SLIIT Discover Your Future

BSc (Hons) in Information Technology
Year 2

Lab Exercise 6

IT2030 – Object Oriented Programming — Semester 1, 2020

Objectives:

- Write Programs that make uses abstract classes, interfaces and Exception Handling

Exercise 1 (*From 2018 Final Paper*)

a) Implement an **interface** called `IPrint` it should contain the following methods

```
void printLine();
void printDetails;
```

Marks 2

b) Implement an **abstract class** called `Item` that implements the `IPrint` interface. In addition, the `Item` class should do the following.

i) It should store the following **properties**
`itemNo, name, unitPrice, qty`
ii) The `printLine()` **method** should display the properties in one line.
iii) The `printDetails()` **method** should display the properties in multiple lines (one line for each property)
iv) Implement a **constructor** to get the four properties as parameters and initialize them.

Marks 5

c) Implement a **sub class** called `Tablet` that **extends** the `Item` abstract class.

i) Add the following **properties**
`brand, model, camera`
ii) Implement a **constructor** to get all the seven properties of this class as parameters and initialize them.
iii) **Override** the `printLine()` and `printDetails()` **methods** to display details of all the properties.

Marks 4

d) Implement a **sub class** called `Vegetables` that **extends** the `Item` abstract class.

i) Add the following properties
`organic, calories` (organic – true/false, calories – integer (per 100 grams)
ii) Implement a **constructor** to get all the six properties of this class as parameters and initialize them.
iii) Override the `printLine()` and `printDetails()` **methods** to display details of all the properties.

Marks 4

e) Implement a class called `MainApp` that contains the `main()` function.

i) Create two `Tablet` type objects.
ii) Create two `Vegetables` type objects.
iii) Create `IPrint` type of array of four elements and store these four objects in it and using a for loop display all items using the `printLine()` method.

Marks 5

Exercise 2 (From Lab 5)

We will write a program that will allow us to enter a given number of marks and calculate the average. We will use a try catch block in the code. The code is at https://goo.gl/i6F3Pq

Complete the comments given in the code. See the following links for specific expceptions that you can use.

https://docs.oracle.com/javase/8/docs/api/java/util/InputMismatchException.html
https://docs.oracle.com/javase/8/docs/api/java/lang/ArithmeticException.html
https://docs.oracle.com/javase/8/docs/api/java/lang/ArrayIndexOutOfBoundsException.html

```
// Lab Sheet on Try Catch Blocks

class Main {
  public static void main(String[] args) {

     int maxSubjects;
     int [] marks = new int[5];
```

```
    int total;
    double avg;

    try {
    // 1. Input a value for maxSubjects
    //    from keyboard
    // 2. Using a for loop
    //    input marks
    // 3. Calculate the avg marks
    // 4. Use a try catch block to
    //    prevent the following
    //    run time errors
    //   (a) Input valid integers to the
    //         inputs
    //   (b) ArithmeticException division
    //        by zero
    //   (c) ArrayIndexOutOfBounds
    //         Exception

    } catch (Exception e) {

    }

    finally {
      System.out.println("This code will be gurrentied to run");
    }

    System.out.println("The end");

  }
}
```