Assignment Recursion

Ans 1. Program to find sum of digits using recursion:

```
 class sum {
    public static void main(String[] args) {
        int n = 1234;
        System.out.println("Sum of digits of " + n + " is
" + sumOfDigits(n));
    }
    public static int sumOfDigits(int n) {
        if (n == 0) {
            return 0;
        } else {
            return n % 10 + sumOfDigits(n / 10);
        }
    }
}
```

Output: Sum of digits of 1234 is 10.

Ans 2. Program to find sum of natural numbers till n but with alternate signs using recursion:

```
public class naturalSum {
    public static void main(String[] args) {
        int n1 = 10;
        int n2 = 5;
        System.out.println("Sum with alternate signs
for " + n1 + " is " + alternateSum(n1, 1, 1));
        System.out.println("Sum with alternate signs
for " + n2 + " is " + alternateSum(n2, 1, 1));
    }
    public static int alternateSum(int n, int current, int
sign) {
```

```
        if (current > n) {
            return 0;
        } else {
            return sign * current + alternateSum(n,
current + 1, -sign);
        }
    }
}
```

Output:

Sum with alternate signs for 10 is -5

Sum with alternate signs for 5 is 3

Ans 3.Program to find the max value of the array [13, 1, -3, 22, 5] :

```
public class main {
    public static void main(String[] args) {
        int[] arr = {13, 1, -3, 22, 5};
        int maxValue = arr[0];

        for (int i = 1; i < arr.length; i++) {
            if (arr[i] > maxValue) {
                maxValue = arr[i];
            }
        }
        System.out.println(" Maximum value of the
array is " + maxValue);
    }
}
```

Output: Maximum value of the array is 22

Ans 4. Program to find the sum of the values of the array [92, 23, 15, -20, 10]:

```
public class main {
    public static void main(String[] args) {
        int[] arr = {92, 23, 15, -20, 10};
        int sum = 0;
        for (int i = 0; i < arr.length; i++) {
            sum += arr[i];
        }
        System.out.println("Sum of the array is " +
sum);
    }
}
```

Output: Sum of the array is 120

Ans 5. Program to check Armstrong Number:

```
public class ArmstrongNumber {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int n = scanner.nextInt();
        scanner.close();

        int temp = n;
        int sum = 0;
        int digits = String.valueOf(n).length();

        while (temp != 0) {
            int digit = temp % 10;
            sum += Math.pow(digit, digits);
            temp /= 10;
```

```
        }

        if (sum == n) {
            System.out.println("Yes");
        } else {
            System.out.println("No");
        }
    }
}
```

Output :

```
Enter a number: 153
Yes
```