Department of Statistics & Computer Science
University of Kelaniya
Academic Year – 2022/2023
COSC 12043 / BECS 12243 - Object Oriented Programming
Tutorial 07

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1. A hospital records patients' daily temperature readings (in °C) over a week. Each row in the array represents a patient, and each column represents the temperature reading for a day.

```
double[][] temperatures = {
        {36.5, 36.7, 37.1, 36.8, 36.6, 37.0, 36.9},
        {38.2, 37.8, 38.0, 37.0, 37.5, 38.1, 37.6},
        {36.4, 36.3, 36.5, 36.2, 36.6, 36.7, 36.8}
};
```

   Write a Java program to count how often each patient had a fever (temperature ≥ 37.5°C) during the week. Display the result for each patient in the format:

```
Patient 1 had no fever
Patient 2 had a fever 6 times
Patient 3 had no fever
```

2. Write a Java program that asks the user for their age and determines if they are eligible to vote and if they are eligible for senior citizen benefits. Use nested if statements.
   - If the age is 18 or older, print "You are eligible to vote."
   - If the age is 65 or older, print "You are also eligible for senior citizen benefits."
   - Otherwise, print "You are not eligible for senior citizen benefits."
   - If the age is below 18, print "You are not eligible to vote."

3. Write a Java program to calculate the factorial value of a given number using the following loop structures:
   a. while loop
   b. do-while loop
   c. for loop

4. Write a Java program to display the following pattern using a loop,

```
*
**
***
****
*****
******
```

5. Write a Java program that takes an integer input from the user and prints a pattern in reverse order.

   For example, for an input of 5, the output should be:

```
55555
4444
333
22
1
```

6. Write a Java program that prints the following pyramid pattern using nested for loops.

```
    *
   ***
  *****
 *******
*********
```

7.

   a. Write a Java program that uses a for loop to print numbers from 1 to 20. However, if the number is divisible by 5, exit the loop using the **break** statement. After exiting the loop, print "Loop terminated."

   b. Write a Java program that uses a for loop to print all even numbers from 1 to 20. Use the **continue** statement to skip odd numbers and avoid printing them.

8. Write a method to print a customized greeting message based on the time of the day. (Hint: Use Date class)

9. Write a Java program that calculates the area and circumference of a circle. The program should prompt the user to enter the radius of the circle. Use the following formulas:

   Area = π * radius²

   Circumference = 2 * π * radius

   Use the built-in methods from the Math class to get the value of π, square the radius, and round the results to two decimal places.

```
Enter the radius of the circle: 5
Area: 78.54
Circumference: 31.42
```

10. Write a method called printRange that accepts two integers as arguments and prints the sequence of numbers between the two arguments, separated by spaces. Print an increasing sequence if the first argument is smaller than the second; otherwise, print a decreasing sequence. If the two numbers are the same, that number should be printed by itself.

    Here are some sample calls to printRange:

    printRange(2, 8) → Output: 2 3 4 5 6 7 8

    printRange(17, 10) → Output: 17 16 15 14 13 12 11 10

    printRange(5, 5) → Output: 5