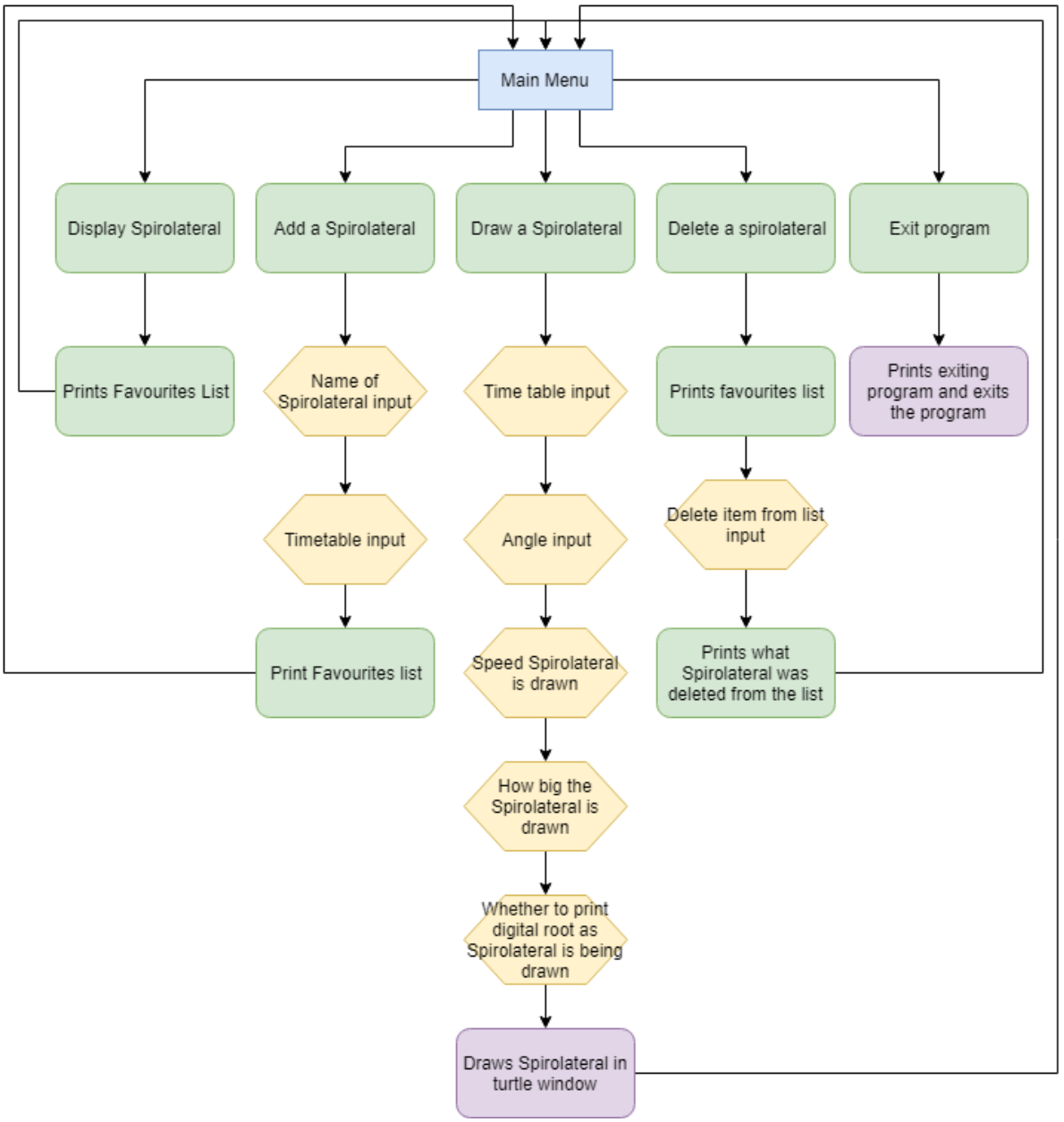
Spirolateral Program Testing and Plan

Task

The task is to create a program to help some students learn timetables and practice some basic arithmetic, the program should be able to, add, remove and display a list containing the spirolateral name and numbers that have been digital rooted.

Plan



Bugs/ errors encountered and fixed in the program,

A bug encountered was when the delete function had run and after the program was closed using exit program (option 5) would cause the program to say the except: error message and would require to click 5, twice. To eliminate this issue I changed “Except:” to “Except IndexError:” and this seemed to fix the extra message popping up when exiting the program.

These are the test cases of the program, testing different inputs to ensure the program is working correctly and to find and fix any bugs in the program.

Another error was that in the delete spirolateral function, there were issues that when for example the input for the spirolateral to delete was “1” the program would output “out of range!”, to fix this i had to add “-1” at the end of the input because python starts counting items inside the list from 0 instead the traditional “1” so any number input would have to be minused by 1 to actually delete the correct list as in the favourites list, the number shown has been corrected using the “num = num + 1”.

```
lelete? ") - 1
```

A bug in the drawing spirolateral function was that if the spirolateral had reached the same starting coordinate then it was meant to stop, this was meant to stop the program once the spirolateral had finished drawing, although the issue was that the spirolateral would stop drawing immediately, to remedy this issue I had to create a new variable called “loop”, the variable loop resets to 0 as the draw spiro function is run and is set to add by one when the drawing loop begins, during the first run of the loop “loop = 1” and on the second run “loop = 2”, what this means is that on the second run of the loop the spirolateral has already passed its starting position and the “if abs(n - (originalspiro_cor * spirosize, 0.00)) < 0.01 and loop >= 2:” line ensures that if the starting spirolateral coordinate matches and the loop has been run at least 2 times then the drawing will “break” what this means is that the drawing of the spirolateral now stops when the turtle has reached the starting point after drawing the spirolateral.

```
What name do you want for the spirolateral? 2times
What times table do you want from 2-20? 2
-------------------------------------------------
1 ['2times', 2, 4, 6, 8, 1, 3, 5, 7, 9]
-------------------------------------------------
```

2 x	1	2	3	4	5	6	7	8	9	10	11
equals	2	4	6	8	10	12	14	16	18	20	22
Digital root	2	4	6	8	1+0=1	1+2=3	1+4=5	1+6=7	1+8=9	2+0=2	2+2=4

Above is a test compared to the 2 times table set of numbers that have been digital rooted, it seems that in my program the digital root seems to be working as the

numbers “ 2, 4, 6, 8, 1, 3, 5, 7, 9” match up with the resource task sheet, and the list stops when the numbers repeat.

Main menu screen (when the program first starts)

Input	Expected Behaviour	Actual Behaviour
1	Say “sorry list is empty”	Says “sorry the list is empty”
2	Ask the user for the name they want to call there spirolateral.	Asks the user for the name they want to call there spirolateral.
3	Ask the user what number they want to draw the spirolateral from.	Asks the user for the name they want to call there spirolateral.
4	Say there is nothing in the list and load up main (the menu screen)	Says there is nothing in the list and load up main (the menu screen)
5	Should say “Exiting program…” and then close the program	Exits the program while saying “Exiting program...” and then closes the program window

Program option choice 2 adding a spirolateral testing (Testing starts from program start)

Question Asked	Input	Expected Behaviour	Actual Behaviour
“Please enter a menu choice from 1 to 5”	2	Ask the user for the name they want to call there spirolateral.	Asks the user for the name they want to call there spirolateral.
“What name do you want for the spirolateral?’	“Cool spiro” as the name	Accept the input with no errors then proceed to ask the next input question.	Accepts the input with no errors then proceeds to ask the next input question.
“What times table do you want from 2-20?”	8	Find the digital root of 8 and stop after the number 8 repeats itself, then display the numbers in a list form with a number showing what list number it was assigned then proceed to show the main menu.	Outputs “1 ['Cool Spiro', 8, 7, 6, 5, 4, 3, 2, 1, 9]” which is the digital root of 8, the list stops before 8 repeats and saves it to the favourites list and displays it, continues to load up the main menu.

Program option choice 1 displaying a spirolateral testing (tested after the program option 2 was tested with “Cool spiro”)

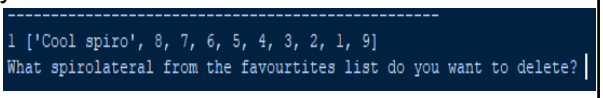
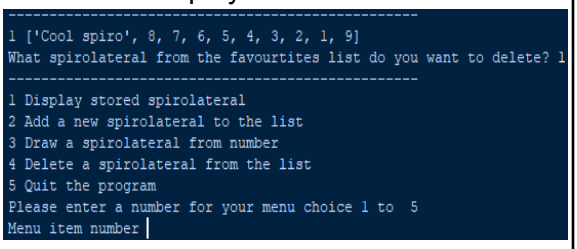
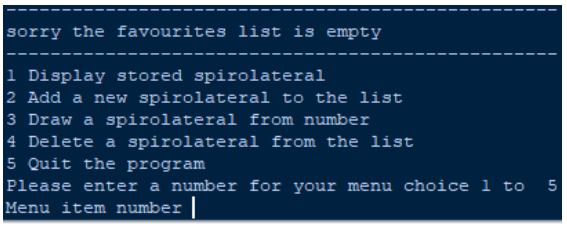
Question Asked	Input	Expected Behaviour	Actual Behaviour
Main menu (ask what menu choice that wants to be run) 1 Display stored spirolateral 2 Add a new spirolateral to the list 3 Draw a spirolateral from number 4 Delete a spirolateral from the list 5 Quit the program Please enter a number for your menu choice 1 to 5 Menu item number	1	Display earlier inputted spirolateral coordinates with correct listing (number of items inside the list next to the items) in this case should display one as only one item (spirolateral) is in the list. Then should show the main menu.	Displays “1 ['Cool spiro', 8, 7, 6, 5, 4, 3, 2, 1, 9]” The program outputs the number for what the list is out of, in this case, 1 Then the program continues to show the main menu.

Test 2, adding two more spirolaterals to the fav list (input name: spiro small, Chosen times table: 4) and (input name: spiro big, Chosen times table: 16)

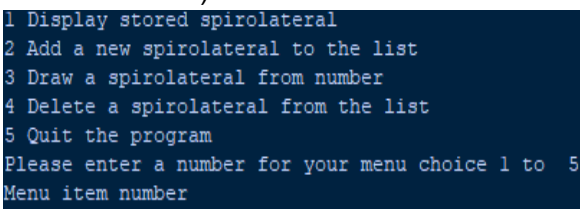
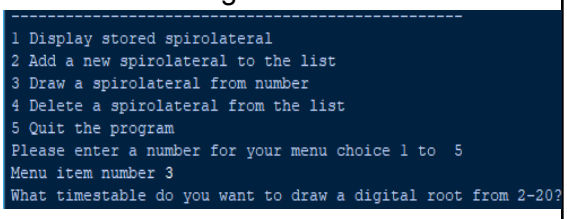
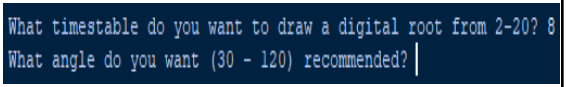
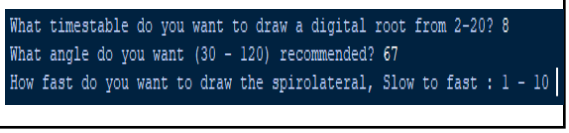
Question Asked	Input	Expected behaviour	Actual behaviour
Main menu (ask what menu choice that wants to be run) 1 Display stored spirolateral 2 Add a new spirolateral to the list 3 Draw a spirolateral from number 4 Delete a spirolateral from the list 5 Quit the program Please enter a number for your menu choice 1 to 5 Menu item number	1	Display earlier inputted spirolateral coordinates with correct listing (number of items inside the list next to the items) in this case should display one as only one item (spirolateral) is in the list. Then should show the main menu.	Displays 1 ['Cool spiro', 8, 7, 6, 5, 4, 3, 2, 1, 9] 2 ['spiro small', 4, 8, 3, 7, 2, 6, 1, 5, 9] 3 ['spiro big', 7, 5, 3, 1, 8, 6, 4, 2, 9]” The program outputs the number for what the list is out of, in this case, 1 Then the program continues to show the main menu. 1 ['Cool spiro', 8, 7, 6, 5, 4, 3, 2, 1, 9] 2 ['spiro small', 4, 8, 3, 7, 2, 6, 1, 5, 9] 3 ['spiro big', 7, 5, 3, 1, 8, 6, 4, 2, 9] 1 Display stored spirolateral 2 Add a new spirolateral to the list 3 Draw a spirolateral from number 4 Delete a spirolateral from the list 5 Quit the program Please enter a number for your menu choice 1 to 5 Menu item number

Program option choice 4 deleting a spirolateral testing (tested after the program option 2 was tested with “Cool spiro”)

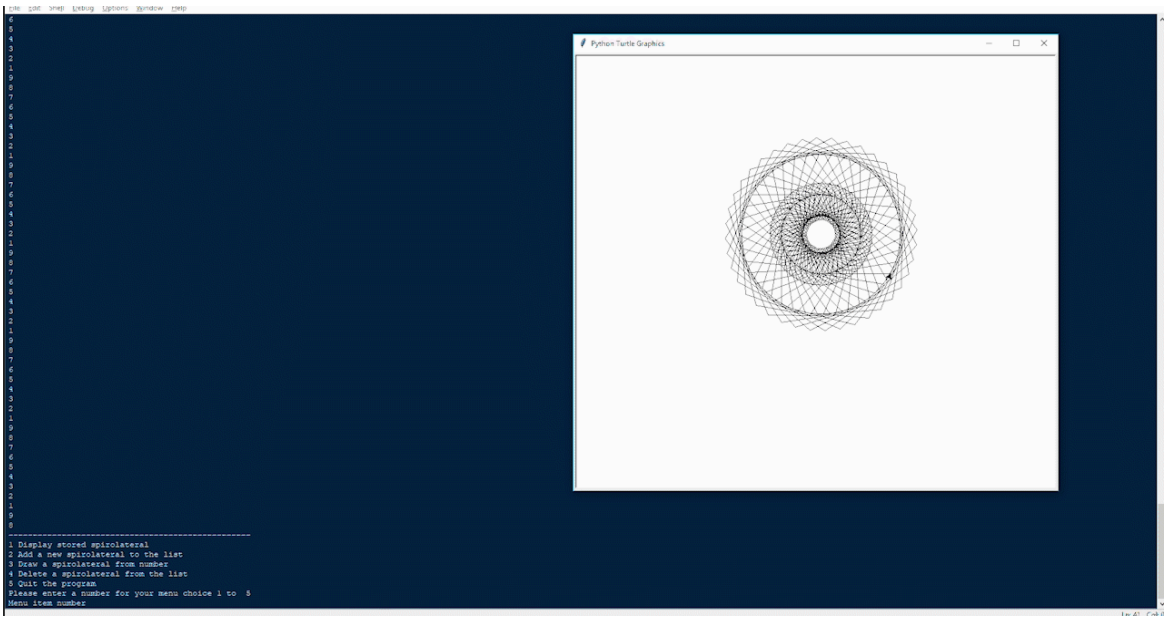
Question Asked	Input	Expected behaviour	Actual behaviour
Main menu (ask what menu choice that wants to be run) 1 Display stored spirolateral 2 Add a new spirolateral to the list 3 Draw a spirolateral from number 4 Delete a spirolateral from the list 5 Quit the program Please enter a number for your menu choice 1 to 5 Menu item number	4	Print the spirolateral favourites list and with the correct associated number of the list next to the item inside the list, should also print a prompt asking for which spirolateral in the favourites list the user wants to	Prints the favourites list containing the spirolateral name, numbers that have been digital rooted as well as a number associating with what item it is in the list, A prompt saying “What spirolateral from the favourites list do you want to delete? “ also gets printed, asking the user which spirolateral they want to delete from the list. Menu item number 4 1 ['Cool spiro', 8, 7, 6, 5, 4, 3, 2, 1, 9] What spirolateral from the favourtites list do you want to delete?

		delete (the spirolateral is specified by the number next to the name on the left)	
“What spirolateral from the favourites list do you want to delete?” 	1	Delete the spirolateral associated with the number “1”, “Cool spiro” from the favourites list and then continue to display the main menu screen	Deletes the spirolateral “Cool spiro” from the favourites list, prints “You just deleted spiro lateral 1 from the list” and then continue to display the main menu screen. 
Displaying the spirolateral list to ensure that the spirolateral associated with the number 1 “Cool spiro” has actually been deleted from the favourites list.	1	Display “sorry the favourites list is empty” And continue to print the main menu.	Prints: “sorry the favourites list is empty” then continues to print the main menu. 

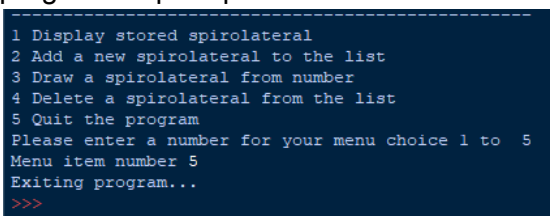
Program option choice 3 Drawing a spirolateral from a number 2-20 testing

Question Asked	Input	Expected behaviour	Actual behaviour
Main menu (ask what menu choice that wants to be run) 	3	Should ask the user what timetable they want to digital root from 2- 20	Asks the user “What timestable do you want to draw a digital root from 2-20?” 
“What timestable do you want to draw a digital root from 2-20?”	8	Accept the input and continue with the next question (what angle the user wants)	Accepts the input of “8” and then goes on to prompt the user what angle they want. 
“What angle do you want (30 - 120) recommended?”-	67	Accept the input and continue to ask how fast they want to draw the spirolateral	Accepts the input and asks “How fast do you want to draw the spirolateral, Slow to fast: 1 - 10” 

“How fast do you want to draw the spirolateral, Slow to fast: 1 - 10”	10	Accept the input and continue to print the next prompt/question about what size they want the spirolateral to be.	Accepts the input and continues to print “How big do you want the spirolateral to be? 10 - 20 recommended” Menu item number 3 What timestable do you want to draw a digital root from 2-20? 8 What angle do you want (30 - 120) recommended? 67 How fast do you want to draw the spirolateral, Slow to fast : 1 - 10
“How big do you want the spirolateral to be? 10 - 20 recommended”	13	Accept the input and continue to ask whether the user wants the digital root set of numbers to be printed or not.	Accepts the input and continues to ask “Do you want to print the digital root as the spirolateral is being drawn? yes or no?” What timestable do you want to draw a digital root from 2-20? 8 What angle do you want (30 - 120) recommended? 67 How fast do you want to draw the spirolateral, Slow to fast : 1 - 10 10 How big do you want the spirolateral to be? 10 - 20 recommended 15 Do you want to print the digital root as the spirolateral is being drawn? yes or no?
“Do you want to print the digital root as the spirolateral is being drawn? yes or no?”	Yes	Accept the input and start drawing the spirolateral as well as printing the numbers being digital rooted in the python shell.	Accepts the input and start drawing the spirolateral as well as printing the numbers being digital rooted in the python shell.
[Rewind back to when the question below was prompted] “Do you want to print the digital root as the spirolateral is being drawn? yes or no?”	No	Accept the input and start drawing the spirolateral without printing the coordinated in the python shell, after the spirolateral is finished drawing the main menu should show.	Accepts input and continues to draw spirolateral without printing the coordinates in the shell, after the drawing of the spirolateral is finished drawing we see the main menu show. Do you want to print the digital root as the spirolateral is being drawn? yes or no? no --- 1 Display stored spirolateral 2 Add a new spirolateral to the list 3 Draw a spirolateral from number 4 Delete a spirolateral from the list 5 Quit the program Please enter a number for your menu choice 1 to 5 Menu item number



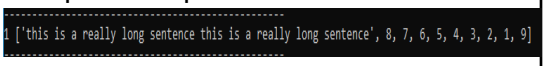
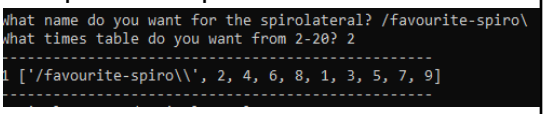
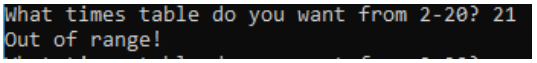
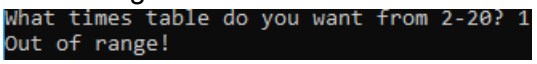
Program option choice 5 Drawing a spirolateral from a number 2-20 testing

Question Asked	Input	Expected behaviour	Actual behaviour
Main menu (ask what menu choice that wants to be run)	5	Close the program after “exiting” prompt.	Exits program after the “Exiting program…” prompt. 

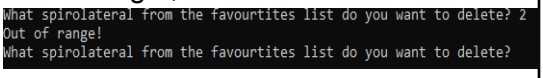
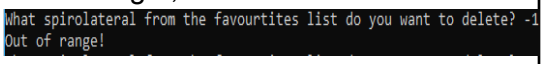
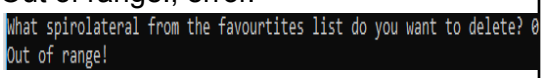
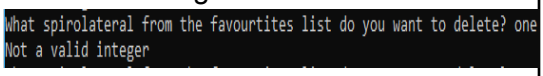
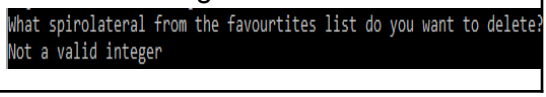
Boundary Testing

Question Asked	Input	Expected behaviour	Actual behaviour
Main menu (ask what menu choice that wants to be run)	6	Do not accept input and print out an error, continue to allow input	Shows “Out of range!” then continues to allow input for main menu choice
Main menu (ask what menu choice that wants to be run)	-1	Do not accept input and print out an error, continue to allow input	Shows “Out of range!” then continues to allow input for main menu choice

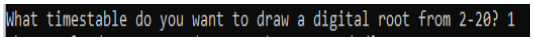
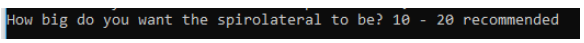
Menu choice 2 “Add a new spirolateral to the list” Boundary testing

Question Asked	Input	Expected behaviour	Actual behaviour
What name do you want for the spirolateral?	this is a really long sentence this is a really long sentence	Possibly crash the program or give some sort of error	Accepts the input and adds to the list. 
What name do you want for the spirolateral?	/favourite-spiro\	Possibly crash as /\ might interfere with the python interpretor.	Accepted the input and added to the list. 
What times table do you want from 2-20?	21	Out of range error as the numbers accepted are from (2 - 20)	Out of range error. 
What times table do you want from 2-20?	1	Out of range error as the numbers accepted are from (2 - 20)	Out of range error. 

Menu choice 4 “delete a spirolateral from the list” Boundary testing (a spirolateral called “/favourite-spiro\” with the number 6 being digital rooted has been added)

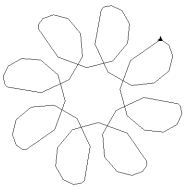
Question Asked	Input	Expected behaviour	Actual behaviour
What spirolateral from the favourites list do you want to delete?	2	An error as there is no item in the list that is associated with the input “2”	Out of range!, error. 
What spirolateral from the favourites list do you want to delete?	-1	An error as there is no item in the list that is associated with the input “-1”	Out of range!, error. 
What spirolateral from the favourites list do you want to delete?	0	An error as there is no item in the list that is associated with the input “0” (input - 1)	Out of range!, error. 
What spirolateral from the favourites list do you want to delete?	one	An error as one is not an integer.	Not a valid integer error. 
What spirolateral from the favourites list do you want to delete?	“spa ce”	An error as one is not an integer.	Not a valid integer error. 

Menu choice 3 “Draw a spirolateral from number”

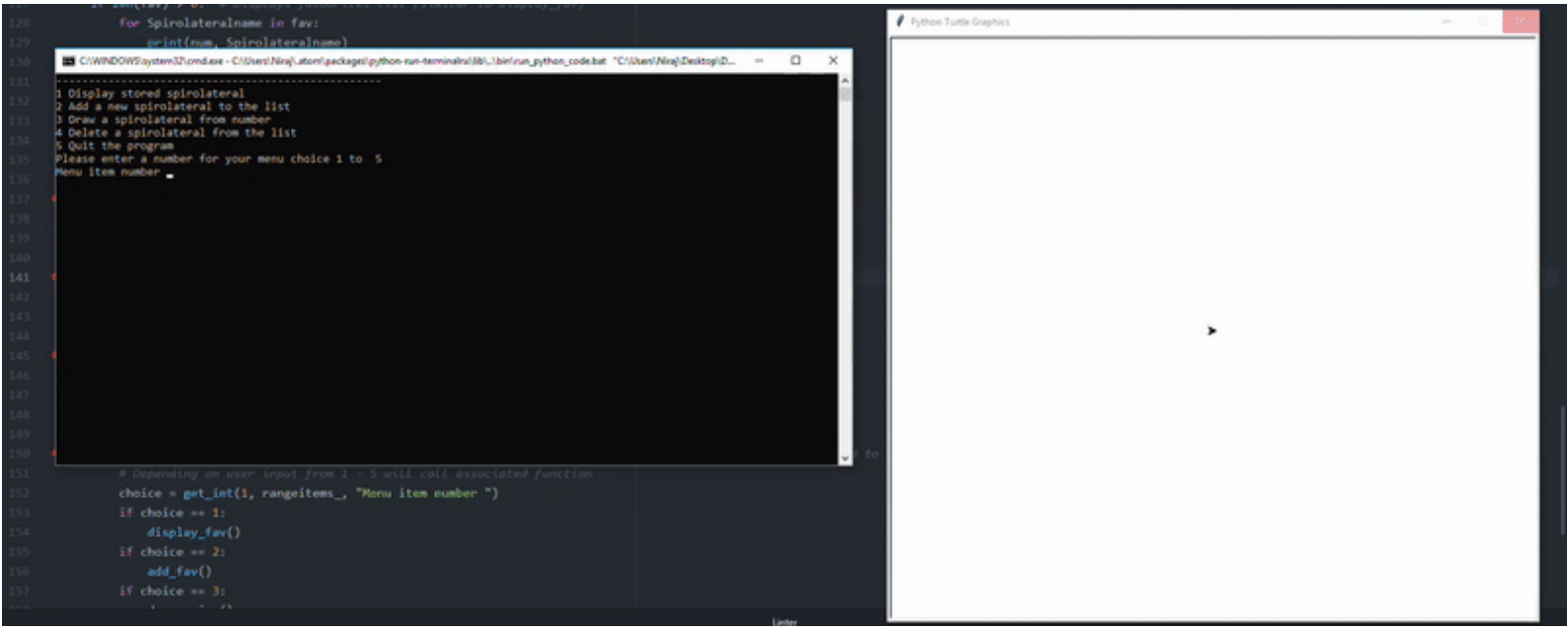
Question asked	Input	Expected outcome	Actual outcome
What timetable do you want to draw a digital root from 2-20?	1	Reject input as its outside the 1- 20 requirement	Accepts the input and continues to ask next prompt. 
What angle do you want (30 - 120) recommended?	-35	Accept the input as negative degrees can still work	Accept the input and continues to ask next question
How fast do you want to draw the spirolateral, Slow to fast : 1 - 10	11	Accept and go faster than 10 as 10 is more of a recommended speed limit although can go all the way up to 100 in speed.	Accept the input and continues to ask next question
	8	Accept as 10 - 20 is still a recommended limit	Accept the input and continues to ask next question
Do you want to print the digital root as the spirolateral is being drawn? yes or no?	ye	Reject as the program only knows these terms ('yes', 'y', 'yea',	Accept the input and continues to draw spirolateral although without printing as it draws, this is because anything other

		'sure', 'ok')	than ('yes', 'y', 'yea', 'sure', 'ok') are understood as “no”

We see a “spirolateral” drawn although this is not a proper spirolateral as the picture is just 1+1 being constantly drawn, although the program seems to finish this incorrect drawing and stop the drawing as well, then continue with the main menu screen.



Python program basic walkthrough showing all functions working correctly, aswell as a spirolateral being drawn with the timetable 2 and the angle 90 :



Spirolateral that is shown in the assessment resource: