**Java programming**

**Exercise 1 of 16**

**Instructions:**

All programs should be written, and linked to an online repository like GitHub.

A video to get you started with GitHub has been posted on Moodle.

After completing your assignment, post the link on the link on Moodle. An instructor will follow the posted link to access and grade your work.

Note that: Your program should always be well-commented. At the top of your source code file, you should write a short description of what your program does and add other comments to help in explaining your code.

All of your variables should be given a deceptive name. Avoid giving your variables names like a, b, I, x, y etc.

In case you copy your friend's work, you both get a Zero (0).

**Section 1:**

1. Explain the differences between primitive and reference data types.
2. Define the scope of a variable (hint: local and global variable)
3. Why is initialization of variables required.
4. Differentiate between static, instance and local variables.
5. Differentiate between widening and narrowing casting in java.
6. the following table shows data type, its size, default value and the range. Filling in the missing values.

|  |  |  |  |
| --- | --- | --- | --- |
| **TYPE** | **SIZE (IN BYTES)** | **DEFAULT** | **RANGE** |
| boolean | 1 bit |  | true, false |
| Char | 2 |  | ‘\0000’ to ‘\ffff’ |
| Byte |  | 0 |  |
| Short |  | 0 | -215 to +215-1 |
| Int | 4 |  |  |
| Long |  | 0L | - |
| Float | 4 | 00.0f |  |
| Double | 8 |  | -1.8E+308 to +1.8E+308 |

1. Define class as used in OOP
2. Explain the importance of classes in Java programming.

Section 2:

1. Write a Java program that asks the user to enter their sur name and current age then print the number of characters of their sir name and even or odd depending on their age number.

Example of Expected result:

If sir name is Saruni and age is 29, output will be;

then the number of characters is 6.

Your current age is an odd number

1. Write Java program to ask student to enter the marks of the five units they did last semester, compute the average and display it on the screen. (Average should be given in two decimal places).
2. Write a program that will help kids learn divisibly test of numbers of integers. The program should check whether the given integer is divisible by integers in the range of 0-9. For example, if a number (955) is divisible by five, the program should print, the number is divisible by 5 because it ends with a 5, and 900 is divisible by 5 because it ends with a 0(zero).
3. Write a Java program to display all the multiples of 2, 3 and 7 within the range 71 to 150.
4. Create a calculator using java to help user perform the basic operations (+, -, \* and /).
   1. User should be asked to enter a number, then an operation, the program computes the operation and display the output to the computer screen.