General Instructions

Make sure that you read and then follow the instructions for each task carefully.

Please make sure that you save all of your work to a safe place and that you make **regular back-ups**.

You should begin all tasks with the following steps unless otherwise stated:

- Create a new Python file with the *Project Name* specified in the file.
- It is suggested that you save the file with your completed code (and/or any other files specified) in a folder named for the tutorial week (*week01, week02,* etc.), which should itself be in a root folder called *sdam*. However, you can use whatever method you wish to organise your work – just make sure that each file can be located quickly and efficiently based on the week number and the project name.

If you are in any doubt, please check with your tutor.

Alphabetical
Project Name: alphabetical

Beginner

Write a program to prompt the user to enter 5 strings which you will store in a list. The program should then sort the input into alphabetical order and then output it.

Write the code necessary to prompt the user for the required data and output the sorted data.

Run the program and input appropriate data taking a screen shot of your output. Call your screenshot *alphabetical.jpg*.

Portfolio

The task contribution to your portfolio is:

- The Python source code file for the task
- *alphabetical.jpg* showing output from *alphabetical.py* when tested.

Shopping List
Project Name: shop_list

Beginner

Write a program to prompt the user to enter 5 items and their prices. The program should then sort the input from highest to lowest price and output the sorted data showing the item and the price.

For example if the user enters:

```
Butter 1.70
Coffee 4.99
Milk 0.45
Kitchen Towel 1.75
Washing powder 6.20
```

The output would be:

```
Washing powder 6.20
Coffee 4.99
Kitchen Towel 1.75
Butter 1.70
Milk 0.45
```

Write the code necessary to prompt the user for the required data, and output the sorted data.

Run the program and input appropriate data taking a screen shot of your output. Call your screenshot *shop_list.jpg*.

Portfolio

The task contribution to your portfolio is:

- The Python source code file for the task
- *shop_list.jpg* showing output from *shop_list.py* when tested.

Tally Ho
Project Name: tally_chart

Intermediate

A program is required to register user votes for a talent contest involving 5 candidates. The user will select the candidate they wish to vote for in order to register their vote.

When all the votes have been cast the program should sort the candidates into order based on the number of votes they have received. The result will then be output to the screen.

Your program should display the list of candidates and prompt the user to vote for a candidate. The program should continue prompting for a vote until -1 is entered.

After each vote is cast your program should redisplay the candidate list.

Write, run and test your program with each candidate receiving at least 1 vote and a clear winner being produced. Take a screen shot of your tested output called *tally_chart.jpg*.

Portfolio

The task contribution to your portfolio is:

- The Python source code file for the task
- *tally_chart.jpg* showing output from *tally_chart.py* when tested.

Insertion sort
Project Name: insertion_sort

Intermediate

The insertion sort algorithm to sort array values into ascending order is:

```
for i = 1 to array length –1 do
      value = array[i]
      j = i - 1
      while j >= 0 and array[j] > value do
            array[j+1] = array[j]
            j = j - 1
      end while
      array[j+1] = value
end for
```

Write a program that takes 5 integer values from the user. Implement the insertion sort algorithm in Python so that it sorts the array into descending order. Output the sorted values.

Write, run and test your program with appropriate values. Take a screen shot of your tested output called *insertion_sort.jpg*.

Portfolio

The task contribution to your portfolio is:

- The Python source code file for the task

- *insertion_sort.jpg* showing output from *insertion_sort.py* when tested.

All portfolio requirements for this tutorial	
Beginner	*alphabetical.jpg*
	alphabetical.py
	shop_list.jpg
	shop_list.py
Intermediate (opt)	*tally_chart.jpg*
	tally_chart.py
	insertion_sort.jpg
	insertion_sort.py