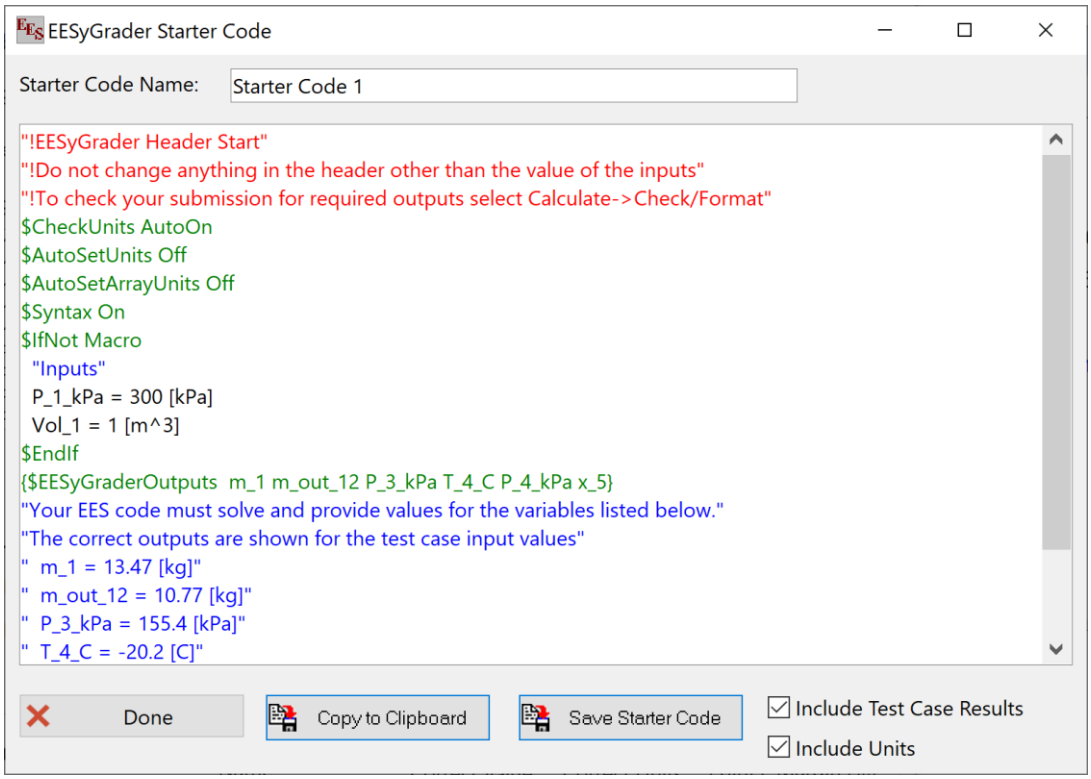


Figure 2-5: EESyGrader Starter Code Dialog.

Select Save to save the starter code contained in the edit box as a .txt file which can be opened by EES. Alternatively, copy the text using the Copy to Clipboard button and paste it into an EES file, as shown in Figure 2-6. The starter code .ees file should be distributed to the students with instructions to place their code below the EESyGrader header. The inputs are set in the $IfNot Macro … $EndIf clause which allows the EESyGrader macro to manipulate the value of these variables during the grading process.

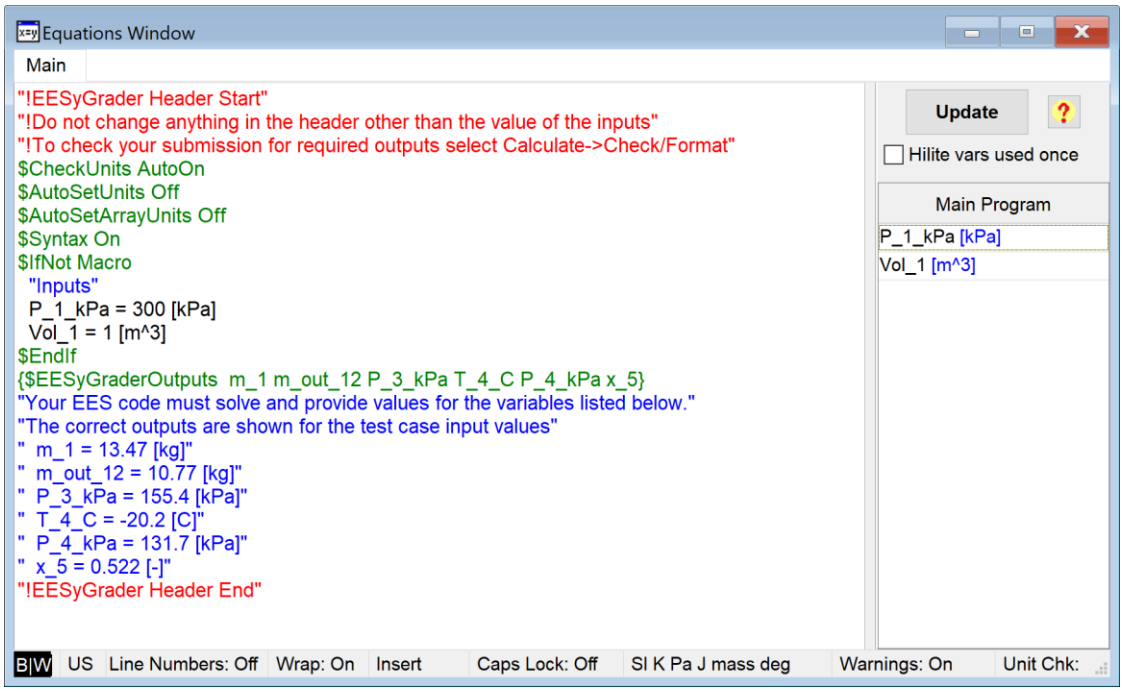


Figure 2-6: EESyGrader code pasted into an EES file for distribution to the students.

By default, the Include Test Case Results is checked in the EESyGrader Starter Code Dialog (see Figure 2-5) so that the correct values of the output variables are included in the EESyGrader Starter Code given the values of the inputs that are used. This allows students to check their solution as they work and seek help if they get stuck. Unchecking the Include Test Case Results box will remove the test case results, as shown in Figure 2-7.

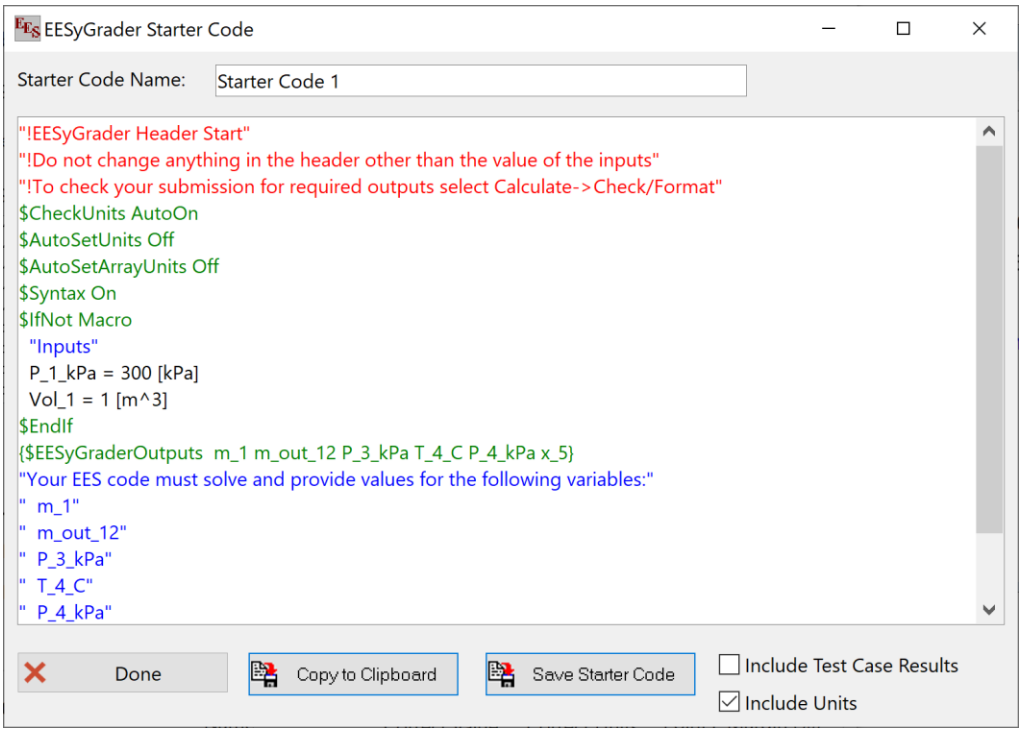


Figure 2-7: EESyGrader Starter Code Dialog with Include Test Case Results box unchecked.

If you uncheck the Include Units box then the units of the input and output variable values will also be removed.

Add a Test Case

It is easy for a student to inadvertently "hard code" one of the input values in their code such that the values of the input variables that are set in the $IfNot Macro … $EndIf clause in the EESyGrader header are ignored. This is a frustrating mistake for students to make because the answers that are calculated match those provided in the test case; however, when EESyGrader opens the submission, sets the inputs to different values, and solves the program the outputs will not change. As a result, the student receives a poor grade on an assignment that is otherwise correct. To reduce the likelihood of this happening, it is good practice to add a second test case that is obtained by changing the values of the inputs. Students can check their answers against the first test case, change the inputs and make sure that their answers all change to the values provided for the second test case.

To add a second test case, select Done in the EESyGrader Starter Code Dialog and again in the EESyGrader Rubric Dialog. Then change the values of the input variables in your EES solution and solve. For example, in my sample EES program shown in Figure 2-8 I have changed the values of P_1_kPa and Vol_1 from 300 kPa and 1 m^3, respectively (see Figure 2-1) to 400 kPa and 2 m^3.

```
"Inputs"
P_1_kPa = 400 [kPa]
Vol_1 = 2 [m^3]
```

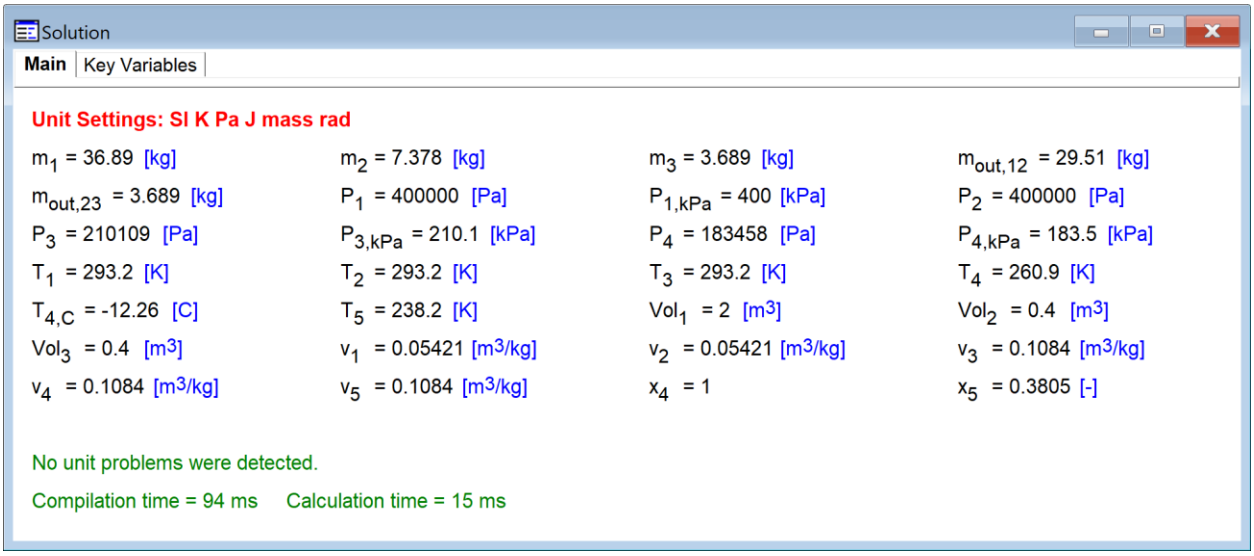


Figure 2-8: Sample EES Solution with the input variable values changed for second test case.

Now select Create EESyGrader Rubric from the Options menu and you should see that the values of the input and output variables have been repopulated with their current values, as shown in Figure 2-9.

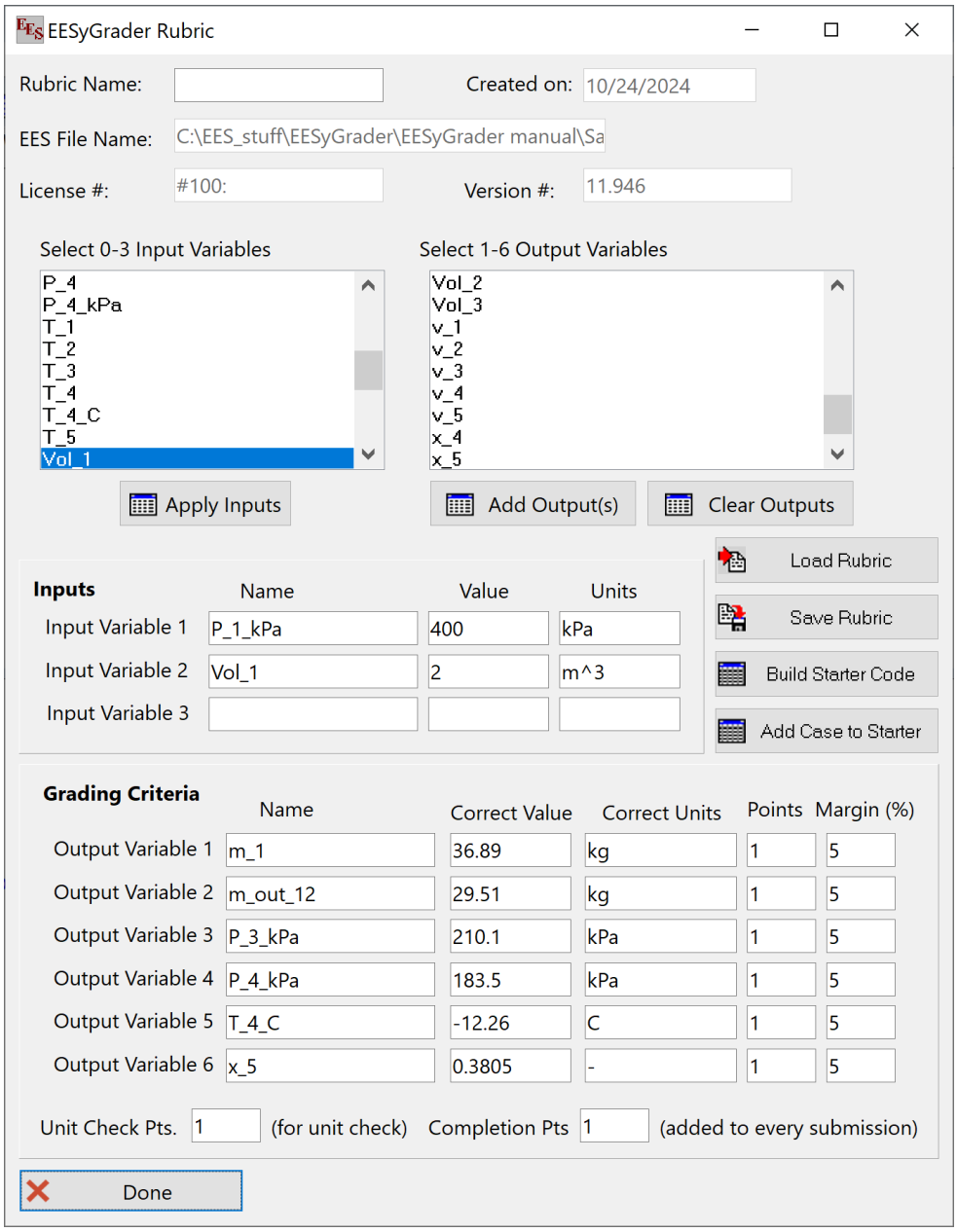


Figure 2-9: EESyGrader Rubric repopulated with updated input and output variable values.

To add this new test case to the starter code, select Add Case to Starter which will add the new input and outputs to the previously generated EESyGrader Starter Code, as shown in Figure 2-10 when copied and pasted into an EES program.

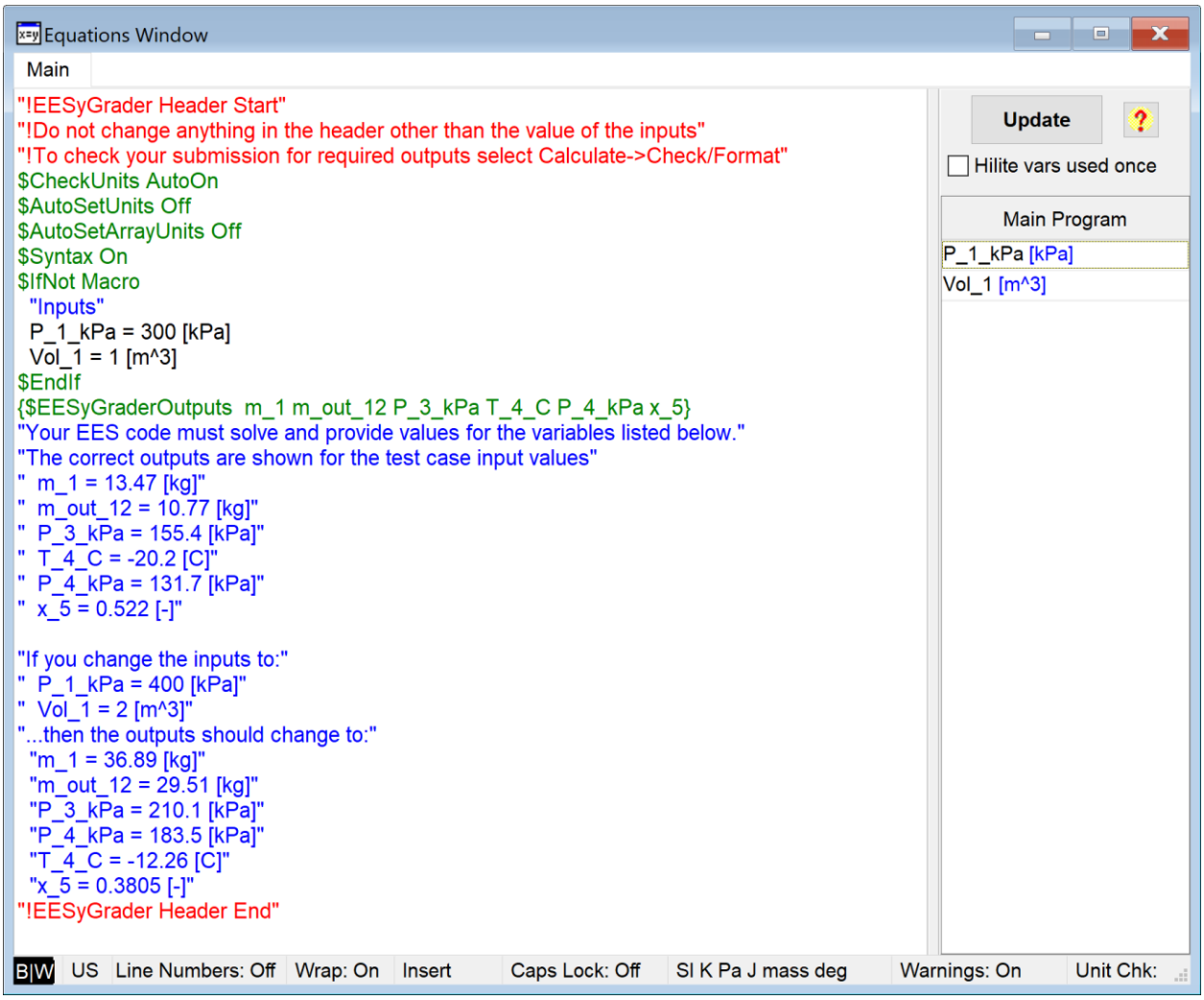


Figure 2-10: EESyGrader Starter Code Dialog with second test case added.

Checking Program for EESyGrader Outputs

Having the second test case available in the EESyGrader header provides an easy way for students to check that they are using the input variables correctly, preventing the frustration associated with hard coding inputs. It is also easy for a student to inadvertently misspell an output variable when working through the problem. However, students using an EESyGrader Starter Code have the opportunity to check their equations and ensure that all of the required EESyGrader outputs are present. The statement:

```
{$EESyGraderOutputs  m_1 m_out_12 P_3_kPa T_4_C P_4_kPa x_5}
```

in the EESyGrader Starter Code provides a list of these outputs with the exact spelling required by EESyGrader. If students select Check/Format from the Calculate menu (or use the shortcut key Ctrl+K) then EES will check their equations and, provided they compile, indicate whether each of these variables are present.

For example, Figure 2-11 shows a student solution to this problem where the required output variable x_5 has been inadvertently misspelled, x5 (see the last line).

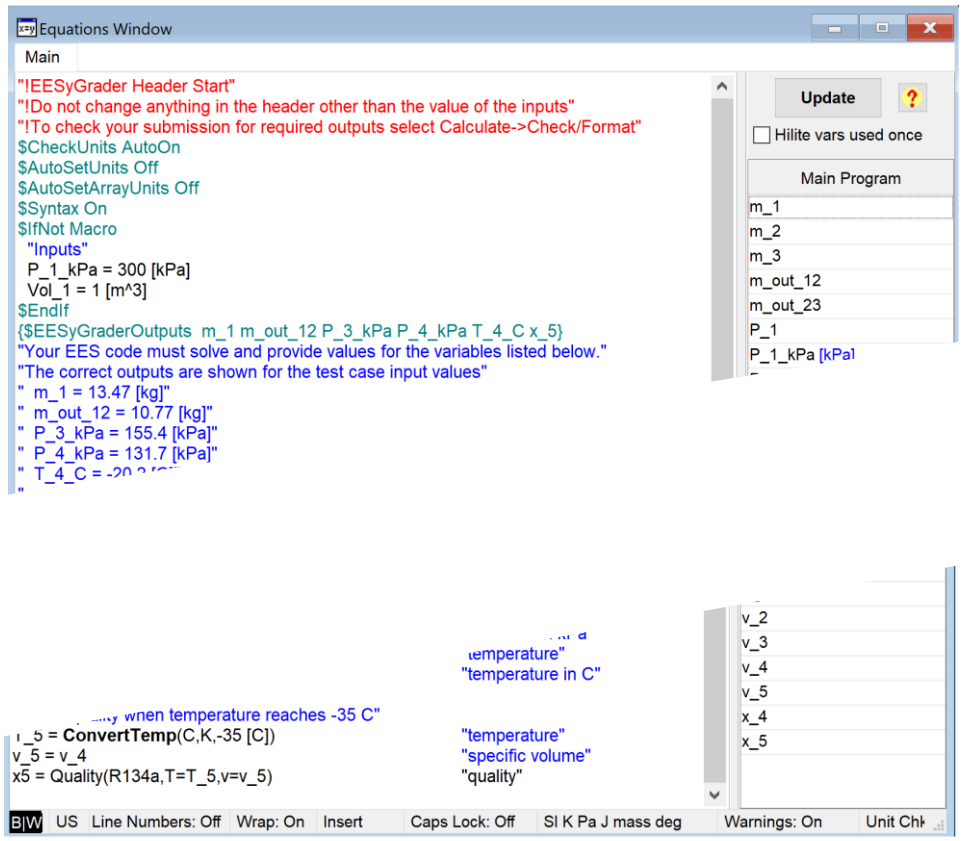


Figure 2-11: Student solution in which one output variable is misspelled.

Selecting Check/Format from the Calculate menu will lead to the message shown in Figure 2-12 which alerts the student to the fact that the required EESyGrader output x_5 is not present in his/her solution.

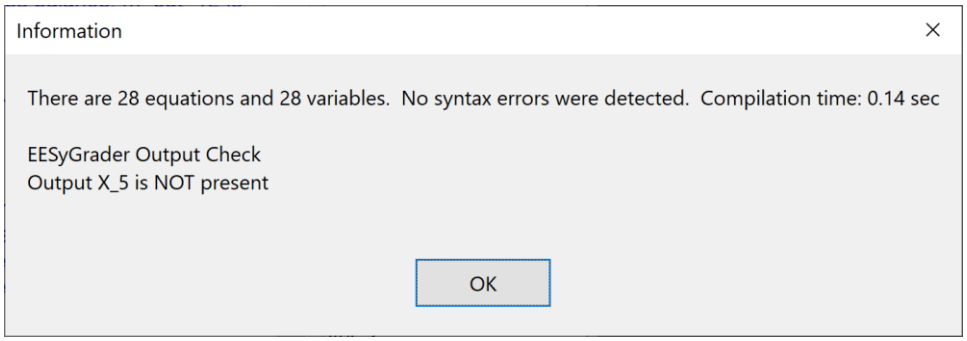


Figure 2-12: Message indicating that the EESyGrader output x_5 is not present in the solution.

If the problem is corrected by changing the line

```
x5 = Quality(R134a,T=T_5,v=v_5)                    "quality"
```

to

```
x_5 = Quality(R134a,T=T_5,v=v_5)                    "quality"
```

then selecting Check/Format from the Calculate menu will lead to the message shown in Figure 2-13.

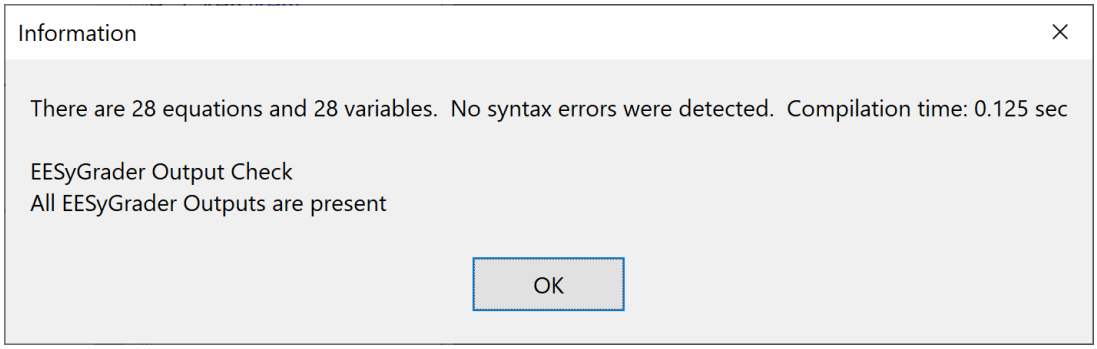


Figure 2-13: Message indicating that all of the expected EESyGrader outputs are present.

2.5 Saving the Rubric

Finally you need to save a rubric for use by EESyGrader during the grading process. If you want the grading to be done using a different set of inputs then either of the test cases, return to your EES program and change the inputs yet again and solve, as shown in Figure 2-14.

```
"Inputs"
P_1_kPa = 500 [kPa]
Vol_1 = 3 [m^3]
```

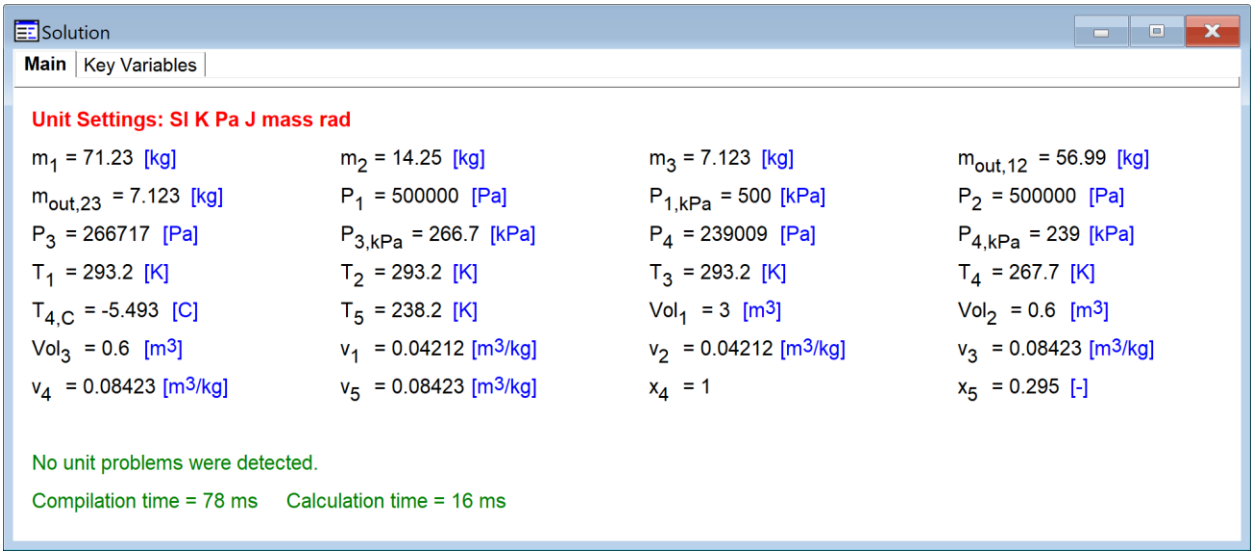


Figure 2-14: Sample EES Solution with the input variable values changed for the rubric (graded) case.

Select Create EESyGrader Rubric from the Options menu and then select the Save Rubric button. Navigate to a folder for the assignment and save the rubric as an EESyGrader rubric (.rbc) file, as shown in Figure 2-15.

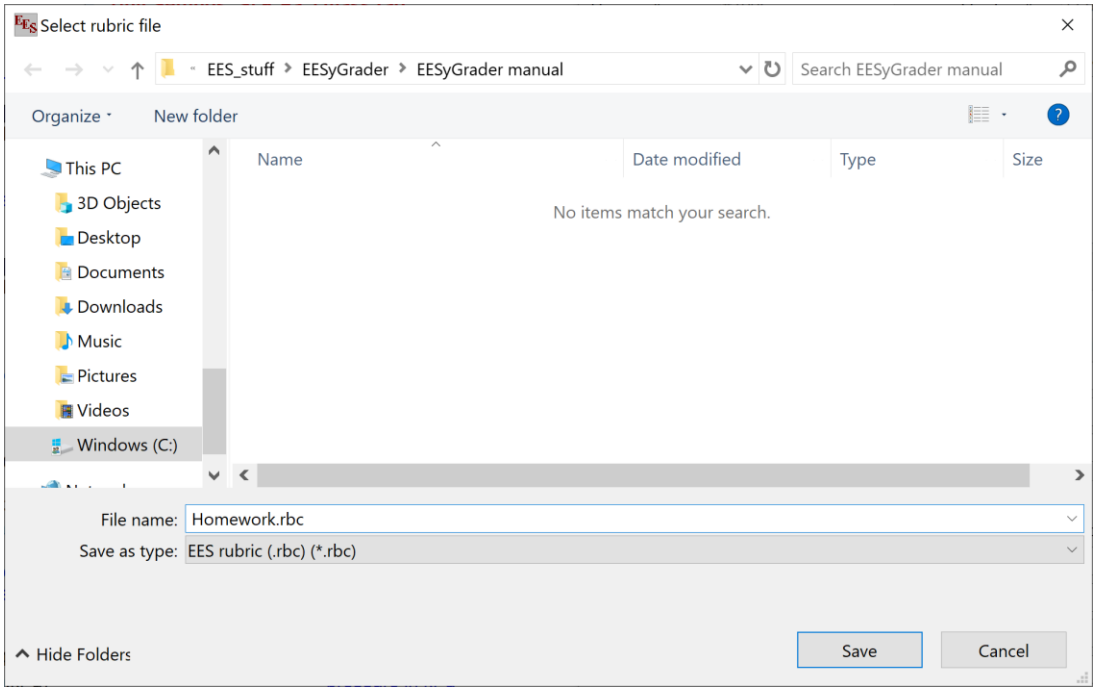


Figure 2-15: Save the rubric as a .rbc file.

3. Grading with EESyGrader

In order to grade a set of student submissions you must first prepare a rubric (as discussed in Chapter 2). Students must have completed the assignment, hopefully by starting with the starter code you prepared for them (also as discussed in Chapter 2). Students should submit their .ees files and these must be placed in a folder for grading. This chapter discusses the grading process without assuming anything about the Learning Management System (LMS) that you are using. Chapter 4 provides some additional information and features that are useful if you are using the Canvas LMS for your class.

3.1 Starting EESyGrader

Open EESyGrader either by selecting the application from the Startup menu or by clicking on the EESyGrader.exe application that is installed in the /Userlib/EESyGrader folder in the folder where your Academic license of EES is installed. Initially you will see a message like the one shown in Figure 3-1 that indicates the version of EESyGrader that you have installed and the associated version of EES that you must be using. The latest version of EESyGrader available for download is also indicated.

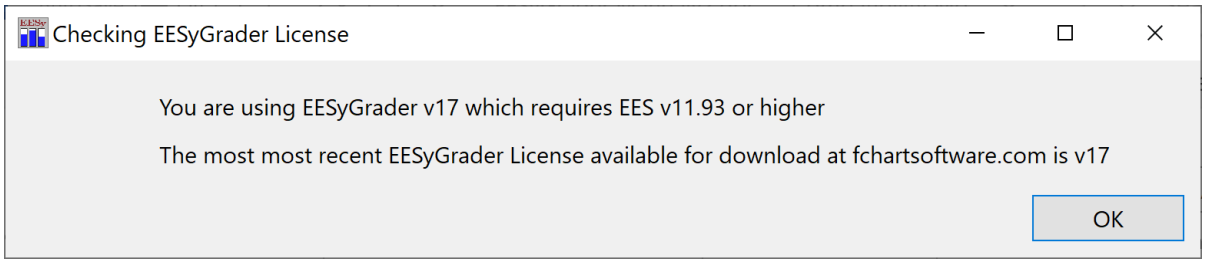


Figure 3-1: EESyGrader Startup Message.

The main EESyGrader Dialog is shown in Figure 3-2.

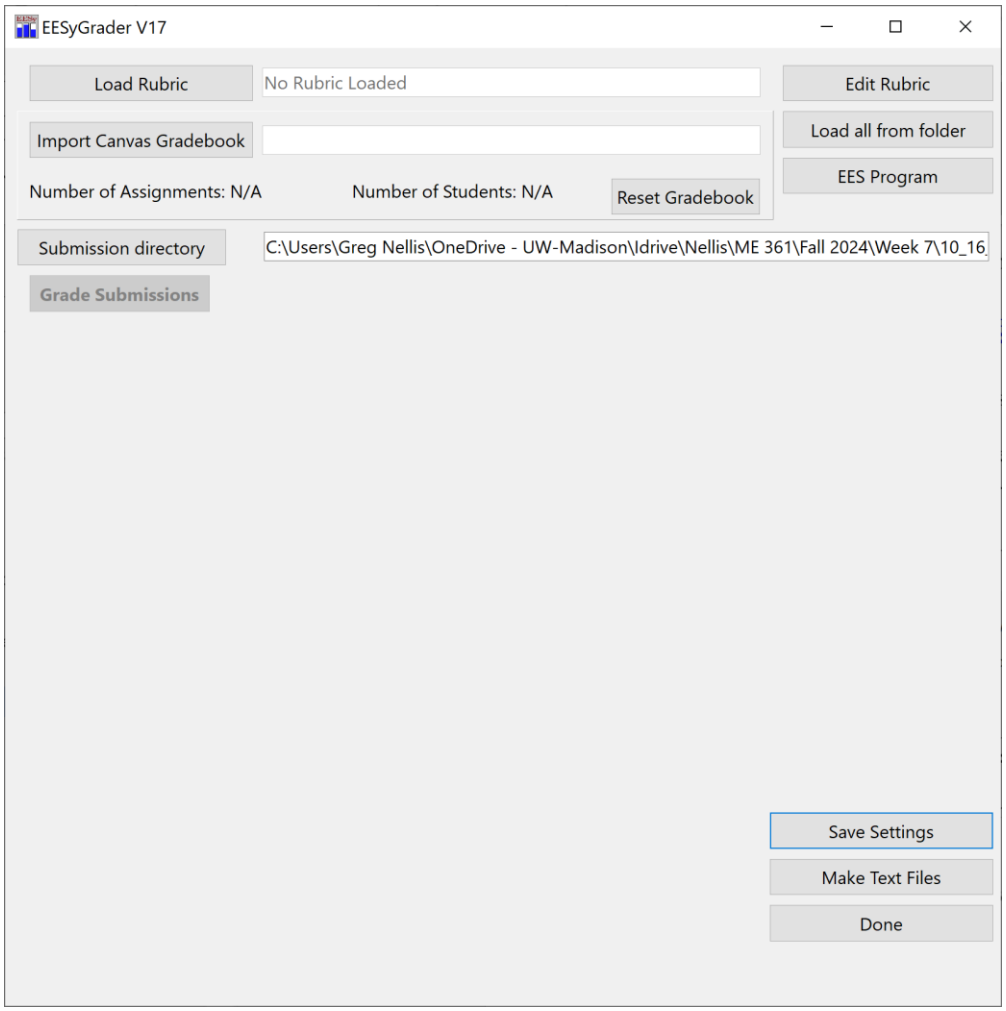


Figure 3-2: Main EESyGrader Dialog.

Specifying the EES Program

EESyGrader opens and runs each submission using your EES program. If you have multiple versions of EES installed on your computer then you may need to specify the location of the Academic Version that you want to use with EESyGrader. You can do this by selecting the EES Program button in the upper right corner of the EESyGrader Dialog. Most users will not need to do this.

Loading a Rubric

EESyGrader requires a rubric to use when grading the submissions. While it is possible to enter a rubric manually, this is tedious and not recommended. Rather, load the rubric that you saved from EES, as discussed in Section 2.5, by selecting the Load Rubric button and navigating to the .rbc file. Select Open to import the rubric and the file being used will populate the edit box adjacent to the Load Rubric button, as shown in Figure 3-3.

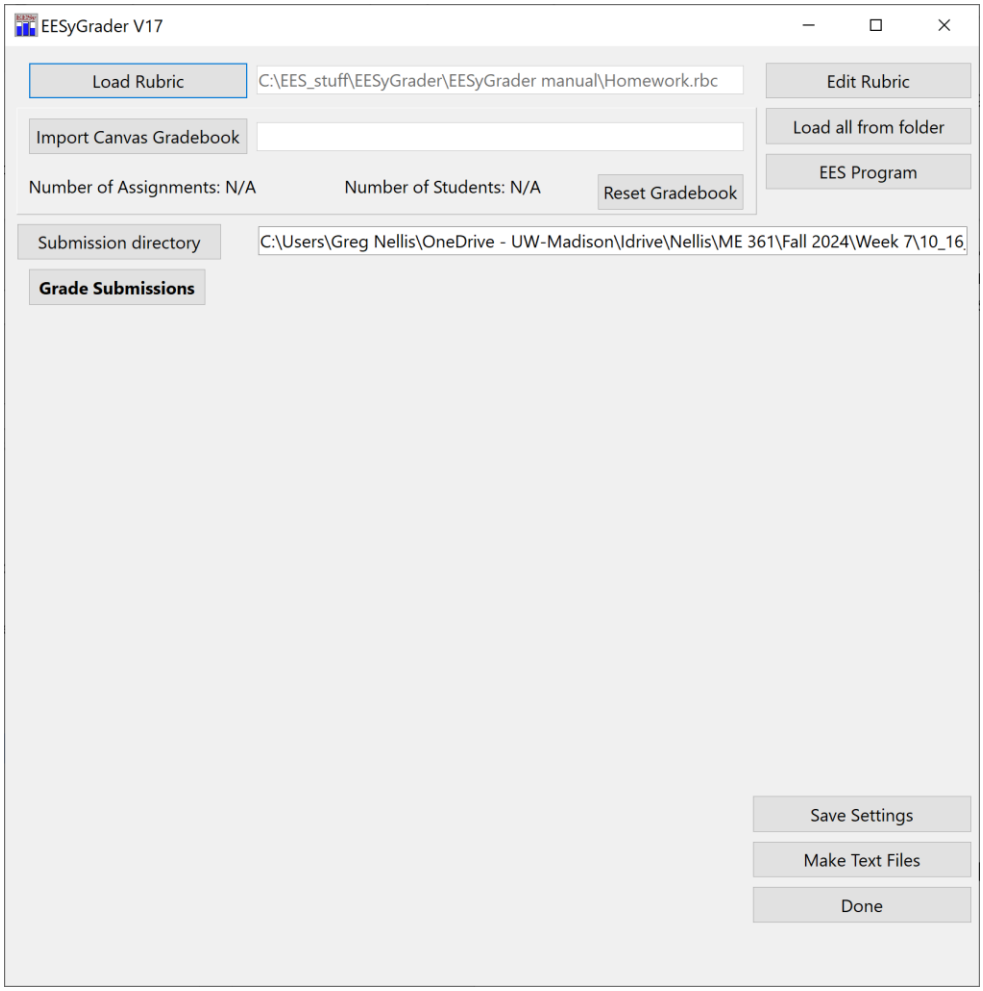


Figure 3-3: Main EESyGrader Dialog with rubric loaded.

If you want to view or edit the rubric, select the Edit Rubric button to bring up the Rubric Dialog. The Rubric Dialog shown in Figure 3-4 results by loading the rubric for the sample assignment developed in Chapter 2. You can modify the rubric any way you'd like at this point, including changing the point values or margins used by EESyGrader. When you are finished you can save your modified rubric with the Save Rubric button or return to the EESyGrader Main Dialog with the Done button. You can also load a different rubric using the Load Rubric button.

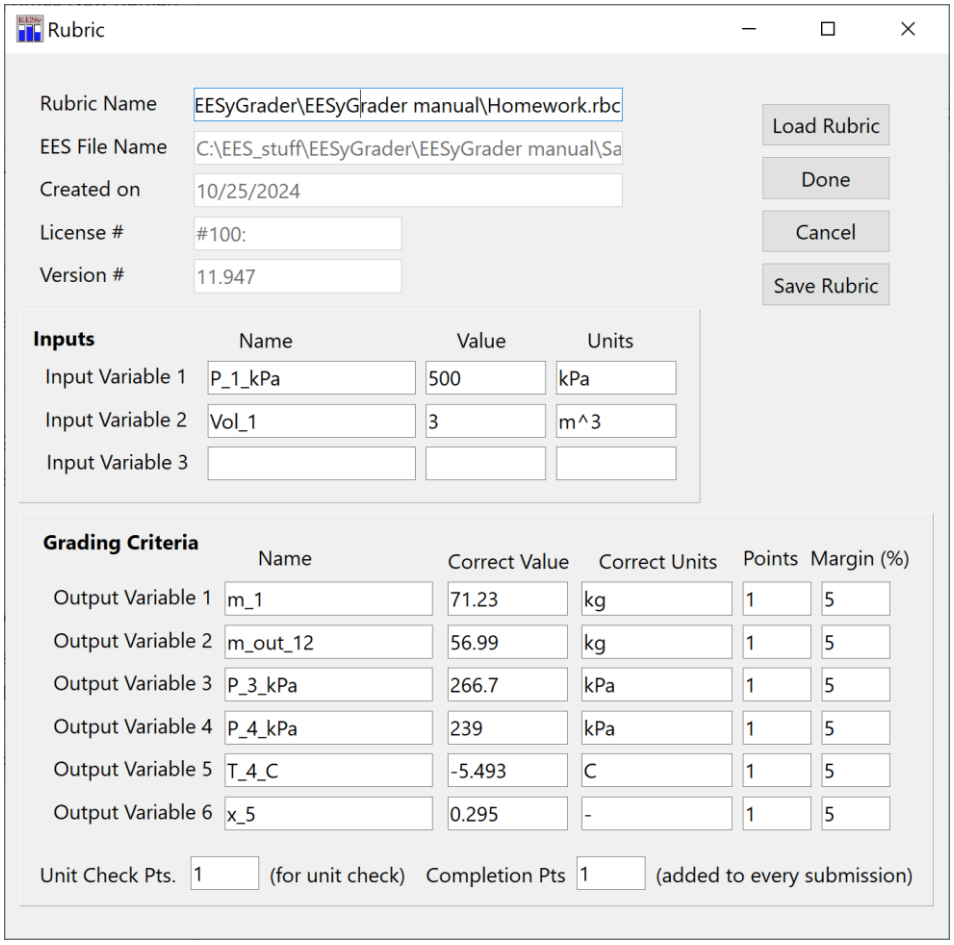


Figure 3-4: Rubric Dialog.

Specifying the Submission Directory

Select the Submission Directory button from the EESyGrader Main Dialog and navigate to the directory where you have placed all of the .ees files submitted by the students for grading.

Save Settings Button

Select the Save Settings button to save the selections you've made for the submissions directory, gradebook file (see Chapter 4), rubric file, and EES file so that EESyGrader will default to these directory locations when opened again.

3.2 Grading with EESyGrader

Once you have loaded the rubric and selected the submission directory you should be able to grade the submissions. Select the Grade Submissions button and you should initially see a message indicating that EESyGrader is opening EES. After a few seconds you should see a message indicating that EESyGrader is grading together with a progress bar. Depending on how many submissions you are grading and how long it takes to solve each EES program the grading process can take a few minutes. On a typical windows computer with relatively simple homework problems, more than 200 submissions can be graded in less than a minute. Once

grading is complete you will see the message shown in Figure 3-5 which indicates that grading has been completed.

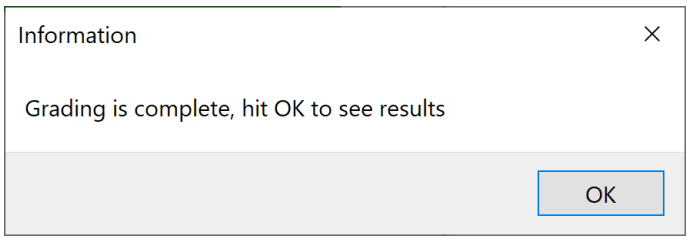


Figure 3-5: Grading Complete Message

Hit OK to return to the EESyGrader Main Dialog which should now include information about the result of the grading process, as shown in Figure 3-6.

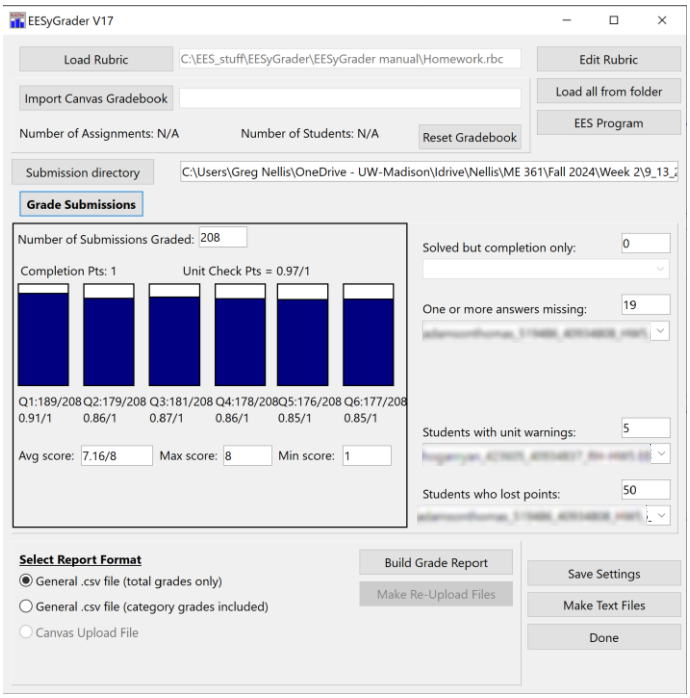


Figure 3-6: EESyGrader Main Dialog after grading is complete.

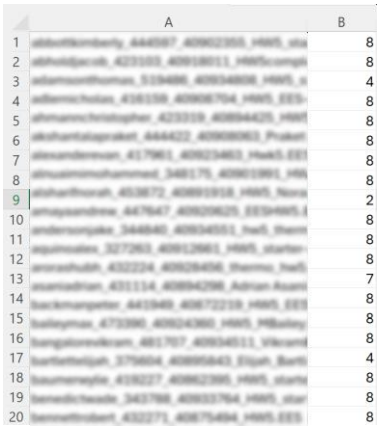
The box to the left shows how many submissions were graded and what the average scores were on each of the questions (i.e., associated with each of the outputs, in the order they were entered in the rubric). The lists to the right indicate, from top to bottom, submissions that had no correct answers, submissions that were missing output variables, submissions that lost points due to unit warnings, and finally all submissions that lost points for any reason. Selecting an entry in any of these lists and double-clicking on it will open that submission in EES for closer investigation.

3.3 Building a Grade Report

The bottom pane in the EESyGrader Main Dialog allows you to generate a grade report. There are two formats available.

General .csv file (total grades only)

The top radio button (total grades only) creates a .csv with two columns, as shown in Figure 3-7. The first column in the csv is the submission name and the second column is the total grade for the submission.



	A	B
1	[redacted]	8
2	[redacted]	8
3	[redacted]	4
4	[redacted]	8
5	[redacted]	8
6	[redacted]	8
7	[redacted]	8
8	[redacted]	8
9	[redacted]	2
10	[redacted]	8
11	[redacted]	8
12	[redacted]	8
13	[redacted]	7
14	[redacted]	8
15	[redacted]	8
16	[redacted]	8
17	[redacted]	4
18	[redacted]	8
19	[redacted]	8
20	[redacted]	8

Figure 3-7: Total grades only grade report.

General .csv file (category grades included)

The second radio button (category grades included) creates a .csv with a column for each of the categories that together make up the total grade, as shown in Figure 3-8.

	A	B	C	D	E	F	G	H	I	J
1	File Name	m_1 (1 pts)	m_out_12 (1 pts)	P_3_kPa (1 pts)	P_4_kPa (1 pts)	T_4_C (1 pts)	x_5 (1 pts)	Completion Pts (1 pts)	Unit Check Pts (1 pts)	Total Pts
2	[redacted]	1	1	1	1	1	1	1	1	8
3	[redacted]	1	1	1	1	1	1	1	1	8
4	[redacted]	1	1	0	0	0	0	1	1	4
5	[redacted]	1	1	1	1	1	1	1	1	8
6	[redacted]	1	1	1	1	1	1	1	1	8
7	[redacted]	1	1	1	1	1	1	1	1	8
8	[redacted]	1	1	1	1	1	1	1	1	8
9	[redacted]	1	1	1	1	1	1	1	1	8
10	[redacted]	0	0	0	0	0	0	1	1	2
11	[redacted]	1	1	1	1	1	1	1	1	8
12	[redacted]	1	1	1	1	1	1	1	1	8
13	[redacted]	1	1	1	1	1	1	1	1	8
14	[redacted]	1	0	1	1	1	1	1	1	7
15	[redacted]	1	1	1	1	1	1	1	1	8
16	[redacted]	1	1	1	1	1	1	1	1	8
17	[redacted]	1	1	1	1	1	1	1	1	8
18	[redacted]	1	1	0	0	0	0	1	1	4
19	[redacted]	1	1	1	1	1	1	1	1	8
20	[redacted]	1	1	1	1	1	1	1	1	8
21	[redacted]	1	1	1	1	1	1	1	1	8

Figure 3-8: Category grades included grade report.

3.4 Building Text Files

It may be important to guard against plagiarism in a class where all submissions are automatically graded. In order to do this, the Make Text Files button will strip the contents of the Equations Window from each of the EES file submissions and make an associated .txt file containing only this information. Select the Make Text Files and specify the directory where you would like to put each of these .txt files.

EESyGrader will then activate EES and open each of the submissions in order to save it as a .txt file with the same name in the selected directory. The .txt file will only contain the information that was found in the Equations Window, as shown in Figure 3-9.

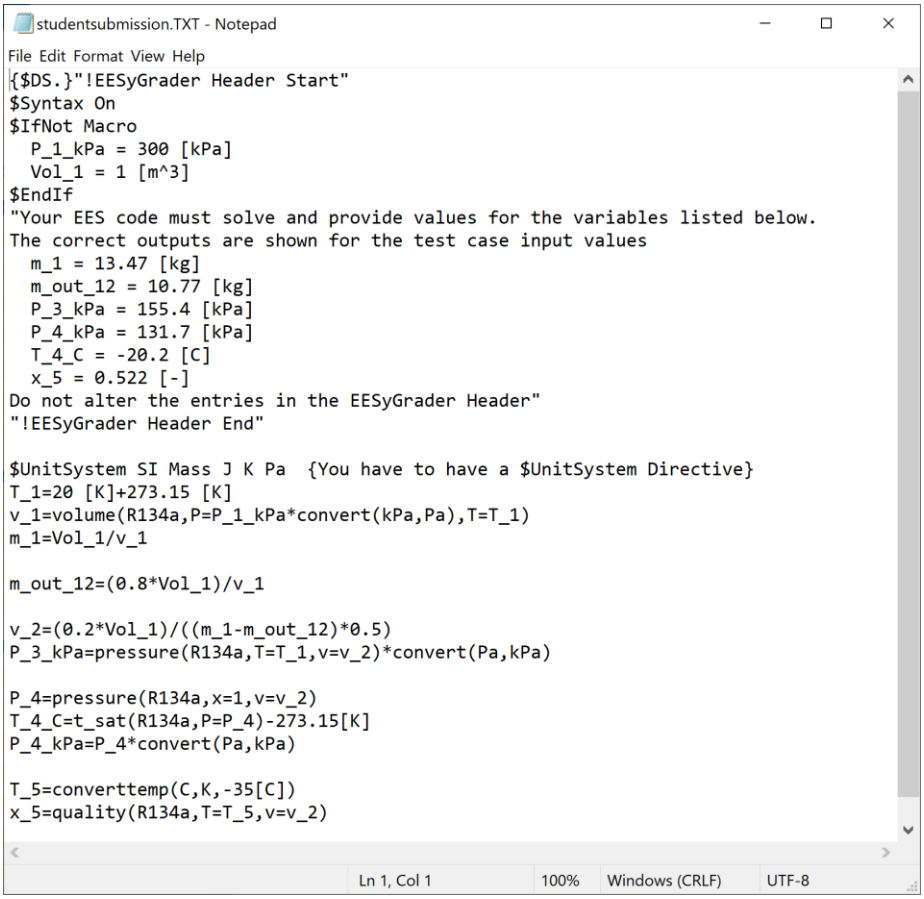


Figure 3-9: Example of a .txt file.

The text files can be easily compared in order to detect plagiarism using a variety of commercial programs. For example, the program Fast Duplicate File Finder will scan the entire directory and group student submissions based on their similarity to one another.

4. Using EESyGrader with Canvas

EESyGrader has some features that are designed for integration with the Canvas Learning Management System. These features are covered in this chapter.

4.1 Using a Canvas Gradebook

Download Canvas Gradebook

You can download your Canvas Gradebook from within Canvas by selecting Export and then Export Entire Gradebook from within the Grades tab on your course page, as shown in Figure 4-1.

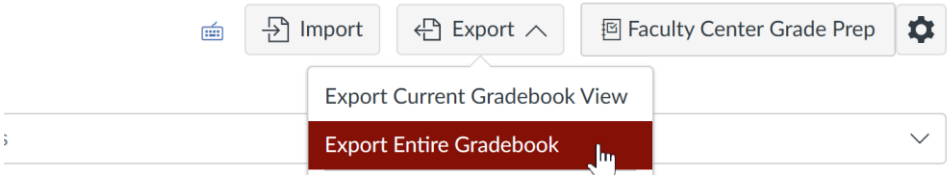


Figure 4-1: Export Canvas Gradebook

Import Canvas Gradebook into EESyGrader

Once you've downloaded the gradebook file (which is a .csv file) you can load it into EESyGrader by selecting the Import Canvas Gradebook button from the EESyGrader Main Dialog and navigating to the .csv file. The number of assignments and students found in the gradebook will be reported, as shown in Figure 4-2. Select the Reset Gradebook button to clear the students and assignments list.

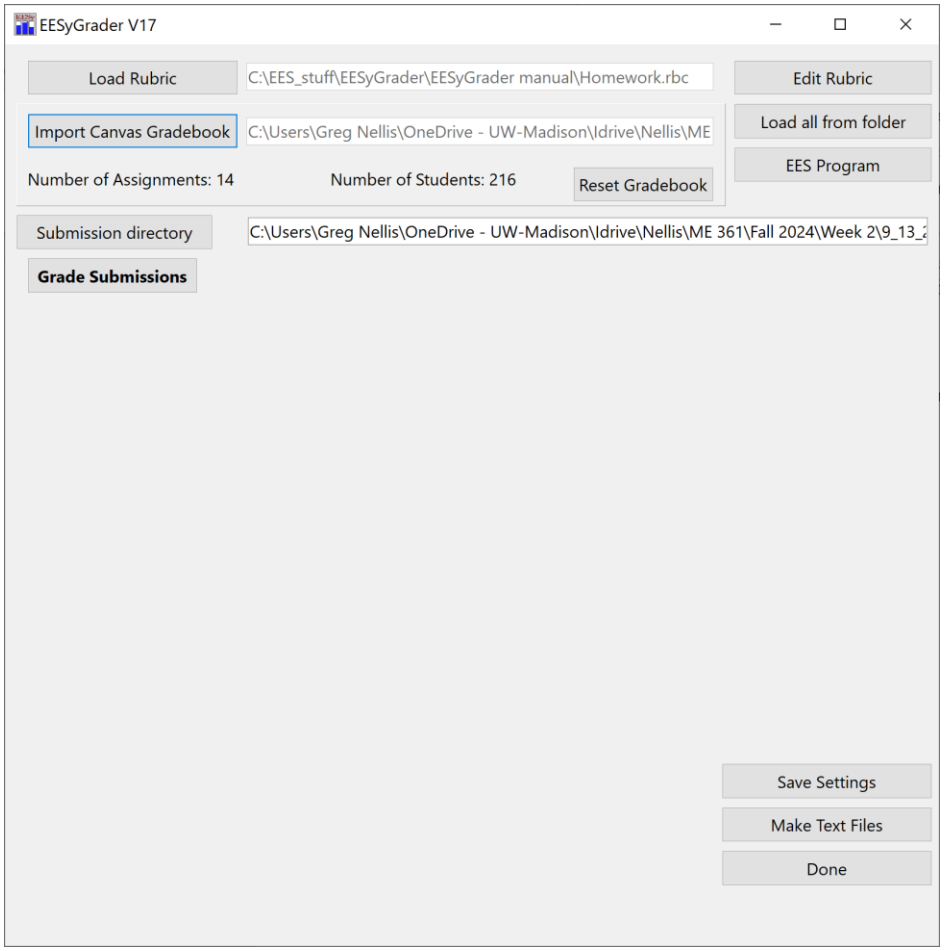


Figure 4-2: EESyGrader Main Dialog after loading Canvas gradebook.

List of Students with no Submissions

If a Canvas Gradebook has been loaded, then an additional list will be shown after grading is completed that contains those students who are in the gradebook but did not submit an ees program, as shown in Figure 4-3.

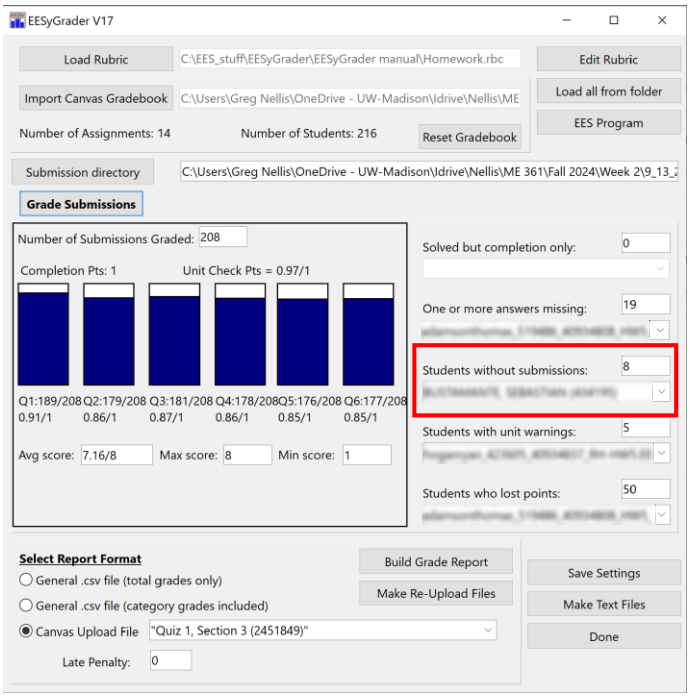


Figure 4-3: EESyGrader Main Dialog with list of students without submissions populated.

4.2 Canvas Grade Report File

Build Canvas-compatible Grade Report

If a Canvas Gradebook has been loaded then the Canvas Upload File option will be enabled in the Grade Report pane towards the bottom of the EESyGrader Main Dialog after grading is complete. Select the assignment that was graded from the list of assignments found in the gradebook that is to the right of the radio button. You can also set a late penalty that should be applied to submissions that have been marked late by Canvas, as shown in Figure 4-4.

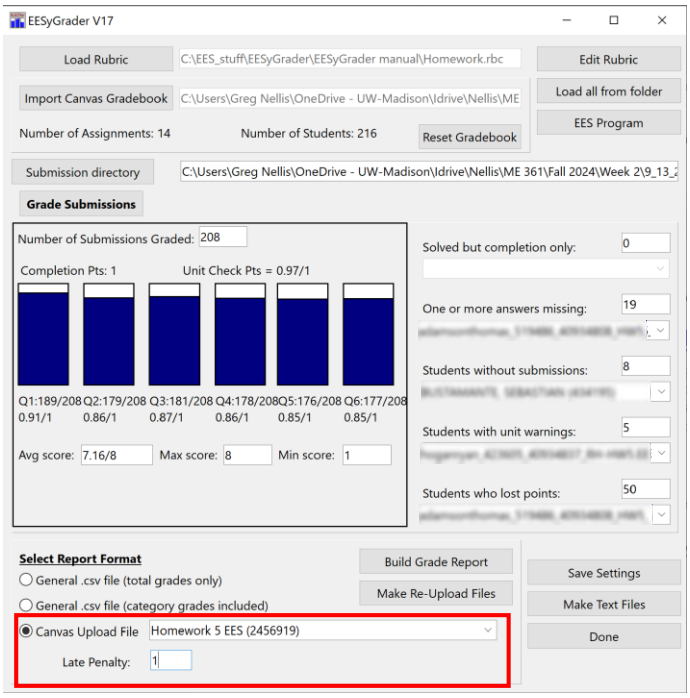


Figure 4-4: Canvas Upload File with assignment selected.

Select the Build Grade Report to build a canvas-compatible grade report, which is a .csv file that can be imported directly to the Canvas LMS in order to populate the grades for each student for the selected assignment.

Load Grades into Canvas

Navigate to the Grades tab of your Canvas course page and select the Import button, as shown in Figure 4-5.

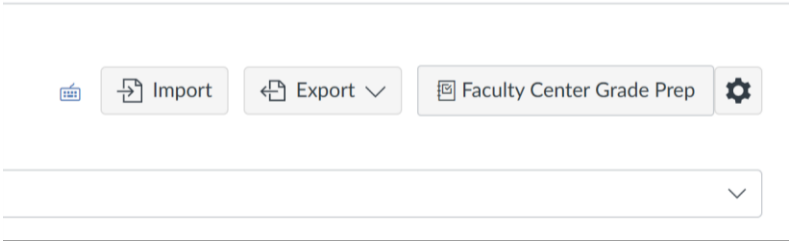


Figure 4-5: Import button in Canvas.

Select the Choose File button, as shown in Figure 4-6 and navigate to the Canvas-compatible grade report .csv file that you prepared.

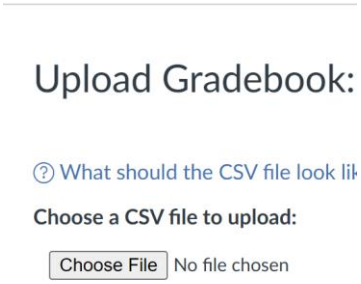


Figure 4-6: Choose File button in Canvas.

Select the Upload Data button shown in Figure 4-7.

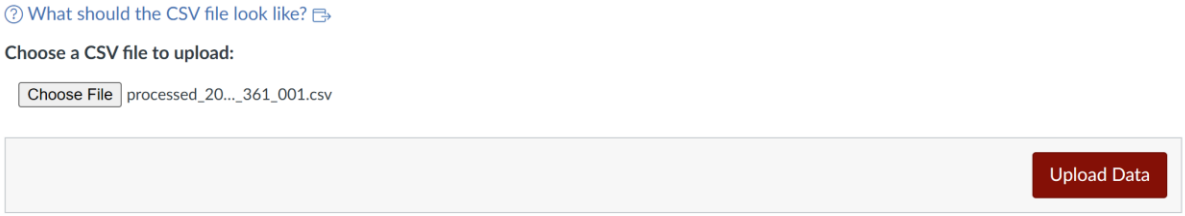


Figure 4-7: Upload Data button in Canvas.

Once the grade report file is uploaded, Canvas will prompt you to answer any questions it has about the data (e.g., students that are present in the grade file but may have dropped your class) and then provide you with a report showing the grades that will be changed in Canvas based on the information found in the upload file, as shown in Figure 4-8. Select Save Changes to save your grades in Canvas.

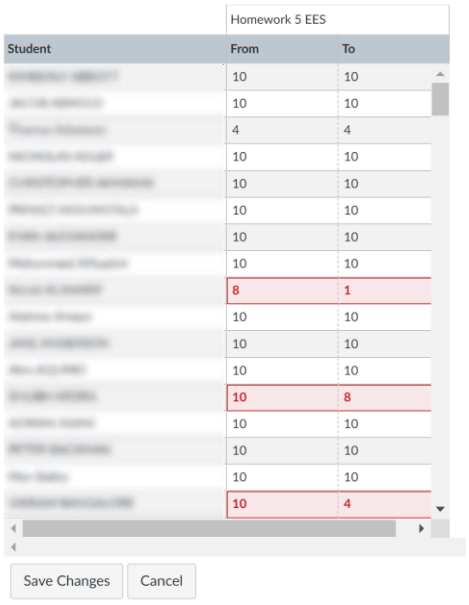


Figure 4-8: Report of grades that will be changed in Canvas.

4.3 Canvas Re-Upload Files

Canvas allows you to re-upload a file for each student that has the same name as the downloaded submission file. EESyGrader will therefore create a set of .ees files, one for each student, that contains only a report showing why the student received the grade that they did on the assignment. To build these Re-Upload Files select the Make Re-Upload Files button and navigate to the folder where you would like to keep these files. Once completed, each of the .ees files in the directory will contain a grade report, as shown in Figure 4-9.

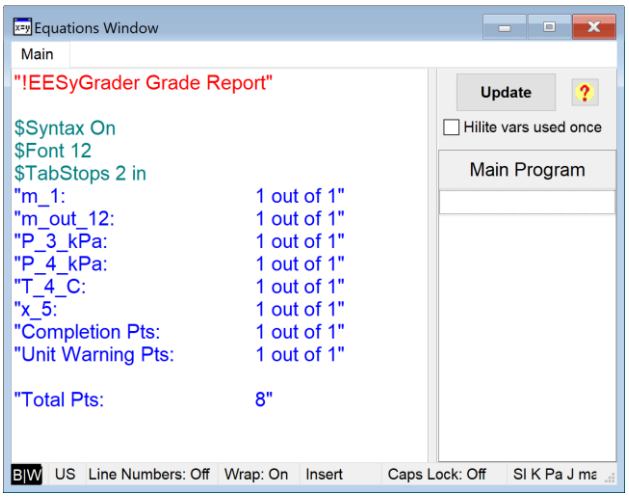


Figure 4-9: Re-Upload File.

Select all of the files in the folder and zip them up. In Canvas go to the Assignments page and then select the assignment of interest. Select the Re-Upload Submissions button that appears in the side bar, as shown in Figure 4-10, and then the Choose File button to navigate to the zip file containing the re-upload files. Finally select the Upload Files button.

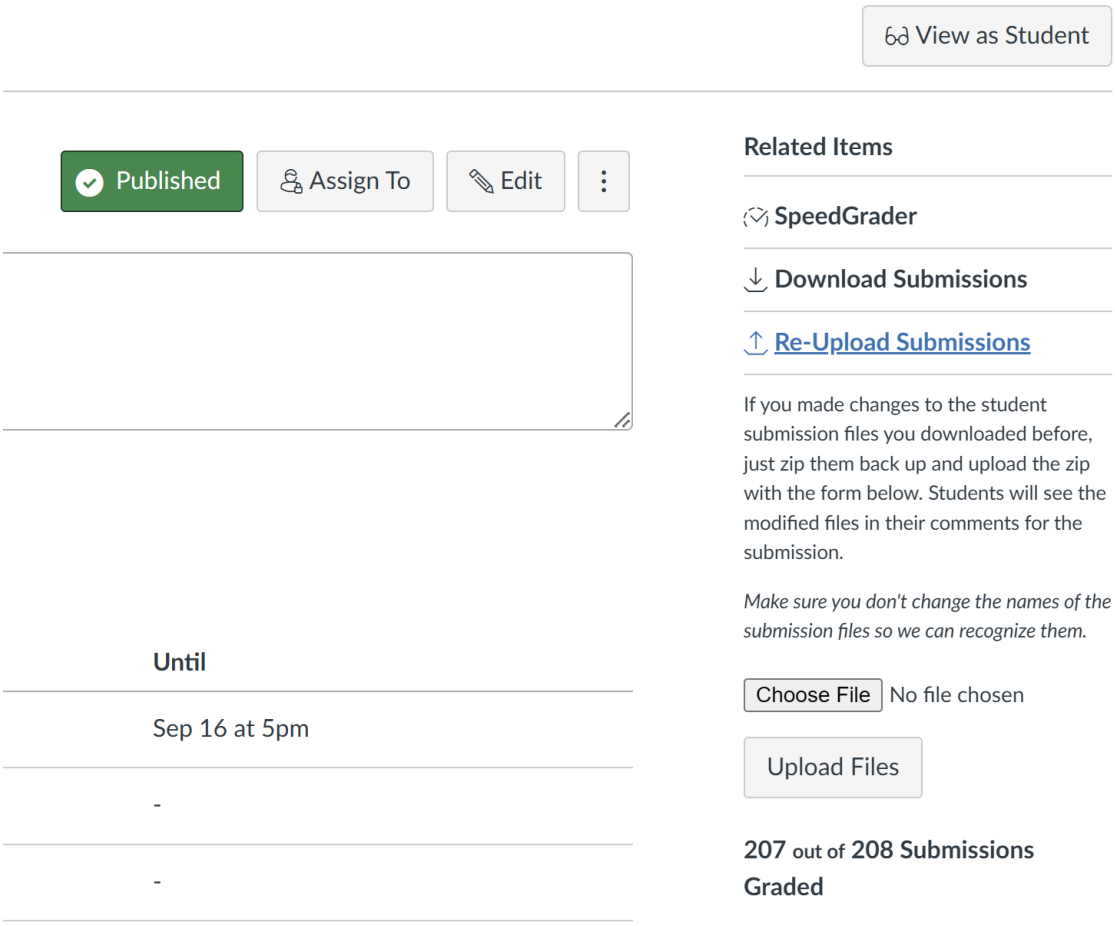


Figure 4-10: Re-Upload Submissions button.

Each student will now be able to go to their account and download the re-upload file containing their grade report.

5. Troubleshooting EESyGrader

EESyGrader works by generating a macro file that is run (in the background) and opens each ees file, sets the inputs, solves the file, and exports the outputs to a file that is subsequently graded for correctness against the rubric. The macro file is saved in your ees directory as EESyGrader.emf and can be examined either from within EES (by opening the Macro from the Macro Window) or outside of EES using a text editor. The macro itself generates a log file as it runs that is named EESyGraderLogFile.log and is placed in the EESyGrader folder of your Userlib directory. In situations where EESyGrader fails to open and grade every submission it is often possible to see where it ran into trouble by investigating the log file. If the grader stops at a particular submission you might want to remove that submission from the directory containing the submissions being graded. Occasionally a student may submit a corrupt file or one that will not open. You can investigate the file outside of the grading process to diagnose the issue.