Coursework 3 (worth 40% of your final module grade)

# Introduction

The objective of this coursework is to assess your ability to perform a user evaluation of visualizations. I recommend that you work as a group. A group may comprise a maximum of four people.

# Detailed specification

For this coursework, you must do the following. First, design a laboratory experiment to compare bar charts vs. pie charts for showing the percentage of students who get different degree classifications. You need to choose an experiment task that is relevant to comparing degree classifications, and which participants may answer by pressing keys on a keyboard (e.g., ‘A’ if Bar A is the correct answer). You may use either a within or between participants design.

Second, develop software to run the experiment. The source code must be contained within one file (to facilitate marking). You may use any language and visualization library (e.g., Matplotlib). The software should have the following functionality: present 10 trials for each chart type to a participant, blank the screen for 1 second between trials (i.e., remove one chart before the next is displayed), automatically generate the data for each chart (i.e., combine random number generation with appropriate parameters for your experiment task), and record participants’ answers (correct vs. wrong) and response times. You must document your software to a professional standard, with a header for each function, and comments that make clear where each aspect of the functionality is implemented.

Third, run the experiment with 10 participants. For each trial record, the response time and whether or not the answer was correct.

Fourth, use t-tests to analyse the error and response time results (e.g., with Excel).

Fifth, write-up the experiment in a report.

# Mark breakdown

There are 10 marks for your software and 30 marks for your report. The report should have the following section headings and content:

* Introduction (the experiment aim, design, task and duration) [4 marks]
* Method
  + Participants (the number, informed consent, and no payment) [3 marks]
  + Materials (state the language/libraries used, and describe and illustrate how the software worked) [10 marks]
  + Procedure (describe what each participant did, in terms of the overall procedure and each trial) [4 marks]
* Results (report the statistical analysis, illustrate the results and describe the findings) [6 marks]
* Appendix: Participant information sheet [3 marks]

# Submission procedure & deadline

One person should make the submission on behalf of the group. That person must submit the software and the report, which are separate “assessments” on Minerva. The submission deadline is 10am on Friday 11th Dec 2020. Late submissions will be penalised in accordance with departmental guidelines.

## Software

Submit one text file that contains your source code. The top of the file must contain a header that lists the names of the people in your group, but NOT their student IDs.

## Report

Submit one PDF file that contains: (a) a coursework header sheet that states the names and student IDs of all the group members, and (b) your report.

*Optionally:* Before the header sheet, insert a signed copy of the COMP3736 Information Visualization *Group Work Form* for your group. You only need to do that if the group members did not contribute equally to the coursework.

*Roy Ruddle, October 2020*