1. For each of the following, declare an array with an appropriate name and type and allocate an appropriate amount of storage.

a. a list of grades for 100 courses

```
char[] arr=new char[5];
```

b. A list of 10 names

string[ ] name=new string[10];

c. a list of 50 temperatures

float[ ] temperature=new float[50];

d. a list birth years for 25 club members

int[ ] birthyear=new int[25];

e. a list of 200 product IDs (product IDs can include digits, letters, and the dash (-))

string[ ] id=new string[200];

f. a list that keeps track of the numbers of students in 5 different classes (e.g. class 1 has x students, class 2 has y students, etc

int class[ ] [ ]=new string[5] [ ];

2. Fill in the elements for the values[] array (it has 10 elements) as the following code executes: int counter = 1;

values[0] = 10;

values[counter] = counter;

counter++;

values[5] = counter;

values[9] = values[5] + counter;

values[counter] = values[9] - values[1];

values[9] += ++counter;

values[1]=1

values[5]=2

values[9]=2+2=4

values[2]=4-1=3

values[9]=valves[9]+(++counter)=4+3=7

0	1	2	3	4	5	6	7	8	9
10	1	3	0	0	2	0	0	0	7

```
class Counter
{
	public static void main(String[] args)
	{
		int values[] = new int [10];
		int counter = 1;
	values[0] = 10;
	values[counter] = counter;
	counter++;
	values[5] = counter;
	values[9] = values[5] + counter;
	values[counter] = values[9] - values[1];
	values[9] += ++counter;

		for (int x:values)
			System.out.println(x);

	}
}
```

```
D:\Java>java Counter
10
1
3
0
0
2
0
0
0
7
```

3. Write the code to display the values[] array (from the previous exercise) backwards.

```
public class Counter1
{
        public static void main(String[] args)
        {
                int values[] = new int [10];
                int counter = 1;
      values[0] = 10;
      values[counter] = counter;
      counter++;
      values[5] = counter;
      values[9] = values[5] + counter;
      values[counter] = values[9] - values[1];
      values[9] += ++counter;

                for (int x:values)
                        System.out.println(x);

                for(int i=values.length-1;i>=0;i--){
                        System.out.print(values[i]+" ");
                }
            }
```

```
    }
```

```
D:\Java>java Counter1
10
1
3
0
0
2
0
0
0
7
7 0 0 0 2 0 0 3 1 10
```

4. a. Write a program that uses a char[] array to store the characters in a sentence. Ask the user for a sentence, and then store that string into the char[] array.

```
import java.util.Scanner;


class StringTOChar
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        String str = sc.nextLine();


        char charArray[] = new char[str.length()];


        for (int i =0;i<str.length() ;i++ ) {
            charArray[i]=str.charAt(i);
        }
        System.out.println(charArray);
    }
}
```

```
D:\Java>java StringTOChar
ASSIGNMENT
ASSIGNMENT

D:\Java>
```

b. Modify the above program to do a search/replace for one letter in the char[] array. Ask the user what letter they'd like to replace, and then the letter they'd like to replace it with. After doing the search/replace, display the sentence.

```
import java.util.Scanner;


class StringTOChar2
{
	public static void main(String[] args)
	{
		System.out.println("Enter any String");
		Scanner sc = new Scanner(System.in);
		String str = sc.nextLine();

		char charArray[] = new char[str.length()];

		for (int i =0;i<str.length() ;i++ ) {
			charArray[i]=str.charAt(i);

		}
		System.out.println("String in Array: ");
		System.out.println(charArray);


	System.out.println("Enter an character you want to replace");
	char x=sc.next().charAt(0);
	System.out.println("Enter an character you want to replace with");
	char y=sc.next().charAt(0);


		for(int j=0;j<charArray.length;j++){
```

```
                if(charArray[j] ==x)     {
                        charArray[j]=y;
                }
        }
        System.out.println("String After Character Replace");
        System.out.println(charArray);


    }
}
```

b. Modify the above program to do a search/replace for one letter in the char[] array. Ask the user what letter they'd like to replace, and then the letter they'd like to replace it with. After doing the search/replace, display the sentence.

```
import java.util.Scanner;

class StringTOChar2
{
    public static void main(String[] args)
    {
        System.out.println("Enter any String");
        Scanner sc = new Scanner(System.in);
        String str = sc.nextLine();

        char charArray[] = new char[str.length()];

        for (int i =0;i<str.length() ;i++ ) {
            charArray[i]=str.charAt(i);
```

```
                }
                System.out.println("String in Array: ");
                System.out.println(charArray);


        System.out.println("Enter an character you want to replace");
        char x=sc.next().charAt(0);
        System.out.println("Enter an character you want to replace with");
        char y=sc.next().charAt(0);


                for(int j=0;j<charArray.length;j++){

                        if(charArray[j] ==x)    {
                                charArray[j]=y;
                        }
                }
                System.out.println("String After Character Replace");
                System.out.println(charArray);


        }
}
```

```
D:\Java>java StringTOChar2
Enter any String
ASSIGNMENT
String in Array:
ASSIGNMENT
Enter an character you want to replace
S
Enter an character you want to replace with
9
String After Character Replace
A99IGNMENT

D:\Java>
```