Assignment-3

Topic: Array, Command-line arguments

1. Write a program to search an element present in the array.

SOLUTION:

```
import java.util.Scanner;
class SearchArray{
public static void main(String s[]){
 Scanner sc=new Scanner(System.in);
        System.out.println("Enter the number of element in the array:");
        int n=sc.nextInt();
        int arr[]=new int[n];
        System.out.println("Enter" +n+ "elements:");
        for (int i=0;i<n;i++){
            arr[i]=sc.nextInt();
        }
System.out.println("Enter the element to search:");
int key=sc.nextInt();
//search element
boolean found=false;//data type
int position=-1;
for (int i=0;i<n;i++)
{
   if(arr[i]==key){
        found=true;
```

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```
        position=i;
        break;
    }
    }
    if(found){
        System.out.println("element" +key+ "found at position:" +(position+1));
    }else{
        System.out.println("Element" +key+ "not found in the array.");
    }
    sc.close();
}
}
```

```
C:\24bcsg35>java SearchArray
Enter the number of element in the array:
4
Enter4elements:

1
2
55
66
Enter the element to search:
55
element55found at position:3
```

2. Write a program to sort the array of n elements.

SOLUTION:

```
import java.util.Scanner;
import java.util.Arrays;
class SortArray{
public static void main(String s[]){
Scanner sc=new Scanner(System.in);
```

```
System.out.println("Enter the number of elements:");

int n=sc.nextInt();

int arr[]=new int [n];

System.out.println("Enter"+n+"elements:");

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

arr[i]=sc.nextInt();

}

Arrays.sort(arr);

System.out.println("sorted array:");

for(int num:arr)

{

System.out.println(num+" ");

}

sc.close();

}

}
```

```
C:\24bcsg35>java SortArray
Enter the number of elements:
6
Enter6elements:
2 34 1 5 8 22
sorted array:
1
2
5
8
22
34
```

3. Write a program input two matrices and perform the addition of two matrices.

SOLUTION:

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```
import java.util.Scanner;
public class AddMatrices{
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
System.out.print("Enter number of rows: ");
        int rows = scanner.nextInt();
        System.out.print("Enter number of columns: ");
        int cols = scanner.nextInt();
        int[][] matrixA = new int[rows][cols];
        int[][] matrixB = new int[rows][cols];
        int[][] sumMatrix = new int[rows][cols];

        System.out.println("Enter first matrix:");
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < cols; j++) {
                matrixA[i][j] = scanner.nextInt();
            }
        }
System.out.println("Enter second matrix:");
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < cols; j++) {
                matrixB[i][j] = scanner.nextInt();
            }
        }
```

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```
for (int i = 0; i < rows; i++) {
            for (int j = 0; j < cols; j++) {
                sumMatrix[i][j] = matrixA[i][j] + matrixB[i][j];
            }
        }
    System.out.println("Sum of matrices:");
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < cols; j++) {
                System.out.print(sumMatrix[i][j] + " ");
            }
            System.out.println();
        }
    }
}
```

```
C:\24bcsg35>java AddMatrices
Enter number of rows: 2
Enter number of columns: 2
Enter first matrix:
11
21
31
41
Enter second matrix:
1
12
13
14
Sum of matrices:
12 33
44 55
```

4. Write a program that performs the addition of two numbers using command-line arguments.

SOLUTION:

```
public class AddNumbers {
```

```
    public static void main(String[] args) {
        int num1 = Integer.parseInt(args[0]);
        int num2 = Integer.parseInt(args[1]);
        int sum = num1 + num2;
        System.out.println("Sum: " + sum);
    }
}
```

```
C:\24bcsg35>java AddNumbers 10 20
Sum: 30
```

5. Write a program that will take two integer numbers from the command prompt and find their GCD. If the user does not provide exactly two numbers of arguments then the program should display error message.

SOLUTION:

```
public class GCD {
    public static void main(String[] args) {
        if (args.length != 2) {
            System.out.println("Error: Please provide exactly two integer arguments.");
            System.exit(1);
        }
        int    a = Integer.parseInt(args[0]);
        int    b = Integer.parseInt(args[1]);
       if (a == 0 && b == 0) {
            System.out.println("Error: GCD of 0 and 0 is undefined.");
            return;
        }
```

```
        a = Math.abs(a);
        b = Math.abs(b);
        while (b != 0) {
            int temp = b;
            b = a % b;
            a = temp;
        }

        System.out.println("GCD: " + a);
    }
}
```

```
C:\24bcsg35>javac GCD.java

C:\24bcsg35>java GCD 24 36
GCD: 12
```

6. Write a program that will take employee id, employee name, department number, salary from the command prompt. If the user does not provide exactly two numbers of arguments then the program should display error message. Use methods display() to display the record of employee.

SOLUTION:

```
public class Employee {
    String id;
    String name;
    int deptNo;
    double salary;
        public Employee(String id, String name, int deptNo, double salary) {
```

```
        this.id = id;
        this.name = name;
        this.deptNo = deptNo;
        this.salary = salary;
    }
    public void display() {
        System.out.println("Employee Record:");
        System.out.println("ID: " + id);
        System.out.println("Name: " + name);
        System.out.println("Department Number: " + deptNo);
        System.out.println("Salary: " + salary);
    }
public static boolean isInteger(String s) {
        if (s == null || s.isEmpty()) return false;
        for (int i = 0; i < s.length(); i++) {
            if (i == 0 && (s.charAt(i) == '-' || s.charAt(i) == '+')) continue;
            if (!Character.isDigit(s.charAt(i))) return false;
        }
        return true;
    }
public static boolean isDouble(String s) {
        if (s == null || s.isEmpty()) return false;
        int dotCount = 0;
        for (int i = 0; i < s.length(); i++) {
```

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```
            char c = s.charAt(i);
            if (i == 0 && (c == '-' || c == '+')) continue;
            if (c == '.') {
                dotCount++;
                if (dotCount > 1) return false;
            } else if (!Character.isDigit(c)) {
                return false;
            }
        }
        return dotCount <= 1;
    }
public static void main(String[] args) {
        if (args.length != 4) {
            System.out.println("Error: Please enter exactly 4 arguments (ID, Name, Department Number, Salary).");
            System.exit(1);
        }
        String id = args[0];
        String name = args[1];
        String deptStr = args[2];
        String salStr = args[3];
 if (!isInteger(deptStr)) {
            System.out.println("Error: Department Number must be a valid integer.");
            System.exit(1);
```

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```
        }

        if (!isDouble(salStr)) {
            System.out.println("Error: Salary must be a valid number.");
            System.exit(1);
        }

        int deptNo = Integer.parseInt(deptStr);
        double salary = Double.parseDouble(salStr);

        Employee emp = new Employee(id, name, deptNo, salary);
        emp.display();
    }
}
```

```
C:\24bcsg35>java Employee 24bcsg35 "Swati Mishra" 1001 1000000
Employee Record:
ID: 24bcsg35
Name: Swati Mishra
Department Number: 1001
Salary: 1000000.0
```

7. Write a program to accept the SIC, name, branch and marks of six subjects using command line argument. Calculate the average marks.

SOLUTION:

```
public class Student {
    public static void main(String[] args) {
        if (args.length != 9) {
```

```
        System.out.println("Error: Please provide exactly 9 arguments: SIC, Name, Branch, and 6 subject marks.");
            System.exit(1);
        }
        String SIC = args[0];
        String name = args[1];
        String branch = args[2];

        int totalMarks = 0;
        for (int i = 3; i < 9; i++) {
            totalMarks += Integer.parseInt(args[i]);
        }
        double average = (double) totalMarks / 6;
        System.out.println("SIC: " + SIC);
        System.out.println("Name: " + name);
        System.out.println("Branch: " + branch);
        System.out.println("Average Marks: " + average);
    }
}
```

```
C:\24bcsg35>java Student 24bcsg35 "Swati Mishra" "CSE" 88 89 91 76 70 90
SIC: 24bcsg35
Name: Swati Mishra
Branch: CSE
Average Marks: 84.0
```

8. Write a program to input a jagged array and display it.

SOLUTION:

```
import java.util.Scanner;
public class JaggedArray {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the number of rows: ");
        int rows = scanner.nextInt();
        // Create jagged array
        int[][] jaggedArray = new int[rows][];
        // Input the size and elements for each row
        for (int i = 0; i < rows; i++) {
            System.out.print("Enter the number of elements in row " + (i + 1) + ": ");
            int cols = scanner.nextInt();
            jaggedArray[i] = new int[cols];
            System.out.println("Enter " + cols + " elements for row " + (i + 1) + ":");
            for (int j = 0; j < cols; j++) {
                jaggedArray[i][j] = scanner.nextInt();
            }
        }
                    System.out.println("The jagged array is:");
        for (int i = 0; i < jaggedArray.length; i++) {
            for (int j = 0; j < jaggedArray[i].length; j++) {
                System.out.print(jaggedArray[i][j] + " ");
            }
            System.out.println();
```

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```
        }


        scanner.close();
    }
}
```

```
C:\24bcsg35>java JaggedArray
Enter the number of rows: 3
Enter the number of elements in row 1: 2
Enter 2 elements for row 1:
11 33
Enter the number of elements in row 2: 3
Enter 3 elements for row 2:
10 20 30
Enter the number of elements in row 3: 1
Enter 1 elements for row 3:
63
The jagged array is:
11 33
10 20 30
63
```

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