

Section: C

OOP Lab#14(Open Ended Lab2)**Objective:**

Implementation of previous Knowledge.

Lab Goal:

To enhance the previous Knowledge.

Lab Overview:

It's a simple program to perform cloning of a object not with copy constructor as we learned it will be some different process, we will take the help or we can say we use the built in clone() method of java which is present in objectclass with protected access modifier i.e in a package of java.lang.objectclass so we will first override this method then perform cloning.

Program Description:**Cloneable Interface:**

It's called as marker interface which is just used to take permission for object cloning. There is nothing in the body of that interface b/c marker interfaces are just used for permissions.

throws keyword:

It is used to report the exception to compiler so compiler will be able to handle and successfully compile our program.

toString() method:

It is a method which is just used for string representation of object.

Clone() method:

It's a built-in method in java used for object cloning in a package of java.lang.objectclass but its access modifier is protected so we override it for our use.

hashCode() method:

A numeric number is generated whenever we create an object so it's a method to print that numeric number to show that object is created. The hashcode of cloned object is different which shows that cloned object is created but with the same content.

Program Source code:

```
package openendedlab2;

class Lab implements Cloneable { // step 1

    String lab;

    int labno;

    Lab(String lab,int labno){

        this.lab=lab;

        this.labno=labno;
```

```

    }
    @Override
    public Lab clone() throws CloneNotSupportedException{ //step2
    return (Lab)super.clone();
    }
    public String toString(){
    return "lab="+lab+"\nlabno="+labno;
    }
    }
    public class OpenEndedLab2 {
    public static void main(String[] args) throws CloneNotSupportedException {
    Lab obj=new Lab("OpenEnded",14);
    System.out.println("Displaying original object content:"+obj.toString());
    System.out.println("hashcode of obj:"+obj.hashCode());
    Lab obj1=obj.clone(); //step 3
    System.out.println("Displaying cloaned object content:"+obj1.toString());
    System.out.println("hashcode of obj1:"+obj1.hashCode());
    }
    }

```

Output:

```

Displaying original object content:lab=OpenEnded
labno=14
hashcode of obj:366712642
Displaying cloaned object content:lab=OpenEnded
labno=14
hashcode of obj1:1829164700

```