Systems Thinking with Technology
Procedural Python Programming

A total of 51 marks.

# 1 Prototype

In this assessment you are to develop an information system application. The information system needs to:

- Display information
- Store information as table of columns (parallel arrays)
- Add records

Either find or manufacture the data (there are companies which actually manufacture data such as medical fictitious medical records as using real data can breach privacy requirements).

**Q1:** Organise a team.
List the team members:

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**Q2:** Manually generate a table of data as a .csv file where the columns contain the properties, and the rows contain the records.

The table data can either be found or created.
The table must include the following:

- Each record is stored as a row in the csv table.
- The first table column must be an integer id column. [1 mark]
- Must contain a minimum of 6 columns. [3 mark]
- Must contain a minimum of 8 rows of data. [4 mark]
- The table of data must be saved as a text file < xxx.csv > [1 mark].
- Require at least two columns have numerical data. [1 mark]

Total: 10 marks

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**Q3:** Using the parallel array pattern, define empty global arrays corresponding to your table's columns. i.e. A single array per column only. [1 mark]

Read your csv data into the program's parallel arrays. [4 marks]

N.B. There will be no marks if the resulting data is NOT in the parallel array form. However, you can use an intermediate process, the data can be in other data structures such as a matrix to get the information (via a library function), and then use that to populate the parallel arrays.

Total: 5 marks

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**Q4:** In the prototype program, after reading in the data into the parallel arrays, print the data in a formatted table.

- The table should have a header. [1 mark]
- Numerical data is right-justified and non-numerical data is left justified is required. [10 marks]

Total: 11 marks

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**Q5:** Demonstrate your prototype. All the working code should be submitted by uploading it before the demonstration. [2 marks]

- Edit the csv by adding another row to the csv file and running it again. [2 mark]

Total: 4 marks

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## 2 Application

You are required to develop a menu driven console application of an information system. The requirements of the console application are to be negotiated with a client (represented by the teacher) Using Python you must create a menu driven console application for your information system. The application needs to:

- Display formatted information (with the prototype formatting)
- Contain a menu driven console
- Be able to store information as a table of columns (parallel arrays)
- Add records
- Be able to use functions. Each menu choice is to be run in its own function.

```
Application Title
1.  Load records
2.  Display
3.  Add record
4.  Delete record
5.  Save records
6.  Exit
```

**Q6:** Main menu interface in functions:

- Implement the menu as a function with loop which iterates until the menu is exited [2 mark]
- Load the records from the csv file in your load function. [1 mark]
- Implement the formatted display in its own function using the formatted display code from your prototype. [1 mark]
- Implement an add record function asking the user for each column of information for the new row. The integer index may be automated. Append the new record as a row to in the parallel arrays structure. [2 marks]
- Implement "Delete record", deleting a record [2 marks]
- Implement "Save records", saving the current state to the csv file. [2 marks]

Total: 10 marks

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**Q7:** Presentation

- Demonstrate you application [2 marks]
- Document each method/function and global variable briefly. (You only require a description and not documentation of the parameters) [4 marks]
- Show Git or similar Git based software to show commits made by all group members.
  Provide screenshots of your commit activity. [5 mark]

Total: 11 marks

## 3 Conditions

No plagiarism. Quote your sources fully. No use of ChatGP or similar AI tools.

In the event that the work is not submitted by the due date, your work that is late will loose 1 mark per day with a 10 mark maximum deduction. The work will be expected to be demonstrated by your team to your instructor. Exceptions for unusual circumstances may be considered. Only one group member needs to submit the work in Canvas.

It is expected that working programs are being submitted. Programs which do not work on the assessor's computer will not be considered. Though, if there is a portability issue, you may be required to modify and resubmit your work.

Missing files in the submission such as not submitting the csv file can lead to loss of marks. Please check your files before submitting (and make sure that they are not empty files).