Week 5

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

Question 1:

Code:

import java.util.Scanner;

public class One {

    public static void main(String[] args) {

        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] + " ");

        scan.close();

    }

}

Output:

PS D:\Uni Material\LAB\sem 3\Week 5> javac One.java

PS D:\Uni Material\LAB\sem 3\Week 5> java One

Enter the size of array: 5

Enter elments (space - separated): 12 03 -69 34 57

Array: 12 3 -69 34 57

PS D:\Uni Material\LAB\sem 3\Week 5>

Code:

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

Question 2: 1

import java.util.Scanner;

public class Two {

    public static void main(String[] args) {

        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: ");

        for (int i = 0; i < size; i++){

            sum += array[i];

            System.out.print(array[i] + " ");

        }

        System.out.println("\nSum of all elements: " + sum);

        scan.close();

    }

}

Output:

PS D:\Uni Material\LAB\sem 3\Week 5> javac Two.java

PS D:\Uni Material\LAB\sem 3\Week 5> java Two

Enter the size of array: 5

Enter elements (space - separated): 89 14 22 67 35

Array: 89 14 22 67 35

Sum of all elements: 227

PS D:\Uni Material\LAB\sem 3\Week 5>

import java.util.Scanner;

public class Three {

    public static void main(String[] args) {

        Scanner scan = new Scanner(System.in);

        System.out.print("Enter the number of rows (n): ");

        int n = scan.nextInt();

        scan.close();

        for(int i = 1; i <= n; i++){

            for(int j = 1; j <= i; j++)

                System.out.print(j + " ");

            System.out.println();

        }

    }

}

12345

1

12

123

1234

Write a java program to print the following pattern.

 12

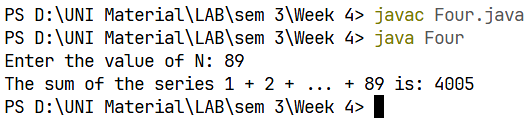
 123

 1234

 12345

Code:

Question 3:



Output:

Question 5:

Write a Java program to take a number, divide it by 2 and print the result until the number becomes less than 10

Code:

import java.util.Scanner;

public class Five {

    public static void main(String[] args) {

        try (Scanner scan = new Scanner(System.in)) {

            System.out.print("Enter a number: ");

            int number = scan.nextInt();

            if(number < 10)

                System.out.println("Number is less than 10, please enter more than 10");

            while (number >= 10) {

                System.out.print(number + " / 2 = " + (number/2) );

                number = number / 2;

            }

        }

    }

}

Output:

PS D:\Uni Material\LAB\sem 3\Week 5> javac Three.java

PS D:\Uni Material\LAB\sem 3\Week 5> java Three

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>

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

Question 4:

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): 89

Sum of series: 5.0715

PS D:\Uni Material\LAB\sem 3\Week 5>

import java.util.Scanner;

public class Four {

    public static void main(String[] args) {

        Scanner scan = new Scanner(System.in);

        System.out.print("Enter the number of terms (n): ");

        int n = scan.nextInt();

        scan.close();

        double sum = 0.0;

        for(int i = 1; i <= n; i++)

            sum += 1.0/i;

        System.out.printf("Sum of series: %.4f", sum);

    }

}

Output:

Code:

Question 5:

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

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: 3658

Sum of digits of 3658 = 22

PS D:\Uni Material\LAB\sem 3\Week 5>

Output:

Code:

import java.util.Scanner;

public class Five {

    public static void main(String[] args) {

        Scanner scan = new Scanner(System.in);

        System.out.print("Enter an integer: ");

        int num = scan.nextInt();

        scan.close();

        int sum = 0, temp = num;

        while (temp > 0) {

            sum += temp % 10;

            temp /= 10;

        }

        System.out.println("Sum of digits of " + num + " = " + sum);

    }

}

Write a Java program to calculate the factorial of a number.

Question 6:

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: 17

Factorial of 17 = 355687428096000

PS D:\Uni Material\LAB\sem 3\Week 5>

Output:

import java.util.Scanner;

public class Six {

    public static void main(String[] args) {

        Scanner scan = new Scanner(System.in);

        System.out.print("Enter a number: ");

        int n = scan.nextInt();

        scan.close();

        long fact = 1;

        for (int i = 1; i <= n; i++)

            fact \*= i;

        System.out.println("Factorial of " + n + " = " + fact);

    }

}

Code:

Write a Java program to find the largest element in a given integer array

Question 7:

Optional

import java.util.Scanner;

public class Seven {

    public static void main(String[] args) {

        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 elments (space - separated): ");

        for (int i = 0; i < size; i++)

            array[i] = scan.nextInt();

        scan.close();

        int largest = array[0];

        System.out.print("Array: ");

        for (int i = 0; i < size; i++) {

            System.out.print(array[i] + " ");

            largest = ( array[i] > largest) ? array[i] : largest;

        }

        System.out.println("\nLargest element: " + largest);

    }

}

Output:

PS D:\Uni Material\LAB\sem 3\Week 5> javac Seven.java

PS D:\Uni Material\LAB\sem 3\Week 5> java Seven

Enter the size of array: 5

Enter elments (space - separated): -96 52 34 71 06

Array: -96 52 34 71 6

Largest element: 71

PS D:\Uni Material\LAB\sem 3\Week 5>

Code:

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

Question 8:

Code:

import java.util.Scanner;

public class Eight {

    public static void main(String[] args) {

        Scanner scan = new Scanner(System.in);

        System.out.print("Enter an integer: ");

        int num = scan.nextInt();

        scan.close();

        int reversed = 0, temp = num;

        while (temp > 0) {

            reversed = reversed \* 10 + (temp % 10);

            temp /= 10;

        }

        System.out.println("Reversed number: " + reversed);

    }

}

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: 996587

Reversed number: 785699

PS D:\Uni Material\LAB\sem 3\Week 5>

Output:

Write a Java program to check if a given number is a palindrome or not

Question 9:

import java.util.Scanner;

public class Nine {

    public static void main(String[] args) {

        System.out.print("Enter an integer: ");

        Scanner scan = new Scanner(System.in);

        int num = scan.nextInt();

        scan.close();

        int reversed = 0, 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: 856685

856685 is not a palindrome.

PS D:\Uni Material\LAB\sem 3\Week 5>

Code:

Write a Java program to convert a decimal number into Hexadecimal number and vice-versa.

Question 10:

Code:

import java.util.InputMismatchException;

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): ");

        Scanner sc = new Scanner(System.in);

        int choice;

        try {

            choice = sc.nextInt();

        } catch (InputMismatchException e) {

            System.out.println("Invalid choice! Please enter 1 or 2.");

            return;

        }

        switch (choice) {

            case 1 -> {

                System.out.print("\nEnter the number (decimal): ");

                long num;

                try {

                    num = sc.nextLong();

                } catch (InputMismatchException e) {

                    System.out.println("Invalid decimal number! Please enter an integer.");

                    return;

                }

                boolean isNegative = num < 0;

                num = Math.abs(num);

                String hexStr = "";

if (num == 0)

                    hexStr = "0";

                else {

                    while (num > 0) {

                        hexStr = switch ((int)(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;

                    }

                }

                if (isNegative) hexStr = "-" + hexStr;

                System.out.println("Hexadecimal: " + hexStr);

            }

            case 2 -> {

                System.out.print("\nEnter the number (hexadecimal): ");

                String hex = sc.next();

                if (hex.isEmpty()) {

                    System.out.println("Empty input! Please enter a valid hexadecimal number.");

                    return;

                }

                boolean isNegative = hex.startsWith("-");

                if (isNegative) {

                    hex = hex.substring(1);

                    if (hex.isEmpty()) {

                        System.out.println("Invalid input! '-' is not a number.");

                        return;

                    }

                }

Code:

Output:

long decimal = 0;

                int power = 0;

                hex = hex.toUpperCase();

                for (int i = hex.length() - 1; i >= 0; i--) {

                    char c = hex.charAt(i);

                    int value;

                    if (c >= '0' && c <= '9')

                        value = c - '0';

                    else if (c >= 'A' && c <= 'F')

                        value = c - 'A' + 10;

                    else {

                        System.out.println("Invalid character '" + c + "' in hexadecimal input!");

                        return;

                    }

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

                    power++;

                }

                if (isNegative) decimal = -decimal;

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

            }

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

        }

        sc.close();

    }

}

Code:

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 (hexadecimal): CD091

Decimal: 839825

PS D:\Uni Material\LAB\sem 3\Week 5>

Output:

import java.util.Scanner;

public class Eleven {

    public static void main(String[] args) {

        Scanner sc = new Scanner(System.in);

        System.out.print("Enter number of total number of rows (must be odd): ");

        int h = sc.nextInt();

        if ( h%2 == 0 ){

            System.out.println("Total number of rows must be odd!");

            sc.close(); return;

        }

        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 j = 1; j <= stars; j++)

                System.out.print("\*");

            System.out.println();

        }

        sc.close();

    }

}

Code:

\*

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Question 11:

 Write a java program to print the following pattern:

PS D:\Uni Material\LAB\sem 3\Week 7> cd "d:\Uni Material\LAB\sem 3\Week 5\" ; if ($?) { javac Eleven.java } ; if ($?) { java Eleven }

Enter number of total number of rows (must be odd): 5

\*

\*\*

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\*

PS D:\Uni Material\LAB\sem 3\Week 5>

Output: