LONDON METROPOLITAN UNIVERSITY

1ˢᵗ SIT EXAM QUESTION PAPER: **Year Long 2021**

Module Code:	**CS4001NP**
Module Title:	**Programming**
Module Leader:	**Sushil Paudel**

Date:	**12 September 2021**
Day / Evening:	**Day**
Start Time:	**9 AM**
Duration:	**12 HOURS**

Test Type:	*SEEN EXAM*
Materials permitted:	
Warning:	Candidates are warned that possession of unauthorised materials in a test is a serious assessment offence.

Instructions to candidates:	**Please Note:** Inclusive of this cover page, this test paper consists of 4 pages **and 6 Questions.** The student must complete all Questions. A Report in PDF format containing the solution codes and a zipped file containing the BlueJ codes This exam accounts for 40**%** of your total module marks.

Attempt all the questions. For each question marks are included within square brackets.

1.   In a scenario of electricity bill, each customer has to pay a minimum amount of Rs.100 and 10 units are free of cost. After 10 units customer is charged according to the given rule:

a.   11 to 50 units: Rs 5 per unit.

b.   51 to 200 units: Rs 10 per unit.

c.   200 to 500 units: Rs 15 per unit.

d.   >500 units: Rs 20 per unit.

Use if-else condition to find the amount charged from a customer. You need to take the number of units consumed as input from the keyboard.

Use variables: min_charge for minimum charge, units for total number of electric units, amount for total amount charged from a customer   [5]

2.   Print the Pattern using Loop   [4]

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3.   Create a class cylinder with attributes radius and height, each of which has a default value of 10. Provide a method that calculates the cylinder's volume, which is pi multiplied by the square of the radius and by the height. It has the set and get Methods for both radius and height. The set method should verify that radius and height are positive number. Write a program to test class cylinder.
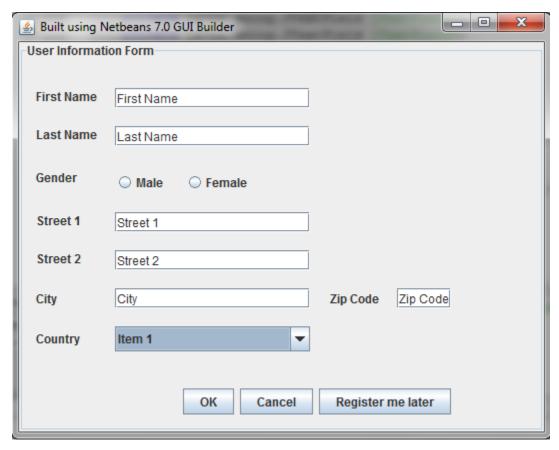
[5]

4.   An array is defined to be a Filter array if it meets the following conditions

a.   If it contains 9 then it also contains 11.

b.   If it contains 7 then it does not contain 13

So {1, 2, 3, 9, 6, 11} and {3, 4, 6, 7, 14, 16}, {1, 2, 3, 4, 10, 11, 13} and {3, 6, 5, 5, 13, 6, 13} are Filter arrays. The following arrays are not Filter arrays: {9, 6, 18} (contains 9 but no 11), {4, 7, 13} (contains both 7 and 13)

Write a function named isFilter() that returns 1 if its array argument is a Filter array, otherwise it returns 0.   [8]

5.   We have to calculate the area of a rectangle, a square and a circle. Create an abstract class 'Shape' with three abstract methods namely 'RectangleArea' taking two parameters, 'SquareArea' and 'CircleArea' taking one parameter each. The parameters of 'RectangleArea' are its length and breadth, that of 'SquareArea' is its side and that of 'CircleArea' is its radius. Now create another class 'Area' containing all the three methods 'RectangleArea', 'SquareArea' and 'CircleArea' for printing the area of rectangle, square and circle respectively. Create an object of class 'Area' and call all the three methods.   [6]

6.   Write a Java program to create a form as shown in the figure below.   [12]

In addition to that, it should also include the event for the following:

● If ok button is pressed, it should display a message that "the information is successfully registered", using dialog box,

● If cancel button is pressed, it should display "You cancelled", and

● If Register me later is pressed, it should display "Your registration will be done later".