SLIIT UNI
THE KNOWLEDGE UNIVERSITY

# Faculty of Computing

## IT1120 – Introduction to Programming

### Year 1 Semester 1 (2024)

### Tutorial 08

**Question 1**

A company has four salespeople (1 to 4) who sell three different products (1 to 3).

Write a Java program that will read the number of sales made from each product by each salesperson and store them in a double-subscripted array (2D array) called **salesArray**.

For each product find and display the total sales.

Sample Output:

```
Product 1
      Enter Number of Sales from Salesperson 1  : 50
      Enter Number of Sales from Salesperson 2  : 22
      Enter Number of Sales from Salesperson 3  : 15
      Enter Number of Sales from Salesperson 4  : 10
      Total Number of Sales for Product 1       : 97

Product 2
      Enter Number of Sales from Salesperson 1  : 12
      Enter Number of Sales from Salesperson 2  : 4
      Enter Number of Sales from Salesperson 3  : 5
      Enter Number of Sales from Salesperson 4  : 11
      Total Number of Sales for Product 2       : 32

Product 3
      Enter Number of Sales from Salesperson 1  : 32
      Enter Number of Sales from Salesperson 2  : 57
      Enter Number of Sales from Salesperson 3  : 28
      Enter Number of Sales from Salesperson 4  : 41
      Total Number of Sales for Product 3       : 158
```

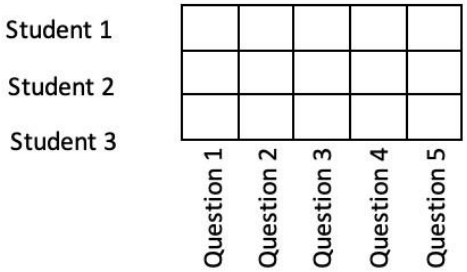
```
import java.util.Scanner;

public class SalesCalculator
{
   public static void main(String[] args)
   {
      // Create a scanner object for input
      Scanner k = new Scanner(System.in);

      // Create a 2D array to store sales data (3 products, 4 salespersons)
      int salesArray[][] = new int[3][4];

      // Loop through each product
      for (int product = 0; product < 3; product++)
      {
         System.out.println("Product " + (product + 1));

         // Loop through each salesperson for the current product
         for (int salesperson = 0; salesperson < 4; salesperson++)
         {
            System.out.print("Enter Number of Sales from Salesperson " +
(salesperson + 1) + ": ");
            salesArray[product][salesperson] = k.nextInt();
         }
```

```
        // Calculate and display the total sales for the current product
        int totalSales = 0;
        for (int salesperson = 0; salesperson < 4; salesperson++)
        {
           totalSales += salesArray[product][salesperson];
        }

        System.out.println("Total Number of Sales for Product " + (product + 1) + ": "
+ totalSales);
        System.out.println();
     }

     // Close the scanner
     k.close();
   }
}
```

**Question 2**

Write a Java program to do the following

a) Create a 3 x 5 two-dimensional character array (studentAnswer) to store the answers of three students as shown below.




b) Input the values to the array **studentAnswer** from the keyboard. If the user enters a letter other than '**t**', '**T**', '**f**' and '**F**' display an error message 'Invalid Input' to the user and ask the user to re-enter the value.

Sample Input:

```
Student 1:
      Enter Answer for Question 1   : F
      Enter Answer for Question 2   : t
      Enter Answer for Question 3   : T
      Enter Answer for Question 4   : T
      Enter Answer for Question 5   : f

Student 2:
      Enter Answer for Question 1   : t
      Enter Answer for Question 2   : F
      Enter Answer for Question 3   : f
      Enter Answer for Question 4   : T
      Enter Answer for Question 5   : T

Student 3:
      Enter Answer for Question 1   : f
      Enter Answer for Question 2   : F
      Enter Answer for Question 3   : t
      Enter Answer for Question 4   : t
      Enter Answer for Question 5   : T
```

c) Correct answers for the five questions are stored in another array **(answerArray)** as shown below.

| | Question 1 | Question 2 | Question 3 | Question 4 | Question 5 |
|---|---|---|---|---|---|
| Correct Answer | F | F | T | T | F |

Compare each student answer set in **studentAnswer** array with the **answerArray**. Display the number of correct answers for each student.

Sample Output:

```
Student 1 Correct Answers     : 4
Student 2 Correct Answers     : 2
Student 3 Correct Answers     : 4
```

```
import java.util.Scanner;

public class StudentAnswerChecker
{

   public static void main(String[] args)
   {
      Scanner k = new Scanner(System.in);

      // Create a 3x5 array to store student answers
      char studentAnswer[][] = new char[3][5];

      // Correct answers array
      char answerArray[] = {'F', 'F', 'T', 'T', 'F'};

      // Loop to input student answers with validation
      for (int student = 0; student < 3; student++)
      {
         System.out.println("Enter answers for Student " + (student + 1) + ":");
         for (int question = 0; question < 5; question++)
         {
            boolean validInput = false;
            while (!validInput)
            {
               System.out.print("Enter Answer for Question " + (question + 1) + ": ");
               char answer = Character.toUpperCase(k.next().charAt(0)); // Convert to
uppercase
               // Check for valid inputs ('T', 'F')
               if (answer == 'T' || answer == 'F')
               {
                  studentAnswer[student][question] = answer; // Store in uppercase
                  validInput = true;
               }
               else
               {
                  System.out.println("Invalid Input. Please enter 't', 'T', 'f', or 'F'.");
               }
            }
         }
      }
```

```
        // Check and display the number of correct answers for each student
        for (int student = 0; student < 3; student++)
        {
            int correctCount = 0;
            for (int question = 0; question < 5; question++)
            {
                if (studentAnswer[student][question] == answerArray[question])
                {
                    correctCount++;
                }
            }
            System.out.println("Student " + (student + 1) + " Correct Answers: " +
correctCount);
        }

        k.close();
    }
}
```