

## WEEK 5

Question 1: Write a Java program to insert 10, 20, 30 ....in an array and display

Code:

```

import java.util.Scanner;

public class One {
    public static void main(String[] args) {
        try (Scanner scan = new Scanner(System.in)) {
            System.out.print("Enter the size of array: ");
            int size = scan.nextInt();
            int[] array = new int[size];
            System.out.print("Enter elements (space - separated): ");
            for (int i = 0; i < size; i++)
                array[i] = scan.nextInt();
            System.out.print("Array: ");
            for (int i = 0; i < size; i++)
                System.out.print(array[i] + " ");
        }
    }
}

PS D:\UNI Material\LAB\sem 3\Week 5> javac One.java
Output: PS D:\UNI Material\LAB\sem 3\Week 5> java One
Enter the size of array: 3
Enter elements (space - separated): 78 54 89
Array: 78 54 89
PS D:\UNI Material\LAB\sem 3\Week 5> █

```

Question 2: Write a Java program to calculate the sum of all the array elements.

Code:

```

import java.util.Scanner;

public class Two {
    public static void main(String[] args) {
        try (Scanner scan = new Scanner(System.in)) {
            System.out.print("Enter the size of array: ");
            int size = scan.nextInt();
            int[] array = new int[size];
            System.out.print("Enter elements (space - separated): ");
            for (int i = 0; i < size; i++)
                array[i] = scan.nextInt();
            int sum = 0;
            System.out.print("Array: ");
        }
    }
}

```

```

System.out.print("Array: ");
for (int i = 0; i < size; i++) {
    sum += array[i];
    System.out.print(array[i] + " ");
}
System.out.println("\nSum of all elements: " + sum);
}

}

}

PS D:\UNI Material\LAB\sem 3\Week 5> javac Two.java
PS D:\UNI Material\LAB\sem 3\Week 5> java Two
Output: Enter the size of array: 3
Enter elements (space - separated): 56 87 21
Array: 56 87 21
Sum of all elements: 164
PS D:\UNI Material\LAB\sem 3\Week 5> █

```

Question 3: Write a java program to print the following pattern. 1

```

Code: import java.util.Scanner;
public class Three {
    public static void main(String[] args) {
        int n;
        try (Scanner scan = new Scanner(System.in)) {
            System.out.print("Enter the number of rows (n): ");
            n = scan.nextInt();
        }
        for(int i = 1; i <= n; i++){
            for(int j = 1; j <= i; j++)
                System.out.print(j + " ");
            System.out.println();
        }
    }
}

PS D:\UNI Material\LAB\sem 3\Week 5> javac Three.java
PS D:\UNI Material\LAB\sem 3\Week 5> java Three
Output: Enter the number of rows (n): 5
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
PS D:\UNI Material\LAB\sem 3\Week 5> █

```

Question 4: Write a java program to find the sum of following series where n is input by the user. 19  
1+1/2+1/3+1/4+.....+1/n.

Code:

```
import java.util.Scanner;
public class Four {
    public static void main(String[] args) {
        int n;
        try (Scanner scan = new Scanner(System.in)) {
            System.out.print("Enter the number of terms (n): ");
            n = scan.nextInt();
        }
        double sum = 0.0;
        for(int i = 1; i <= n; i++)
            sum += 1.0/i;
        System.out.printf("Sum of series: %.4f", sum);
    }
}
```

Output:

```
PS D:\UNI Material\LAB\sem 3\Week 5> javac Four.java
PS D:\UNI Material\LAB\sem 3\Week 5> java Four
Enter the number of terms (n): 5
Sum of series: 2.2833
PS D:\UNI Material\LAB\sem 3\Week 5>
```

Question 5: Write a Java program and compute the sum of the digits of an integer.

Code:

```
import java.util.Scanner;
public class Five {
    public static void main(String[] args) {
        int num;
        try (Scanner scan = new Scanner(System.in)) {
            System.out.print("Enter an integer: ");
            num = scan.nextInt();
        }
        int sum = 0;
        int temp = num;
        while (temp > 0) {
            sum += temp % 10;
            temp /= 10;
        }
        System.out.println("Sum of digits of " + num + " = " + sum);
    }
}
```

```
PS D:\UNI Material\LAB\sem 3\Week 5> javac Five.java
PS D:\UNI Material\LAB\sem 3\Week 5> java Five
Enter an integer: 2248
Sum of digits of 2248 = 16
PS D:\UNI Material\LAB\sem 3\Week 5> █
```

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Output:

**Question 6:** Write a Java program to calculate the factorial of a number.

Code: import java.util.Scanner;

```
public class Six {
    public static void main(String[] args) {
        int n;
        try (Scanner scan = new Scanner(System.in)) {
            System.out.print("Enter a number: ");
            n = scan.nextInt();
        }
        long fact = 1;
        for (int i = 1; i <= n; i++)
            fact *= i;
        System.out.println("Factorial of " + n + " = " + fact);
    }
}
```

Output:

```
PS D:\UNI Material\LAB\sem 3\Week 5> javac Six.java
PS D:\UNI Material\LAB\sem 3\Week 5> java Six
Enter a number: 12
Factorial of 12 = 479001600
PS D:\UNI Material\LAB\sem 3\Week 5> █
```

Optional

**Question 7:** Write a Java program to find the largest element in a given integer array

Code: import java.util.Scanner;

```
public class Seven {
    public static void main(String[] args) {
        int size;
        int[] array;
        try (Scanner scan = new Scanner(System.in)) {
            System.out.print("Enter the size of array: ");
            size = scan.nextInt();
            array = new int[size];
            System.out.print("Enter elements (space - separated): ");
            for (int i = 0; i < size; i++)
                array[i] = scan.nextInt();
        }
}
```

Code:

```

int largest = array[0];
System.out.print("Array: ");
for (int i = 0; i < size; i++) {
    System.out.print(array[i] + " ");
    if (array[i] > largest)
        largest = array[i];
}
System.out.println("Largest element: " + largest);
}

}
PS D:\UNI Material\LAB\sem 3\Week 5> javac Seven.java
PS D:\UNI Material\LAB\sem 3\Week 5> java Seven
Output: Enter the size of array: 10
Enter elements (space - separated): 12 45 87 96 32 40 -87 59 09 68
Array: 12 45 87 96 32 40 -87 59 9 68
Largest element: 96
PS D:\UNI Material\LAB\sem 3\Week 5>

```

Question 8: Write a Java program to reverse the digits of a given integer.

Code:

```

import java.util.Scanner;
public class Eight {
    public static void main(String[] args) {
        int num;
        try (Scanner scan = new Scanner(System.in)) {
            System.out.print("Enter an integer: ");
            num = scan.nextInt();
        }
        int reversed = 0;
        int temp = num;
        while (temp > 0) {
            reversed = reversed * 10 + (temp % 10);
            temp /= 10;
        }
        System.out.println("Reversed number: " + reversed);
    }
}
Output: PS D:\UNI Material\LAB\sem 3\Week 5> javac Eight.java
PS D:\UNI Material\LAB\sem 3\Week 5> java Eight
Enter an integer: 4578
Reversed number: 8754
PS D:\UNI Material\LAB\sem 3\Week 5>

```

Code:

```
import java.util.Scanner;

public class Nine {
    public static void main(String[] args) {
        System.out.print("Enter an integer: ");
        int num;
        try (Scanner scan = new Scanner(System.in)) {
            num = scan.nextInt();
        }
        int reversed = 0;
        int temp = num;
        while (temp != 0) {
            reversed = reversed * 10 + (temp % 10);
            temp /= 10;
        }
        if (num == reversed)
            System.out.println(num + " is a palindrome.");
        else
            System.out.println(num + " is not a palindrome.");
    }
}
```

Output:

```
PS D:\UNI Material\LAB\sem 3\Week 5> javac Nine.java
PS D:\UNI Material\LAB\sem 3\Week 5> java Nine
Enter an integer: 789656987
789656987 is a palindrome.
PS D:\UNI Material\LAB\sem 3\Week 5> █
```

Question 10: Write a Java program that takes a number as input and prints all its factors

Code:

```
import java.util.Scanner;

public class Ten {
    public static void main(String[] args) {
        System.out.println("Select one operation: ");
        System.out.println("1. Decimal to Hexadecimal");
        System.out.println("2. Hexadecimal to Decimal");
        System.out.print("Enter your choice (1-2): ");
        int choice;
        Scanner sc = new Scanner(System.in);
        choice = sc.nextInt();
```

```
switch (choice) {  
    case 1 -> {  
        System.out.print("\nEnter the number (decimal): ");  
        int num = sc.nextInt();  
        String hexStr = "";  
        if (num == 0)  
            hexStr = "0";  
        else {  
            while (num > 0) {  
                hexStr = switch (num % 16) {  
                    case 10 -> "A" + hexStr;  
                    case 11 -> "B" + hexStr;  
                    case 12 -> "C" + hexStr;  
                    case 13 -> "D" + hexStr;  
                    case 14 -> "E" + hexStr;  
                    case 15 -> "F" + hexStr;  
                    default -> (num % 16) + hexStr;  
                };  
                num /= 16;  
            }  
        }  
        System.out.println("Hexadecimal: " + hexStr);  
    }  
    case 2 -> {  
        System.out.print("\nEnter the number (hexdecimal): ");  
        String hex = sc.next();  
        int decimal = 0;  
        int power = 0;  
        for (int i = hex.length() - 1; i >= 0; i--) {  
            char c = hex.charAt(i);  
            int value = 0;  
            if (c >= '0' && c <= '9')  
                value = c - '0';  
            else if (c >= 'A' && c <= 'F')  
                value = c - 'A' + 10;  
        }  
    }  
}
```

Code:

```
else if (c >= 'a' && c <= 'f')
    value = c - 'a' + 10;

    decimal += value * Math.pow(16, power);
    power++;
}

System.out.println("Decimal: " + decimal);

}

default -> System.out.println("Invalid choice! Please run again.");
}

sc.close();
}

}
```

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Output:

```
PS D:\UNI Material\LAB\sem 3\Week 5> javac Ten.java
PS D:\UNI Material\LAB\sem 3\Week 5> java Ten
Select one operation:
1. Decimal to Hexadecimal
2. Hexadecimal to Decimal
Enter your choice (1-2): 2

Enter the number (hexdecimal): 680
Decimal: 1664
PS D:\UNI Material\LAB\sem 3\Week 5> █
```

Question 11: Write a java program to print the following pattern:

```
Code: import java.util.Scanner;
public class Eleven {
    public static void main(String[] args) {
        try (Scanner sc = new Scanner(System.in)) {
            System.out.print("Enter number of total number of rows (must be odd): ");
            int h = sc.nextInt();
            int mid = (h + 1) / 2;
            for (int i = 1; i <= h; i++) {
                int stars = (i <= mid) ? i : h - i + 1;
                int spaces = mid - stars;
                for (int j = 1; j <= spaces; j++) {
                    System.out.print(" ");
                }
                for (int k = 1; k <= stars; k++) {
                    System.out.print("*");
                }
            }
        }
    }
}
```

Code:

```
for (int j = 1; j <= stars; j++) {  
    System.out.print(" *");  
}  
System.out.println();  
}  
}  
}
```

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Output:

```
PS D:\UNI Material\LAB\sem 3\Week 5> javac Eleven.java  
PS D:\UNI Material\LAB\sem 3\Week 5> java Eleven  
Enter number of total number of rows (must be odd): 5  
 *  
 **  
 ***  
 **  
 *  
PS D:\UNI Material\LAB\sem 3\Week 5> █
```