## 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  
 }  
}