Java - Introduction to Programming
Lecture 10

Arrays In Java

Arrays in Java are like a list of elements of the same type i.e. a list of integers, a list of booleans etc.

a. Creating an Array (method 1) - with new keyword

```
int[] marks = new int[3];
marks[0] = 97;
marks[1] = 98;
marks[2] = 95;
```

b. Creating an Array (method 2)

```
int[] marks = {98, 97, 95};
```

c. Taking an array as an input and printing its elements.

```
import java.util.*;

public class Arrays {
   public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        int size = sc.nextInt();
        int numbers[] = new int[size];

        for(int i=0; i<size; i++) {
            numbers[i] = sc.nextInt();
        }

        //print the numbers in array
        for(int i=0; i<arr.length; i++) {
            System.out.print(numbers[i]+" ");
        }
   }
}
```

Homework Problems

1. Take an array of names as input from the user and print them on the screen.

```
import java.util.*;
```

```
        Scanner sc = new Scanner(System.in);
        int size = sc.nextInt();
        String names[] = new String[size];

        //input
        for(int i=0; i<size; i++) {
            names[i] = sc.next();
        }

        //output
         for(int i=0; i<names.length; i++) {
             System.out.println("name " + (i+1) +" is : " + names[i]);
         }

    }
}
```

2. Find the maximum & minimum number in an array of integers.

[HINT : Read about Integer.MIN_VALUE & Integer.MAX_VALUE in Java]

```
import java.util.*;

public class Arrays {
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        int size = sc.nextInt();
        int numbers[] = new int[size];
```

```
        for(int i=0; i<size; i++) {
            numbers[i] = sc.nextInt();
        }

        int max = Integer.MIN_VALUE;
        int min = Integer.MAX_VALUE;

         for(int i=0; i<numbers.length; i++) {
             if(numbers[i] < min) {
                 min = numbers[i];
             }
             if(numbers[i] > max) {
                 max = numbers[i];
             }
         }

         System.out.println("Largest number is : " + max);
         System.out.println("Smallest number is : " + min);

    }
}
```

3. Take an array of numbers as input and check if it is an array sorted in ascending order.

Eg : { 1, 2, 4, 7 } is sorted in ascending order.

{3, 4, 6, 2} is not sorted in ascending order.

```
import java.util.*;
```

```
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        int size = sc.nextInt();
        int numbers[] = new int[size];

        //input
        for(int i=0; i<size; i++) {
            numbers[i] = sc.nextInt();
        }

        boolean isAscending = true;

         for(int i=0; i<numbers.length-1; i++) { // NOTICE numbers.length - 1 as termination
condition
             if(numbers[i] > numbers[i+1]) { // This is the condition for descending order
                 isAscending = false;
             }
         }

         if(isAscending) {
             System.out.println("The array is sorted in ascending order");
         } else {
             System.out.println("The array is not sorted in ascending order");
         }

    }
}
```

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