# **Evaluation**

Contents

Specification requirements

- Each system is windowed
- Each input is provided using a keyboard
- A registration system is present
- A login system is present
- There are 2 tiers of accounts: student, teacher
- A guide is present
- An exit button is present
- A test creator system is present
- Both single and multiple-choice questions can be entered
- A test can be modified with questions and answers
- A test can be completed
- Both a user's score and time are displayed
- Either individual or all user's scores, grades and times can be viewed
- A feedback sender is present
- A feedback receiver is present
- The program can be easily used by all

Main menu testing

Number	Test	Type of test	Example test data	Expected outcome	Justification	Achieved?
1	Does the main menu GUI work?	Viewing	NULL	The main menu opens	To view several options and select one. **Otherwise, the**	Yes

|				on running the program	user can not pick their desired option	
2	Does the registration button work?	Normal	Button press	A window with a registration process opens	To start the registration process. **Otherwise, a user cannot start registering an account**	Yes
3	Does the login button work?	Normal	Button press	A window with a login process opens	To start the login process. **Otherwise, a user cannot start logging in to gain access to the program.**	Yes
4	Does the guide button work?	Normal	Button press	A window with a text guide opens	To receive guidance on how to use the program. **Otherwise, the user cannot access information on how to use the program**	Yes

1 – Does the main menu GUI work?
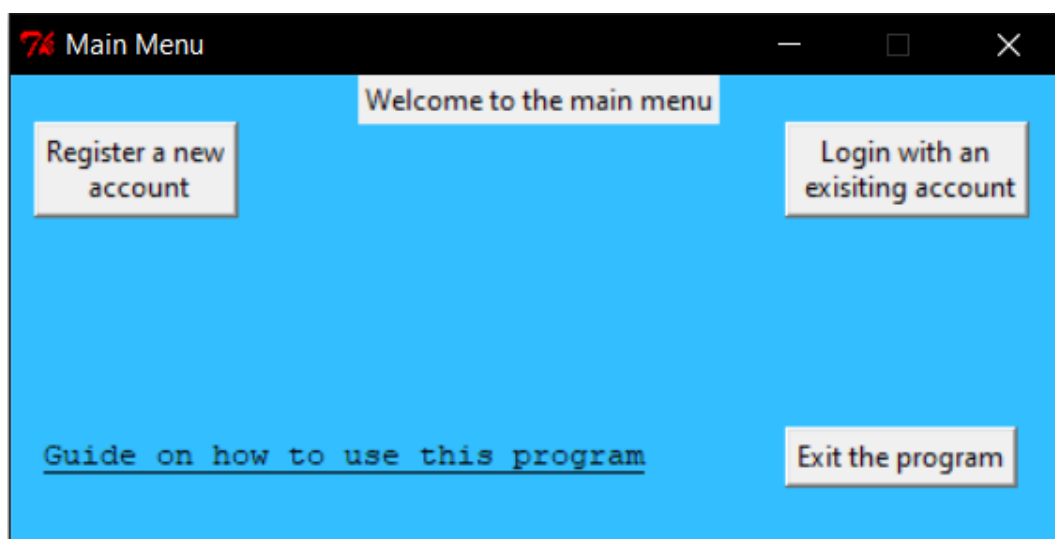
Yes

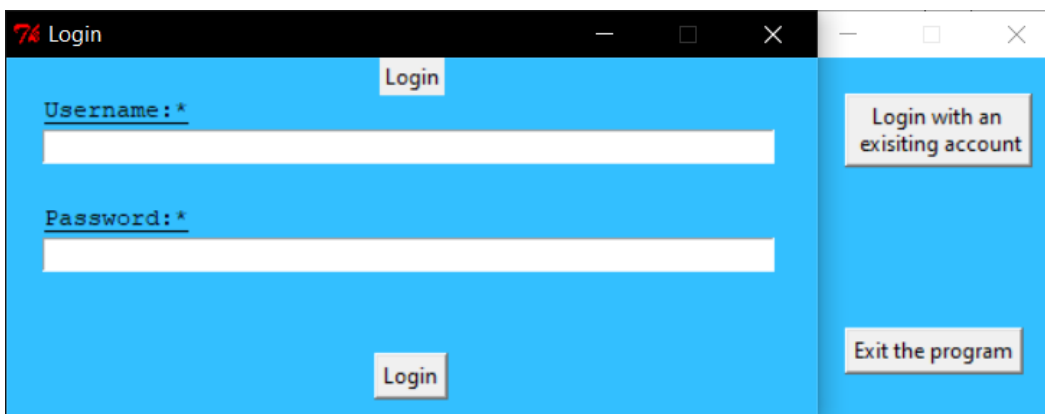When the program is run, the main menu GUI is visible

2 - Does the registration button work?
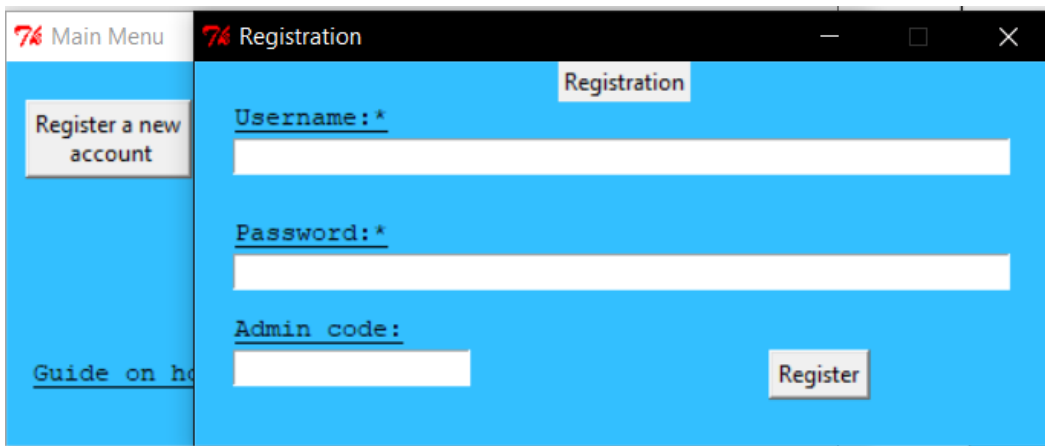
Yes

When the "Register a new account" button is pressed, the registration menu appears
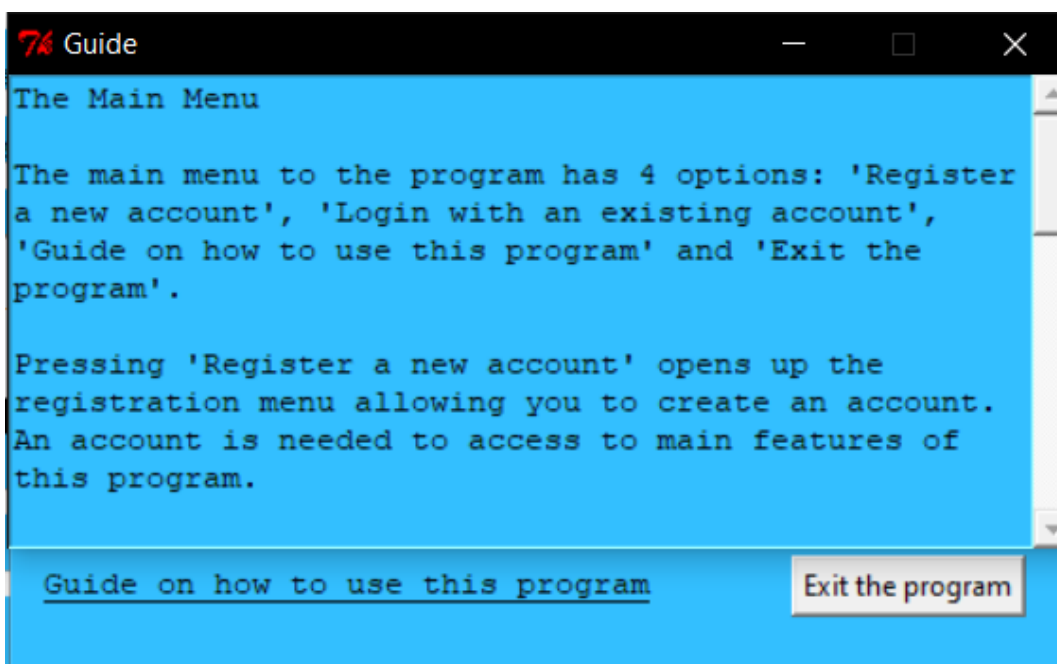
3 - Does the login button work?

Yes

When the "Login with an existing account" is pressed, the login menu opens

4 - Does the guide button work?

Yes

When the "Guide on how to use this program", the guide appears

Registration menu testing

Number	Test	Type of test	Example test data	Expected outcome	Justification	Achieved?
1	Does the registration menu GUI work?	Viewing	NULL	The registration menu GUI is visible	To register and account and access the program. **Otherwise, the user would not be able to see what information is required and input it**	Yes
2	Can the username, password and admin code input boxes be accessed?	Normal	Click on an input box using a mouse and type on keyboard	All input boxes can be entered	To enter details to make an account for authorisation. **Otherwise, the user would not be able to create their own username, password and enter an admin code if necessary**	Yes
3	Does the register button work?	Normal	Button press	The account details are saved	To save the entered details. **Otherwise, the user would not be able to see what information is required and input it**	Yes
4	Is there an indicator if the input boxes are not filled properly?	Viewing	NULL	A message box appears with an error message	To inform the user that they have not entered details correctly. **Otherwise, the user would not know if their inputs are valid**	Yes
5	Is there an indicator if a registration is successful?	Viewing	NULL	A message box appears with a confirmation message	To inform the user that their account has been registered. **Otherwise, the user would not know if their registration was successful**	Yes

1 - Does the registration menu GUI work?
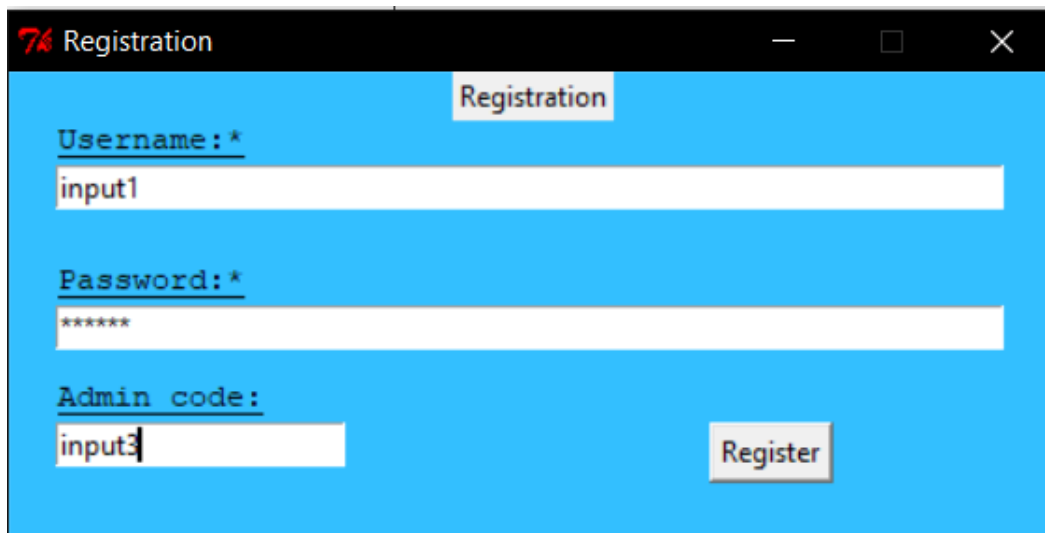
Yes

The registration window is visible

2 - Can the username, password and admin code input boxes be accessed?

Yes

All input boxes can be clicked on and text can be entered by the user

3 - Does the register button work?
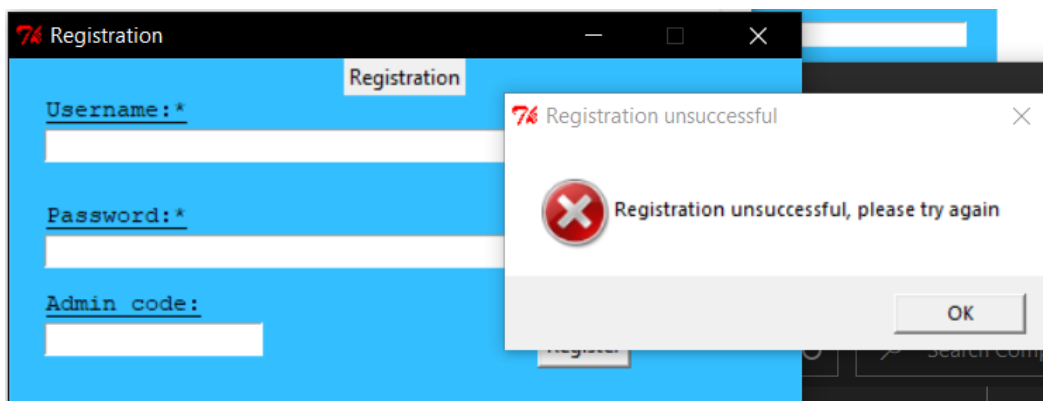

Yes

Once the register button has been pressed, all details are saved to the login.csv file

|	A	B	C
1	Username	Password	Admin
2	testuserna	testpassw	testadmin
3	noadmin1	noadmin2	
4	a	a	testadmin
5	input1	input2	input3

4 - Is there an indicator if the input boxes are not filled properly?

Yes

If either the username or password input boxes are blank, an error message will be displayed, and the details will not be saved

5 - Is there an indicator if a registration is successful?

Yes
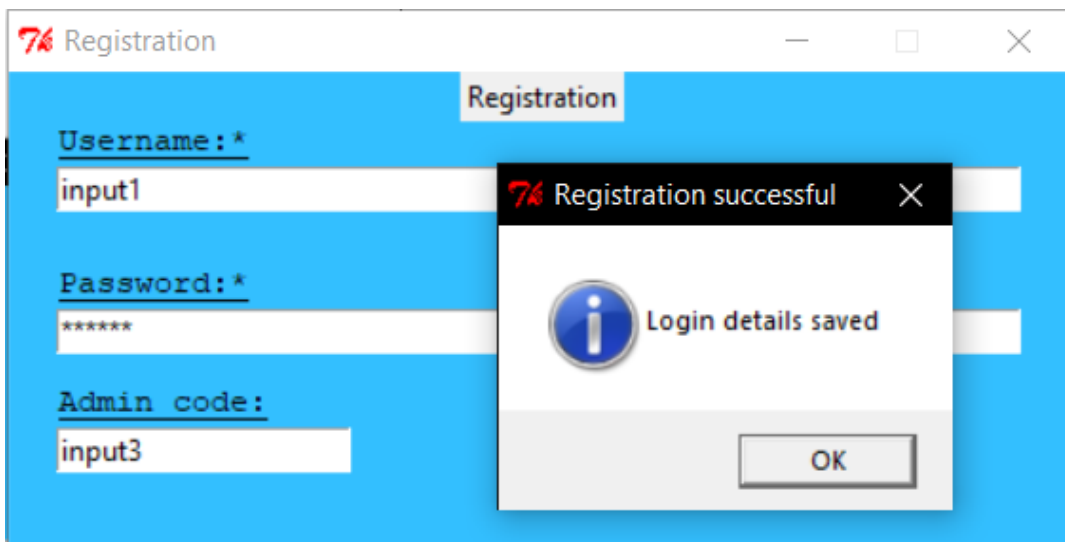
There is a message box to indicator that login details have been saved successfully

Login menu testing

Number	Test	Type of test	Example test data	Expected outcome	Justification	Achieved?
1	Does the login menu GUI work?	Viewing	NULL	The login GUI is visible	To verify a user's authorisation. **Otherwise, the user would not be able to see what information is required and input it**	Yes
2	Can the username and password input boxes be accessed?	Normal	Click on an input box using a mouse and type on keyboard	All input boxes can be typed in by the user	To receive login details to verify a user. **Otherwise, a user would not be able to enter their account details**	Yes
3	Does the login button work?	Normal	Button press	The login details are checked against the login.csv file and access to the program is given accordingly	To start the verification process and check if the user exists on the database and give program access based on their input. **Otherwise, the user would not be able to login when they are ready**	Yes
4	Is there an indicator if a login is successful?	Viewing	NULL	A message box appears with a confirmation message	To inform the user that they have logged in successfully. **. Otherwise, a user would not know if their login was successful**	Yes
5	Is there an indicator if a login is unsuccessful?	Viewing	NULL	A message box appears with an error message	To inform the user that their login attempt was unsuccessful. **Otherwise, a user would not know if their login was unsuccessful**	Yes

1 – Does the login menu GUI work?

Yes

The login menu GUI is visible

2 - Can the username and password input boxes be accessed?

Yes

Both input boxes can be clicked on and text can be entered by the user
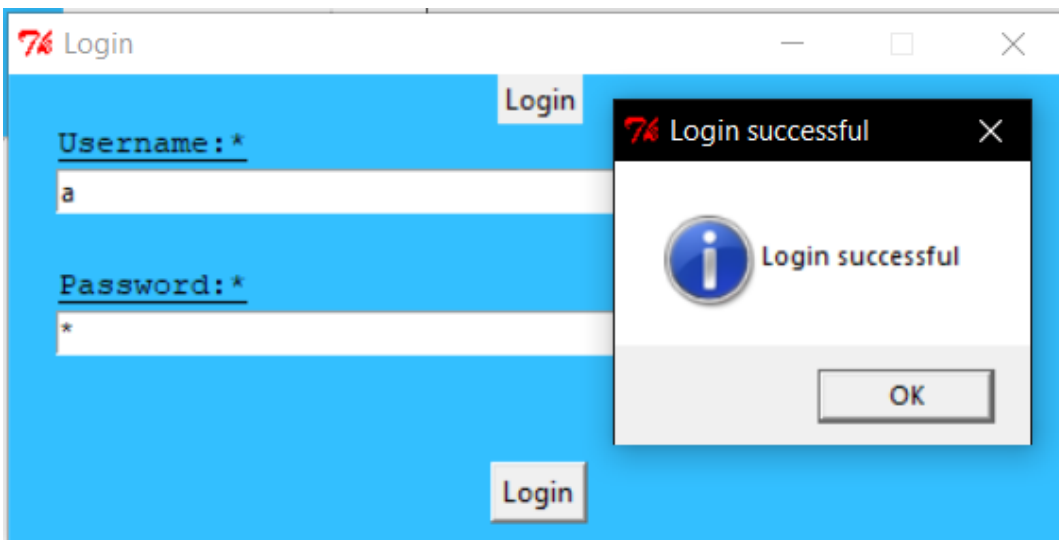
3 - Does the login button work?

Yes

If correct login details are entered, the program will continue to the secondary menu

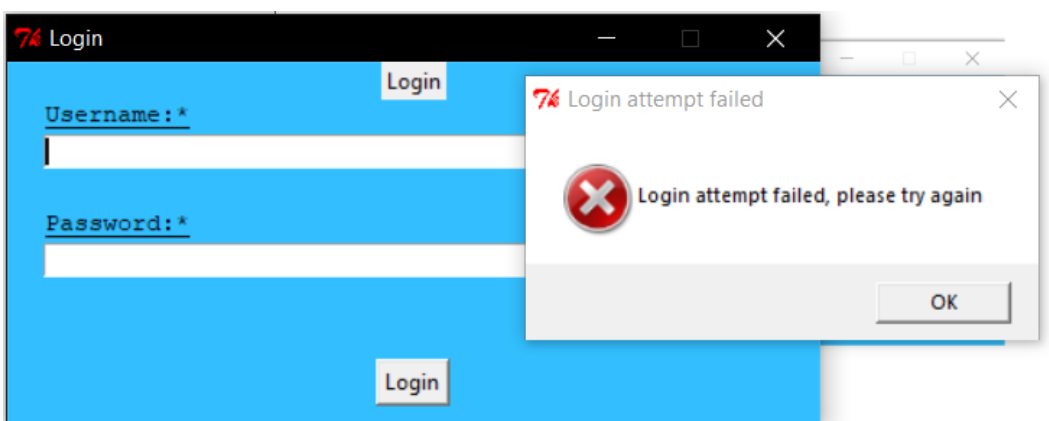|	A	B	C
1	Username	Password	Admin
2	testuserna	testpasswc	testadmin
3	noadmin1	noadmin2	
4	a	a	testadmin
5	input1	input2	input3

4 - Is there an indicator if a login is successful?

Yes

If correct login details are entered, following pressing the login button, a message box appears with a confirmation message

5 - Is there an indicator if a login is unsuccessful?

Yes

If incorrect or invalid inputs are provided, access to secondary menu will not be given and a message box with an error message will appear

Secondary menu testing

Number	Test	Type of test	Example test data	Expected outcome	Justification	Achieved?
1	Does the secondary menu GUI work?	Viewing	NULL	The secondary menu GUI is visible	To select a specific feature to use. **Otherwise, the user would not be able to see all options and select one**	Yes

2	Does the create a test button work?	Normal	Button press	A window to name a test opens	To start the create a test process. **Otherwise, the user would not be able to start creating a test**	Yes
3	Does the complete a test button work?	Normal	Button press	A window to enter the name of a test opens	To start the complete a test process. **Otherwise, the user would not be able to start completing a test**	Yes
4	Does the feedback giver button work?	Normal	Button press	A window to choose the type of feedback to give opens	To start the give feedback process. **Otherwise, the user would not be able to give feedback**	Yes
5	Does the feedback receiver button work?	Normal	Button press	A window that displays all feedback linked to an account opens	To start the receive feedback process. **Otherwise, the user would not be able to receive feedback**	Yes
6	Do the create a test and feedback giver buttons only show up on an admin account?	Viewing	NULL	The create a test and feedback giver buttons appear on the menu if the account logged in with has admin status	To only allow teachers to create tests and give feedback. **Otherwise, unauthorised users would be able to access special features of the program**	Yes

1 - Does the secondary menu GUI work?
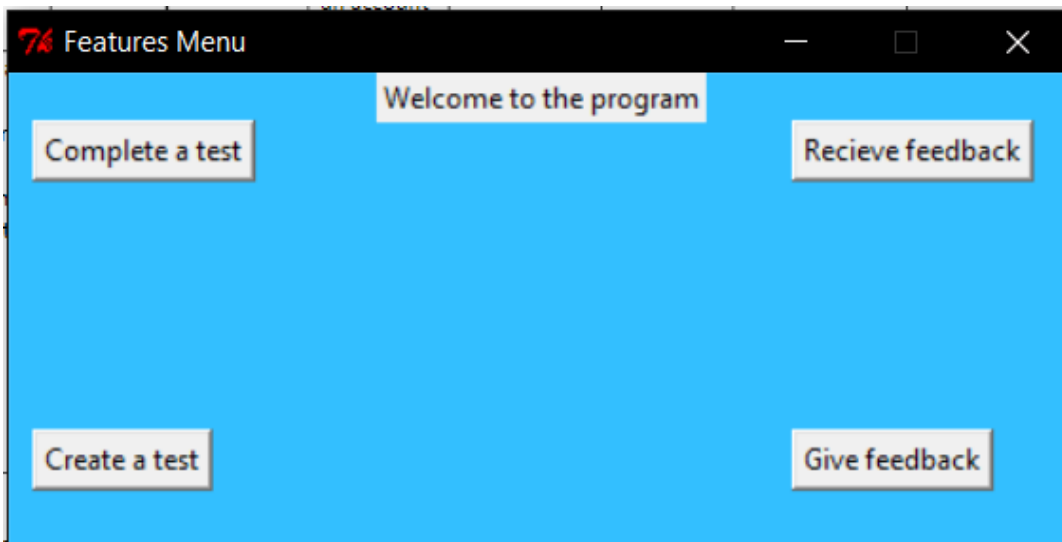
2 - Does the create a test button work?

3 - Does the complete a test button work?

Yes
The secondary menu GUI is visible
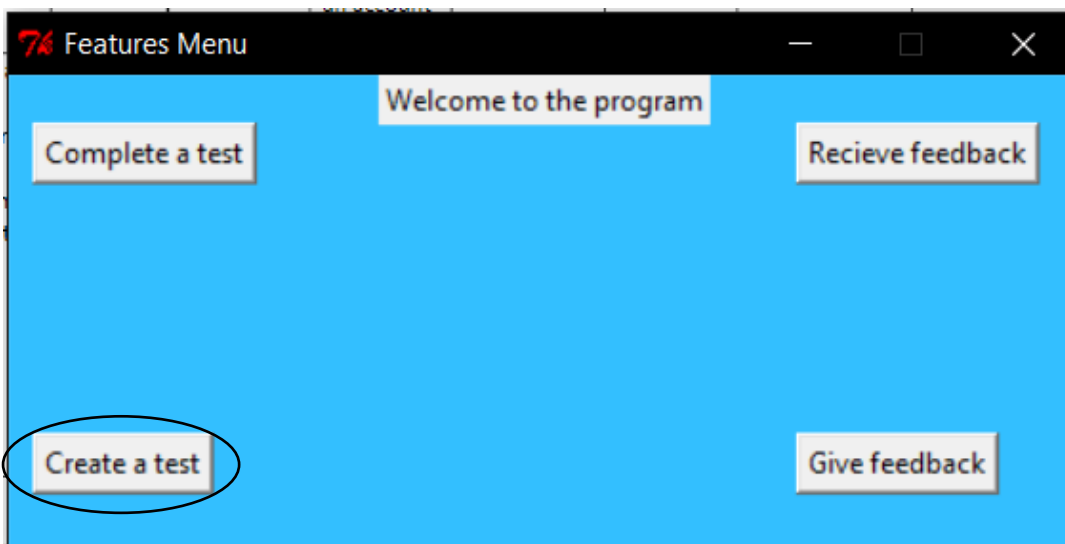
Yes
The the create a test process starts after pressing the "Create a test" button

Yes
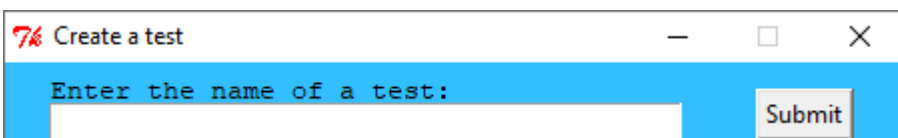
When the "Complete a test" button is pressed, the complete a test process starts

4 - Does the feedback giver button work?

Yes
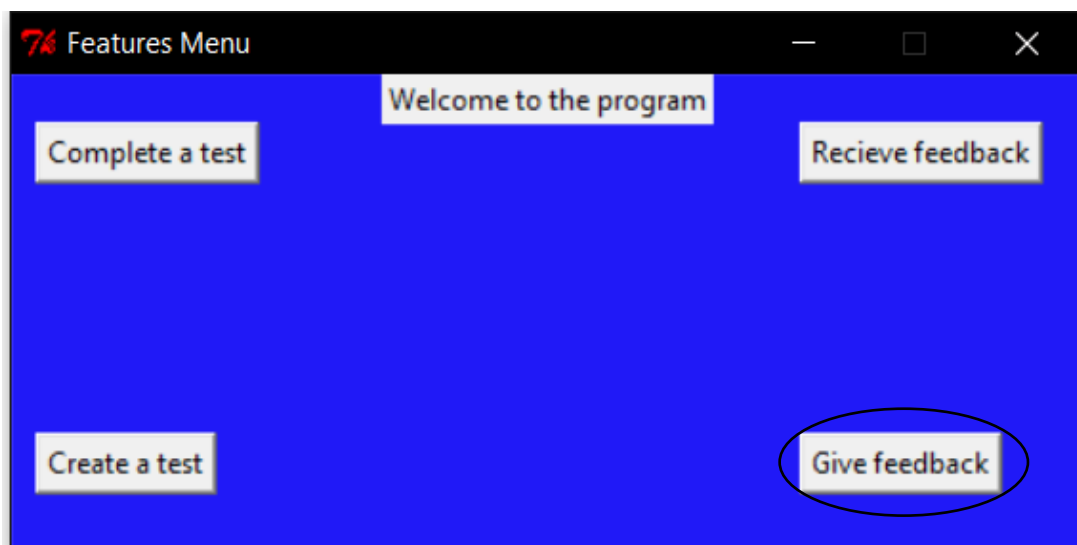
When the "Give feedback" button is pressed, the feedback sender process starts
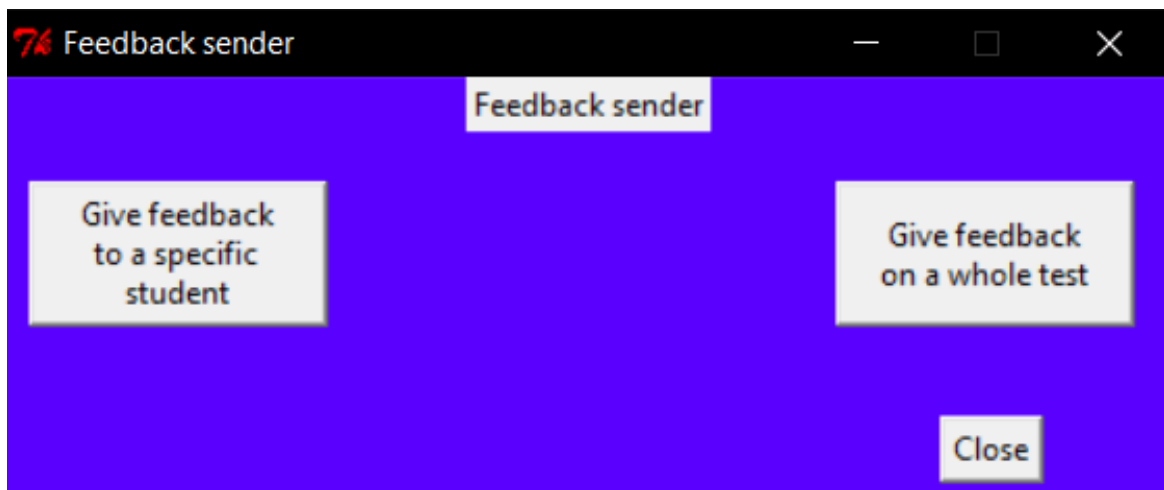
5 - Does the feedback receiver button work?

Yes
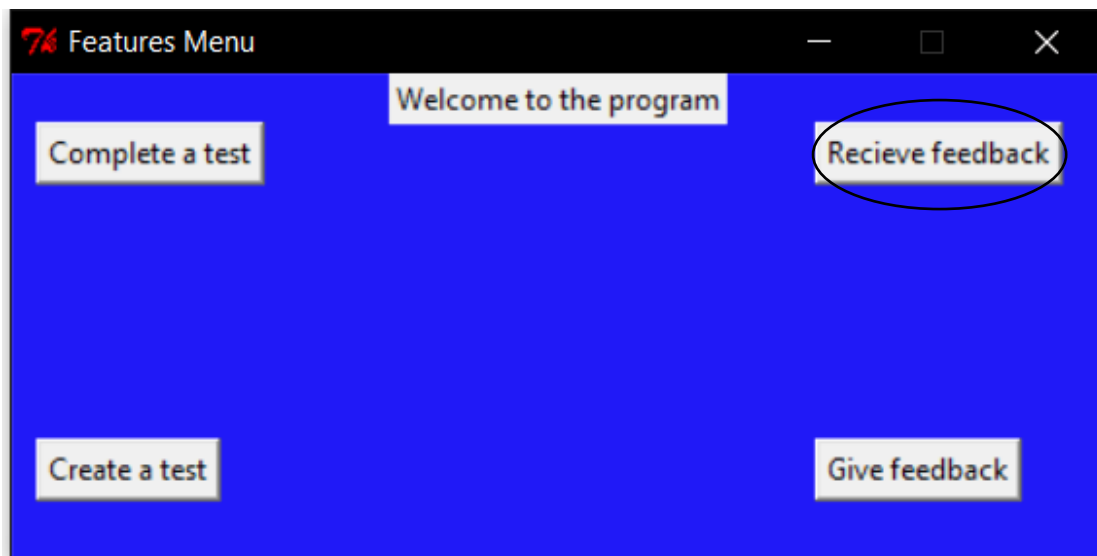
When the "Recieve feedback" button is pressed, a window opens with all relevant feedback
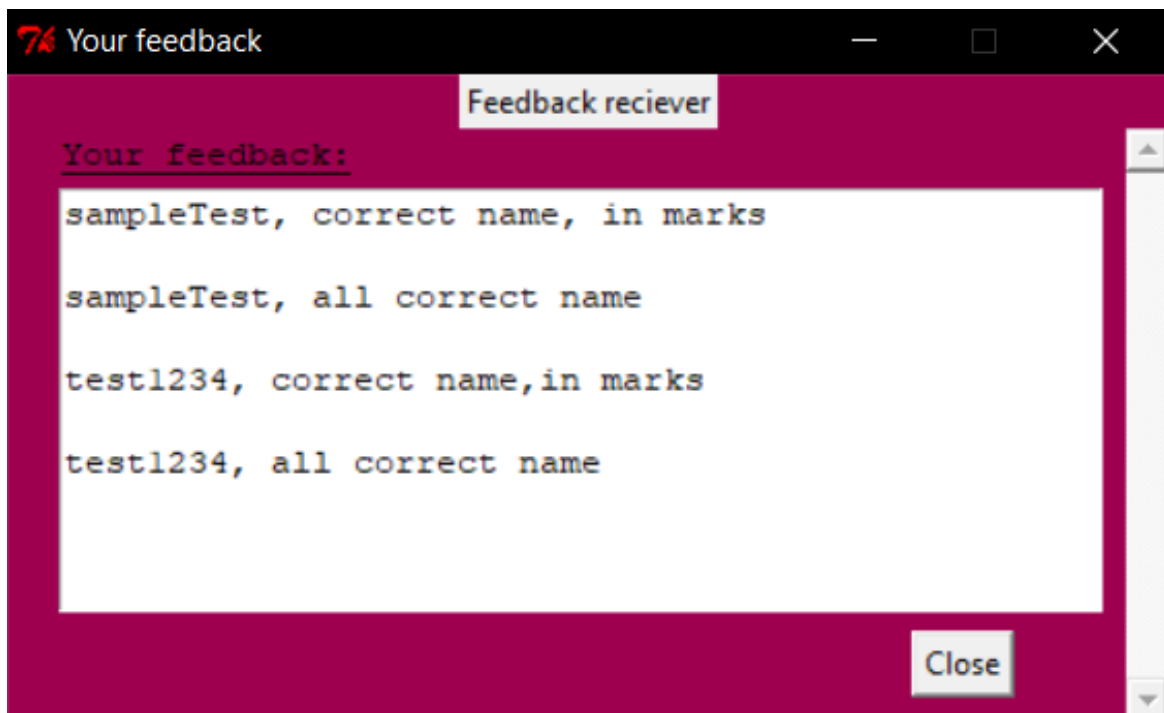
6 - Do the create a test and feedback giver buttons only show up on an admin account?

7*6 Login   —   □   ✕

Login

Username: *

a

Password: *

*

Login

7*6 Features Menu   —   □   ✕

Welcome to the program

Complete a test   Recieve feedback

Create a test   Give feedback

Yes

The "Create a test" and "Give feedback" buttons only appear if an account with the correct admin code is used when logging in

(For testing the correct admin code is 'test admin')

Test creating testing

Number	Test	Type of test	Example test data	Expected outcome	Justification	Achieved?
1	Does the test name GUI work?	Viewing	NULL	A window opens with an input box to name the test	For the user to name the test. **Otherwise, the user would not be able to name their test**	Yes

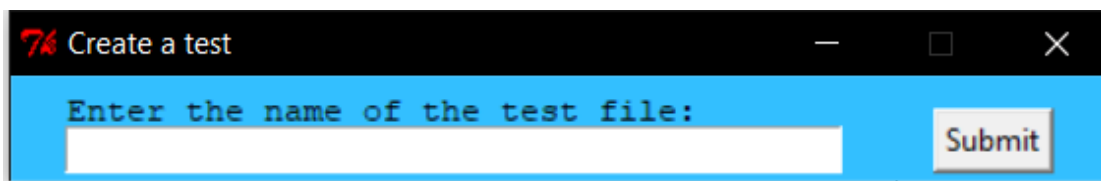| 2	Can the test name input box be accessed?	Normal	Click on the input box using a mouse and type on keyboard	The input box can be typed in by the user	For the user to name the test. **Otherwise, the user would not be able to name their test**	Yes
3	Does the submit (test name) button work?	Normal	Button press	The test file is created	To save the user's input. **Otherwise, the user would not be able to submit their test name once they have inputted a name**	Yes
4	Is there an indicator if a test has been created successfully?	Viewing	NULL	A message box appears with a confirmation message	To inform the user that the test has been successfully created. **Otherwise, a user would not know if their test has been created successfully**	Partially
5	Is there an indicator if a name is invalid or already exists?	Viewing	NULL	A message box appears with an error message	To inform the user that the test has not been successfully created. **Otherwise, a user would not know if their test has been created unsuccessfully**	Yes
6	Does the test creator GUI work?	Normal	Button press	A window with several input boxes and buttons to modify the test appears	To modify and view the test. **Otherwise, a user would not be able to see what information is required from them**	Yes
7	Can the question and answer input boxes be accessed?	Normal	Click on an input box using a mouse and type on keyboard	The input boxes can be typed into by the user	For the user to enter questions and answers into the test. **Otherwise, a user cannot enter their question and answer**	Yes
8	Does the submit (question and answers) button work?	Normal	Button press	The questions and answers from the input boxes are saved	To save the inputted questions and answers. **Otherwise, a user cannot save their question and answer once they have inputted them**	Yes
9	Is there an indicator if the question and answers have been successfully added?	Viewing	NULL	A message box with a confirmation message appears	To inform the user that the question and answers have been successfully added. **Otherwise, the user does not know if their inputs have been saved successfully**	Yes

10	Is there an indicator if the question or answer input boxes are empty?	Viewing	NULL	A message box with an error message appears	To inform the user that the question and answers have not been successfully added. **Otherwise, the user does not know if their inputs have been saved unsuccessfully**	Yes
11	Does the preview button work?	Normal	Button press	A window with the test spreadsheet opens	To allow the user to view the test during its creation. **Otherwise, the user would not be able to check what their test looks like during creation**	Yes
12	Does the delete last button work?	Normal	Button press	The last row in the test will be deleted	To allow the user to remove the previous inputs. **Otherwise, the user cannot remove inputs once they have been added**	Yes
13	Does the finish button work?	Normal	Button press	A window opens to input grades	To start the enter grades process. **Otherwise, the user cannot stop adding questions and answers once the test has been made.**	Yes
14	Does the enter grades GUI work?	Viewing	NULL	A window appears with input boxes and buttons to enter grades for the test	To add grades to the test. **Otherwise, the user cannot create grade boundaries to assess results**	Yes
15	Can each grade input box be accessed?	Normal	Click on an input box using a mouse and type on keyboard	Each input box can be typed into	To allow the user to set grade boundaries. **Otherwise, the user cannot enter grade boundaries to assess results**	Yes
16	Does the check total marks button work?	Normal	Button press	A message box appears with the total marks	To show the total amount of marks in the test to influence the grade boundaries. **Otherwise, the user cannot check how many marks the test is out of**	Yes
17	Does the submit (grades) button work?	Normal	Button press	The grades inputted are saved	To save the grade boundaries entered. **Otherwise, the user cannot save inputted grade boundaries**	Yes
18	Is there an indicator if	Viewing	NULL	A message box appears	To inform the user that the grade boundaries have been successfully saved. **Otherwise,**	Yes

	grades have been saved?			with a confirmation message	**the user does not know if their inputs have been saved successfully**	
19	Is there an indicator if grades have not been saved? (invalid inputs or empty inputs)	Viewing	NULL	A message box appears with an error message	To inform the user that the grade boundaries have not been successfully saved. **Otherwise, the user does not know if their inputs have been not saved successfully**	Yes

1 - Does the test name GUI work?

Yes

The test naming GUI is visible

2 - Can the test name input box be accessed?

Yes
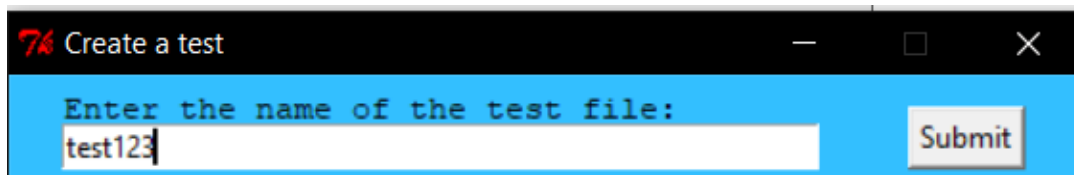
The input box can be clicked on and text can be entered by the user

3 - Does the submit (test name) button work?
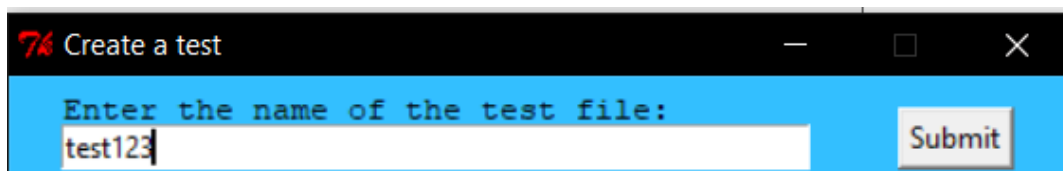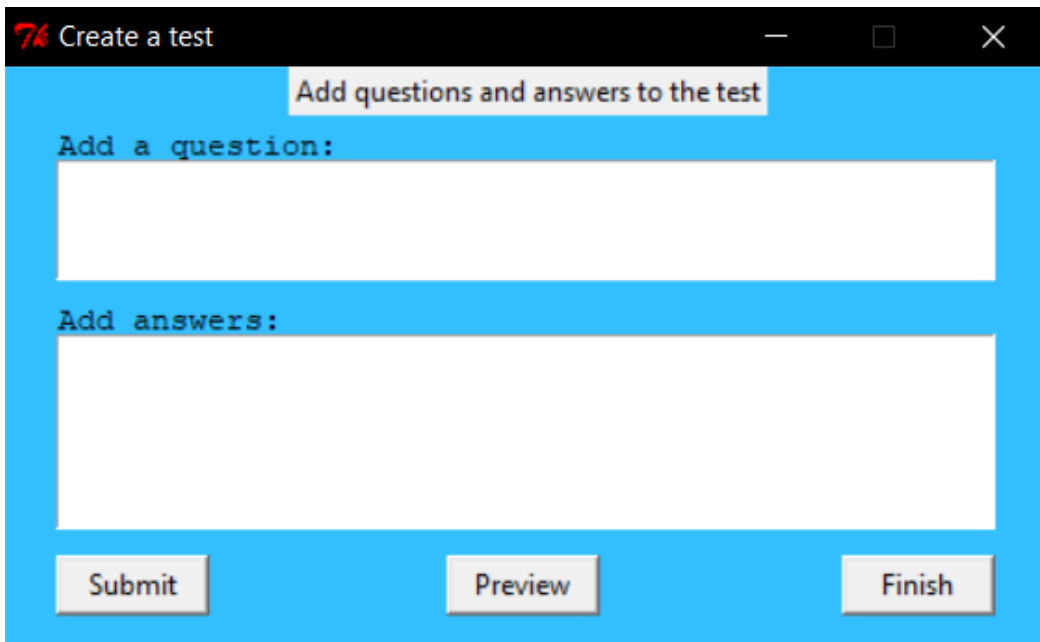
Yes

A test file is created after the submit button is pressed
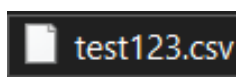
4 - Is there an indicator if a test has been created successfully?
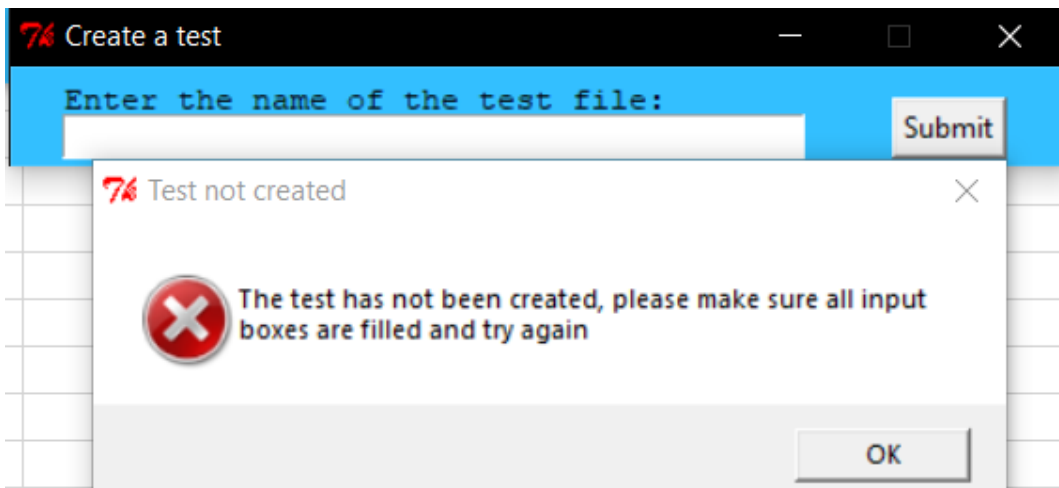
Partially

There is no message box to display a confirmation message, however a new window opens on successful test creation.

In the future, I can add a message box that also appears to confirm that the test has been created successfully

5 - Is there an indicator if a name is invalid or already exists?
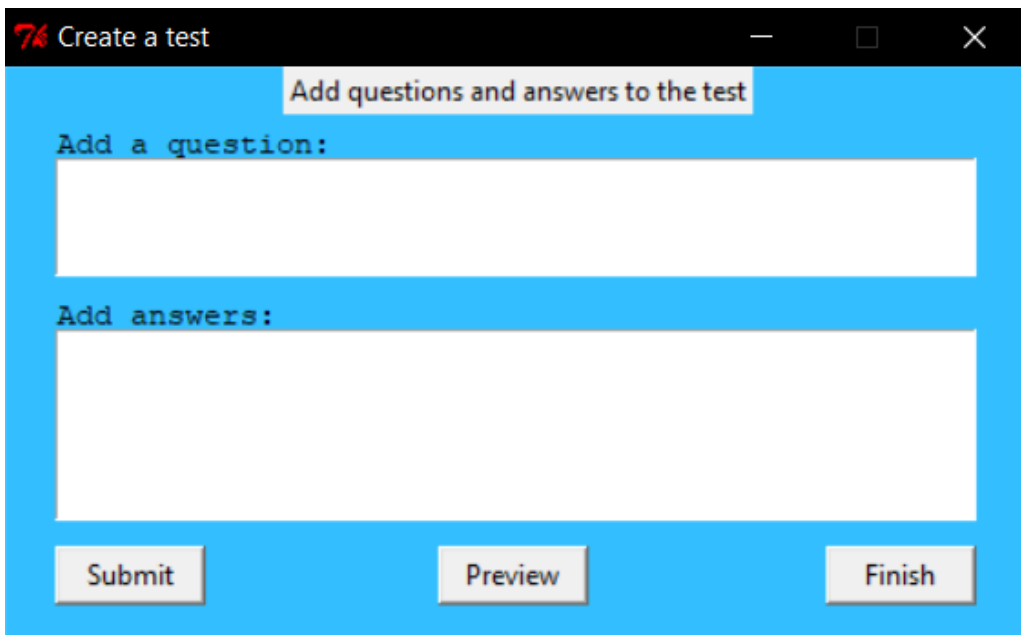
Yes

If a test is not created, an appropriate message box is displayed

6 – Does the test creator GUI work?

Create a test

Add questions and answers to the test
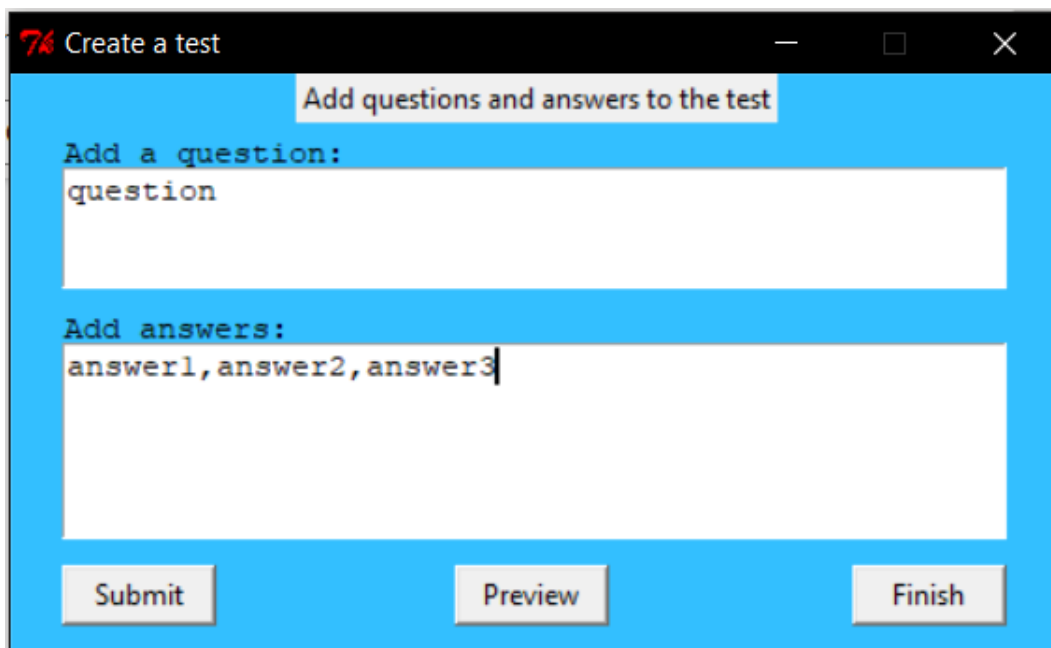
Add a question:

Add answers:

Submit   Preview   Finish

Yes

The test creator GUI is visible

7 - Can the question and answer input boxes be accessed?

Create a test

Add questions and answers to the test

Add a question:
question

Add answers:
answer1,answer2,answer3

Submit   Preview   Finish

Yes

The input boxes can be clicked on and text can be entered by the user

8 - Does the submit (question and answers) button work?

Create a test   —   □   ✕

Add questions and answers to the test

Add a question:

question

Add answers:

answer1,answer2,answer3

Submit   Preview   Finish

Yes

When the submit button is pressed, the input in the boxes is appended onto the test

Test preview   —   □   ✕

Question,Answer
question,answer1,answer2,answer3

9 - Is there an indicator if the question and answers have been successfully added?

Yes
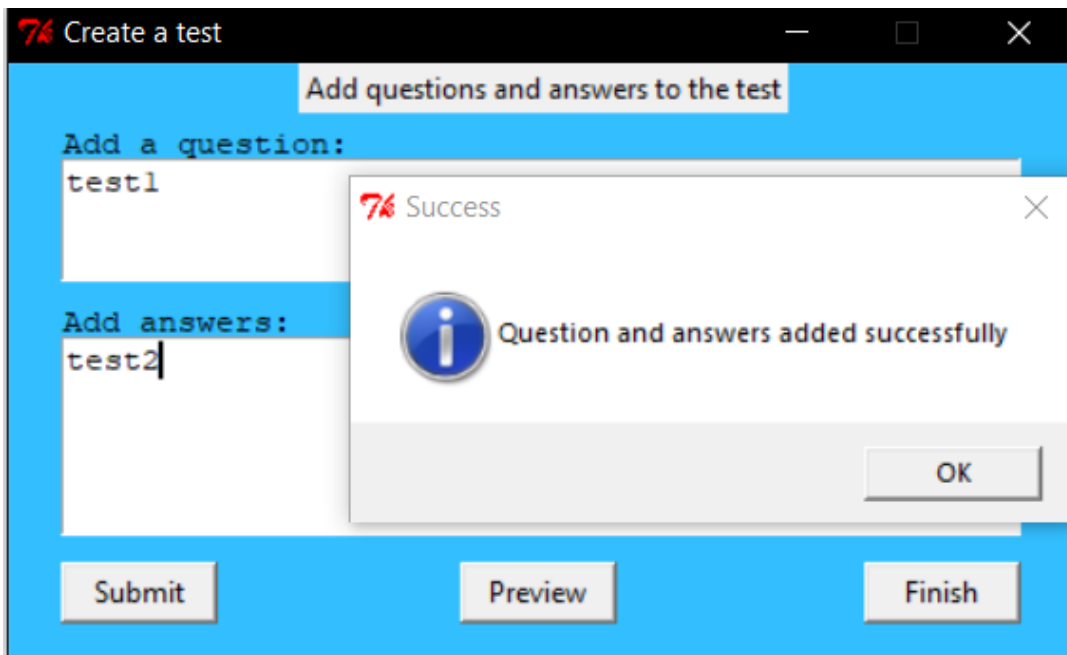
There is a message box with a confirmation message, if the question and answers have been added successfully

10 - Is there an indicator if the question or answer input boxes are empty?
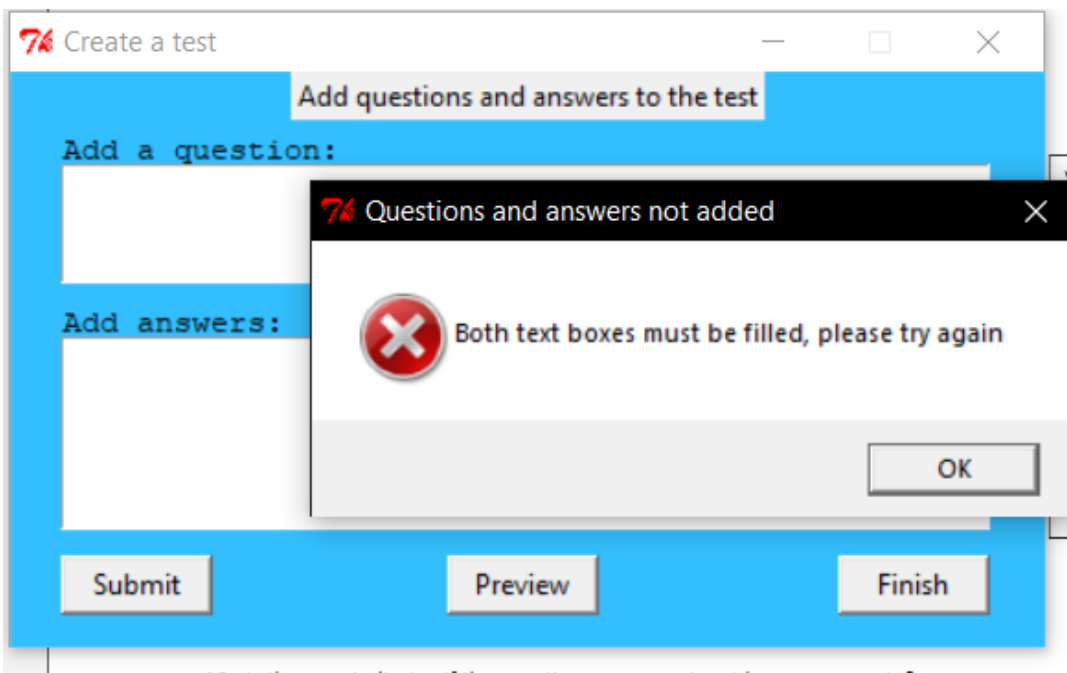
Yes

An error message will appear, if the inputs are empty
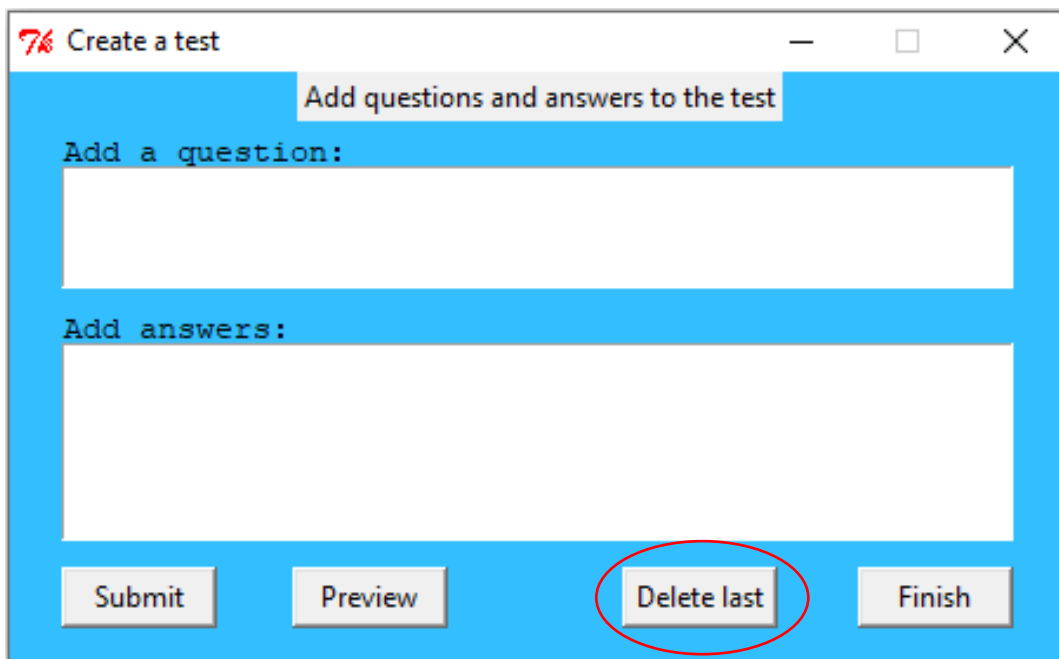
11 - Does the preview button work?
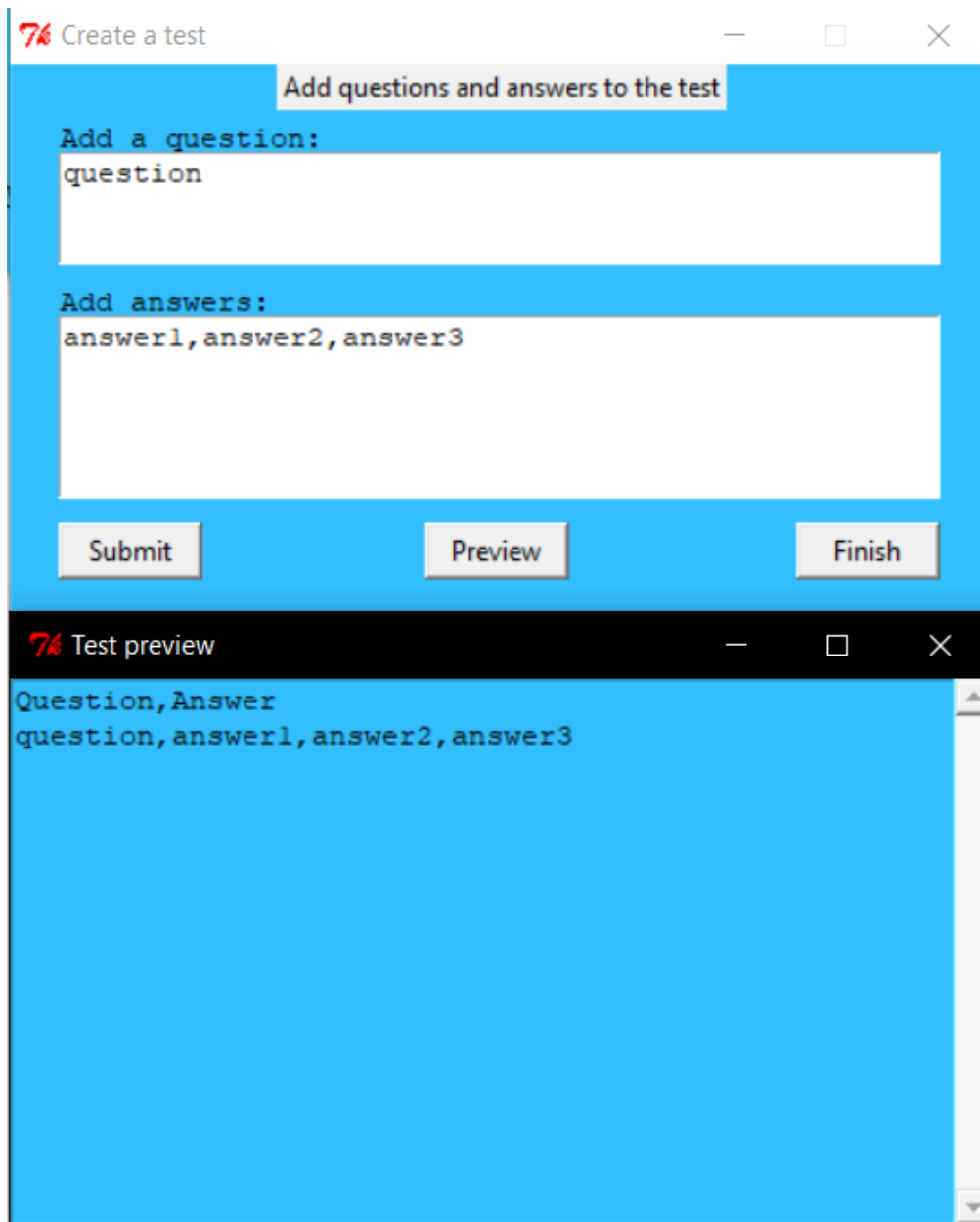
Yes

The preview button displays a new window, with the spreadsheet of the test contents

12 - Does the delete last button work?
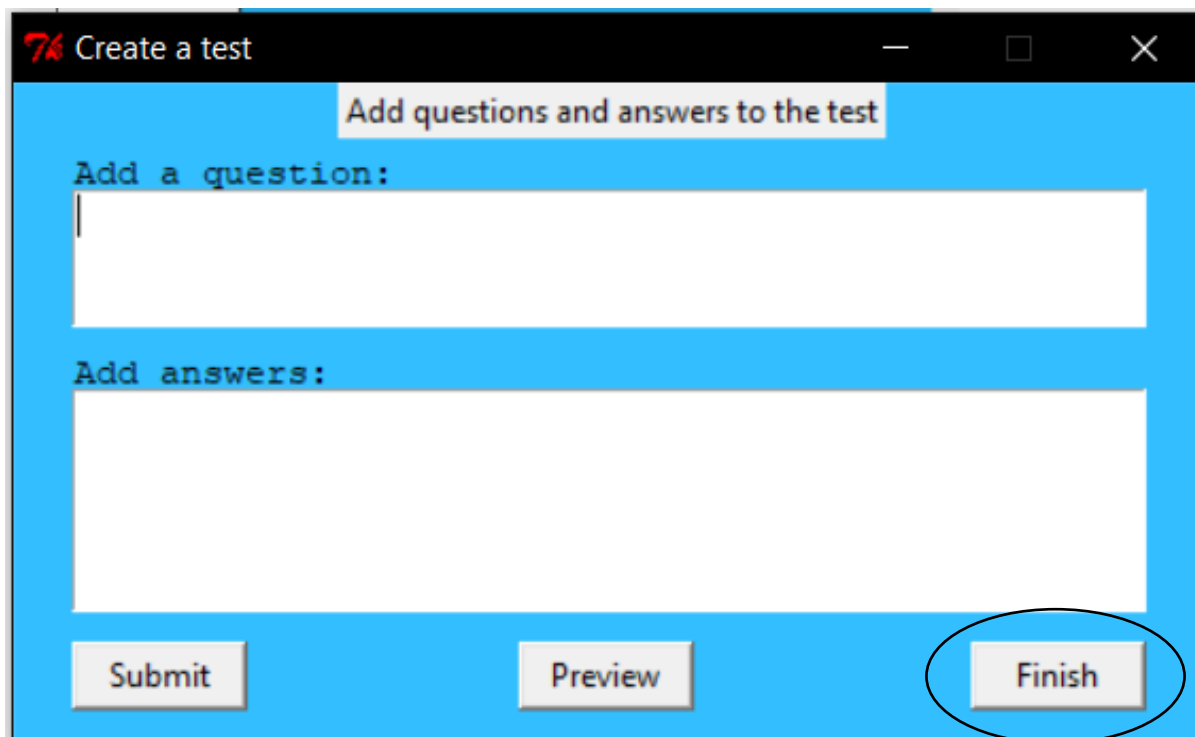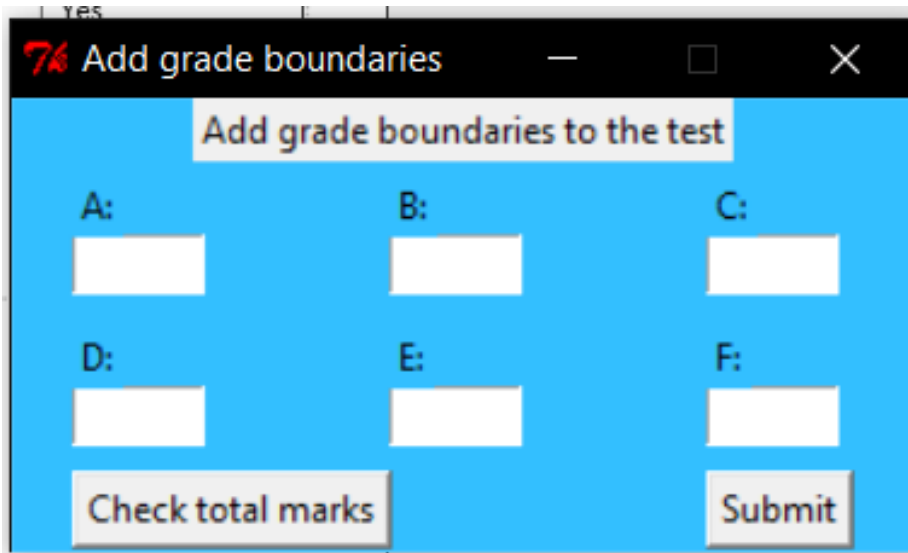
Yes

When the "Delete last" button is pressed, the last row of the test's csv file is deleted

13 - Does the finish button work?

14 - Does the enter grades GUI work?
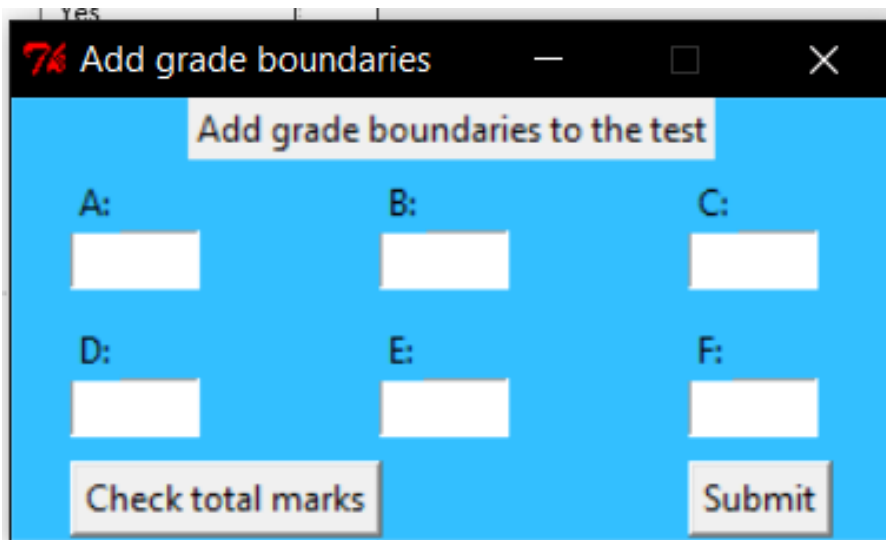
Yes

Once the finish button is pressed, the next window opens to input grade boundaries
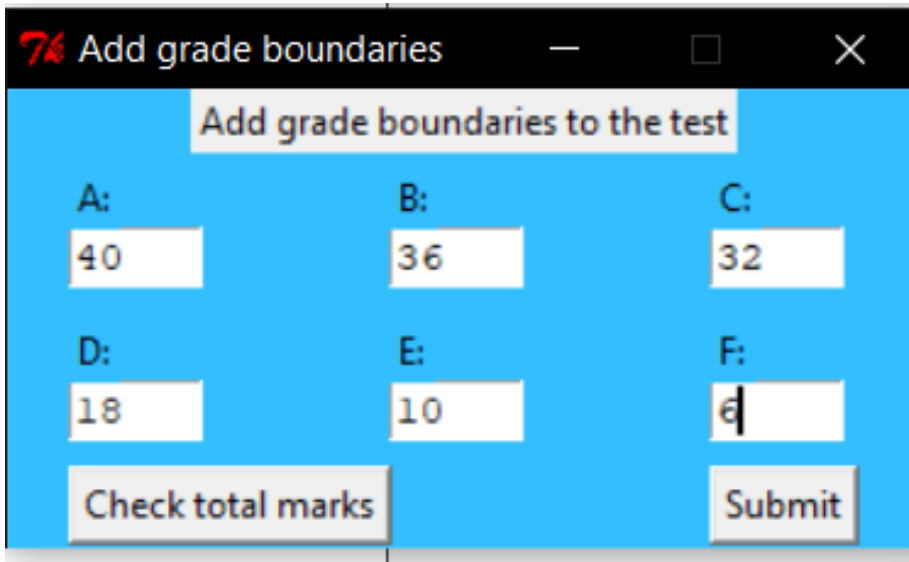
15 - Can each grade input box be accessed?

Yes

The grade boundaries GUI is visible

A:
40

B:
36

C:
32

D:
18

E:
10

F:
6

Yes

Each input box can be clicked on and text can be entered by the user

16 - Does the check total marks button work?
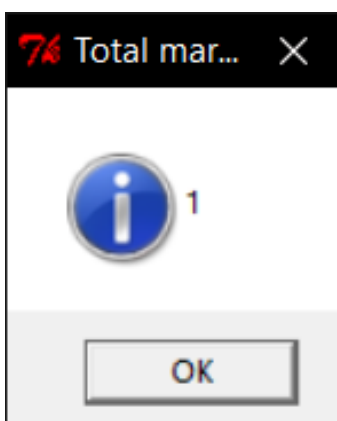
Yes

A message box displays the total number of marks in a test
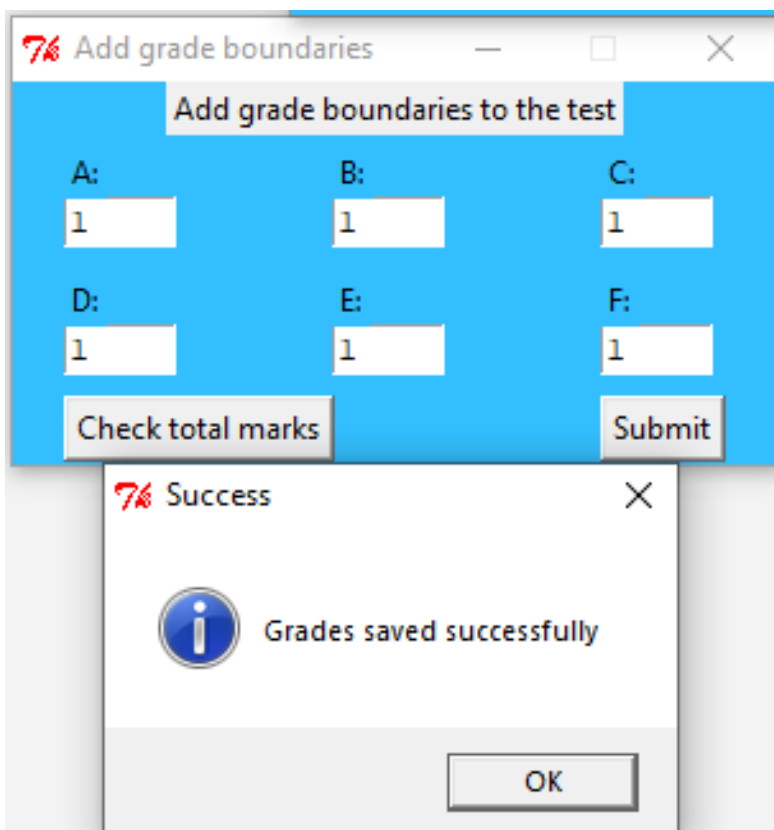
```
Question,Answer
question,answer1,answer2,answer3
```

17 - Does the submit (grades) button work?

Yes

If all input boxes have been filled and the "Submit button" is pressed, a confirmation message box will appear and the test's grades csv file will be modified with the inputs

	A	B	C	D	E	F
1	A	B	C	D	E	F
2	1	1	1	1	1	1

18 - Is there an indicator if grades have been saved?

Yes

If all input boxes have been filled and the "Submit button" is pressed, a confirmation message box will appear.

19 - Is there an indicator if grades have not been saved? (invalid inputs or empty inputs)

Yes

If an input box is empty and the "Submit button" is pressed, an error message box will appear.

Test completing testing

Number	Test	Type of test	Example test data	Expected outcome	Justification	Achieved?
1	Does the enter test name GUI work?	Viewing	NULL	A window with an input box to enter the name of a test opens	To enter the name of a test that you want to complete. **Otherwise, the user cannot select what test they want to complete**	Yes
2	Can the test name input box be accessed?	Normal	Click on the input box using a mouse and type on keyboard	The input box can be typed into	To enter the name of a test that you want to complete. **Otherwise, the user cannot select what test they want to complete**	Yes
3	Does the submit button work?	Normal	Button press	To check if the test exists and open it if it does	To open the test entered. **Otherwise, the user cannot start the test when they are ready**	Yes

4	Is there an indicator if the input is invalid?	Viewing	NULL	A message box with an error message appears	To inform the user that their input is invalid. **Otherwise, the user cannot tell if their input is invalid**	Yes
5	Does the complete a test GUI work?	Viewing	NULL	A window that displays a question, answer box and submit button opens	To allow the user to complete a test. **Otherwise, the user cannot see what question to answer and where to input their answer**	Yes
6	Can the answer input box be accessed?	Normal	Click on the input box using a mouse and type on keyboard	The input box can be typed into	To allow an answer to be checked. **Otherwise, the user cannot input an answer to a given question**	Yes
7	Does the submit button work?	Normal	Button press	Checks if the answer is correct	To check if the answer is correct. **Otherwise, the user cannot submit their answer when ready for the program to check if it is correct**	Yes
8	Is there an indicator of the score and time at the end of a test?	Viewing	NULL	A message box appears with both the score and time	To inform the user on how good they did on a test. **Otherwise, the user does not know how good they did on a test**	Partially

1 - Does the enter test name GUI work?

Yes
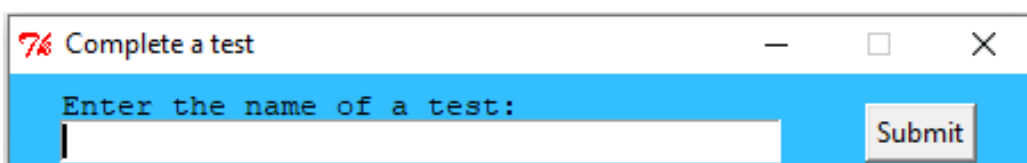
When the "Complete a test" button is pressed in the secondary menu the complete a test process starts and the test naming GUI is appears

2 - Can the test name input box be accessed?

7% Complete a test   —   ☐   ✕

Enter the name of a test:
test123| Submit
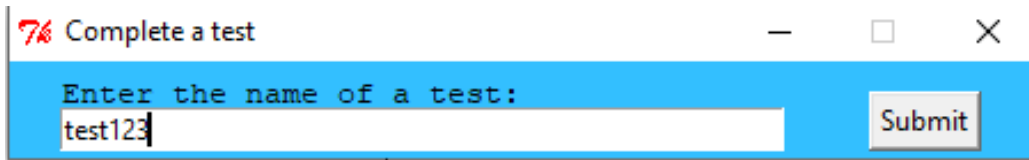
Yes

A user can click on the input box to enter an input

3 - Does the submit button work?

7% Complete a test   —   ☐   ✕

Enter the name of a test:
test123   Submit

7% test123   —   ☐   ✕

Question:

question1

Answer:

Submit
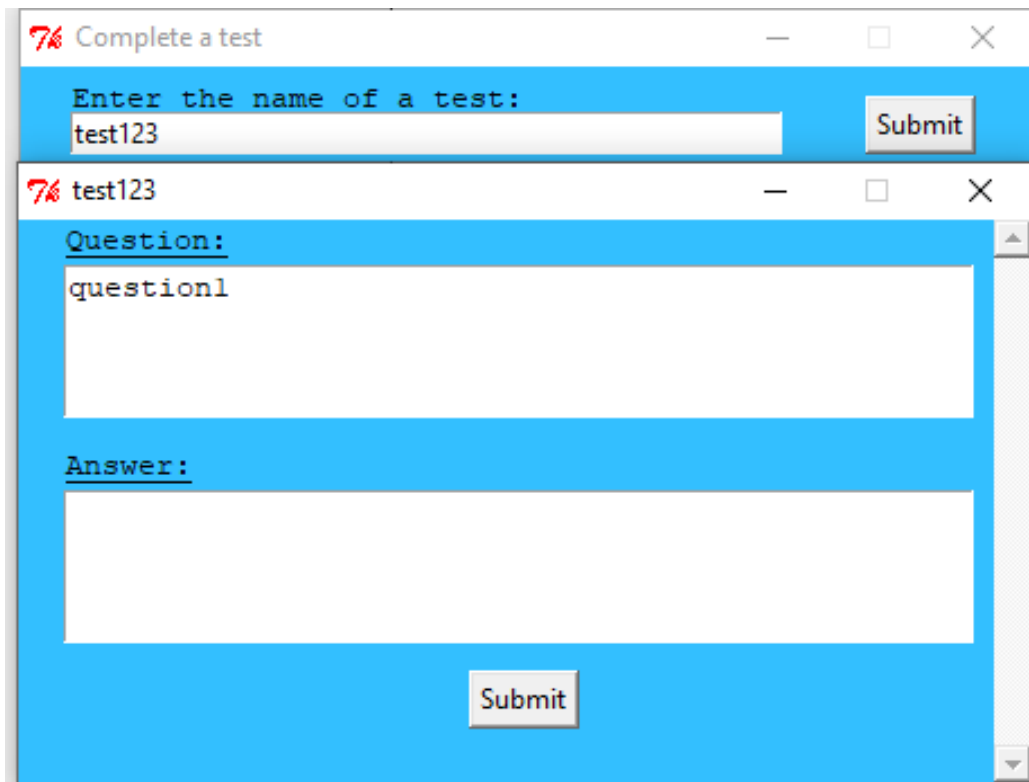
Yes

If the input box is filled with the name of an existing test. Then, the completing test GUI appears

4 - Is there an indicator if the input is invalid?

7% Complete a test   —   ☐   ✕

Enter the name of a test:
                                                  Submit

7% File not found   ✕

❌ The file has not been found, please try again

OK
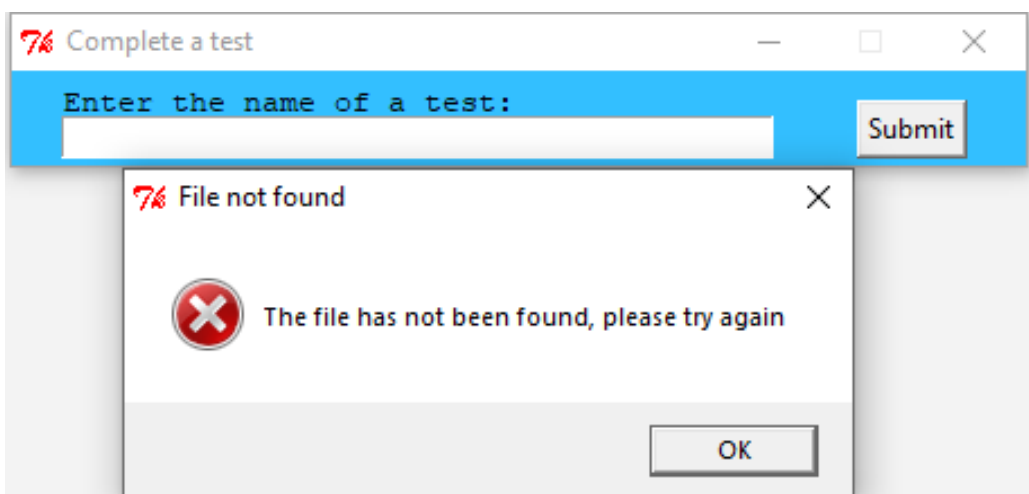
Yes

If the input is invalid (e.g: empty) or contains a name that does not exist. An error message will appear

5 - Does the complete a test GUI work?

Yes

Ilf a valid test name was entered. Then, the completing test GUI appears

6 - Can the answer input box be accessed?

Yes

The answer input box can be clicked on then a typed in using a keyboard

7 - Does the submit button work?

Yes
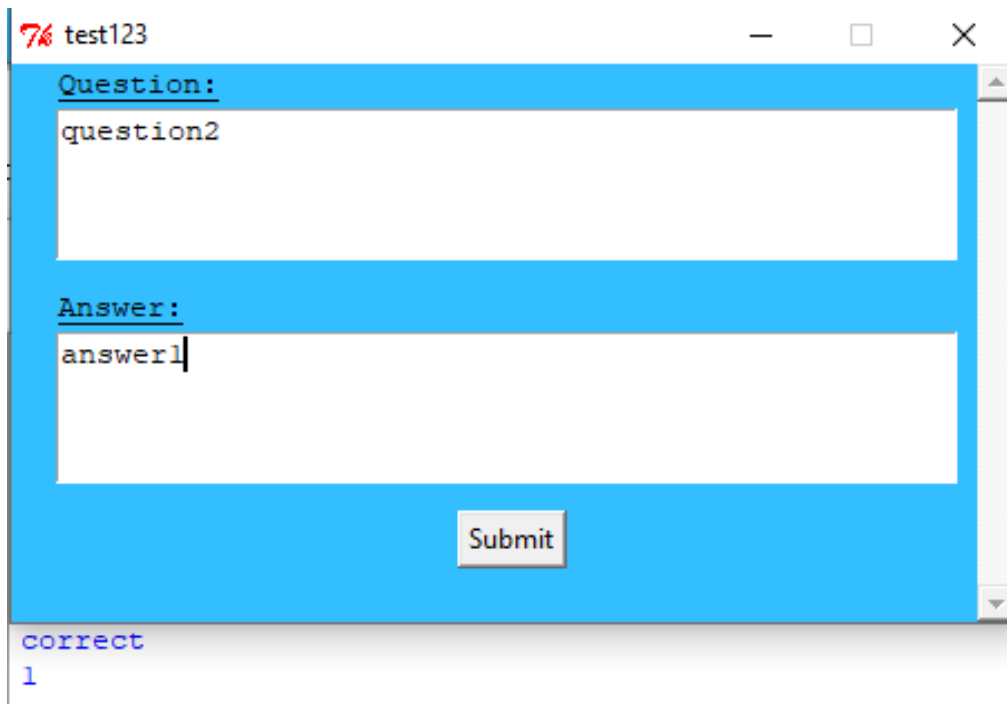
When the "Submit" button has been pressed, the next question will appear and the program will process the input

8 - Is there an indicator of the score and time at the end of a test?
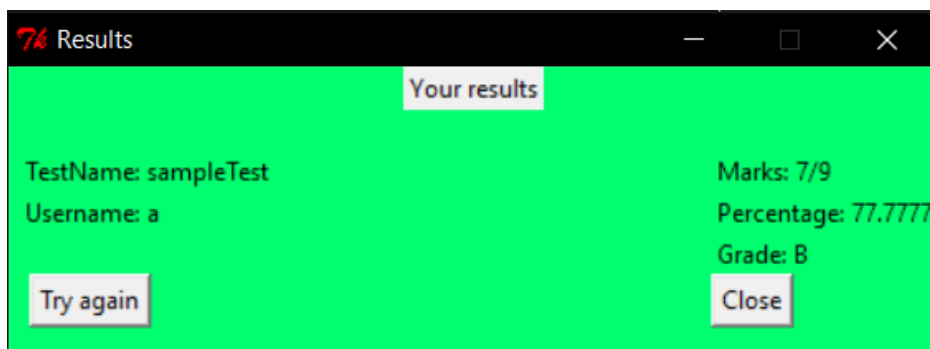
Partially

A results window appears once a test has been completed and it shows the score in the form of marks, percentage and a grade. However, it does not show how long it took a user to complete the test

To improve the program in the future, I can implement a timing system along with displaying the time taken to complete a test in this window

Feedback giving menu testing

Number	Test	Type of test	Example test data	Expected outcome	Justification	Achieved?
1	Does the select feedback GUI work?	Viewing	NULL	A window with two feedback options opens	To allow the user to select who to send feedback to. **Otherwise, the user cannot see what information is required to send feedback**	Yes

2	Does the whole class button work?	Normal	Button press	The whole class feedback process starts	To allow the user to send feedback to a whole class. **Otherwise, the user cannot select what type of feedback to give.**	Yes
3	Does the whole class feedback GUI work?	Viewing	NULL	A window with an input box to enter feedback appears	To allow the user to send feedback to a whole class. **Otherwise, the user cannot see what information is required to send feedback**	Yes
4	Can the feedback input box be accessed?	Normal	Click on the input box using a mouse and type on keyboard	The input box can be typed into	To allow the user to enter feedback. **Otherwise, the user cannot enter feedback**	Yes
5	Does the submit button work?	Normal	Button press	The entered feedback is saved	To save the feedback. **Otherwise, the user cannot send feedback once they have inputted the feedback**	Yes
6	Is there an indicator that whole class feedback has been successfully saved?	Viewing	NULL	A message box with a confirmation message appears	To inform the user that the feedback has been successfully sent. **Otherwise, the user does not know if the feedback has been sent successfully**	Yes
7	Is there an indicator that whole class feedback has not been successfully saved? (empty input box)	Viewing	NULL	A message with an error message appears	To inform the user that the feedback has not been successfully sent. **Otherwise, the user does not know if the feedback has not been sent successfully**	Yes
8	Does the specific student button work?	Normal	Button press	A window with username and feedback input boxes appears	To start the specific user feedback process. **Otherwise, the user cannot select what type of feedback to give.**	Yes
9	Does the student feedback GUI work?	Viewing	NULL	A window with username and feedback input boxes appears	To allow the user to give specific feedback. **Otherwise, the user cannot see what information is required to send feedback**	Yes
10	Can the student username, test	Normal	Click on an input box	The input boxes can	To allow the user the to enter a username and feedback.	Yes

	name and feedback box be accessed?		using a mouse and type on keyboard	be typed into	**Otherwise, the user cannot enter feedback and the username of the receiver**	
11	Does the submit button work?	Normal	Button press	The feedback is sent to the specific user	To send the feedback to the user. **Otherwise, the user cannot send feedback once they have inputted the feedback and username**	Yes
12	Is there an indicator if sending user feedback was successful?	Viewing	NULL	A message box with a confirmation message appears	To inform the user that the feedback has been successfully sent. **Otherwise, the user does not know if the feedback has been sent successfully**	
13	Is there an indicator if sending user feedback was unsuccessful? (empty input boxes or non-existent user)	Viewing	NULL	A message with an error message appears	To inform the user that the feedback has not been successfully sent. **Otherwise, the user does not know if the feedback has not been sent successfully**	Yes

1 - Does the select feedback GUI work?

Yes
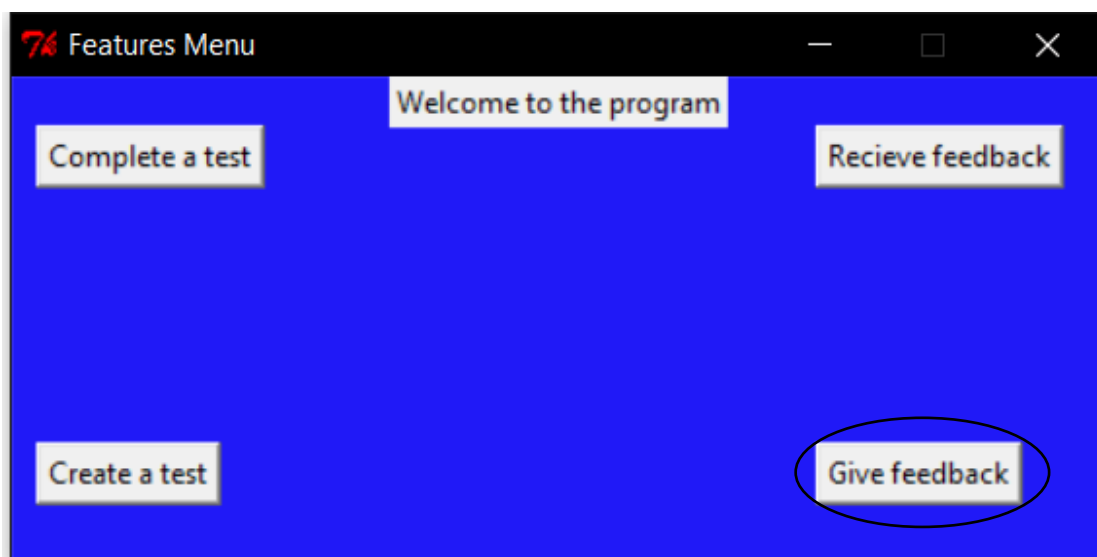
When the "Give feedback" button is pressed. A window appears to select what feedback to give
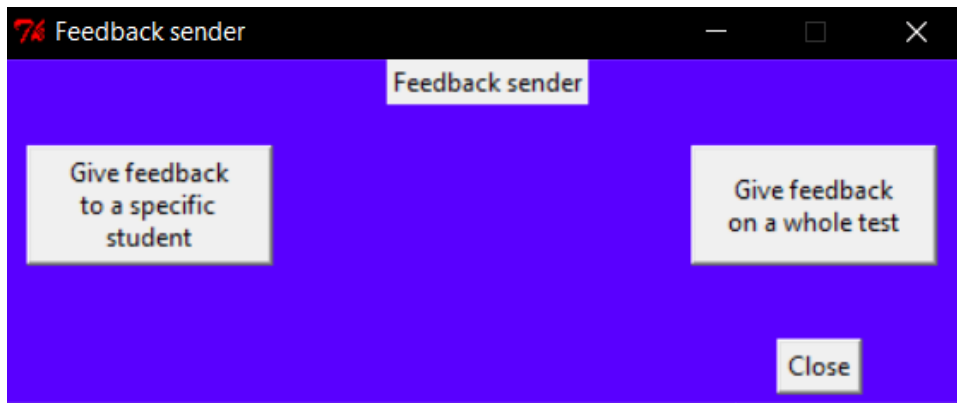
2 - Does the whole class button work?
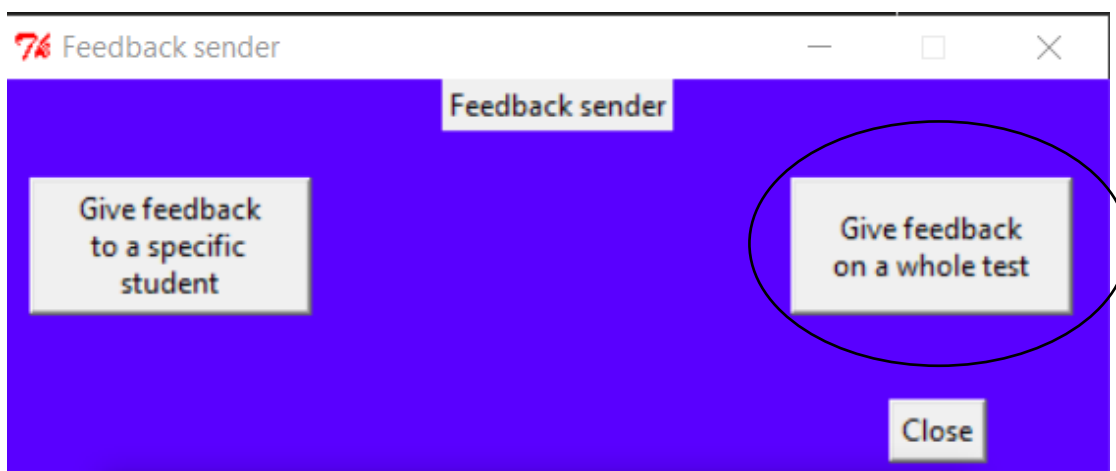
Yes

When the "Give feedback on a whole test" button is pressed. The whole class feedback process starts

3 - Does the whole class feedback GUI work?

Yes
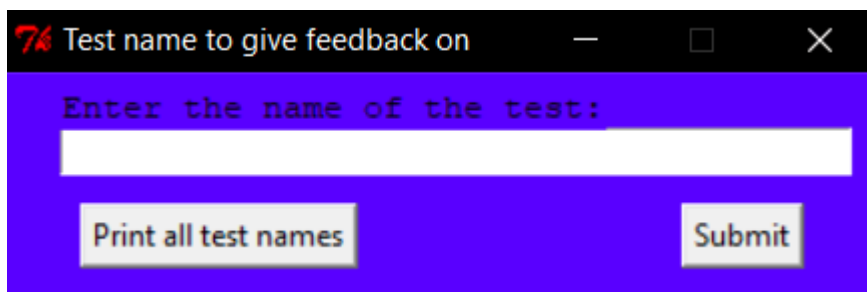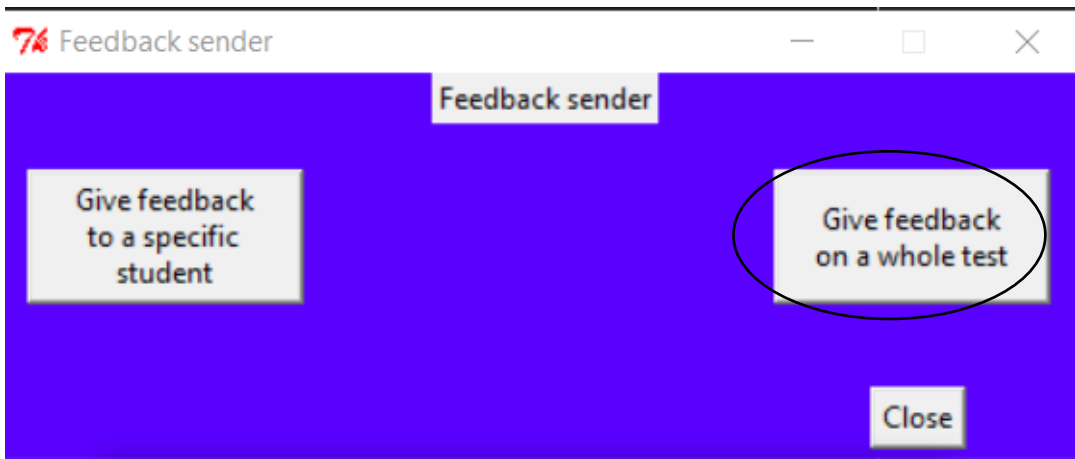
When the "Give feedback on a whole test" button is pressed. The whole class feedback GUI becomes visible to the user

4 - Can the feedback input box be accessed?

Yes
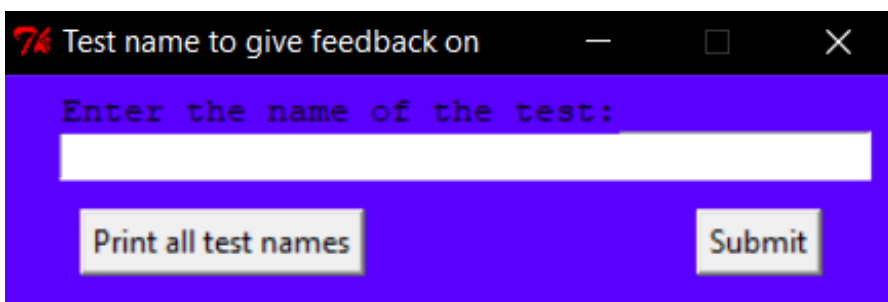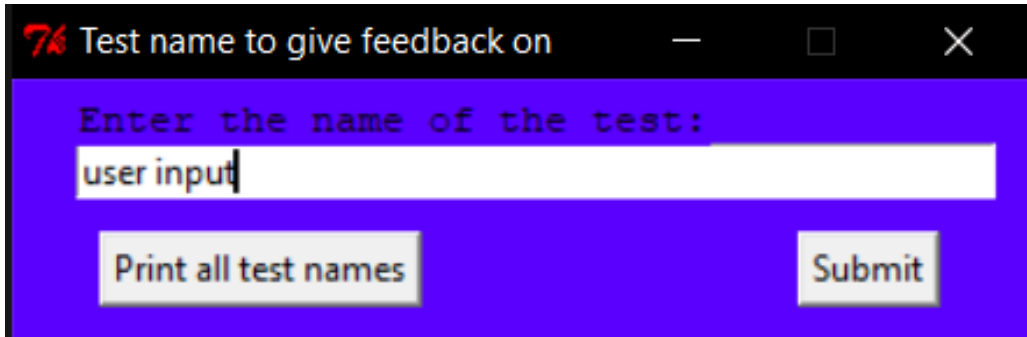
The input box can be clicked on with a mouse and text can be entered using a keyboard by the user

5 - Does the submit button work?
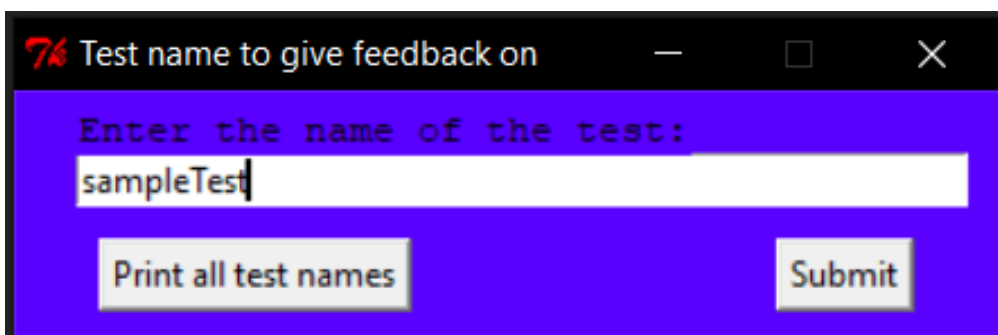
Yes

When a valid test name is submitted the next window is opened

sampleTest - feedback.csv
sampleTest - grades.csv
sampleTest - marks.csv
sampleTest.csv

When the submit button is pressed on the enter feedback GUI, the feedback is saved to the test file

	A	B	C
1	Username	Feedback	
2	a	sampleTest, correct name, in marks	
3	*	sampleTest, all correct name	
4	b	sampleTest, wrong name, in marks	
5	c	sampleTest, wrong name, not in marks	
6	*	feedback 123	

6 - Is there an indicator that whole class feedback has been successfully saved?

Yes

When the submit button is pressed on the enter feedback GUI for a whole class, while there is a valid input (not empty), a confirmation message box will appear
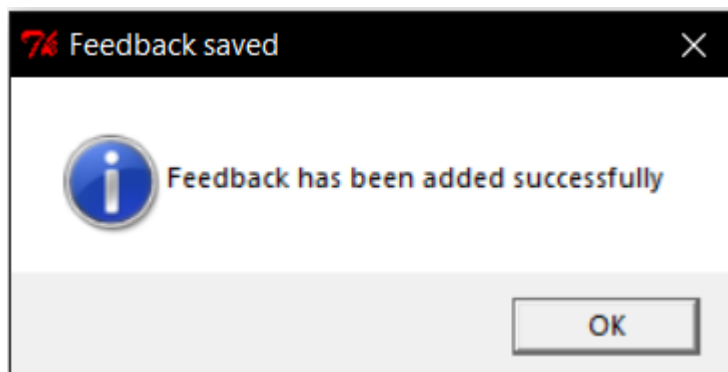
7 - Is there an indicator that whole class feedback has not been successfully saved?

(empty input box)

Enter feedback to give

Feedback sender

Enter feedback to give:

Submit

Yes

If the submit button is pressed while the feedback input box is empty, an error message box will appear

---

Invalid input ✕

Please enter feedback into the input box

OK

---

8 - Does the specific student button work?

Feedback sender

Feedback sender

Give feedback to a specific student

Give feedback on a whole test

Close

Yes

When the "Give feedback to a specific student" button is pressed. The specific student feedback process starts

9 - Does the student feedback GUI work?

Yes

When the "Give feedback to a specific student" button is pressed. The specific student feedback GUI becomes visible to the user

10 - Can the student username, test name and feedback box be accessed?

Yes

All three input boxes can be clicked on by the user using a mouse and can typed in using a keyboard

11 - Does the submit button work?

Yes

The first submit button will open the give feedback GUI, while the second submit button will save the feedback. Assuming input boxes have been filled with valid data

(sampleTest exists and the user 'a' has atleast 1 recorded attempt in the sampleTest – marks file, leading to the give feedback GUI opening)
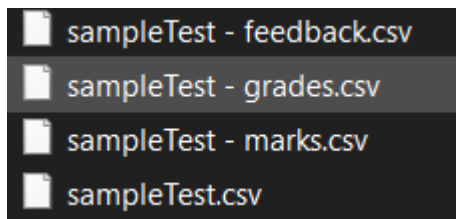
(sampleTest – marks.csv)
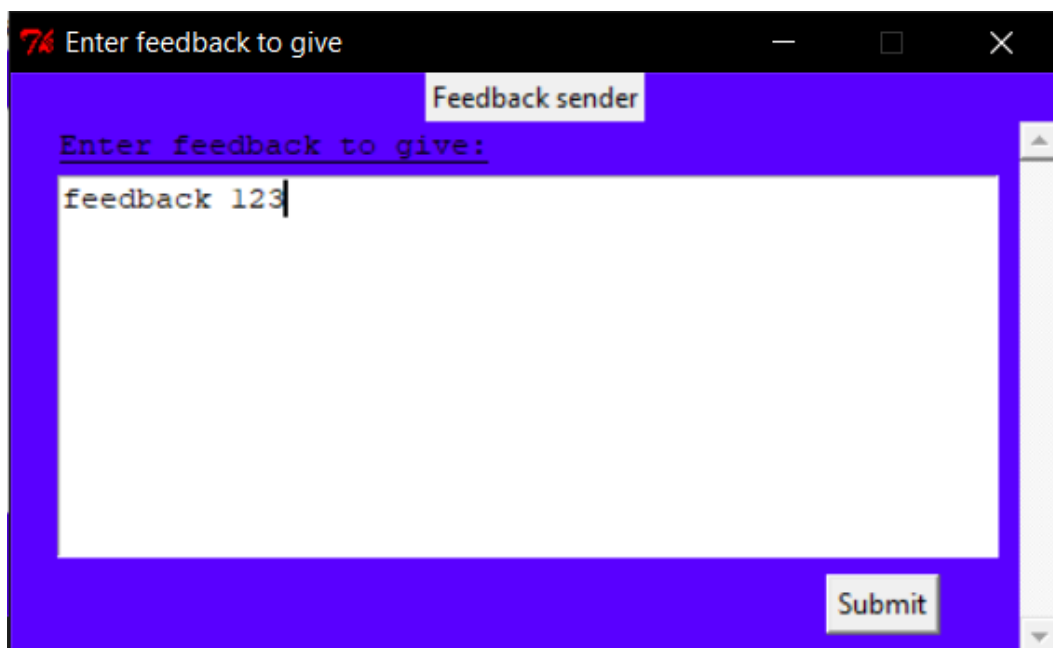
	A	B	C
1	Username	Marks	Grades
2	a	7	U
3	a	7	B
4	a	7	B
5	a	7	B
6	a	7	B
7	b	7	B
8	c	7	B
9	a	0	U
10	a	7	B
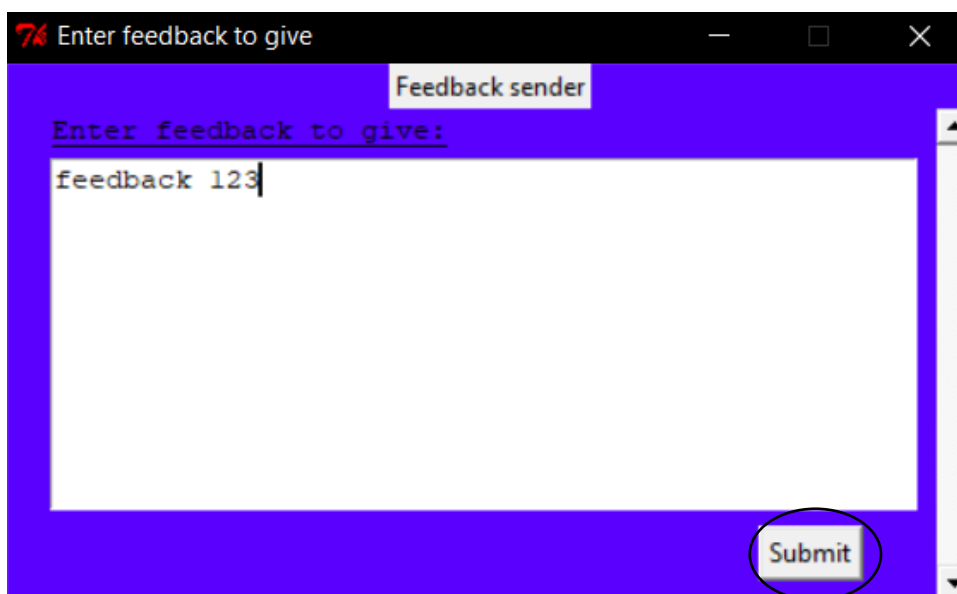
(sampleTest – feedback.csv is correctly updated with the new feedback)

	A	B	C	
1	Username	Feedback		
2	a	sampleTest, correct name, in marks		
3	*	sampleTest, all correct name		
4	b	sampleTest, wrong name, in marks		
5	c	sampleTest, wrong name, not in marks		
6	*	feedback 123		
7	a	feedback 123		

12 - Is there an indicator if sending user feedback was successful?

Yes

When the submit button is pressed on the enter feedback GUI for a specific user, while there is a valid input (not empty), a confirmation message box will appear
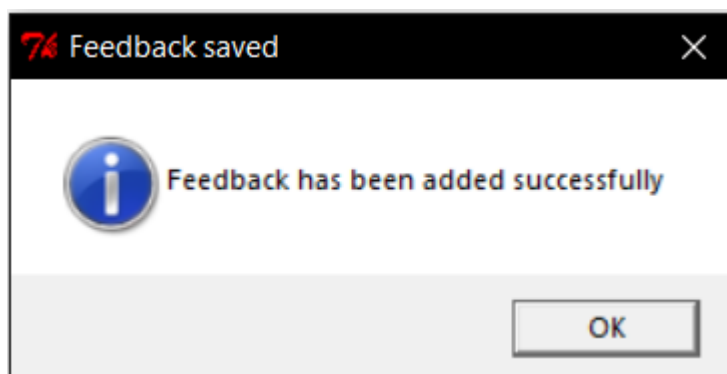
13 - Is there an indicator if sending user feedback was unsuccessful?

(empty input boxes or non-existent user)

Yes
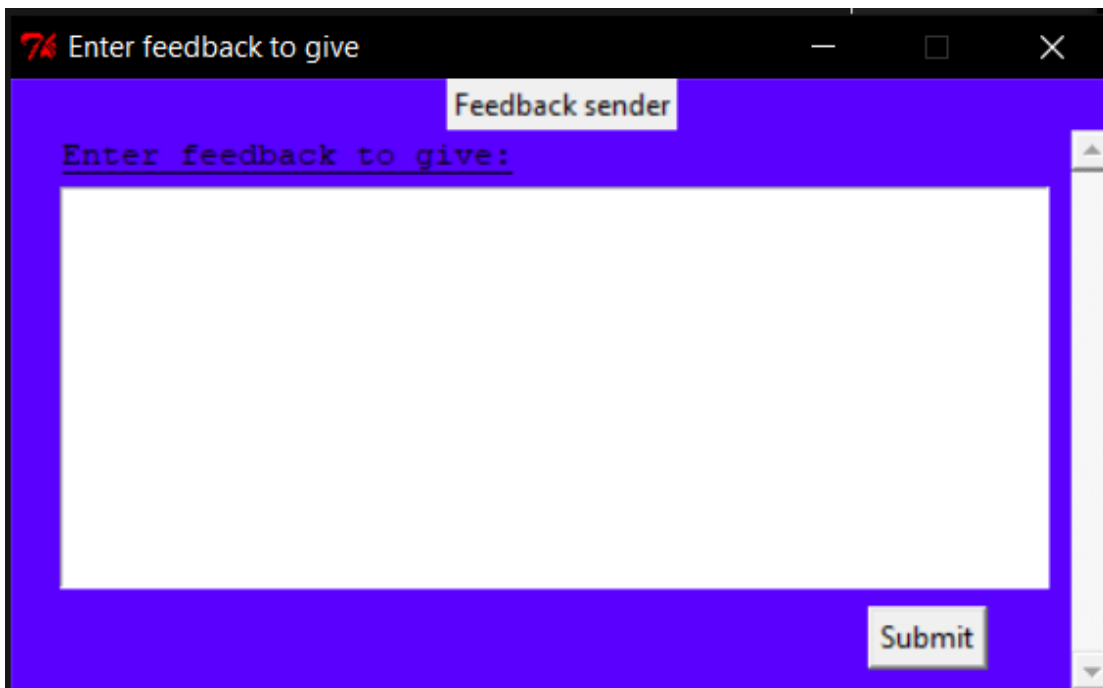
If the submit button is pressed while the feedback input box is empty, an error message box will appear
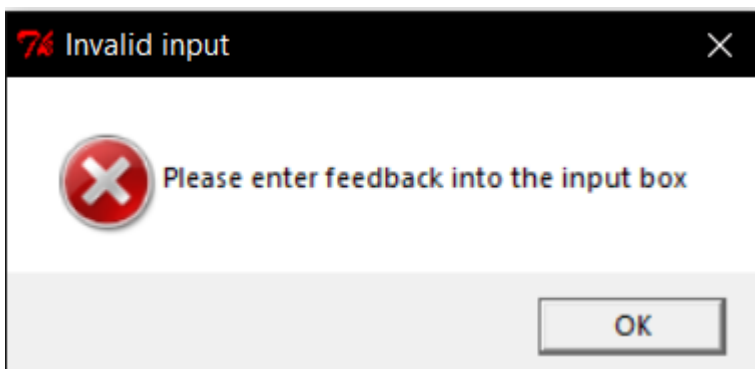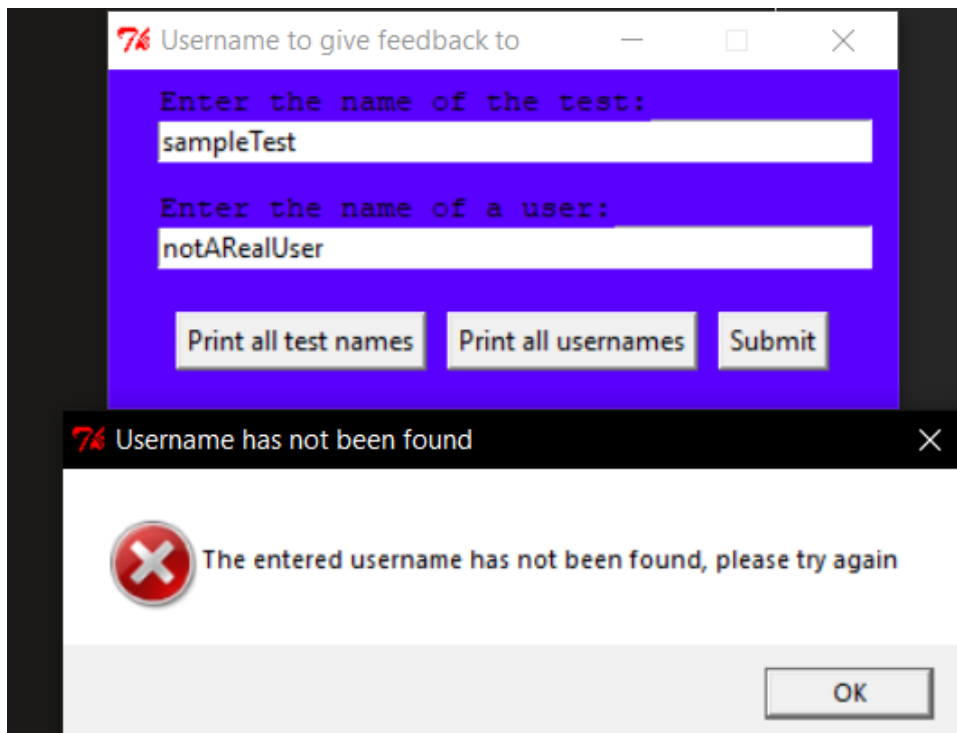
If the submit button is pressed when there is the name of a non-existent user. An error message will appear.

(login.csv file's contents, the entered username does not exist)

	A	B	C
1	Username	Password	Admin
2	testusername	testpassword	testadmin
3	noadmin1	noadmin2	
4	a	a	testadmin
5	input1	input2	input3
6	a		
7		a	
8	testusernam	213124	

Feedback receiving testing

Number	Test	Type of test	Example test data	Expected outcome	Justification	Achieved?
1	Does the feedback receiver GUI work?	Viewing	NULL	A window with feedback appears	To view feedback. **Otherwise, the user cannot see their feedback**	Yes

1 - Does the feedback receiver GUI work?

Yes
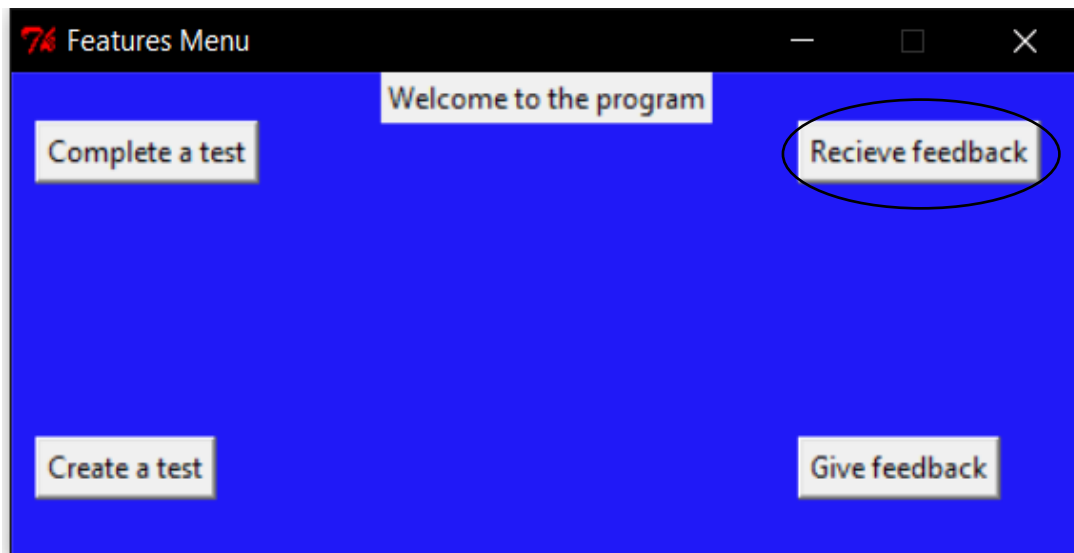
When the "Recieve feedback" button is pressed. The feedback GUI opens
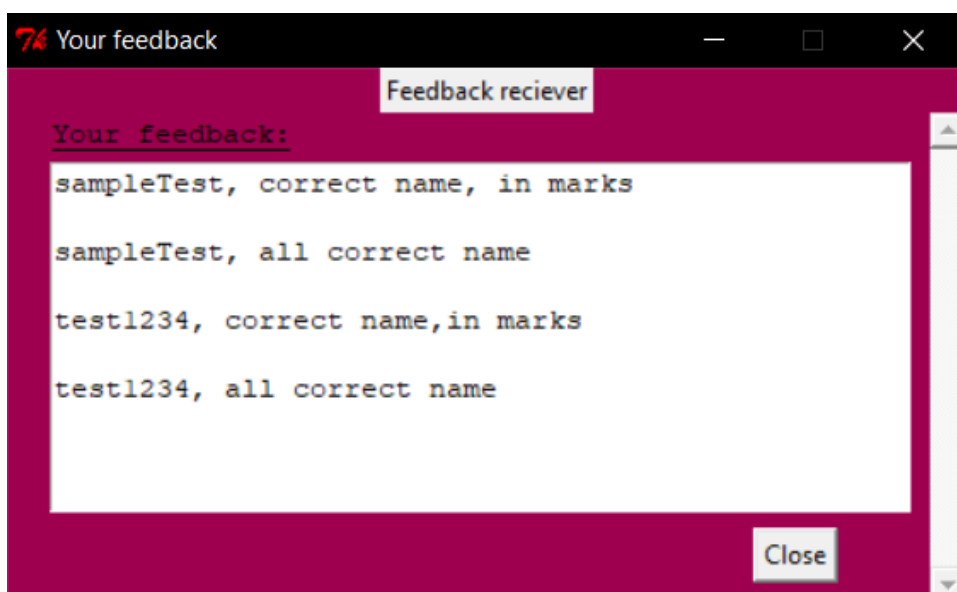
Post development interview with stakeholders

Post development interview with client

What are your first opinions on the program?

"**The program is very easy to use with its simple design**. The buttons and labels make it easy to understand what information is needed and the guide also helps give a deeper understanding into the different features of the program"

What aspects do you like?

"**The program is easily understandable** making it suitable for both the teachers and students who have not used an electronic test maker or test completer. **Also, the program runs very quickly allowing for tests and feedback to be**

made efficiently, and the message boxes are useful in telling whether a process was successful or not, and what to do if it was unsuccessful"

What aspects do you not like?

"Although I like that the test file is split into 4 excel files, this **leads to lots of files accumulating quickly**. For example, creating only 10 tests leads to 40 files being made. The design of the windows' is too simple. **It certainly contributes to how easy the program is to use**, but it would be nice to have images or multiple different colours. Also, being able to set marks for each question would make it much more useful as a testing tool, since all questions have one mark it is difficult to make complex questions without having to manually evaluate answers"

How can it be improved?

"Perhaps the test files could be saved in a separate folder for all tests or separate folders for each test. This would make it much easier to keep all files organised. It would be good if images were included to make the windows a little less empty. Also, being able to save a test during creation to finish creating later would be a good feature or being able to modify a test in general after it has been created"

Is the program a solution to your problem?

"The program definitely solves my problem. It will save me a huge amount of time when creating and marking tests, and I am sure I will see an increase in exam results due to students using it. I am sure that other teachers will also find the program useful especially with its easy to use and understand nature"

From this interview I can conclude that my solution solves my client's problems. The program is easy to use, runs fast and is easy to understand. However, the files created by the program can accumulate quickly leading to an unorganised folder. I can fix this problem by grouping the 4 files that create a test into 1 folder, in a future prototype. Also, a more complex window design, using images and colours, along with the ability to modify existing tests using the program would make the solution better. Using my second prototype, I have been able to implement a wider colour range in the design of windows, partially solving some of the client's criticisms.

Post development questionnaire with teachers

Is the program easy to use?
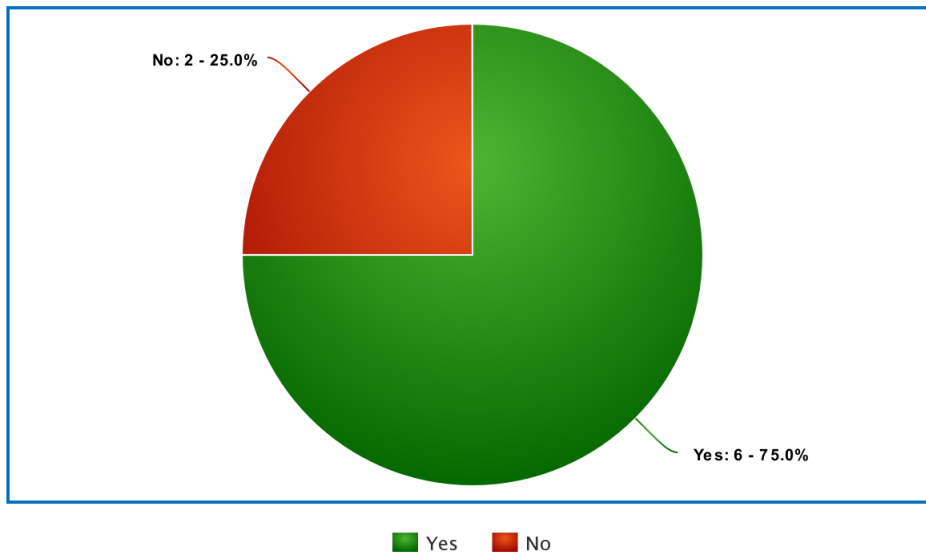
Is the program easy to use?

No: 2 - 25.0%

Yes: 6 - 75.0%

Yes   No

meta-chart.com

Is the program easy to understand?

Is the program easy to understand?

No: 1 - 12.5%

Yes: 7 - 87.5%

Yes   No
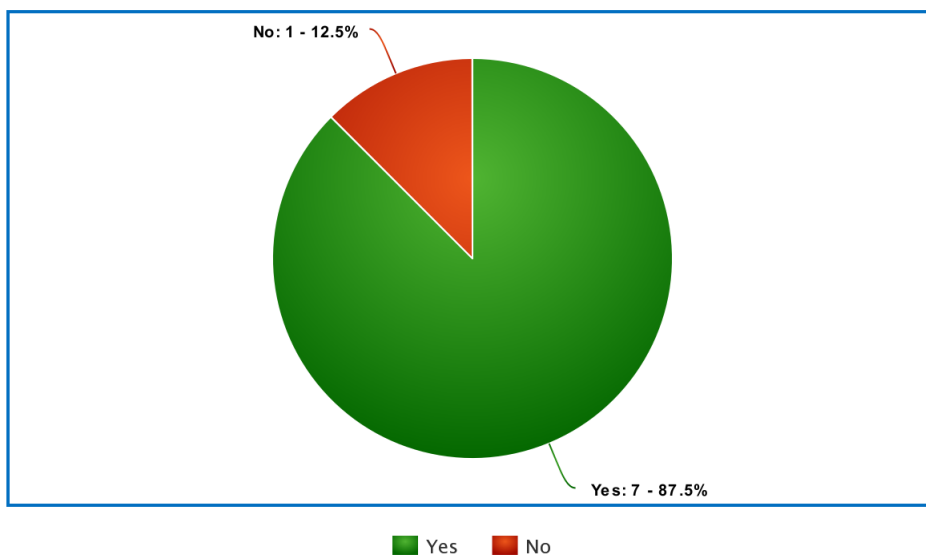
meta-chart.com

Is the program a better alternative to the previous system in place?

Is the program a better alternative to the previous system in place?

No: 1 - 12.5%

Yes: 7 - 87.5%

■ Yes   ■ No
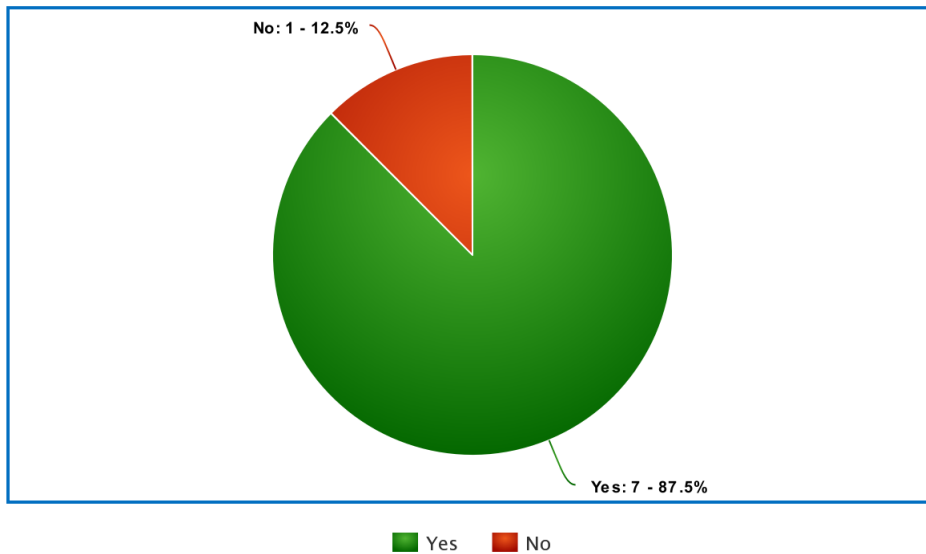
meta-chart.com

From this questionnaire I can conclude that, according to the sample of teachers that were surveyed, my program is a more efficient testing solution for most teachers and will save them time when creating tests

Post development questionnaire for students

Is the program easy to use?
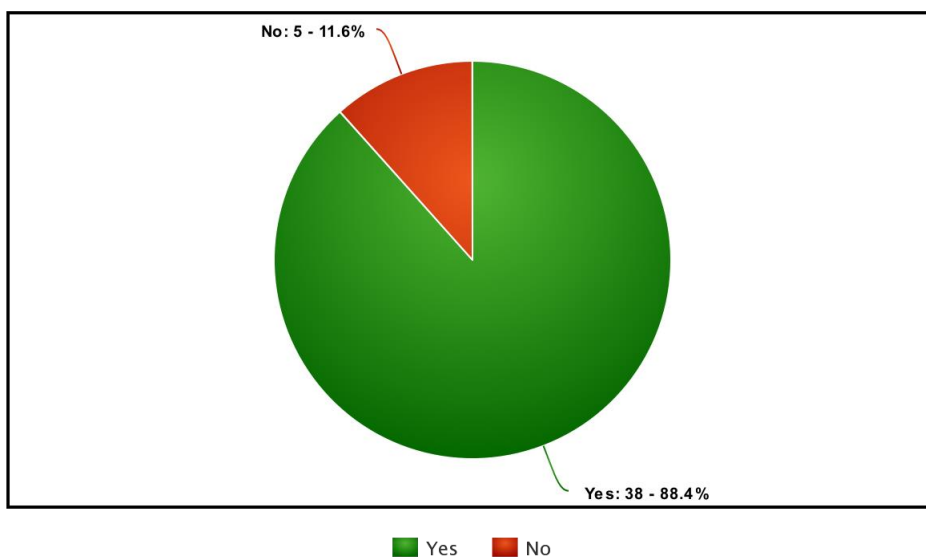
IS THE PROGRAM EASY TO USE?

No: 5 - 11.6%

Yes: 38 - 88.4%

■ Yes   ■ No

meta-chart.com

Is the program easy to understand?

IS THE PROGRAM EASY TO UNDERSTAND?

No: 8 - 18.6%

Yes: 35 - 81.4%

■ Yes   ■ No
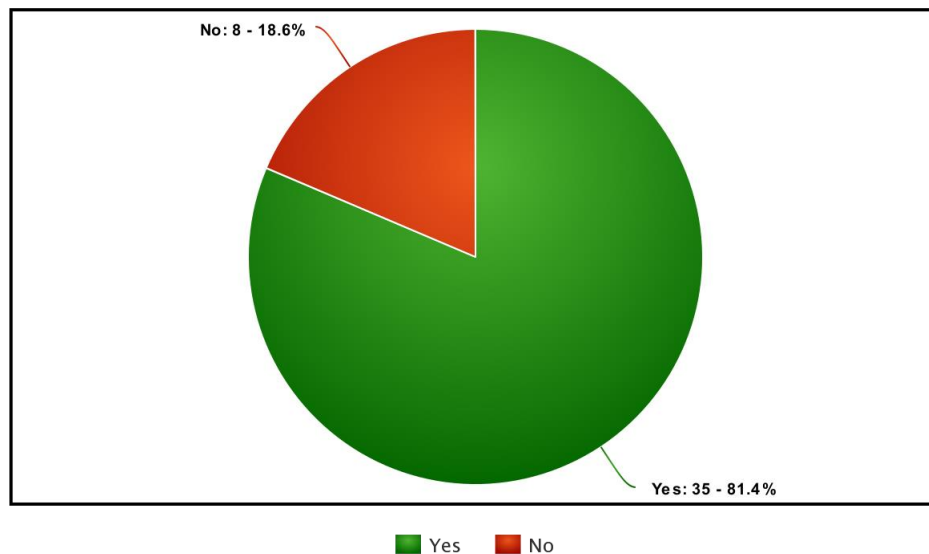
meta-chart.com

Do you think this program will help your learning?

DO YOU THINK THIS PROGRAM WILL HELP YOUR LEARNING?

No: 6 - 14.0%

Yes: 37 - 86.0%

■ Yes   ■ No
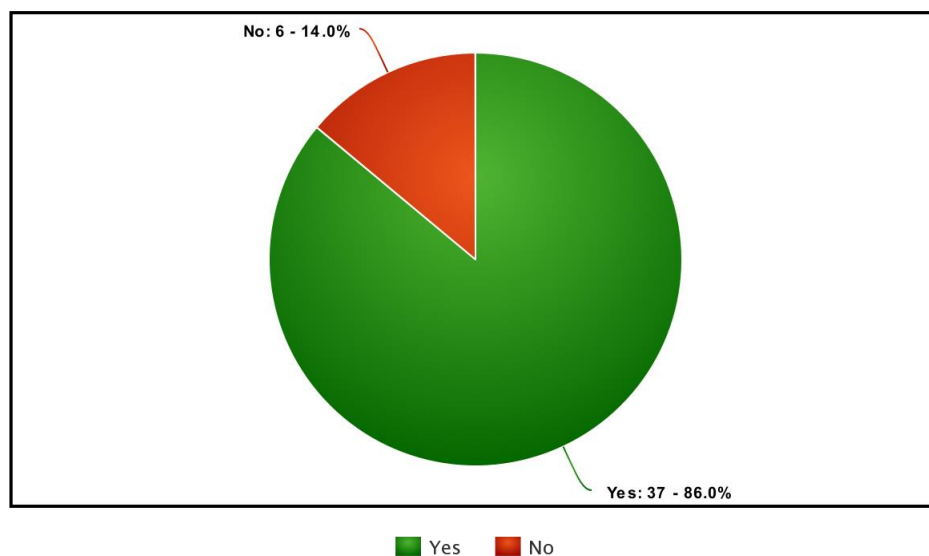
meta-chart.com

The answers for the 3 questions given during the questionnaire establishes that a large percentage of students at the client's school will also find the program useful. The results further re-iterate the requirement for an easy-to-use and easy-to-understand program, which will influence my development in the future.

Strengths and weaknesses

From assessing the results in the multiple post-development interviews and questionnaire. I can overview the strengths and weaknesses of my program.

Strengths: The client finds the program a suitable solution to their problem and other teachers and students that will potentially use the program find it useful, easy-to-use and easy-to-understand. The program allows for both tests to be made and tests to be completed, and the program can differentiate the authorisation of accounts and provide appropriate access to the program's features.

Weaknesses: From my success criteria, the option to select between multiple choice and text questions has not been implemented. However, the ability to set multiple answers to a question can offset this assuming a user states the multiple choices to the question. There is no method of modifying a test after it has been created by the program, modifying the test requires the user to manually modify the excel file.

Usability features

The usability features that I have implemented ensure that the program is as easy to use as possible. My pre-development design of the various GUI's all contains an appropriate title at the top displaying the purpose of the window. **Otherwise, the user may not understand the purpose of the current window**. They also contain large buttons within large windows **(otherwise, the user may find it difficult to use the window)** with labels describing the process that they execute **(otherwise, the user may find it difficult to understand the purpose of a button).** All GUI's were also designed with dark blue background.

However, in the final design most GUI's have changed. All GUI's are significantly smaller **(otherwise, it would be difficult to use multiple windows at once due to the amount of space each GUI takes)** and the buttons are also smaller because of this. This smaller design makes it much easier to have multiple windows open at once and visible on the screen.

The colour has also changed to a wider range of colours based on my client's criticisms in the post-development interview

(Main menu)

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the sucees criteria in: Each system is windowed (1) and Main menu (3)

Main Menu

Create a test

Complete a test

Give feedback

Recieve feedback

Guide on how to use this program

Exit the program

Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know the function of each button.** These buttons meet the success criteria in: Guide button (9), Exit button (11), Create a test button (12), Complete a test button (18), Feedback sender button (21) and Feedback receiver button (24)

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using**

Use of seperate main menu GUI meets the success criteria in: each system is windowed (1), and main menu (3)

Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know what the function of the button is.** These buttons also meet the success criteria in: Register button (4), Login button (6), Guide button (9) and Exit button (11)

(Secondary menu)

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the sucees criteria in: Each system is windowed (1) and Main menu (3)

Main Menu

Create a test

Complete a test

Give feedback

Recieve feedback

Guide on how to use this program

Exit the program

Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know the function of each button.** These buttons meet the success criteria in: Guide button (9), Exit button (11), Create a test button (12), Complete a test button (18), Feedback sender button (21) and Feedback receiver button (24)

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using**. This GUI meets the sucees criteria in: Each system is windowed (1) and Main menu
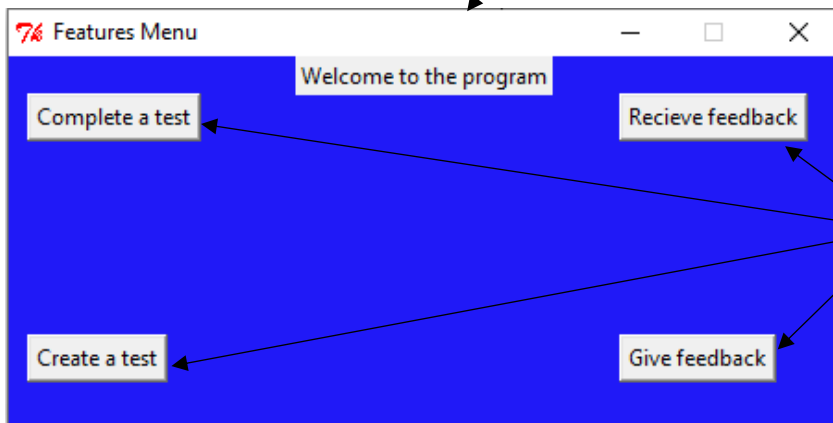
Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know the function of each button.** These buttons meet the success criteria in: Complete a test button (18), Feedback sender button (21) and Feedback receiver button (24)

(Registration)

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1) and Registration system (5)

Each input box has a label to make it clear what is to be inputted by the user. **Otherwise, the user would not know what information to enter into the input boxes.** These input boxes meet the success criteria in: Each input is provided using a keyboard (2)

Each button has a label to make the purpose of each button clear to the user. **Otherwise, the user would not know the function of the button.** These buttons meet the success criteria in: Exit button (11)

Registration

Username:

Password:

Admin code:

Submit

Exit the program

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1) and Registration system (5)

Each input box has a label to make it clear what is to be inputted by the user. **Otherwise, the user would not know what information to enter into the input boxes.** These input boxes meet the success criteria in: Each input is provided using a keyboard (2)

Each button has a label to make the purpose of each button clear to the user. **Otherwise, the user would not know the function of the button.**

7⁄6 Registration   — ☐ ✕

Registration

Username:*

Password:*

Admin code:

Register

(Login)

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1) and Login system (7)

Each input box has a label to make it clear what is to be inputted by the user. **Otherwise, the user would not know what information to enter into the input boxes.** These input boxes meet the success criteria in: Each input is provided using a keyboard (2)

Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know what the function of the button is.** These buttons meet the success criteria in: Exit button (11)

Login

Username:

Password:

Submit

Exit the program

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1) and Login system (7)

Each input box has a label to make it clear what is to be inputted by the user. **Otherwise, the user would not know what information to enter into the input boxes.** These input boxes meet the success criteria in: Each input is provided using a keyboard (2)

Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know what the function of the button is.**

7k Login

Login

Username: *

Password: *

Login

Furthermore, many designs for GUI's have been split into several GUI's to allow the user to close unnecessary GUI's once they have been used, **otherwise the user may find it difficult to navigate between the several windows**. This both increases performance and makes the program easier to use. For example, the create a test function originally was 1 GUI, but has been split into 4 separate GUI's, which each close automatically once they have been used.

(Test creating)

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1) and Create a test system (13)

Create a test

Name of test: Number of questions:

Submit

Each input box has a label to make it clear what is to be inputted by the user. **Otherwise, the user would not know what information to enter into the input boxes.** These input boxes meet the success criteria in: Each input is provided using a keyboard (2)

Question: Answer:

Submit

Exit the program

Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know what the function of the button is.** These buttons meet the success criteria in: Exit button (11)

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1) and Create a test system (13)

Each input box has a label to make it clear what is to be inputted by the user. **Otherwise, the user would not know what information to enter into the input boxes.** These input boxes meet the success criteria in: Each input is provided using a keyboard (2)

76 Create a test   —   □   ✕

Enter the name of a test:

Submit

Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know what the function of the button is.**

Each input box has a label to make it clear what is to be inputted by the user. **Otherwise, the user would not know what information to enter into the input boxes.** These input boxes meet the success criteria in: Each input is provided using a keyboard (2), Modify a test (17)

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1) and Create a test system (13)

Create a test

Add questions and answers to the test

Add a question:
a

Add answers:
a

Submit   Preview   Delete last   Finish

Test preview

Question,Answer
a,a

Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know what the function of the button is.** These buttons meet the success criteria in: Preview button (14)
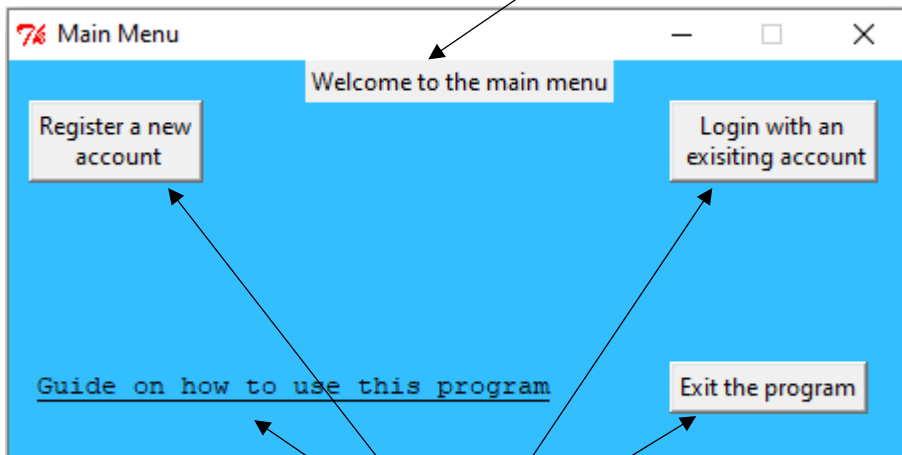
Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1) ,Create a test system (13) and Create grade boundaries (16)

Each input box has a label to make it clear what is to be inputted by the user. **Otherwise, the user would not know what information to enter into the input boxes.** These input boxes meet the success criteria in: Each input is provided using a keyboard (2)

7k Add grade boundaries — □ ✕

Add grade boundaries to the test

A: B: C:

D: E: F:

Check total marks   Submit

Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know what the function of the button is.**
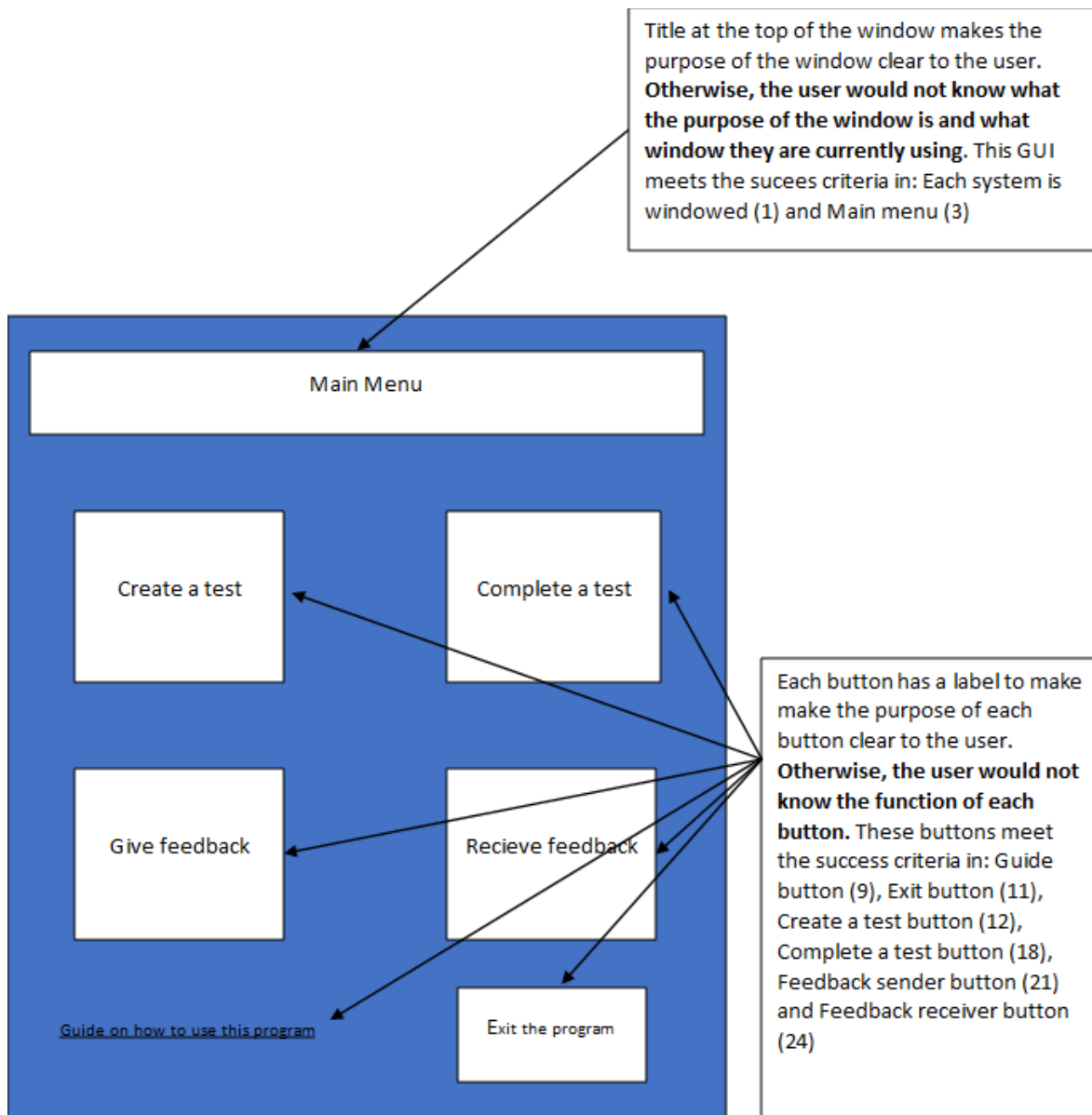
(Test completing)

Title at the top of the window makes the purpose of the window clear to the user. Otherwise, the user would not know what the purpo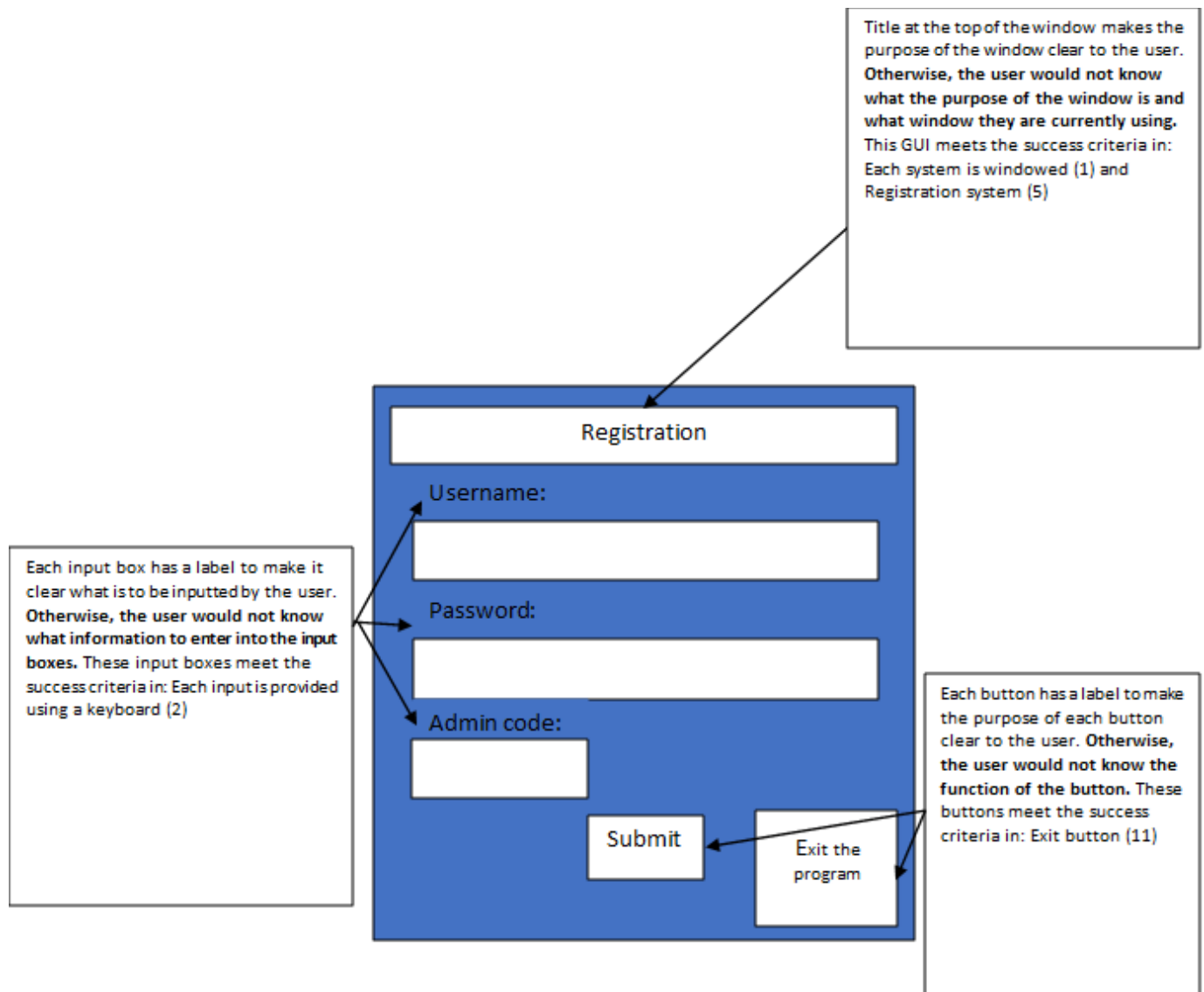se of the window is and what window they are currently using. This GUI meets the success criteria in: Each system is windowed (1), Complete a test system (19)

Each input box has a label to make it clear what is to be inputted by the user. Otherwise, the user would not know what information to enter into the input boxes. These input boxes meet the success criteria in: Each input is provided using a keyboard (2)

Complete a test

Name of test:

Submit

Question:

Answer:

Exit the program

Each button has a label to make make the purpose of each button clear to the user. Otherwise, the user would not know what the function of the button is. These buttons meet the succes criteria in: Exit button (11)

Title at the top of the window makes the purpose of the window clear to the user. Otherwise, the user would not know what the purpose of the window is and what window they are currently using. This GUI meets the success criteria in: Each system is windowed (1) and Complete a test system (18)

Each input box has a label to make it clear what is to be inputted by the user. Otherwise, the user would not know what information to enter into the input boxes. These input boxes meet the success criteria in: Each input is provided using a keyboard (2)

7⅚ Complete a test   —   □   ✕

Enter the name of a test:

Submit

Each button has a label to make make the purpose of each button clear to the user. Otherwise, the user would not know what the function of the button is.
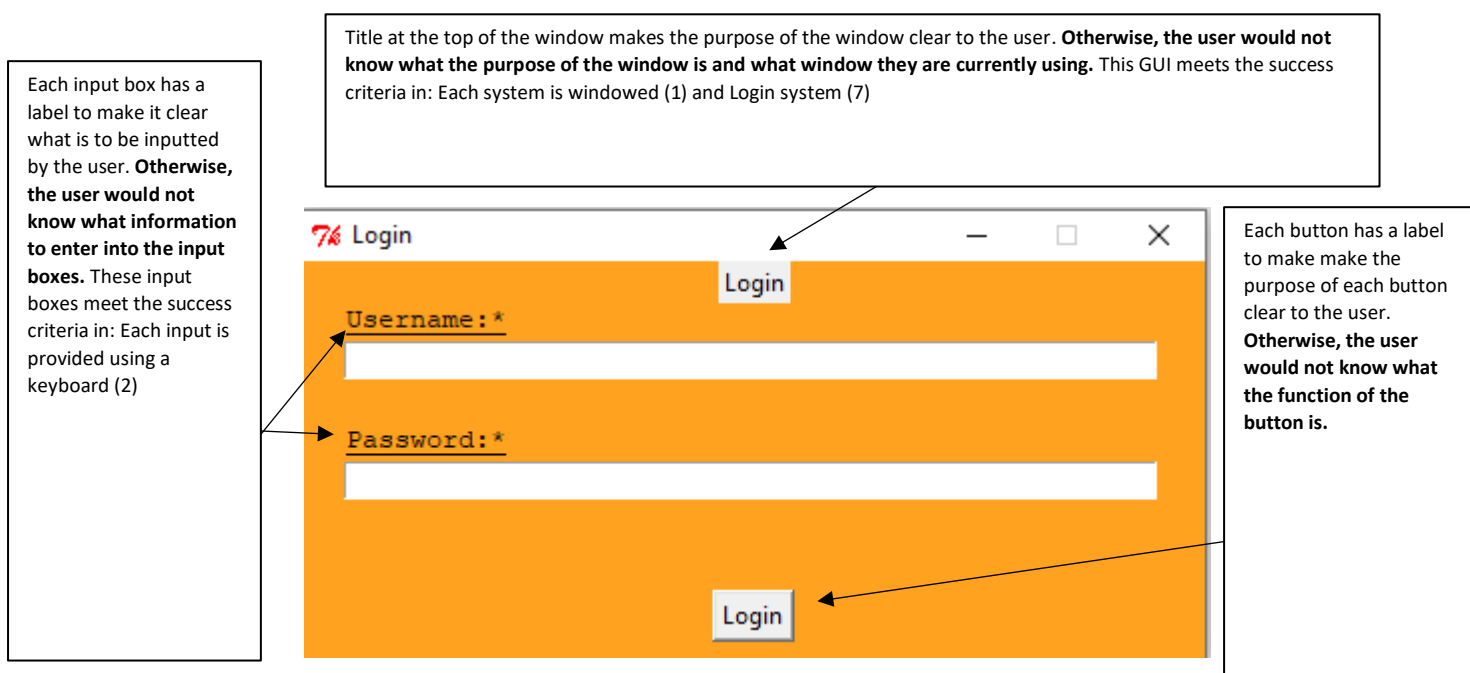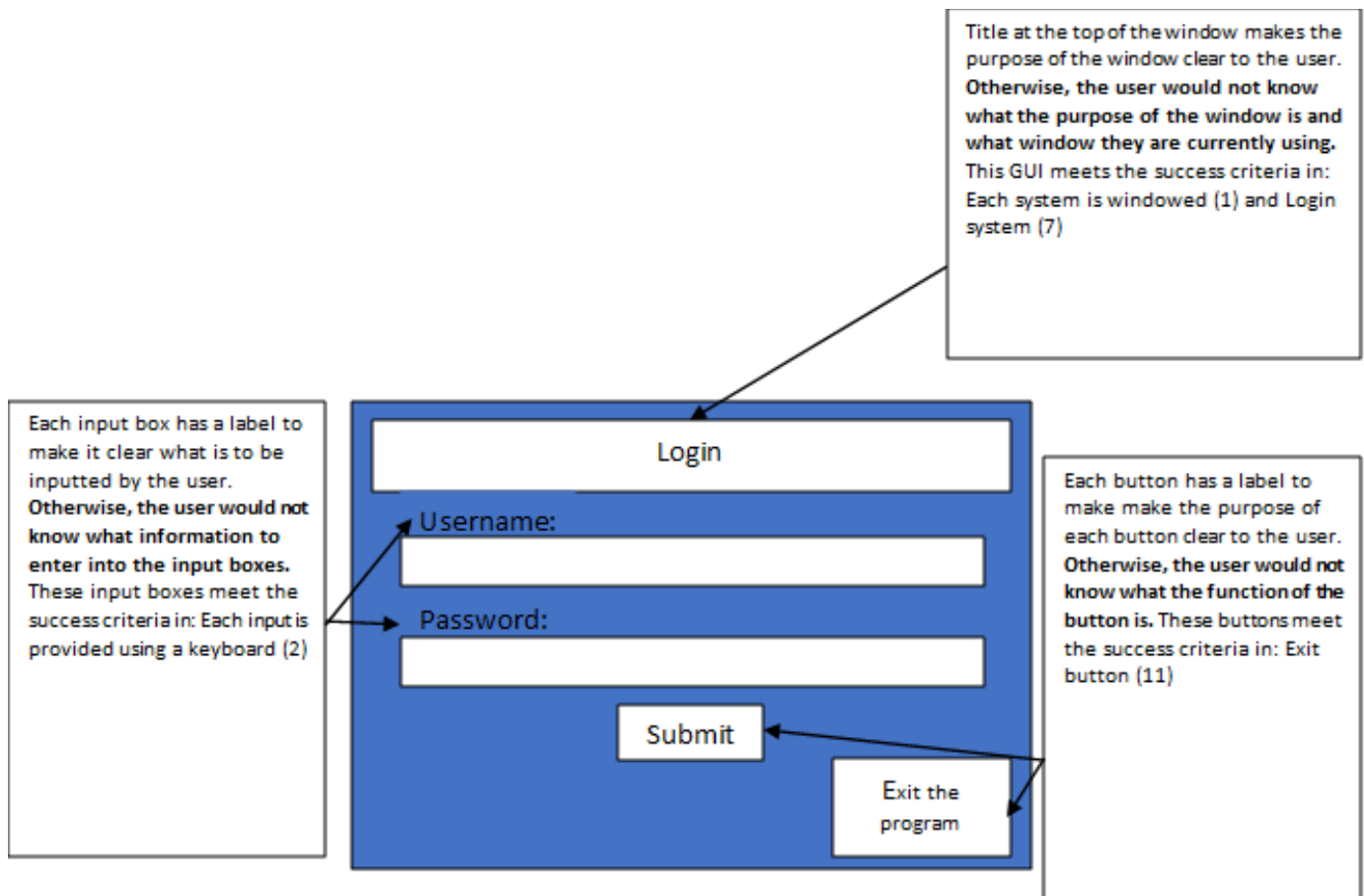
Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1), Complete a test system (19)

Each input box has a label to make it clear what is to be inputted by the user. **Otherwise, the user would not know what information to enter into the input boxes.** These input boxes meet the success criteria in: Each input is provided using a keyboard (2)

Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know what the function of the button is.**

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1), Complete a test system (19)

Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know what the function of the button is.** These buttons meet the succes criteria in: Exit button (11)

(Giving feedback)

Title at the top of the window makes the purpose of the window clear to the user. Otherwise, the user would not know what the purpose of the window is and what window they are currently using. The GUI meets the success criteria: Each system is windowed (1), Feedback sender system (22)

Giving feedback

Give feedback to specific student

Give feedback to a specific class

Exit the program

Each button has a label to make make the purpose of each button clear to the user. Otherwise, the user would not know what the function of the button is. These buttons meet the success criteria in: Exit button (11)

Title at the top of the window makes the purpose of the window clear to the user. Otherwise, the user would not know what the purpose of the window is and what window they are currently using. The GUI meets the success criteria: Each system is windowed (1), Feedback sender system (22)

7% Feedback sender   —   □   ✕

Feedback sender

Give feedback to a specific student

Give feedback on a whole test

Close

Each button has a label to make make the purpose of each button clear to the user. Otherwise, the user would not know what the function of the button is. These buttons meet the success criteria in: Exit button (11)

Give feedback

StudentID/Class code:

Submit

Feedback:
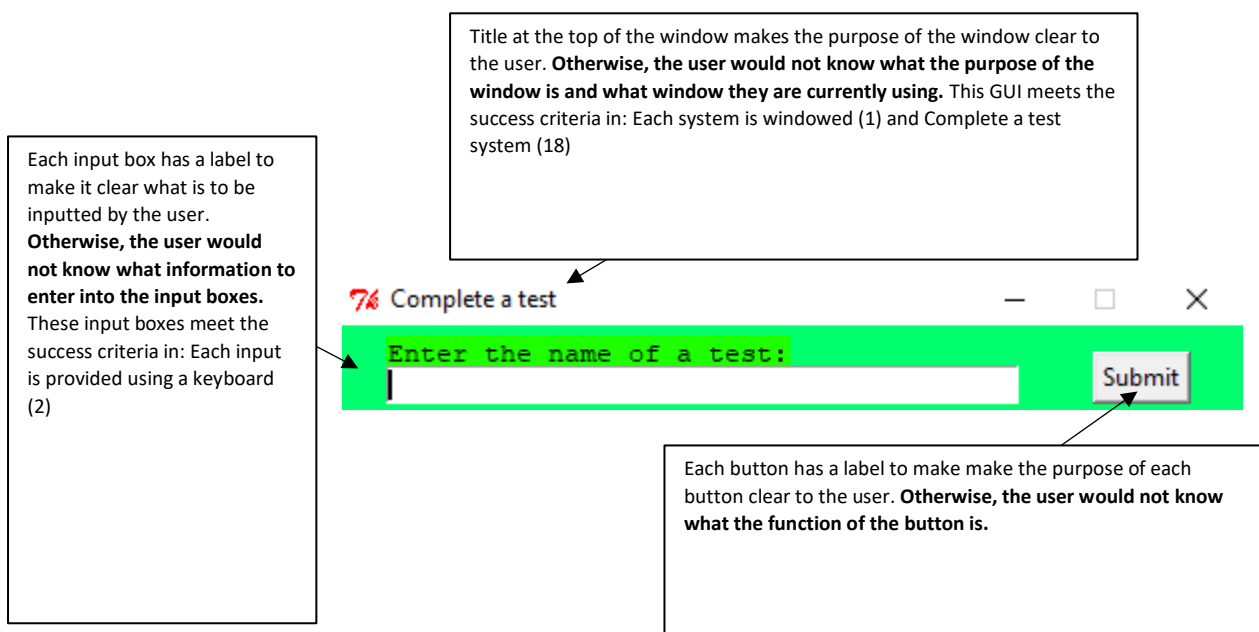
Submit

Exit the program

Each input box has a label to make it clear what is to be inputted by the user. **Otherwise, the user would not know what information to enter into the input boxes.** These input boxes meet the success criteria in: Each input is provided using a keyboard (2)

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1), Feedback sender system (22)

Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know what the function of the button is.** These buttons meet the success criteria in: Exit button (11)
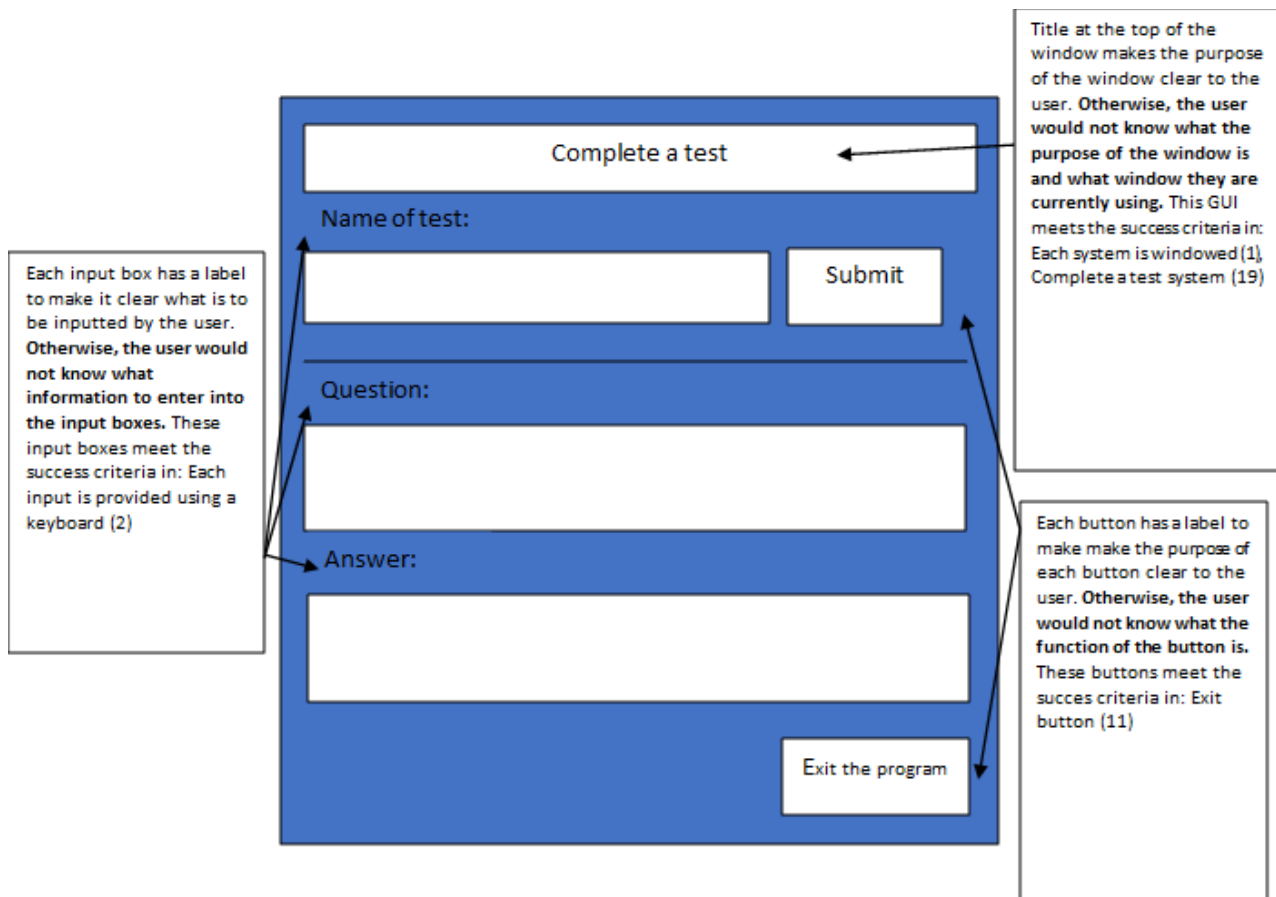
Each input box has a label to make it clear what is to be inputted by the user. **Otherwise, the user would not know what information to enter into the input boxes.** These input boxes meet the success criteria in: Each input is provided using a keyboard (2)

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1), Feedback sender system (22)

Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know what the function of the button is.**

7⁄ Username to give feedback to   —   □   ✕

Enter the name of the test:

Enter the name of a user:

Print all test names   Print all usernames   Submit

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1), Feedback sender system (22)

Each input box has a label to make it clear what is to be inputted by the user. **Otherwise, the user would not know what information to enter into the input boxes.** These input boxes meet the success criteria in: Each input is provided using a keyboard (2)

Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know what the function of the button is.**

7⁄6 Test name to give feedback on   —   ☐   ✕

Enter the name of the test:

Print all test names   Submit

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1), Feedback sender system (22)

Each input box has a label to make it clear what is to be inputted by the user. **Otherwise, the user would not know what information to enter into the input boxes.** These input boxes meet the success criteria in: Each input is provided using a keyboard (2)

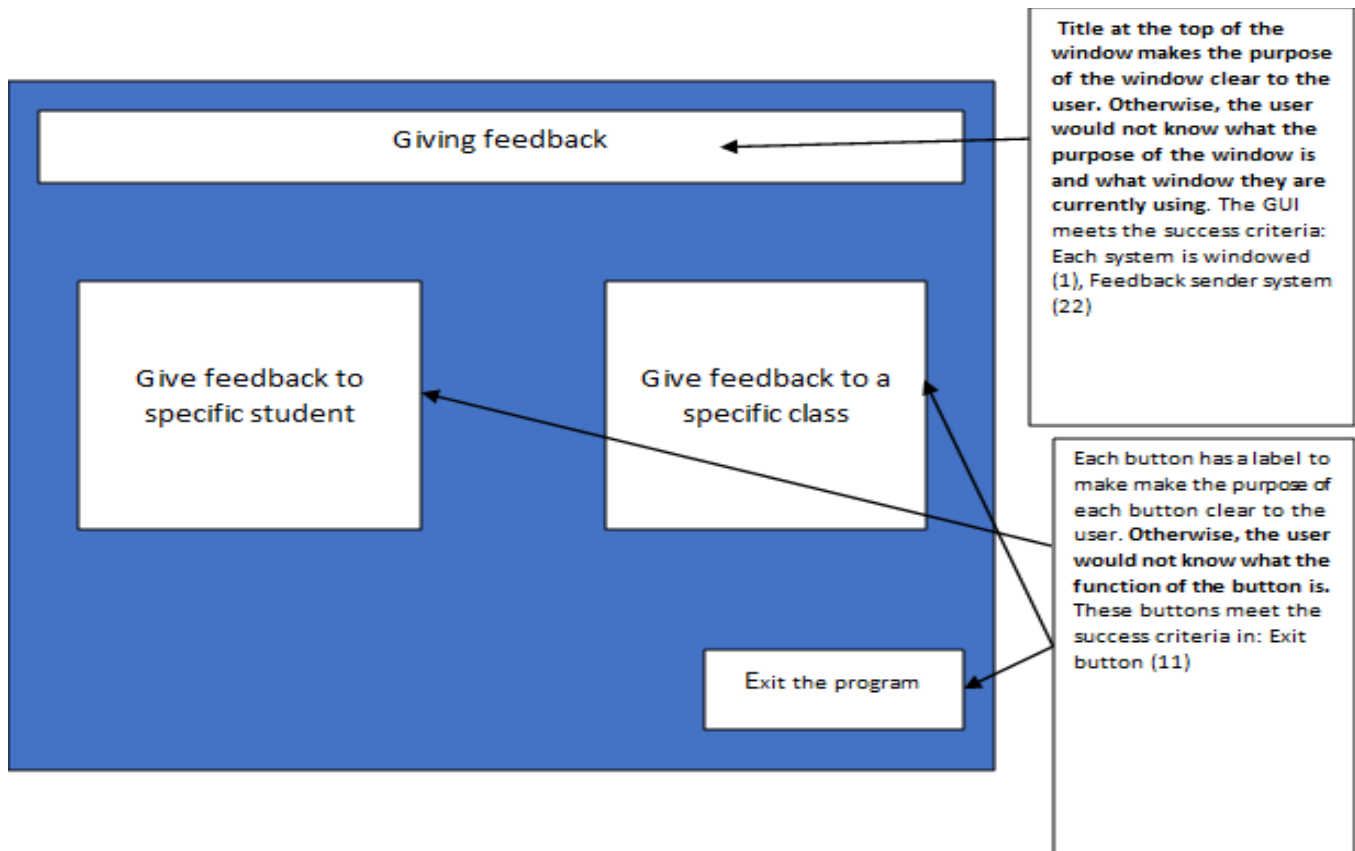**7⁄6 Enter feedback to give   —   ☐   ✕**

Feedback sender

Enter feedback to give:
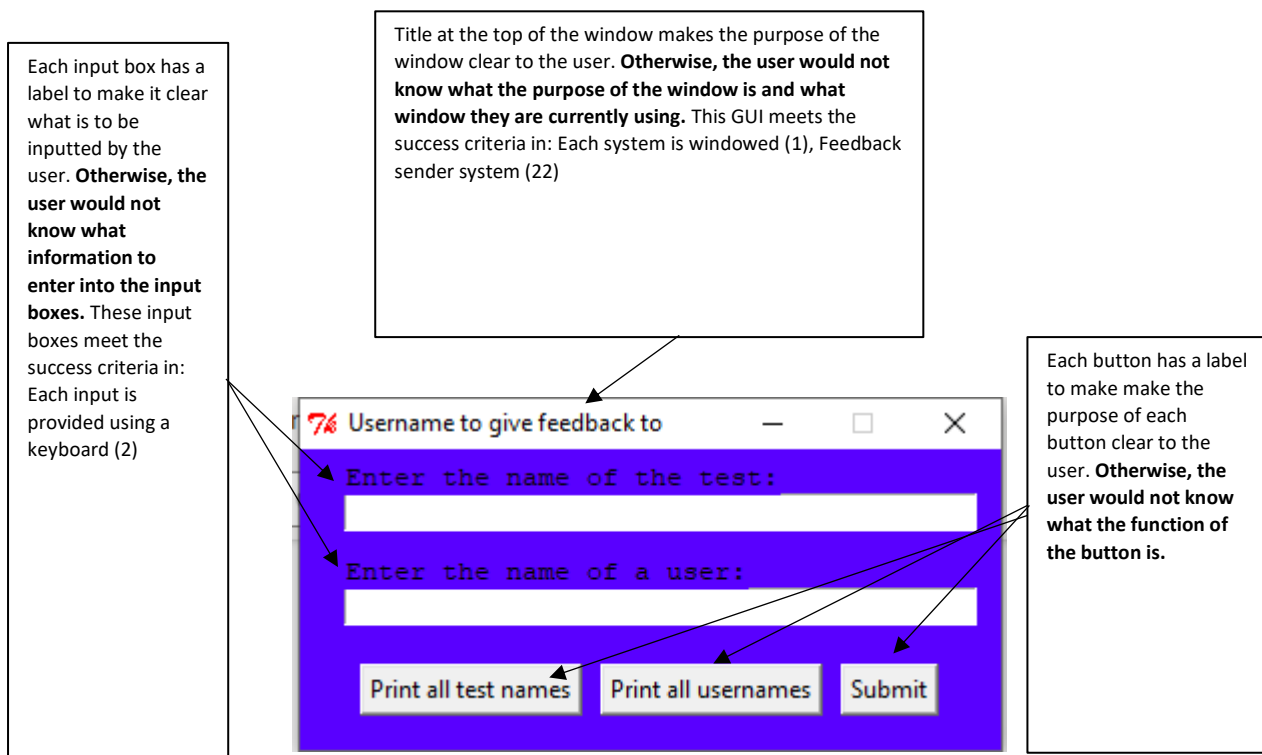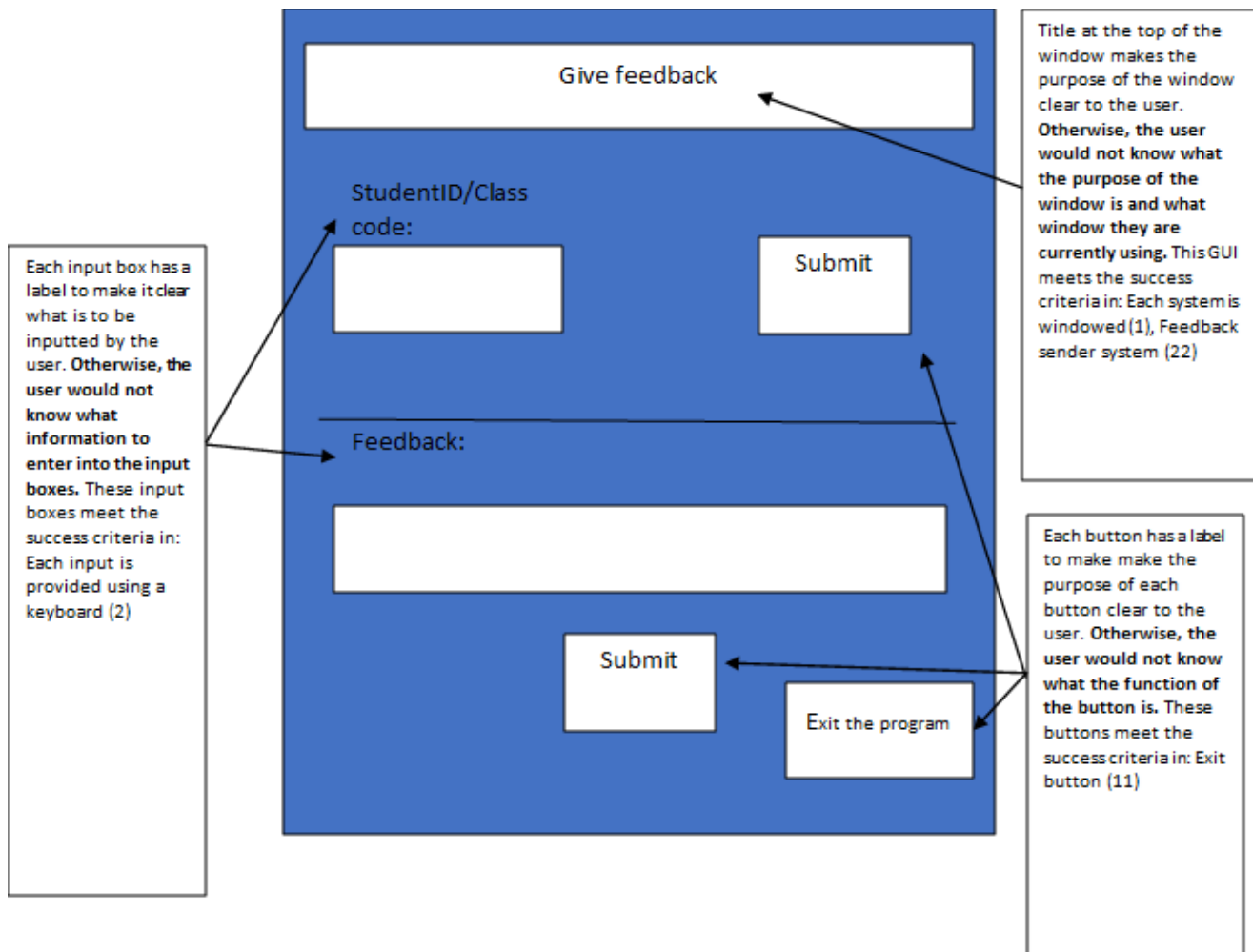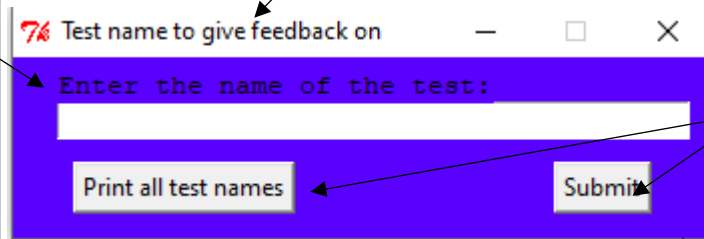
Each button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know what the function of the button is.**

Submit

(Receiving feedback)

Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1), Feedback receiver system (25)

Text box has a label to make it clear what is to be being displayed to the user. **Otherwise, the user would not know what information they are looking at**

Feedback

Feedback:

Exit the program

Button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know what the function of the button is.** This button meets the success criteria in: Exit button (11)
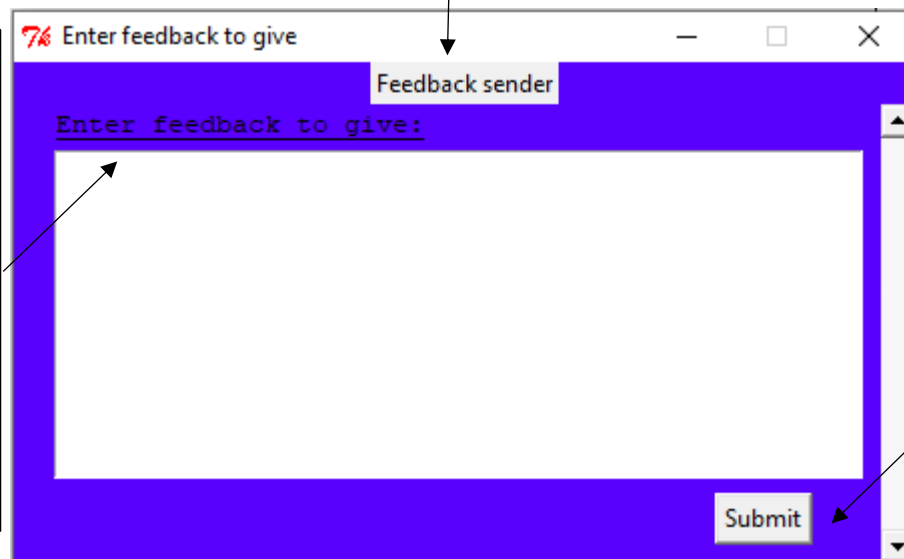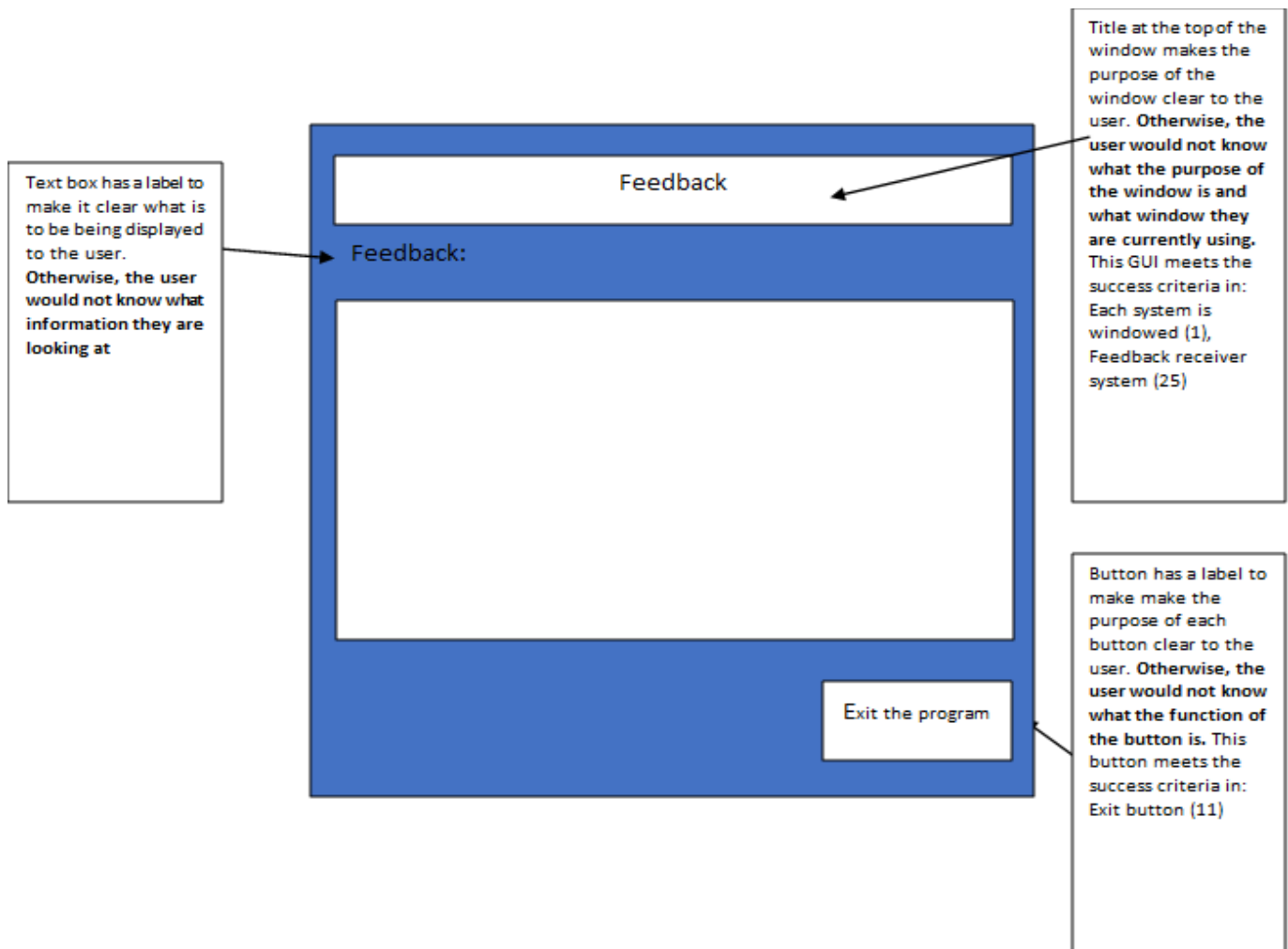
Title at the top of the window makes the purpose of the window clear to the user. **Otherwise, the user would not know what the purpose of the window is and what window they are currently using.** This GUI meets the success criteria in: Each system is windowed (1), Feedback receiver system (25)

Text box has a label to make it clear what is to be being displayed to the user. **Otherwise, the user would not know what information they are looking at**
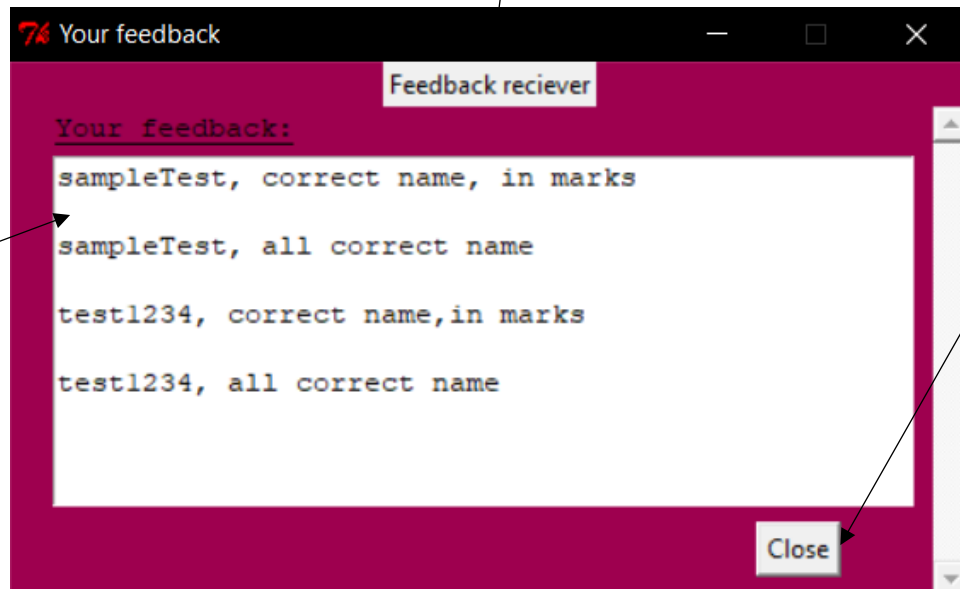
Button has a label to make make the purpose of each button clear to the user. **Otherwise, the user would not know what the function of the button is.** This button meets the success criteria in: Exit button (11)

I can improve the usability further by allowing the modification of tests after they have been created via another GUI. This would make the program easier to use as tests can be modified using the program if there has been a mistake, **otherwise the user must re-create the whole test again or modify the test manually**. I could also add images, a small logo representing what each button or window does would make it easier for a user to understand what the purpose of the button or window is.

Maintainability

Many different features have been implemented during the development of the program to make post-development modifications and using the program as easy as possible.

Functions: Functions have been used to create all GUI's in the program. This makes the program easy to use as only the necessary functions for a process can are called, ensuring good program performance and allowing for maximum efficiency when using various features of the program. **Otherwise, the program would run poorly making it difficult to use.**

Variables: Each variable has been given an appropriate name to match its function, this will make modifying code in the future easier. **Otherwise, I will find it difficult to modify the program in the future.** Furthermore, all variables in the program have only local scope minimizing the chance of errors or miscalculations occurring during the program's use. **Otherwise, global variables may be modified accidentally leading to errors.**

Labels: Labels have been created using the tkinter module in Python. These labels ensure that the program easy to understand by displaying what the purpose of a window is and what information should be entered into input boxes. **Otherwise, the user would find it difficult to understand how to use the program**

Buttons: Buttons have been created using the tkinter module in Python. These buttons allow the user to interact with the program quickly and easily. All buttons have also been give appropriate text to explain what they do. **Otherwise, the user would find it difficult to interact with the program.**

Versions: Copies of several versions of the program have been made during the development, this will make removing unwanted features and implementing new features easy in the future. **Otherwise, I will find it difficult to modify the program in the future.**

Comments: Comments have been used to describe the purpose of each function in the program, they have also been used to state where in the program improvements can be made. This will ensure that changing the code in the future or implementing more features based on the interview answers is easy to do so. **Otherwise, I will find it difficult to modify the program in the future.**

Limitations

From evaluating both my success criteria and the post-development interviews. I can conclude that the program is limited in several ways. Firstly, I did not create an option to add multiple-choice questions in a suitable manner, **otherwise I would have run out of time for development**. Although, multiple-choice questions can be made by stating the several choices into the questions, users would prefer a better alternative. In the future, I could implement a second test GUI that displays the multiple-choice answers as buttons that can be pressed. **Otherwise, implementing multiple-choice questions in the current program would remain difficult**. Also, from the interview there has been suggestions of making the GUIs look more complex using images. I could implement images by creating a simple logo for the program or by using different logos for each feature of the program. I did not implement this, otherwise **I would have run out of time for development.** Finally, the client mentioned that test files accumulate quickly. In the future this can be solved by making the program create separate folders where all files related to a single test can be stored. I did not implement this when making the program, **otherwise I would have run out of time for development**.

Bibliography

Python 3.11.3 standard library – csv module – used during development to learn how to utilise .csv files

https://docs.python.org/3/library/csv.html

Python 3.11.3 standard library – tkinter module – used during development to learn how to implement GUIs

https://docs.python.org/3/library/tkinter.html

Python 3.11.3 standard library – os module – used during development to learn how to implement an exit button and complete file operations

https://docs.python.org/3/library/os.html

Python 3.11.3 standard library – shutil module – used during development to learn how to implement the creation of files and checking if a file exists

https://docs.python.org/3/library/shutil.html

Quiz maker – used during research and analysis to determine useful features in an effective model

www.quiz-maker.com