Singapore Polytechnic

School of Electrical & Electronic Engineering

ET0736 Object Oriented Programming & Data Structure

2024/2025 Semester 1 Lab Test 1 Sample

TOTAL MARKS

/100

Duration: 75 min

1. Apply proper exception handlings to the program below. [20 marks]

```
    public static void main(String[] args) {
       Object x= new Object();
       Integer y= (Integer) x;
    }
```

Provide the correct answer in the empty box.

```
  public static void main(String[] args) {

    // provide your answers here

















   }
```

2. Debug the program shown below. Do not change the interface. Based on the error hints provided by the IDE, edit the class LandTransport and LRT. (Class LandTransport inherits from class Transportation and class LRT inherits from LandTransport.) [30 marks]

```java
interface Transportation {
  public void Move();
}

class LandTransport extends Transportation {
    double speed;

    LandTransport(double speed) {
        speed = speed;
    }

    void Move() {
        System.out.println("Moving on land");
    }
}

class LRT extends LandTransport {
    public void Move() {
      System.out.println("Moving on rail tracks");
    }
}
```

Provide the correct answer for class LandTransport and LRT.

3. Write a console Java program to keep simulate the process of generating results for 4D:

- Create a class called ***Draw***: [50 marks]
  - With attributes of ***int count*** (number of 4D numbers for the draw) and an ***ArrayList of Strings*** to store the results (each element is a String for 4-digit).
  - 1st constructor accepts ***no argument.*** By default, ***count*** is set to 10.
  - 2nd constructor accepts ***int count*** to set the count value
  - A method called ***getSingle4D()*** to randomly generate a single String of 4-digit
  - A method called ***generate4DList()*** to populate the ArrayList with the required number of 4D Strings randomly, by calling the ***getSingle4D()***.
  - A method called ***displayList()*** to display the content of the ArrayList

- Assuming that the user will always enter the correct data types. Write the ***main***() to:
  - Prompt user for the number of 4D numbers for a draw
  - Create a ***Draw*** object with the number entered
  - Call the ***generateList()*** method to generate the results of the draw
  - Call the ***displayList()*** to display the results of the draw [The first 3 elements in the ArrayList are the 1st, 2nd and 3rd prize respectively. Subsequent prizes to be displayed in rows of 5 (except the last row which can be shorter).

[Sample output]
[***Bold italic underline*** entered by user]

```
Enter number of 4D for this draw: 15
1st: 0986
2nd: 3737
3rd: 4011

Others:
9023  7752   8351  0992  0605
1519  3104  8142  0789  6477
4788  8990
```