

lab-6 Packages:

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

```
import java.io.*;
```

```
import java.lang.*;
```

```
import cie.*;
```

```
import see.*;
```

```
public class student_end
```

```
{
```

```
    public static void main(String[] args)
```

```
    {
```

```
        int n;
```

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

```
        int final_mark;
```

```
        System.out.println("Enter the Number of students ");
```

```
        n=sc.nextInt();
```

```
        internals[] in=new internals[n];
```

```
        external[] ex=new external[n];
```

```
        internals ob1=new internals();
```

```
        external ob2=new external();
```

```
        ob2.mar=new int[n];
```

```
        for(int i=0;i<n;i++)
```

```
        {
```

```
            System.out.println("Enter the details of the student " + (i+1));
```

```

        in[i]=new internals();

        in[i].read();

        ex[i]=new external();

        ex[i].read();

    }

    System.out.println();

    for(int i=0;i<n;i++)

    {

        System.out.println("*Details Of The Student* " + (i+1));

        System.out.println("USN of the student is " + in[i].usn);

        System.out.println("Name of the student is " + in[i].name);

        System.out.println("Semester of the student is " + in[i].sem);

        for(int j=0;j<5;j++)

        {

            final_mark=in[i].a[j]+((ex[i].b[j])/2);

            System.out.println("Final Mark of the student " + (i+1) + " " + " in course " +

(j+1) + " " + final_mark);

        }

        System.out.println();

    }

}

}

}

```

lab-7

1)Exception:

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

```
import java.io.*;
```

```
import java.lang.*;
```

```
class Wrongage extends Exception
```

```
{
```

```
    public int a;
```

```
    Wrongage(int x)
```

```
    {
```

```
        a=x;
```

```
    }
```

```
    public String toString()
```

```
    {
```

```
        return "Wrongage[" + a + "];"
```

```
    }
```

```
}
```

```
class father
```

```
{
```

```
    public int age;
```

```
    father(int a)
```

```
    {
```

```

        age=a;
    }

    public void check() throws Wrongage
    {
        System.out.println("Checking the age of the father ");
        System.out.println();
        if(age<0)
            throw new Wrongage(age);
        System.out.println("Correct Age");
    }
}

```

class son extends father

```

{
    public int son_age;
    son(int fa_age,int i)
    {
        super(fa_age);
        son_age=i;
    }

    public void check() throws Wrongage
    {
        super.check();
        System.out.println();
        System.out.println("Checking the age of the Son ");
        System.out.println();
    }
}

```

```

        if(son_age<0 || son_age>age)

            throw new Wrongage(son_age);

        System.out.println("Correct Age");

    }

}

public class errortest

{

    public static void main(String[] args)

    {

        int so_age,father_age;

        Scanner sc=new Scanner(System.in);

        System.out.println("Enter the Age Of The Father ");

        father_age=sc.nextInt();

        System.out.println("Enter the age of the son ");

        so_age=sc.nextInt();

        son s=new son(father_age,so_age);

        try

        {

            s.check();

        }catch(Wrongage w)

        {

            System.out.println("Exception: " + w);

        }

    }

}

```

```
}
```

Output:

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.18363.1256]
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C:\windows\system32>cd\

C:\>cd program files/java/jdk-15/bin
C:\Program Files\Java\jdk-15\bin>javac errortest.java
C:\Program Files\Java\jdk-15\bin>java errortest
Enter the Age Of The Father
55
Enter the age of the son
22
Checking the age of the father
Correct Age
Checking the age of the Son
Correct Age
C:\Program Files\Java\jdk-15\bin>javac errortest.java
C:\Program Files\Java\jdk-15\bin>
C:\Program Files\Java\jdk-15\bin>javac errortest.java
C:\Program Files\Java\jdk-15\bin>java errortest
Enter the Age Of The Father
40
Enter the age of the son
50
Checking the age of the father
Correct Age
Checking the age of the Son
Exception: Wrongage[50]
C:\Program Files\Java\jdk-15\bin>
```

2)Generics:

```
import java.io.*;
```

```
import java.lang.*;
```

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

```
class gen<T>
```

```
{
```

```
    T ob;
```

```
    gen(T o)
```

```
{
```

```

        ob=o;
    }
    T getob()
    {
        return ob;
    }
    void showtype()
    {
        System.out.println("Type of T is " + ob.getClass().getName());
    }
}

```

class generic

```

{
    public static void main(String[] args)
    {
        String n;
        Scanner sc=new Scanner(System.in);
        System.out.println("Enter the Integer Number to Be Displayed Using the generic style");
        n=sc.next();
        gen<Integer> ob1=new gen<Integer>(Integer.parseInt(n));
        ob1.showtype();
        int val=ob1.getob();
        System.out.println("Value is: " + val);

        System.out.println();
    }
}

```

```
System.out.println("Enter the String to Be Displayed Using the generic style");
```

```
n=sc.next();
```

```
gen<String> ob2=new gen<String>(n);
```

```
ob2.showtype();
```

```
String x=ob2.getob();
```

```
System.out.println("Value : " + x);
```

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

```
System.out.println("Enter the Double Number to Be Displayed Using the generic style");
```

```
n=sc.next();
```

```
gen<Double> ob3=new gen<Double>(Double.parseDouble(n));
```

```
ob3.showtype();
```

```
double ans=ob3.getob();
```

```
System.out.println("Value : " + ans);
```

```
}
```

```
}
```

Output:


```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.18363.1256]
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C:\windows\system32>cd\
C:\>cd program files/java/jdk-15/bin
C:\Program Files\Java\jdk-15\bin>javac generic.java
C:\Program Files\Java\jdk-15\bin>java generic
Enter the Integer Number to Be Displayed Using the generic style
25
Type of T is java.lang.Integer
Value is: 25

Enter the String to Be Displayed Using the generic style
Rohit
Type of T is java.lang.String
Value : Rohit

Enter the Double Number to Be Displayed Using the generic style
45.54
Type of T is java.lang.Double
Value : 45.54

C:\Program Files\Java\jdk-15\bin>
```

Lab-8 Threads:

```
import java.util.*;

import java.io.*;

import java.lang.*;

class newthread implements Runnable
{
    Thread t;

    newthread()
    {
        t=new Thread(this,"CSE");

        System.out.println("CHILD THREAD: " + t);
    }

    public void run()
```

```

{
    try{
    for(;;)
    {
        System.out.println("CSE");
        Thread.sleep(2000);
    }
    }catch(InterruptedException e){
        System.out.println("CSE Thread interrruoted ");
    }
    System.out.println("Exiting The CSE Thread");
}
}

```

class thread

```

{
    public static void main(String[] args)
    {
        newthread nt=new newthread();
        nt.t.start();
        try{
            for(;;)
            {
                System.out.println("BMS COLLEGE OF ENGINEERING");
                Thread.sleep(10000);
            }
        }catch(InterruptedException e){
            System.out.println("Main Thread Interrupted: ");
        }
    }
}

```

```

    }
    System.out.println("Exiting out of the main thread ");
}
}

```

Output:

```
Administrator: Command Prompt - java thread
Microsoft Windows [Version 10.0.18363.1256]
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C:\Windows\system32>cd\

C:\>cd program files/java/jdk-15/bin

C:\Program Files\Java\jdk-15\bin>javac thread.java

C:\Program Files\Java\jdk-15\bin>java thread
CHILD THREAD: Thread[CSE,S,main]
BMS COLLEGE OF ENGINEERING
CSE
CSE
CSE
CSE
CSE
CSE
CSE
CSE
CSE
CSE
CSE
CSE
```

Lab-9

1) Car mechanic:

```
import java.util.*;
import java.io.*;
import java.lang.*;

class car_queue
{
    boolean valueset=false;
```

```

synchronized String get()
{
    try
    {
        while(!valueset)
        {
            wait();
        }

    }catch(InterruptedException e){
        System.out.println("Exception Caught");
    }
    System.out.println("Mechanic: Serviced,Thank You!");
    valueset=false;
    notify();
    return "yes";
}

synchronized void put(String msg)
{
    try
    {
        while(valueset)
        {
            wait();
        }

    }catch(InterruptedException e){
        System.out.println("Exception Caught");
    }
}

```

```

        System.out.println(msg);

        valueset=true;

        notify();
    }
}

class car_owner implements Runnable
{
    Thread t;

    car_queue cq;

    car_owner(car_queue cq)
    {
        this.cq=cq;

        t=new Thread(this,"OWNER");
    }

    public void run()
    {
        while(true)
        {
            cq.put("Owner:Please Service My Car");
        }
    }
}

class car_mechanic implements Runnable
{
    Thread t;

    car_queue cq;

    car_mechanic(car_queue cq)
    {

```

```

        this.cq=cq;

        t=new Thread(this,"Mechanic");
    }
    public void run()
    {
        while(true)
        {
            cq.get();
        }
    }
}

class test
{
    public static void main(String[] args)
    {
        car_queue cq=new car_queue();
        car_owner co=new car_owner(cq);
        car_mechanic cm=new car_mechanic(cq);
        co.t.start();
        cm.t.start();
        try{
            co.t.join();
            cm.t.join();
        }catch(InterruptedException e){
            System.out.println("Exception Caught");
        }
    }
}

```

Output:

```
Administrator: Command Prompt - java test
Owner:Please Service My Car
Mechanic: Serviced,Thank You!
Owner:Please Service My Car
Mechanic: Serviced,Thank You!
Owner:Please Service My Car
Mechanic: Serviced,Thank You!
Owner:Please Service My Car
Mechanic: Serviced,Thank You!
Owner:Please Service My Car
Mechanic: Serviced,Thank You!
Owner:Please Service My Car
Mechanic: Serviced,Thank You!
Owner:Please Service My Car
Mechanic: Serviced,Thank You!
Owner:Please Service My Car
Mechanic: Serviced,Thank You!
Owner:Please Service My Car
Mechanic: Serviced,Thank You!
Owner:Please Service My Car
Mechanic: Serviced,Thank You!
Owner:Please Service My Car
Mechanic: Serviced,Thank You!
Owner:Please Service My Car
Mechanic: Serviced,Thank You!
Owner:Please Service My Car
Mechanic: Serviced,Thank You!
Owner:Please Service My Car
Mechanic: Serviced,Thank You!
```

Windows taskbar at the bottom includes:
Start button
Search bar: Type here to search
Taskbar icons: File Explorer, Microsoft Edge, Task View, Settings, File Explorer, Runes of Magic, etc.
System tray: Network, Volume, Battery, Date/Time (09:06, 19-12-2020)

2) multiplication table:

class Table

```
{
    void printTable(int n)
    {
        synchronized(this)
        {
            for(int i=1;i<=5;i++)
            {
                System.out.println(+n+"*"+i+"="+n*i);
                try
                {
                    Thread.sleep(400);
                }
            }
        }
    }
}
```

```

        catch(Exception e)
        {
            System.out.println(e);
        }
    }
}

```

```

class Mythread1 extends Thread
{
    Table t;
    Mythread1(Table t)
    {
        this.t=t;
    }
    public void run()
    {
        t.printTable(5);
    }
}

```

```

class Mythread2 extends Thread
{
    Table t;
    Mythread2(Table t)
    {

```



```
        this.t=t;
    }
    public void run()
    {
        t.printTable(100);
    }
}
```

class use

```
{
    public static void main(String args[])
    {
        Table obj = new Table();
        Mythread1 th1 = new Mythread1(obj);
        Mythread2 th2 = new Mythread2(obj);
        th1.start();
        th2.start();
    }
}
```

Output:

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.18363.1256]
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C:\windows\system32>cd\
C:\>cd program files/java/jdk-15/bin
C:\Program Files\Java\jdk-15\bin>javac use.java
C:\Program Files\Java\jdk-15\bin>java use
5*1=5
5*2=10
5*3=15
5*4=20
5*5=25
100*1=100
100*2=200
100*3=300
100*4=400
100*5=500
C:\Program Files\Java\jdk-15\bin>
```

3)Synchronized:

```
import java.util.*;

import java.io.*;

import java.lang.*;

class callme

{

    synchronized void call(String msg)

    {

        System.out.print("[ " + msg);

        try

        {

            Thread.sleep(2000);

        }catch(InterruptedException e)

        {

            System.out.println("Exception Caught");

        }

    }

}
```

```

        System.out.println("]");
    }
}

class caller implements Runnable
{
    String msg;
    callme target;
    Thread t;
    caller(callme targ,String s)
    {
        target=targ;
        msg=s;
        t=new Thread(this,"SYNC");
    }
    public void run()
    {
        target.call(msg);
    }
}

class sync
{
    public static void main(String[]args)
    {
        callme tt=new callme();
        caller ob1=new caller(tt,"Rohit");
        caller ob2=new caller(tt,"Anil");
        caller ob3=new caller(tt,"Chadichal");
        ob1.t.start();
    }
}

```

```
        ob2.t.start();

        ob3.t.start();

    try
    {

        ob1.t.join();

        ob2.t.join();

        ob3.t.join();

    }catch(InterruptedException e){

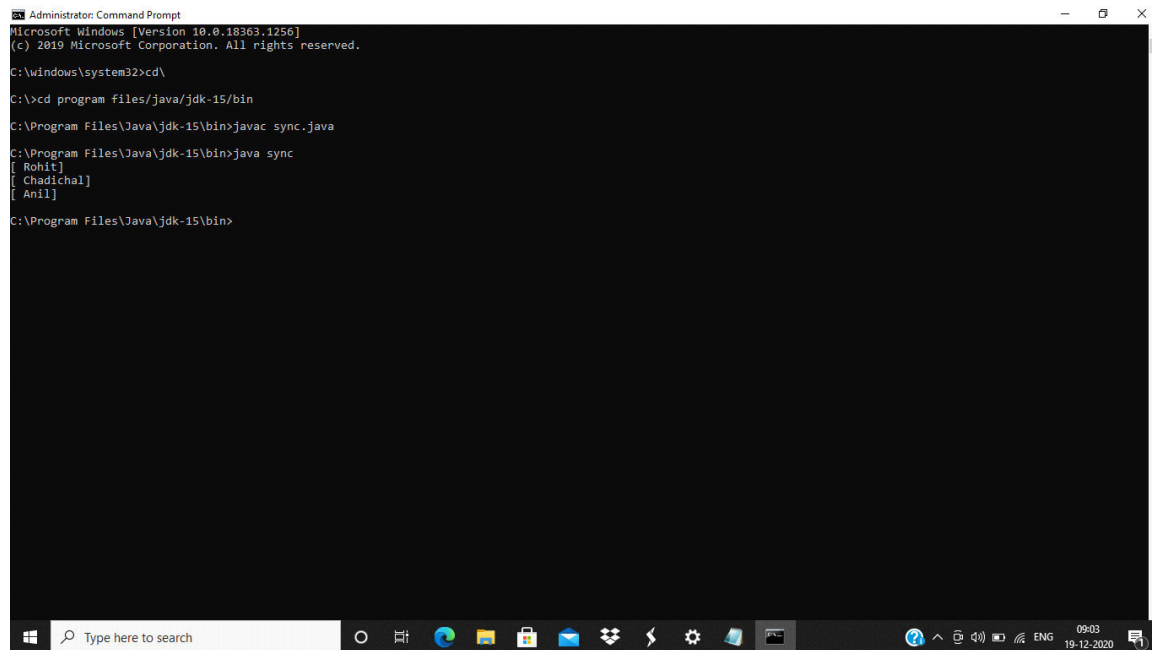
        System.out.println("Exception Caught");

    }

}

}
```

Output:



```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.18363.1256]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\windows\system32>cd\

C:\>cd program files/java/jdk-15/bin
C:\Program Files\Java\jdk-15\bin>javac sync.java
C:\Program Files\Java\jdk-15\bin>java sync
[ Rohit]
[ Chadicha1]
[ Anil]
C:\Program Files\Java\jdk-15\bin>
```

