Practical 6. Working with Numbers

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In this practical, you will write python code for two problems. You can ask the instructors for help. You may also need to look for online references to complete this assignment, which is good practice on how to ask right questions. Please don't be shy about asking questions and remember you can post anonymously on the IBI1 discussion boards if you wish.

You are expected to use your GitHub account from previous weeks to store your code and to submit your in-course assessment.

The deadline for the formative assessment of your portfolio is this Friday (24 March) at 12:00. All you need to submit for this assessment is the username for your GitHub repo. The marker will look up your repository directly to look at your work. If you are still having difficulties pushing your work from these practicals please ask an instructor in the practical session or post on the discussion boards **before** the deadline.

Although the mark you receive in this formative assessment does not count towards your final grade, it is still important that you submit your username for this assessment. You will receive helpful feedback to help you improve your code in the remainder of the course. There are also marks in the final assessment for how you respond to the feedback at this formative stage.

1 Learning objectives

- Practice python coding with numbers
- Learn to program with the help of online references

2 Favourite movie genres among Chinese university students

- A recent survey (https://www.statista.com/statistics/1284497/china-popular-movie-genres-among-university-students/) has reported the favourite movie genre of university students in China (Full confession: these numbers were reported as percentages but to make this practical more straightforward we are going to assume that they are number of students who reported preferring each genre).
- The results are show below:

Movie genre	No. students for which this genre is their favourite
Comedy	73
Action	42
Romance	38
Fantasy	28
Science-fiction	22
Horror	19
Crime	18
Documentary	12
History	8
War	7

- In this practical, you should create and print a dictionary in Python to record these data and construct a pie chart from the data.
- Tip: Try the `pyplot` function in `matplotlib`.
- For a given movie genre from the input list above, print the number of students for which this genre is their favourite. Rather than ask the user for an input, you are allowed to create a variable of the requested genre that can be modified – but make sure to highlight where it is in your script using pseudocode.
- Return:

(1) A dictionary in python containing the information in the table above;

(2) A pie chart plot describing the data;

(3) The number of university students who prefer a movie genre taken from the input list.

- You may explore different styles of the plot if you like.

3 Olympic Costs

- The cost of hosting the Summer Olympic Games has increased rapidly over time (https://blogs.sas.com/content/graphicallyspeaking/2012/06/07/bar-chart-with-response-sort/) as shown in the table below

Olympic Games	Cost (in $ billions)
Los Angeles 1984	1
Seoul 1988	8
Barcelona 1992	15
Atlanta 1996	7
Sydney 2000	5
Athens 2003	14
Beijing 2008	43
London 2012	40

- You could also store these costs in a list like this:.

```
costs=[1,8,15,7,5,14,43,40]
```

- Return:

(1) Print a list of sorted values for the cost of hosting the Summer Olympic Games;

(2) A bar plot displaying this sorted distribution of marks;

- Please explore the options for creating a bar plot that you like the look of – don't stick to the default choices!

4 For your portfolio

The markers will look for and assess the following:

Favourite movie genres

- The marker will test that the correct dictionary is printed.
- The marker will verify that the pie chart matches the input data and that the plot produced is appropriately altered when the input data are modified.
- The marker will test that the number of students is printed for a given movie genre.
- The marker will verify that you have used pseudocode to plan and comment your project.

Olympic Costs

- The marker will supply another set of eight Olympic costs and check that your code runs correctly to print the sorted list.
- The marker will verify that the bar plot matches these data.
- The marker will verify that you have used pseudocode to plan and comment your project.

You can add or edit things after the Practical and Tutorials have finished. We do not look at the commit date, we just want it all to be there!