Practical 2: Software Engineering

Simple variable usage, reading form console and output formatting

**Introduction**

This lab is going to concentrate on the following:

1. Variable declaration, assignment and usage
2. Reading in data from the console
3. Rounding to appropriate number of decimal places
4. Console output formatting
5. Using java libraries, e.g. java.lang.Math

This practical is going to concentrate in demonstrating the above by developing solutions for given questions. The first question will be walked through by me, the next few questions are for you to try by yourself.

**Problem 1:**

Write a java program that asks the user (student) to enter the following:

* TNumber
* Name
* Age
* Average Grade
* Gender (M or F)

Each detail entered should be stored in an appropriate variable. The average grade should be rounded to two decimal places. Once the details have been stored in variables, the program should display exactly the following output:

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Student Details

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TNumber: T00012345

Name: Billy Stack

Age: 30

Average Grade: 88.92

Gender: M

**Problem 2:**

Write a java program that asks the student to enter the following:

* The length of the opposite side of the triangle (O)
* The length of the adjacent side of the triangle (A)

Whatever value is entered, you must round each value to 3 decimal places and store the values in appropriate variables.

You must then calculate the length of the hypotenuse (H), using pythagoras’ theorem:

O2 + A2 = H2

Output the result to 3 decimal places.

**Problem 3:**

Write a java program that calculates the volume of a cylinder. The user will be asked to enter the following:

* The length of the diameter of the cylinder
* The length of the height of the cylinder

You must then calculate the volume of the cylinder. The formula for calculating the volume of the cylinder is:

PI\*R2H

Note that PI is a constant that can be obtained from the Math class, R is the radius (half the diameter) and H is the height

O2 + A2 = H2

Output the cylinder volume to 2 decimal places.