Assignment 1

Deadline:	Monday, 31 March, 11pm
Evaluation:	40 marks (20% of your final grade)
Late Submission*:*	Deduct 4 marks per day late
Individual Work	You must complete this assignment by yourself - you must NOT share your code with others or use others' code including the code generated by Artificial Intelligence platforms such as ChatGPT – For details, refer to the document ***AI Usage***. You must also complete the ***Generative AI Use Statement*** and submit it with this assignment.
Purpose:	Reinforce Java language basics, Arrays, classes, objects, and objects working together

1. **System description (overview of problem):**
   You are asked to write a program in Java to simulate a **University Paper Offering System**

   The School of Mathematical and Computational Sciences (SMCS) provides several Information Science-related majors to undergraduate students. These majors are: Computer Science (CS), Information Technology (IT), Information Systems (IS), Software Engineering (SE), and Data Science (DS).

   Each paper offered belongs to one or more majors and has a paper number (such as 159234) and a name. Each paper may include up to three assessment types (tests, assignments, exam), and each assessment type carries a particular weighting. Each paper is offered in all three of the following modes: internal Auckland, internal Palmerston North (PN), and distance. Each mode must be delivered by one lecturer.

   Each lecturer is located at one of two campuses (Auckland or PN). A lecturer can only deliver an internal offering if it is located on his/her campus – but can deliver any distance offering. Each lecturer may deliver a minimum of zero offerings and a maximum of four offerings. Each lecturer's biographical details (first name, last name, ID number, and campus) must be recorded.

2. **Sample class diagram:**
   A simplified class diagram based on the above system description is provided below to help you get started with your assignment. It includes the names of the potential classes and their associations. To complete your program design, you will need to identify the attributes and methods for each class. Please also note that this is just a sample class diagram but not the only correct solution. Feel free to add classes that you deem appropriate.
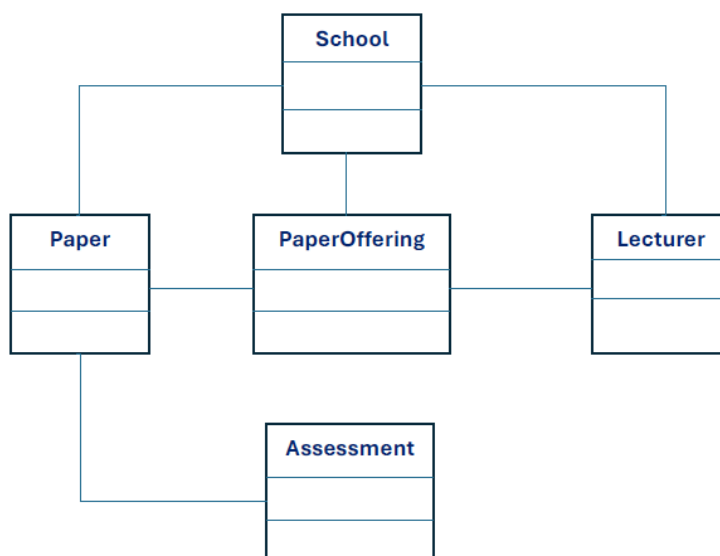
3. Programming tasks to complete by your java code:

1) Add to your system test data regarding papers and lecturers (use the test data provided on page 3 of this document).

2) Add yourself to the system as a lecturer. You MUST record your real name and your real Student ID number. You can choose either Auckland or PN as your campus.

3) Randomly assign lecturers to every paper offering based on the rules specified in the system description above (using Java library java.util.Random or Math.random()).

4) When your program runs, it should display the following output in the same order as below, from Task 1 to Task 8:

> *Task 1:* Full name of school
>
> *Task 2:* All papers' details (including paper number, name, and majors it belongs to)
>
> *Task 3:* All papers belong to your real major at Massey (such as 'CS')
>
> *Task 4:* All papers that have an exam
>
> *Task 5:* All papers whose assignments weigh more than 50% in total
>
> *Task 6:* All paper offerings including paper number, offering mode, and lecturer
>
> *Task 7:* The paper offerings that you teach
>
> *Task 8:* The lecturer's name of your campus (Auckland or PN) offering 159234

4. Design and Implementation Guideline

Note: You will receive credit for correctness, completeness, no code duplication, clear on-screen output display. Also, the following **OOP and general software design concepts** will be checked while marking your program:

1) Include appropriate classes and associations among them.

2) Use appropriate data fields, constructor(s), and methods for each class.

3) Use appropriate access modifiers (private or public) for encapsulation.

4) Use getters and/or setters wherever appropriate.

5) Use Array of objects (or Java collection if you already know how) to store information.

5. Other Specifications

You **must** follow the next five specifications when completing this assignment:

1) Create the method *displayInfo* as shown below to provide appropriate information.
The content of *displayInfo* should be the first thing that displays on screen.

```java
private static void displayInfo() {
    System.out.println("*************************************");
    System.out.println("Assignment 1, 159.234 Semester 1 2025");
    System.out.println("Submitted by: Mickey Mouse, ID: 12345678");
    System.out.println("My Major at Massey: Computer Science");
    System.out.println("*************************************");
    System.out.println();
}
```

Replace these values with your real name, student ID, and major.

2) Place appropriate comments in your program – e.g.:
```
/** explain what the program file is doing . . . */
// explain what a part/method of the program is doing...
```

3) **DO NOT** hard-code any output for tasks 1 – 8 (You won't get any credit if you use hard-coded output, like in the *displayInfo* method above.)

4) **DO NOT** add any package name (for example 'package Assignment1;') to the beginning of your .java file (for marking purpose)

5) **DO NOT** use any function to clean the screen at any stage of a program

6. Submission Requirement:
- Zip all your **.java files (source codes)** together and submit as a single file to Stream (**Do NOT** submit the whole project)
- Submit '**generative AI use statement**' as a separate document

7. Test data for your assignment:

1) Papers and their details (You MUST use the test data regarding papers provided in the table below):

Number	Name	Belongs to the following major(s)	Assignments	Tests	Exam
158100	Information Technology Principles	IT, IS	70%	30%	
158120	Web-based IT Fundamentals	IT, IS	60%	40%	
159101	Applied Programming	IT, IS, CS, DS, SE	50%	50%	
159201	Algorithms and Data Structures	CS, DS, SE, IS	40%	20%	40%
159234	Object-Oriented Programming	CS, SE	50%	10%	40%
158337	Database Development	IT, SE, DS	60%		40%
158345	Professionalism in the Information Sciences	IT, IS, CS, DS, SE	100%		

2) Lecturers and their details (Feel free to change the following IDs, First Names, and Last Names):

ID	First Name	Last Name	Campus
1105236	Amy	Sheffield	PN
1235894	Victoria	Jensen	PN
7225669	James	Lee	PN
1328991	Colin	Delmont	PN
1562347	Thomas	Becker	Auckland
5664789	Steven	Hobbs	Auckland
3658947	Andrew	Jackson	Auckland
6332698	Jonathon	Wood	Auckland
Your student ID	Your first name	Your last name	Your campus

3) Example output:

```
**********************************
Assignment 1, 159.234 Semester 1 2025
Submitted by: Mickey Mouse, ID: 12345678
My Major at Massey: Computer Science
**********************************

------------- Task 1 ---------------------
School Full Name: School of Mathematical and Computational Sciences

------------- Task 2 ---------------------
All papers details:
158100  Information Technology Principles (IT IS )
158120  Web-based IT Fundamentals (IT IS )
159101  Applied Programming (IT IS CS DS SE )
159201  Algorithms and Data Structures (CS DS SE IS )
159234  Object-Oriented Programming (CS SE )
158337  Database Development (IT SE DS )
158345  Professionalism in the Information Sciences (IT IS CS DS SE )

------------- Task 3 ---------------------
Papers that belong to Major CS:
Paper -  159101 Applied Programming
Paper -  159201 Algorithms and Data Structures
Paper -  159234 Object-Oriented Programming
Paper -  158345 Professionalism in the Information Sciences
Total matching papers in specified Major - CS :4

------------- Task 4 ---------------------
Papers that have exam:
Paper -  159201 Algorithms and Data Structures
Paper -  159234 Object-Oriented Programming
Paper -  158337 Database Development
Total number of papers that have exam: 3
```

```
-------------- Task 5 ----------------------
Papers that their assignments weigh higher than 50.0%:
Paper -  158100 Information Technology Principles
Paper -  158120 Web-based IT Fundamentals
Paper -  158337 Database Development
Paper -  158345 Professionalism in the Information Sciences
Total number of papers that have assignments weighted more than 50%: 4

-------------- Task 6 ----------------------
Paper offering details:
158100  Distance    Mickey Mouse
158100  Auckland    Andrew Jackson
158100  PN          James Lee
158120  Distance    Mickey Mouse
158120  Auckland    Steven Hobbs
158120  PN          Colin Delmont
159101  Distance    Steven Hobbs
159101  Auckland    Andrew Jackson
159101  PN          Victoria Jensen
159201  Distance    Victoria Jensen
159201  Auckland    Mickey Mouse
159201  PN          Victoria Jensen
159234  Distance    Andrew Jackson
159234  Auckland    Steven Hobbs
159234  PN          Amy Sheffield
158337  Distance    Steven Hobbs
158337  Auckland    Mickey Mouse
158337  PN          Amy Sheffield
158345  Distance    Amy Sheffield
158345  Auckland    Andrew Jackson
158345  PN          Victoria Jensen

-------------- Task 7 ----------------------
The paper offerings that I teach:
Paper Offering -  158100    Distance    Lecturer: Mickey Mouse
Paper Offering -  158120    Distance    Lecturer: Mickey Mouse
Paper Offering -  159201    Auckland    Lecturer: Mickey Mouse
Paper Offering -  158337    Auckland    Lecturer: Mickey Mouse
I am teaching 4 paper(s)

-------------- Task 8 ----------------------
The lecturer of Auckland offering of 159234:
Lecturer's Name: Steven Hobbs
This lecturer is teaching 4 paper(s)
```

The outputs for tasks 6, 7 and 8 could be different with each run, as the lecturers are randomly assigned to each offering in the code.