

From your previous assignment 1 in SU1, you created your example applying OOP. Congratulations! You managed to achieve the first part of your task. As an aspiring young Computer Scientist, you will often come across Data Structures and Algorithms in your academics and career, and in most cases be told to think outside the box. Let's put that to the test and see how well we can think! Shall We!!!

You will use **Assignment 1** to work on this assignment. It is mandatory to use the same java files you submitted for **Assignment 1**. However, for this Assignment, you will extend **Assignment 1** based on the following:

From **Assignment 1** you created one superclass and two subclasses, for **Assignment 2**, you will use the same superclass and subclasses. Note that all classes must have variables, constructors, accessors, mutators, toString and abstract methods. Your example must have a test program that use the created classes and demonstrates polymorphism and inheritance, as well as the implicit and explicit calling of the toString method. The program will randomly create instances of these subclasses, store them in an array, and then sort the array. In addition, the program should compute and output the time complexity using all three time complexity analysis approaches studied in SU2: Detailed method(tau-notation), Simplified Method, and Asymptotic Analysis (Big Oh Notation). The time complexity output should be for all classes

#### **Important rules for all assignments**

- **Only work submitted on e-fundi will be marked**
- **No work may be submitted on any other platform other than e-fundi.**
- **Only working code will be marked.**
- **Code will be checked for plagiarism.**

**Remember this is not a group assignment. Enjoy!!!**