Assignment 1 (Individual) – 10%

Question

You are invited to develop a simple Java console based program for Sunway University Centre for American Programme to keep track and print report for their students' results. The following information are required, i.e. Student Id, Student name, course name, full time/part time, fees structure (only for part time student), year of study, subjects name and the subject result.

Identify the required classes and appropriate relationships (inheritance, aggregation or composition) between the classes. Implement all the classes.

The main program will display a menu with 4 options as shown below:

```
Main Menu

  1. Add new student record
  2. Delete student record
  3. List all students' records
  4. Exit

 Enter your choice [1..4]
```

Figure A

During the menu option "Add new student record", user will be asked to enter all the necessary data. Given that,

- there are only 10 subjects being offer during the semester, i.e.
  - Programming 1
  - Programming 2
  - General Chemistry 1
  - General Chemistry 2
  - Basic Principle in Accounting
  - Introduction to Journalism
  - Calculus I
  - Calculus 2
  - Research Methods
  - Advertising
- A full time student is only allowed to register up to 3 subjects, whereas a part time student is only allowed to register up to 2 subjects.
- You may display the subjects for the user to choose.
- Store all the input values into a fixed size array.

During the menu option "Delete student record", user will be asked to enter student id. Your program will perform a search to the array. If the record found, program will display existing data. User will be asked to re-confirm on their deletion. Record will be deleted after user has confirmed. The program will display error message if the record cannot be found.

During the menu option "list all students' records", the program will produce a listing containing the full details of the students. A sample listing is shown below:

Student Result Listing

Id	Name	Course FT/ PT	Fees	Year	Subjects	Result
1001	John Wayne	Computer Science (Full Time)	-	2	Programming 1 General Chemistry 1 Basic Principle in Accounting	A B+ A
1002	Bea Arthur	Computer Science (Full Time)	-	1	Introduction to Journalism Calculus I General Chemistry 1	B B+ B

1003	Meg Ryan	Computer Engineering (Full Time)	-	3	Research Methods Advertising	B+ A
1004	Jane Doe	Software Engineering (Part Time)	Per subject	2	Programming 2	A
1005	Al Johnson	Computer Science (Full Time)	-	2	Introduction to Journalism General Chemistry 2	B B
1006	Ned Beatty	Software Engineering (Part Time)	Per semester	1	General Chemistry 1 Calculus I	A A
1007	Karen Winter	Software Engineering (Part Time)	Per subject	1	General Chemistry 1	A
1008	Pearls William	Computer Engineering (Full Time)	-	2	Programming 1 General Chemistry 1 Basic Principle in Accounting	B A B+
1010	Amy Harrod	Computer Science (Full Time)	-	3	Calculus 2 Research Methods Advertising	A B+ B
1012	Allen Budden	Computer Science (Full Time)	-	3	Research Methods Advertising	B A

Your program will continue ask user to enter a menu option until option 4 (Exit) is entered.

Additional information:

- For each object (entity) classes, you need to implement the following:
  - Relevant instance variable(s)
  - A parameterized constructor to initialize all the instance variables.
  - Overloading constructor (if necessary)
  - `A toString` method to return all the data fields' values as a string.
- Automate the registration number.
- input validations ONLY required for Course name, year of study, no of registered subjects and Result (A, B+, B, C+, C, D & F)
- In your driver program,
  - create an array of student objects with minimum size of 10.
  - All the menu options must be implemented in a method respective, except menu option 4.

Submission Guideline:

Please submit your assignment in the following order:

a) Cover Page
b) Rubrics
c) Class Diagram
d) Your printed code
e) Screen shot for the application

Important Date:

Hardcopy submission**: 15th March 2018, 2pm**
Softcopy submission: **15th March 2018, 2pm**
Late Submission: Late submission within the week will be capped at 40% of the marks. Any later submission will be awarded 0%.