```
/*
Name of programmer: Zainulabdin Bughio
ICS4UA.3
Program name: Array problem set courses and grades
*/
import java.util.Scanner;
import java.util.Random;

public class Main{
   public static void main(String[] args){
      Scanner sc = new Scanner(System.in);
      final int size = 10;
      int[] grades = new int[10];
      String[] courses = new String[10];
      int i = 0;
      for(i = 0; i<grades.length;i++){
         System.out.println("please enter the course");
         courses[i] = sc.nextLine();
         System.out.println("please enter the Grade");
         grades[i] = sc.nextInt();
         sc.nextLine();
      }
      for(i=0; i<grades.length;i++){
         System.out.println(" the grade for " + courses[i] + " is " + grades[i]);
      }
      System.out.println("the course marks reversed are below");
      for(i=grades.length-1; i>=0;i--){
         System.out.println("the grade for " + courses[i] + " is " + grades[i]);
      }
      System.out.println("the average of the courses entered is below");
      int sum = 0;
      for(i=0;i<grades.length;i++){
         sum += grades[i];
      }
      System.out.println("the average of the grades you entered is " +  (double)sum/size);
      printgradesandcourses(courses,grades);
      }

   public static void printgradesandcourses(String courses[] , int grades[]){
         for(int i = 0; i<grades.length;i++){
            System.out.println( courses[i] + " : " + grades[i]);
         }
   }
}
```

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/*
Name of programmer: Zainulabdin Bughio
ICS4UA.3
Program name: dice roll counter
*/
import java.util.Scanner;
import java.util.Random;

public class Main{
   public static void main(String[] args){
      Scanner sc = new Scanner(System.in);
      Random rn = new Random();
      System.out.println("enter the amount of rolls you want for dice one");
      int rolls = sc.nextInt();
      System.out.println("enter the amount of rolls you want for dice two");
      int rolls2 = sc.nextInt();
      int one = 0;
      int two = 0;
      int three = 0;
      int four = 0;
      int five = 0;
      int six = 0;
      int i = 0;
      int[] dice1 = new int[rolls];
      int[] dice2 = new int[rolls2];
      for(i=0;i<dice1.length;i++){
         dice1[i] = rn.nextInt(6) + 1;
         if(dice1[i] == 1){
            one++;
         }
         else if(dice1[i] == 2){
         two++;
         }
         else if(dice1[i] == 3){
         three++;
         }
         else if(dice1[i] == 4){
         four++;
         }
         else if(dice1[i] == 5){
         five++;
         }
         else if(dice1[i] == 6){
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    six++;
    }
if(dice1.length/2 == i){
    System.out.println("50percent of the rolls are done for dice one");
    }
}
for(i=0;i<dice2.length;i++){
    dice2[i] = rn.nextInt(6) + 1;
    if(dice2[i] == 1){
        one++;
    }
    else if(dice2[i] == 2){
    two++;
    }
    else if(dice2[i] == 3){
    three++;
    }
    else if(dice2[i] == 4){
    four++;
    }
    else if(dice2[i] == 5){
    five++;
    }
    else if(dice2[i] == 6){
    six++;
    }
if(dice2.length/2 == i){
    System.out.println("50percent of the rolls are done for dice two");
    }
}
System.out.println("the amount of times one got rolled by the dices is " + one);
System.out.println("the amount of times two got rolled by the dices is " + two);
System.out.println("the amount of times three got rolled by the dices is " + three);
System.out.println("the amount of times four got rolled by the dices is " + four);
System.out.println("the amount of times five got rolled by the dices is " + five);
System.out.println("the amount of times six got rolled by the dices is " + six);

int totalrolls = rolls + rolls2;
System.out.println("percent rolled for one is " + (double)one/totalrolls * 100 + "%");
System.out.println("percent rolled for two is " + (double)two/totalrolls * 100 + "%");
System.out.println("percent rolled for three is " + (double)three/totalrolls * 100 + "%");
System.out.println("percent rolled for four is " + (double)four/totalrolls * 100 + "%");
System.out.println("percent rolled for five is " + (double)five/totalrolls * 100 + "%");
System.out.println("percent rolled for six is " + (double)six/totalrolls * 100 + "%");
```

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   }
}

/*Name of programmer: Zainulabdin Bughio
ICS4UA.3
Program name: names and addresses
*/
import java.util.Scanner;
import java.util.Random;

public class Main{
   public static void main(String[] args){
      Scanner sc = new Scanner(System.in);
      String[] name = new String[5];
      String[] address = new String[5];
      int i = 0;
      for(i=0;i<name.length;i++){
         System.out.println("enter the name");
         name[i] = sc.nextLine();
         System.out.println("enter the address");
         address[i] = sc.nextLine();
      }
      System.out.println("this is the info you shared");

      for(i=0;i<name.length;i++){
         System.out.println(name[i] +  " : " + address[i]);
      }
      String n = "";
      String checker = "";
      String changer = "";
      int j = 0;
      int a =0;
      for(i=0;i<name.length;i++){
         System.out.println("search for a exact name");
         n = sc.nextLine();
         for(a=0;a<name.length;a++){
         if(name[a].equals(n)){
            System.out.println("the address asociated with this name is " + address[a]);
            System.out.println("would you like to change this address");
            checker = sc.nextLine().toUpperCase();
            if(checker.equals("YES")){
               System.out.println("what would you like to change it to");
               address[a] = sc.nextLine();
            System.out.println("this is the updated info");
```

```
            for(j=0;j<name.length;j++){
                System.out.println(name[j] + " : " + address[j]);
                }
            }
            }
        }
        System.out.println("would you like to go again");
        checker = sc.nextLine().toUpperCase();
        if(checker.equals("YES")){
            i=-1;
        }else{
            break;
        }
    }
    System.out.println("this is advanced search");
    System.out.println("enter something and we will find names that contain exactly that");
    System.out.println("do you want to use advanced search");
    checker = sc.nextLine().toUpperCase();
    if(checker.equals("YES")){
        System.out.println("enter what you are looking for");
        checker = sc.nextLine();
        System.out.println("this is what we found");
        for(i=0;i<name.length;i++){
            if(name[i].contains(checker)){
                System.out.println(name[i] + " : " + address[i]);
            }
        }
    }
  }
}

/*
Name of programmer: Zainulabdin Bughio
ICS4UA.3
Program name: Array problem set randomized numbers in arrays
*/
import java.util.Scanner;
import java.util.Random;
import java.util.List;
import java.util.Collections;
import java.util.Arrays;
public class Main{
   public static void main(String[] args){
      Integer[] arr = new Integer[100];
```

```
        System.out.println("this is the original array");
        int i = 0;
        int j = 0;
        for(i=0;i<arr.length;i++){
            arr[i] = j;
            j++;
        }
        List <Integer> one = Arrays.asList(arr);
        Collections.shuffle(one);
        arr = one.toArray(new Integer[0]);
        for(i=0;i<arr.length;i++){
            System.out.print("E " + arr[i] + " | ");
        }
        int a = 99;
        Integer[] arr2 = new Integer[100];
        for(i=0;i<arr2.length;i++){
            arr2[i] = arr[a];
            a--;
        }
        System.out.println();
        System.out.println();
        System.out.println("this is the reversed order of the original array");
        for(i=0;i<arr2.length;i++){
            System.out.print("E " + arr2[i] + " | ");
        }
    }
}


/*
Name of programmer: Zainulabdin Bughio
ICS4UA.3
Program name: Array problem set order sorting
*/
import java.util.Scanner;
import java.util.Random;
import java.util.List;
import java.util.Collections;
import java.util.Arrays;
public class Main{
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        System.out.println("enter 5 numbers that are real numbers");
        int i = 0;
```

```
        Integer[] numbers= new Integer[5];
        for(i=0;i<numbers.length;i++){
            numbers[i] = sc.nextInt();
        }
        for(i=0;i<numbers.length;i++){
        System.out.print(numbers[i] + " , ");
        }
        Boolean ordered= false;
        int problem = 0;
        for(i=0;i<numbers.length;i++){
            if(i>0 && numbers[i]<numbers[i-1]){
            ordered = true;
            problem = i;
            break;
            }
        }
        System.out.println();
        for(i=0;i<numbers.length;i++){
            if(problem == i){
            System.out.print("[" + numbers[i] + "] ");
            }else{
                System.out.print(numbers[i] + " , ");
            }
        }
        if(ordered == true){
            System.out.println("the array is not in order from lowest to highest");
            System.out.println("the problem was caused at index " + problem + " and number " +
numbers[problem]);
        }else{
            System.out.println("the array is in order");
        }
    }
}

/*
Name of programmer: Zainulabdin Bughio
ICS4UA.3
Program name: Array problem set Max and Min values
*/

import java.util.Random;
public class Main{
    public static void main(String[] args){
        Random rn = new Random();
```

```
    int[] arr = new int[10];
    int i =0;
    for(i=0;i<arr.length;i++){
        arr[i] = rn.nextInt(10) + 1;
    }
    printminvalueandindex(arr);
    printmaxvalueandindex(arr);
    print2maxvalues(arr);
}
public static void print2maxvalues(int arr[]){
    int max1 = arr[0];
    int max2 = arr[0];
    for(int i =1;i<arr.length;i++){
        if(max1<arr[i]){
            max2 = max1;
            max1 = arr[i];
            }else if(max2<arr[i] && max1!=arr[i]){
                max2 = arr[i];
            }
        }
        System.out.println("the two max numbers are " + max1  + " and " + max2 );
}
public static void printminvalueandindex(int arr[]){
    int min = arr[0];
    int problem = 0;
    for(int i=1;i<arr.length;i++){
        if(arr[i]< min){
            min = arr[i];
            problem = i;
        }
    }
    for(int i=0;i<arr.length;i++){
        System.out.println(arr[i] + " , ");
    }
    System.out.println("min value is " + min);
    System.out.println("min value is at index " + problem);
}
public static void printmaxvalueandindex(int arr[]){
    int max = arr[0];
    int maxindex = 0;
    for(int i=1;i<arr.length;i++){
        if(arr[i] > max){
            max = arr[i];
            maxindex = i;
```

```
            }
        }
        System.out.println("max value is " + max);
        System.out.println("max value is at index " + maxindex );
    }
}

/*
Name of programmer: Zainulabdin Bughio
ICS4UA.3
Program name: Array problem set shifting an Array to the right
*/
import java.util.Scanner;
import java.util.Random;
public class Main{
    public static void main(String[] args){
        Scanner sc = new Scanner(System.in);
        Random rn = new Random();
        int[] arr = new int[10];
        int i = 0;
        for(i = 0; i<arr.length;i++){
            arr[i] = rn.nextInt(10)+1;
        }
        System.out.println("this is the orignal random array created by the program");
        for(i=0;i<arr.length;i++){
            System.out.print(arr[i] + " , ");
        }
        System.out.println();
        System.out.println("enter the number of shifts you want for the array");
        int shifts = sc.nextInt();
        int[] aftshifts = new int[arr.length];
        for(i=0;i<arr.length;i++){
            aftshifts[i] = arr[(arr.length - shifts + i)%arr.length];
        }
        System.out.println("this is the array after the shifts");
        for(i=0;i<aftshifts.length;i++){
            System.out.print(aftshifts[i] + " , ");
        }
    }
}


/*
Name of programmer: Zainulabdin Bughio
```

```
ICS4UA.3
Program name: Array problem set 2D array
*/
import java.util.Scanner;
import java.util.Random;
public class Main{
   public static void main(String[] args){
      Scanner sc = new Scanner(System.in);
      System.out.println("enter the amount of rolls you want to do");
      int rollnumber = sc.nextInt();
      sc.nextLine();
      Random rn = new Random();
      int[][] grid = new int[7][7];
      int i = 0;
      int sum = 0;
      int[] dicerolls = new int[13];
      for(i=0;i<rollnumber;i++){
         int x = rn.nextInt(6)+1;
         int y = rn.nextInt(6)+1;
         grid[x][y] += 1;
         sum += x+y;
      }
      int j = 0;
      int k = 0;
      System.out.println("column    1    2    3    4    5    6 ");
      for(j=1;j<grid.length;j++){
      System.out.print("row " + j + " : " );

         for(k=1;k<grid[j].length;k++){
            System.out.print("  " + grid[j][k] + "  ");

         }
         System.out.println();
      }
      System.out.println("this is the sum of all the dice rolls " + sum);
      for(i=1;i<=6;i++){
         for(j=1;j<=6;j++){
          int total = i+j;
          dicerolls[total] += grid[i][j];

          }
         }
         System.out.println();
```

```
        System.out.println("do you want the amount of times each combination of number was
rolled");
        String checker = sc.nextLine().toUpperCase();
        if(checker.equals("YES")){
        for(i=2;i<=12;i++){
           System.out.println(" the amount of times the diceroll summed up to " + i + " is " +
dicerolls[i]);
        }
        }
        System.out.println();
        System.out.println("do you want the percentage chance of each rolled number");
        checker = sc.nextLine().toUpperCase();
        if(checker.equals("YES")){
        for(i=2;i<=12;i++){
           double percent = ((double)dicerolls[i] / (double)rollnumber) * 100.0;
           System.out.println("the percentage chance of how many times " + i + " is " + percent +
" percent ");
        }
        }
    }
}
```