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| **JAVA LAB SESSION** | **Session Objectives**   * *Understanding basic problem statements* * *To implement problem statements into programs* |

**TASK 1:**

Suppose salary and deductions are variables of type double that have been given values. Write an if-else statement that outputs the word "Crazy" if salary is less than deductions ; otherwise, it should output "OK" and set the variable net equal to salary minus deductions .

**TASK 2:**

Write a program that determines whether a meeting room is in violation of fire law regulations regarding the maximum room capacity. The program will read in the maximum room capacity and the number of people to attend the meeting. If the number of people is less than or equal to the maximum room capacity, the program announces that it is legal to hold the meeting and tells how many additional people may legally attend. If the number of people exceeds the maximum room capacity, the program announces that the meeting cannot be held as planned due to fire regulations and tells how many people must be excluded in order to meet the fire regulations.

**TASK 3:**

Write an if-else statement that outputs the word “High” if the value of the variable score is greater than 100 and outputs “Low” if the value of score is at most 100. The variable score is of type int.

**TASK 4:**

Translate the following algorithm into Java code:

**Step 1:** Declare double variable named miles with initial value 100;

**Step 2:** Declare a doubleconstant named MILES\_PER\_KILOMETERwith value 1.609;

**Step 3:** Declare a double variable named kilometers, multiply miles and

MILES\_PER\_KILOMETER, and assign the result to kilometers.

**Step 4:** Display kilometers to the console. What are kilometers after Step 4?

**TASK 5**

Write a Java application to create a Guessing game

Hint the following statement generates a random number from 1 through 10

inclusive, and assigns it to ran:

int ran = 1 + (int)(Math.random() \* 10);

Write a Java application that asks you to think of a number between 1 and 10.

And check the user can see whether his or her guess was accurate or not.

**TASK 6:**

Write a program that simulates rolling a pair of dice. You can simulate rolling one die by choosing one of the integers 1, 2, 3, 4, 5, or 6 at random. The number you pick represents the number on the die after it is rolled. The expression (int)(Math.random()\*6) + 1 does the computation you need to select a random integer between 1 and 6. You can assign this value to a variable to represent one of the dice that is being rolled. Do this twice and add the results together to get the total roll. Your program should report the number showing on each die as well as the total roll.

For example : The first die comes up 3

The second die comes up 5

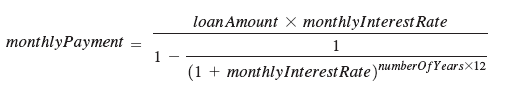
Your total roll is 8

**TASK 7:**

Write a Java program that computes a customer’s monthly cell phone bill given the number of minutes used.

The program should take in two integer command-line arguments one for the number of peak minutes used, and one for the number of weekend and night minutes used. Each customer pays 200 Rs per month, which includes 400 peak minute and 750 weekend and night minutes.The price for going over the allotted time is 140 paisa minute for bothpeak and weekend/night calls.

**TASK 8:**

Write a program that computes loan payments. The loan can be a car loan, a student loan, or a home mortgage loan. The program lets the user enter the interest rate, number of years, and loan amount, and displays the monthly and total payments. The formula to compute the monthly payment is as follows:

**TASK 9:**

Write a program that reads in investment amount, annual interest rate, and number of years, and displays the future investment value using the following formula:



Hint: Math.pow(a, b) method is used to compute a raised to the power of b.

**TASK 10:**

Write a program that calculates the energy needed to heat water from an initial temperature to a final temperature. Your program should prompt the user to enter the amount of water in kilograms and the initial and final temperatures of the water. The formula to compute the energy is

Q = M \* (final temperature – initial temperature) \* 4184

Where M is the weight of water in kilograms, temperatures are in degrees Celsius, and energy Q is measured in joules.

**Sample Input:**

Enter the amount of water in kilograms:

Enter the initial temperature:

Enter the final temperature:

The energy needed is :