Department of Statistics & Computer Science
University of Kelaniya
Academic Year – 2022/2023
COSC 12043 / BECS 12243 - Object Oriented Programming
Tutorial 06

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1. Print the following array using **for loop** and **foreach loop** and get the sum of all the values stored in the Num array.
   Num = {40,28,10,81,23,45,47,18,76,64}

2. The two-dimensional array below contains the weights of students in 4 groups:
   double[][] weights = {{54.5, 50, 48}, {43, 56.5, 67, 65.5, 59}, {45, 55, 63, 45.5, 54.5}, {66, 49.5, 56}};
   Write a Java program to compute the average weight of students for each group and display the results in the format:

```
Group 1 Average Weight: 50.83
Group 2 Average Weight: 58.20
Group 3 Average Weight: 52.20
Group 4 Average Weight: 57.17
```

3. Create a two-dimensional array to store the students' first names in the row you are sitting and the rows before and after you. Assuming that the row number and column number name seats in the above three rows, print each student's name along with the relevant seat number as follows:
   Sample Output:

```
Seat No    Student
-------------------
11         Amali
12         Thilina
13         Vihara
21         Kamal
22         Nimal
23         Sunil
```

4. Input a date string from the keyboard and write methods for the following operations.

   `Input the string in this form: december 8, 2024`

   a. Delete the leading and trailing spaces from the date string.
   b. Find the position of the first blank space.
   c. Find the comma's position.
   d. Separate the date string into 3 partitions.

      Month: december

      Day: 8

      Year: 2024

   e. Get the initial character in the month name in uppercase.
   f. Get the remaining characters in the month name in lowercase.
   g. Concatenate the initial character and the remaining characters.
   h. If the length of the day string is less than 2, concatenate it to a leading 0

      Ex: 8 as 08
   i. Print out the year, month, and day strings in this form: 2024 December 08

5. Write a Java program to order two **user input strings** lexicographically. Sample input and output are given below:

```
Enter first String: Banana
Enter second String: Apple
Ordered Strings: Apple, Banana
```

6. Write a Java program that prompts the user to enter their Name, Age, Gender, Weight in kilograms, and Height in meters.

   Using the formula:

$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m)}^2}$$

   The program should calculate the BMI for each individual and categorize the result according to the following ranges:

   BMI < 18.5: Underweight

   18.5 ≤ BMI < 24.9: Normal weight

   25 ≤ BMI < 29.9: Overweight

   BMI ≥ 30: Obesity

After calculating the BMI, display the results as follows:

```
Hi John Doe!
Here are your details:
Age: 30
Gender: Male
Weight: 85.0 kg
Height: 1.75 m
BMI: 27.76
Category: Overweight
```

7. Write a program to check whether the entered character is a lowercase letter (a to z) or an uppercase letter (A to Z). If the character is lowercase, convert it to uppercase. If it is uppercase, convert it to lowercase. If the input is not an alphabet, display an appropriate message.

   If the user input is,

   a - **`You entered a lowercase letter "a". Converted to uppercase: "A"`**
   D - **`You entered an uppercase letter "D". Converted to lowercase: "d"`**
   @ - **`You entered "@", which is not an alphabet.`**

8. Write a Java program that uses a **switch statement** to display the name of the weekday based on the value of the day variable. The value of the day variable is an integer between 1 and 7, where 1 represents Monday, 2 represents Tuesday, and so on.

9. Write a program that acts as a calculator for two numbers. It should take two numbers and an operator (+, -, *, /, %) as input. Perform the operation based on the operator using a **switch statement**. If the operator is invalid, print "Invalid operator." If the division is chosen and the second number is 0, print "Division by zero is not allowed."

10. Write a Java program using a **while loop** to add the first 100 integers.

    `The sum of the first 100 integers is: 5050`