Tutorial 04

[Q1]

```
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {

        int [] array=new int[6];

        Scanner input=new Scanner(System.in);

        for (int i=0;i<array.length;i++){
            System.out.print("Enter marks:");
            array[i]=input.nextInt();
        }

        System.out.println("Marks entered:");
        for (int i=0;i<array.length;i++){
            System.out.println(array[i]);
        }

        int failnb=0;
        int sum=0;

        for (int i=0;i<array.length;i++){
            if (array[i]<40){
                failnb++;
            }
            sum+=array[i];
        }
        double average =(double) sum/array.length;

        System.out.println("Fail students: "+failnb);
        System.out.println("Average: "+average);
    }
}
```

[Q2]

```
public class Q2 {
    public static void main(String[] args) {

        String[] array = {"Alex", "Max", "Charlie", "Bob", "Ada", "Jim"};

        int index1=2;
        int index2=4;

        if (index1>=0 && index1< array.length && index2 >= 0 && index2 <
array.length){
            String temp=array[index1];
            array[index1]=array[index2];
```

```
            array[index2]=temp;

            for (int i=0; i< array.length;i++){
                System.out.print(array[i]);
                if (i!= args.length-1){
                    System.out.print(",");
                }
            }
            System.out.println();
        }else {
            System.out.println("Invalid.");
        }
    }
}
```

[Q3]

```
import java.util.Scanner;

public class Q3 {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        // Create an array of doubles with length 10
        double[] array = new double[10];

        // Fill the array with double values
        for (int i = 0; i < array.length; i++) {
            System.out.print("Enter value for position " + i + ": ");
            array[i] = scanner.nextDouble();
        }

        // Prompt the user to input two indices i and j
        System.out.print("Enter the index i: ");
        int i = scanner.nextInt();
        System.out.print("Enter the index j: ");
        int j = scanner.nextInt();

        // Check if i and j are valid indices
        if (i >= 0 && i < array.length && j >= 0 && j < array.length) {
            // Swap values at positions i and j
            double temp = array[i];
            array[i] = array[j];
            array[j] = temp;

            // Print the contents of the array
            System.out.println("Array contents after swapping:");
            for (double value : array) {
                System.out.println(value);
            }
        } else {
            System.out.println("Invalid indices provided. They must be
between 0 and 9 (inclusive).");
        }
    }
}
```

[Q4]

```
public class Q4 {
    public static void main(String[] args) {
        int[] A = {2, 3, 4, 5, 6, 7, 8, 9};

        // Task a) Find even numbers in set A
        System.out.println("Even numbers in set A:");
        for (int num : A) {
            if (num % 2 == 0) {
                System.out.print(num + " ");
            }
        }
        System.out.println(); // New line for clarity

        // Task b) Find numbers that, when multiplied by 2, give a number
that is also in set A
        System.out.println("Numbers in set A that, when multiplied by 2, give
a number in set A:");
        for (int num : A) {
            if (contains(A, num * 2)) {
                System.out.print(num + " ");
            }
        }
        System.out.println(); // New line for clarity
    }

    // Helper method to check if an array contains a specific number
    public static boolean contains(int[] arr, int target) {
        for (int num : arr) {
            if (num == target) {
                return true;
            }
        }
        return false;
    }
}
```

[Q5]

```
import java.util.Scanner;

public class Q5 {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        double[][] marks = new double[5][3];

        // Input marks for each student and subject
        for (int i = 0; i < 5; i++) {
            System.out.println("Enter marks for student " + (i + 1) + ":");
            for (int j = 0; j < 3; j++) {
                System.out.print("Enter marks for subject " + (j + 1) + ":
");
                marks[i][j] = scanner.nextDouble();
            }
```

```
        }

        // Calculate average marks for each student
        System.out.println("Average marks of each student:");
        for (int i = 0; i < 5; i++) {
            double sum = 0;
            for (int j = 0; j < 3; j++) {
                sum += marks[i][j];
            }
            double average = sum / 3;
            System.out.println("Student " + (i + 1) + ": " + average);
        }
    }
}
```

[Q6]

```
public class Q6 {
    public static void main(String[] args) {
        int[] runs = {5, 12, 28, 34, 47, 52, 65, 71, 80, 99};
        int target = 47;

        int matchNumber = binarySearch(runs, target);

        if (matchNumber != -1) {
            System.out.println("Batsman scored 47 runs in match " +
(matchNumber + 1));
        } else {
            System.out.println("Batsman did not score 47 runs in any
match.");
        }
    }

    public static int binarySearch(int[] arr, int target) {
        int left = 0;
        int right = arr.length - 1;

        while (left <= right) {
            int mid = left + (right - left) / 2;

            if (arr[mid] == target) {
                return mid;
            } else if (arr[mid] < target) {
                left = mid + 1;
            } else {
                right = mid - 1;
            }
        }

        return -1; // Target not found
    }
}
```