

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
ROORKEE – 247 667

(Autumn Semester 2018 – 19)

Fundamentals of Object Oriented Programming (CSN 103)

Assignment 9

- Q1. Explain different categories of exceptions. Draw a diagram to show Java Exception classes hierarchy of main subclasses.
- Q2. Write an interactive program to compute the square root of a number. The input values must be tested for validity. If it is negative, the user defined method `MySqrt()` should raise the exception.

- Q4. WAP to find the rate of change of slope between ordered pairs of 2D co-ordinates. Declare a class with appropriate instance variable and methods to find the rate of change of slope $= (y_2 - y_1) / (x_2 - x_1)$ [e.g. (2,3) and (5,4) is one set of ordered pairs then rate of change of slope $= (4-3)/(5-2) = 1/3 = 0.33$ and second set of ordered pair is (2,3) and (4,4) then rate of change of slope $= (4-3)/(4-2) = 1/2 = 0.5$. 1st set of ordered pair is having less rate of change.

User defined exception handling required to take care for avoiding (i) rate of change of slope as infinity (ii) rate of change of slope as negative

- Q4. WAP to create your own exceptions by creating your own Exception class called `NeedMorepoints` by extending the Exception class. This is required in the following problem.

A mobile game for motor bike race has already been designed for scoring and purchasing the gadgets based on the points scored and rupees earned. Based on the points scored in each consecutive game played, the player gets rewarded in Rupees, which increases/decrease and maintains a balance till the user desired to play as per the following criteria

- (i) 1st game, points scored 2000-2500, rewarded Rs. 200
- (ii) 2nd game, points earned 2000-2500, rewarded Rs. 400
- (iii) 3rd game, points earned 2000-2500, deducted Rs. 300; points earned 3000-5000, rewarded Rs. 600
- (iv) Player can buy gadgets to safe guard any crash during the game (a) Helmet for Rs. 500 to recover from single crash (b) Rs. 800 to recover from two crashes

Now depending on your rewarded amount and purchase of each gadget, exception handling should be implemented in order to prompt you for "rewarded amount is less

than the purchase value of gadget, required to play another game with a minimum score in order to make the desired purchase".