COMP20200 Unix Programming
Assignment 4

April 8, 2022

Write a bash script that prints the transcript for a B.Sc. in Computer Science.

For a successful B.Sc. degree,

- One must pass four stages, Stage 1, Stage 2, Stage 3, and Stage 4.
- In each stage, one must take all the core modules and zero or more elective modules.
- In addition, one must complete the minimum number of credits to pass a stage. The minimum numbers are 55, 50, 50, and 60 for Stage 1, Stage 2, Stage 3, and Stage 4, respectively.

The transcript will show the results for the four stages. For each stage, the list of modules and the grades obtained is printed. Each line in the list has the format below:

<module code> <module name> <credits> <module grade> <grade point>

For example: the following is a legal transcript printed by your bash script:

```
Module    Title                                Cred  Grade  G.P
-------   -----------------------------------  ----  -----  ---
Stage 1
COMP10030 Algorithmic Problem Solving          5     A      5
COMP10040 Introduction to Computer Architecture 5    B      4
...

Stage 2
COMP20020 Digital Systems                      5     C      3
COMP20070 Databases and Information Systems I  5     D      2
...

Stage 3
COMP30010 Foundations of Computing             5     D      2
```

```
COMP30040 Networks and Internet Systems         5     B      4
...

Stage 4
COMP20020 Digital Systems                       5     A      4
COMP20070 Databases and Information Systems I   5     D      2
...

Total grade point score = 150.
```

where "..." represent other modules taken during the stage.

1 Datasets

The following files are provided to you.

- **stage1.sh.inc** - Contains bash arrays with the module codes, modules names, and credits for stage 1.
- **stage2.sh.inc** - Contains bash arrays with the module codes, modules names, and credits for stage 2.
- **stage3.sh.inc** - Contains bash arrays with the module codes, modules names, and credits for stage 3.
- **stage4.sh.inc** - Contains bash arrays with the module codes, modules names, and credits for stage 4.
- **grades.sh.inc** - Contains bash arrays for the module grades and corresponding grade points.
- **mincredits.sh.inc** - Contains bash arrays for the minimum credits in each stage.

Each file for a stage contains two arrays, an array containing the core modules and an array containing the elective modules.

You must include all the files in your bash script as follows so that the bash arrays are available for you to use:

```
source ./stage1.sh.inc
source ./stage2.sh.inc
source ./stage3.sh.inc
source ./stage4.sh.inc
source ./grades.sh.inc
source ./mincredits.sh.inc
```

2 Implementation Requirements

- The script must display the following if no arguments are provided or "–help" is supplied as the argument.

```
$ ./bsctranscript.sh
Correct usage: bsctranscript.sh <I|NI>
I for internship in stage 3
NI for no internship in stage 3

$ ./bsctranscript.sh --help
Correct usage: bsctranscript.sh <I|NI>
I for internship in stage 3
NI for no internship in stage 3
```

- The script takes one argument. The value of the argument is I or NI. If I is specified, then "Industry internship" must be taken in Stage 3. If NI is specified, then the student has other options to fulfill the minimum credits.
- If invalid arguments or invalid number of arguments are given, you must print a message specifying how to use to your script and exit.
- At the beginning of your script, you must have concise comments documenting the design and structure of your script.
- The electives for each stage can be selected randomly and it is left to you how you pick electives to fulfill the minimum credit requirement.
- The grade for each module can also be selected randomly and it is left to you how you pick a grade for a module. There are five available grades with integer grade points.
- You can do pretty printing of your transcript. But this is not mandatory.