MODULE 2 LABSHEET

Defining an Array, Initializing & Accessing Array, Multi –Dimensional Array, Strings: Operation on String, Mutable & Immutable String, Creating Strings using String Buffer or StringBuilder. String Constant Pool, String Internal representation, String Application. Tokenizing a String. Inheritance and Polymorphism: Use and benefits of inheritance in OOP, Types of Inheritance, Method overriding, super keyword, Final, Polymorphism in inheritance, Abstract, this keyword.

1. Mr. John went to super market with a basket of holding 5 kg. He purchased 1 kg of apple, 1kg of orange, 1 kg of grapes, 1 kg of pomegranates and 1 kg of kiwi fruit. He puts all the fruits in his basket and at home he wants to check what he has bought from the market.

```
public class fruit
 {
public static void main(String[] args)
 {
int i;
String fruits[]={ "1kg Apple", "1kg Orange", "1kg Grapes", "1kg Pomegranate", "1kg
Kiwi"};
for(i=0;i<5;i++)
System.out.println(fruits[i]);
}
}
```

2. A university maintains Library applications which keep track of the books or magazines the students read in every month using matrix form. A student visits the university library in the month of June, July, and August. He reads fiction, non-fiction books and magazines, both in paper copies and online. The library application shows how many different types of books and magazines the student read. Use the information given below for better understanding:

June		
	PAPER	ONLINE
Fiction	2	4
Non-fiction	3	1
Magazines	4	5

July		
	PAPER	ONLINE
Fiction	3	2
Non-fiction	1	1
Magazines	5	3

August		
	PAPER	ONLINE
Fiction	1	3
Non-fiction	2	3
Magazines	4	6

```
import java.util.Scanner;
class AddTwoMatrix
{
  public static void main(String args[])
  {
    int m, n, i, j;
    Scanner in = new Scanner(System.in);

    System.out.println("Enter the number of rows and columns of matrix");
```

```
m = in.nextInt();
n  = in.nextInt();

int first[][] = new int[m][n];
int second[][] = new int[m][n];
int third[][]=new int[m][n];
int sum[][] = new int[m][n];

System.out.println("Enter the books which the student read in the month of June and it's matrix form is");

for (i = 0; i < m; i++)
  for (j = 0; j < n; j++)
    first[i][j] = in.nextInt();

System.out.println("Enter the books which the student read in the month of July and it's matrix form is");

for (i = 0; i < m; i++)
  for (j = 0; j < n; j++)
    second[i][j] = in.nextInt();

System.out.println("Enter the books which the student read in the month of August and it's matrix form is");

for (i = 0; i < m; i++)
  for (j = 0; j < n; j++)
    third[i][j] = in.nextInt();

  //Sum of matrices is:
for (i = 0; i < m; i++)
  for (j = 0; j < n; j++)
    sum[i][j] = first[i][j] + second[i][j]+third[i][j];

System.out.println("Total number of different types of books and magazines he read is");
for (i = 0; i < m; i++)
{
  for (j = 0; j < n; j++)
    System.out.print(sum[i][j]+"\t");

  System.out.println();
}
System.out.println("Total 6 paper fiction books the student has read");
System.out.println("Total 9 online fiction books the student has read");
System.out.println("Total 6 paper non-fiction books the student has read");
System.out.println("Total 5 online non- fiction books the student has read");
System.out.println("Total 13 papers the student has read");
System.out.println("Total 14 online magzines the student has read");

}
```

```
}
```

Output:

```
Enter the number of rows and columns of matrix
3
2
Enter the books which the student read in the month of June and it's matrix form is
2       4
3       1
4       5
Enter the books which the student read in the month of July and it's matrix form is
3       2
1       1
5       3
Enter the books which the student read in the month of August and it's matrix form is
1       3
2       3
4       6
Total number of different types of books and magazines he read is
6       9
6       5
13      14
Total 6 paper fiction books the student has read
Total 9 online fiction books the student has read
Total 6 paper non-fiction books the student has read
Total 5 online non- fiction books the student has read
Total 13 papers the student has read
Total 14 online magazines the student has read
```

3. Mr. John has joined the Company as Database Administrator and his major role is to maintain the Employee database which includes Employee Id, Employee Name, Age and Employee Salary. The criteria for maintaining are that, he need to store all the records in one single table. How the John is going to access all the records which he has stored?

```
import java.util.Scanner;


   class Employee
   {
      int Id;
      String Name;
      int Age;
      long Salary;

      void GetData()          // Defining GetData()
      {

         Scanner sc = new Scanner(System.in);
```

```
        System.out.print("\n\tEnter Employee Id : ");
        Id = sc.nextInt();

        System.out.print("\n\tEnter Employee Name : ");
        Name = sc.next();

        System.out.print("\n\tEnter Employee Age : ");
        Age = sc.nextInt();

        System.out.print("\n\tEnter Employee Salary : ");
        Salary = sc.nextLong();

    }

    void PutData()          // Defining PutData()
    {
        System.out.print("\n\t" + Id + "\t" +Name + "\t" +Age + "\t" +Salary);
    }

    public static void main(String args[])
    {

        Employee[] Emp = new Employee[3];
        int i;

        for(i=0;i<3;i++)
            Emp[i] =  new Employee();   // Allocating memory to each object

        for(i=0;i<3;i++)
        {
            System.out.print("\nEnter details of "+ (i+1) +" Employee\n");

            Emp[i].GetData();
        }

        System.out.print("\nDetails of Employees\n");
        for(i=0;i<3;i++)
            Emp[i].PutData();

    }
}
```

Output:

```
Enter details of 1 Employee
        Enter Employee Id : 34
        Enter Employee Name : Geetha
        Enter Employee Age : 23
        Enter Employee Salary : 45000
```

Enter details of 2 Employee
Enter Employee Id : 35
Enter Employee Name : Seetha
Enter Employee Age : 24
Enter Employee Salary : 50000

Enter details of 3 Employee
Enter Employee Id : 25
Enter Employee Name : Vineetha
Enter Employee Age : 28
Enter Employee Salary : 55000

Details of Employees

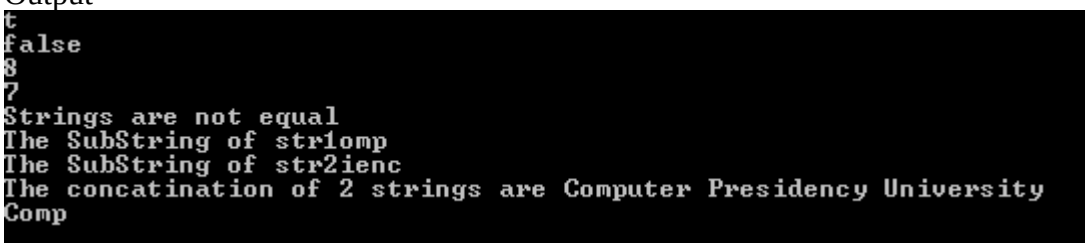
34	Geetha	23	45000
35	Seetha	24	50000
25	Vineetha	28	55000

4. Create two Strings str1 and str2, using String functions find the
a. Character at index 5 for str1
b. Check if the str2 starts with “k”
c. Find the length of str1 and str2
d. Find if str1 and str2 are equal
e. Find the substring of str1 for index 1:4
f. Create a character array called dst, store dst[0]=’a’ and dst[1]=’b’ respectively and display it.
g. Use getchars function to add characters to a character array dst and display it.
h. Concatenate str2 with presidency University

```
public class Stringexample1 {
public static void main(String[] args)
 {
String str1 = "Computer";
String str2= "Science";
System.out.println(str1.charAt(5));
System.out.println(str2.startsWith("k"));
System.out.println(str1.length());
System.out.println(str2.length());
if(str1.equals(str2)) {
System.out.println("the strings are equal");
}
else
 {
System.out.println("Strings are not equal");
}
```

```
String s2 = str1.substring(1,4);
String s3 = str2.substring(2,6);
System.out.println("The SubString of str1"+s2);
System.out.println("The SubString of str2"+s3);
String s4;
s4 = str1.concat(" Presidency University");
System.out.println("The concatination of 2 strings are "+s4);
char[] dst=new char[20];
dst[0]='a';
dst[1]='b';
dst[2]='c';
str1.getChars(0,4,dst,0);
 System.out.println(dst);
}
}
```

Output



5. Create a String "ScienceTechnology" using StringBuffer, Perform the following operations
a. insert string "for" at location 7
b. insert 0 at location 2
c. insert "true" at location 3
d. insert a character array

```
import java.io.*;
class Stringexample {
public static void main(String[] args) {
StringBuffer s = new StringBuffer("ScienceTechnology");
 s.insert(7, "for");
System.out.println(s);
s.insert(2,0);
 System.out.println(s);
 s.insert(3, "true");
System.out.println(s);
char str_arr[] = { 'c', 'o', 'm','p', 'u', 't', 'e', 'r' };
s.insert(2, str_arr); System.out.println(s);
}
}
```

Output:

```
C:\ec07>java Stringexample
ScienceforTechnology
Sc0ienceforTechnology
Sc0trueienceforTechnology
Sccomputer0trueienceforTechnology
```

6. A customer on e-commerce ordered a product online by giving both his/her company and home address. The e-commerce site has maintained both the addresses entered by a customer. When a product has to be delivered the delivery boy working for e-commerce wants to know the address to deliver the product. Thus, the delivery boy wants to access both the address from his portal but there is only one column. Help him to access both addresses without override the values.

```
class Organization
{
 public void address() // this is called overridden method
  {
    System.out.println("Rajankunte,Bengaluru");
   }
}
class Employee extends Organization
{
 public void address() // this is called overridding method
   {
      System.out.println("Hebbal,Bengaluru");
   }
}

class Overriding2
{
public static void main(String args[])
{
   Organization o=new Organization();
   Organization e=new Employee();
    o.address();
    e.address();
}
}
```

output

```
Rajankunte,Bengaluru
Rajankunte,Bengaluru
```

7. A teacher is having marks list of her students. One of the students asked the teacher to share the marks. She is worrying that if she shared the marks to the students they may edit the marks they secured. So help the teacher by providing the secure access to students to view their marks without editing/modifying it.

```
class Teacher
{
final int java_marks=75;
final int dsa=70;
final int c_pro=65;
```

```
final int fds=60;
final int python=80;

   void show()
   {
      System.out.println("List of marks");
    }
}
class Student extends Teacher
{
  void show()
   {
System.out.println("Student:"+ java_marks);
System.out.println("Student:"+ dsa);
System.out.println("Student:"+ c_pro);
System.out.println("Student:"+ fds);
System.out.println("Student:"+ python);
    }
}
class FinalLab
{
 public static void main(String args[])
 {
    Teacher t=new Teacher();
    Teacher s=new Student();
    t.show();
    s.show();
}
}
```