

JAVA TRAINING CENTER

Java Training Center

(No.1 in Training & placement)

MultiThreading WorkBook

Master the Content...

GROWTH UNBOUND

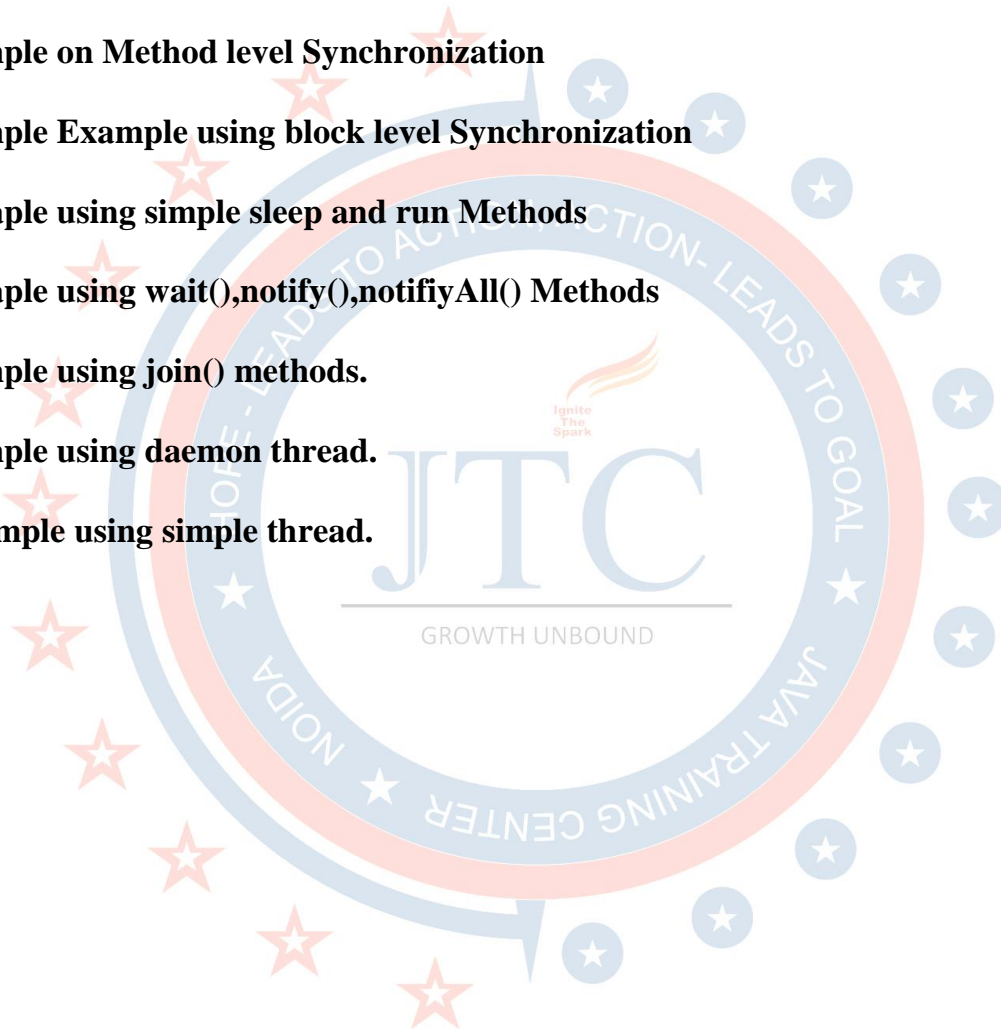
Author

Som Prakash Rai

JAVA TRAINING CENTER

Topic

- Jtc 1: Example using gc() and ThreadGroup**
- Jtc 2: Example using start() and run() Methods**
- Jtc 3: Example using start() and run() Methods**
- Jtc 4: Example on Method level Synchronization**
- Jtc 5: Example Example using block level Synchronization**
- Jtc 6 :Exmaple using simple sleep and run Methods**
- Jtc 7: Exmaple using wait(),notify(),notifiyAll() Methods**
- Jtc 8: Example using join() methods.**
- Jtc 9: Example using daemon thread.**
- Jtc 10: Example using simple thread.**



JAVA TRAINING CENTER

Jtc 1: Example using gc() and ThreadGroup

1) Jtc1.java

```
public class Jtc1 {
/*
 * @Author   : Som Prakash Rai
 * @Join     : Java Training Center
 * @visit    : www.jtcindia.org
 * @Call     : +91-9990399111
 * */

public static void main(String[] args) {
System.out.println("Main started");
System.out.println("Length:" + args.length);
for (int i = 0; i < args.length; i++) {
System.out.println("Args:" + i + "\t" + args[i]);
}

Thread th = Thread.currentThread();
ThreadGroup tg = th.getThreadGroup();
new JtcStudent();
System.gc();
for (int i = 0; i < 10; i++) {
System.out.println(i + "\t" + th.getName() + "\t" + tg.getName());
}
System.out.println("Main Completed");
}
}

class JtcStudent{
public void finalize() {
Thread th = Thread.currentThread();
ThreadGroup tg = th.getThreadGroup();
for (int i = 20; i < 40; i++) {
System.out.println(i + "\t" + th.getName() + "\t" + tg.getName());
}
}
}
```

Jtc 2: Example using start() and run() Methods

1) Jtc2.java

```
public class Jtc2{
/*
 * @Author   : Som Prakash Rai
```

JAVA TRAINING CENTER

* @Join : Java Training Center
* @visit : www.jtcindia.org
* @Call : +91-9990399111
* */

```
public static void main(String args[]){
    JtcThread jt1=new JtcThread();
    jt1.start();
    Thread th=Thread.currentThread();
    for(int i=100;i<110;i++){
        System.out.println("Main "+i+"\t"+th.getName());
        if(i==105){
            int x=10/0;
        }
    }
}

class JtcThread extends Thread{
    public void run(){
        Hello12 h=new Hello12();
        h.show();
    }
}

class Hello12 {
    void show(){
        Thread th=Thread.currentThread();
        for(int i=0;i<10;i++){
            System.out.println("Show\t"+i+"\t"+th.getName());
        }
    }
}
```

Jtc 3: Example using start() and run() Methods

1) Jtc3.java

```
public class Jtc3 {
    /*
    * @Author : Som Prakash Rai
    * @Join : Java Training Center
    * @visit : www.jtcindia.org
    * @Call : +91-9990399111
    * */

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

JAVA TRAINING CENTER

```
JtcThread1 jth1 = new JtcThread1();
JtcThread2 jth2 = new JtcThread2();
jth1.start();
jth2.start();
}
```

```
class JtcThread1 extends Thread {
public void run() {
Service serv = new Service();
serv.downloadFile();
}
```

```
class JtcThread2 extends Thread {
public void run() {
Service serv = new Service();
serv.readJtcStudentInfo();
}
```

```
class Service {
void downloadFile() {
for (int i = 0; i <= 100; i += 5) {
System.out.println("Download\t" + i + "%");
}
}
void readJtcStudentInfo() {
for (int i = 0; i < 51; i++) {
System.out.println("JtcStudent with id\t" + i + "\t\tInformation");
}
}
```

Jtc 4: Example on Method level Synchronization

Jtc4.java

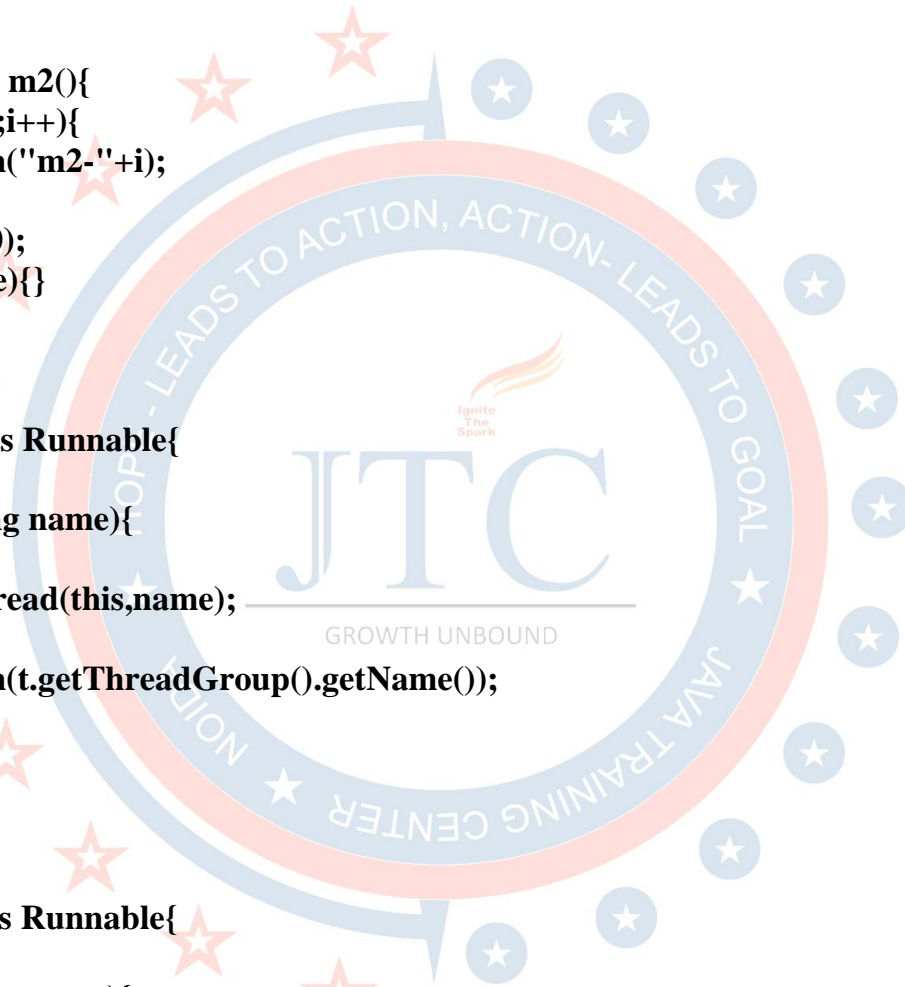
```
public class Jtc4{
public static void main(String[] args) {
HelloJtc h=new HelloJtc();
new A(h,"A");
new B(h,"B");
}
```

JAVA TRAINING CENTER

```
class HelloJtc{
synchronized void m1(){
for(int i=1;i<=5;i++){
System.out.println("m1-"+i);
try{
Thread.sleep(1000);
}catch(Exception e){}

}
}
synchronized void m2(){
for(int i=10;i<=15;i++){
System.out.println("m2-"+i);
try{
Thread.sleep(1000);
}catch(Exception e){}
}
}
}
class A implements Runnable{
HelloJtc h=null;
A(HelloJtc h,String name){
this.h=h;
Thread t=new Thread(this,name);
t.start();
System.out.println(t.getThreadGroup().getName());
}
public void run(){
h.m1();
}
}
class B implements Runnable{
HelloJtc h=null;
B(HelloJtc h,String name){
this.h=h;
Thread t2=new Thread(this,name);
t2.start();
System.out.println(t2.getThreadGroup().getName());

}
public void run(){
h.m2();
}
```



JAVA TRAINING CENTER

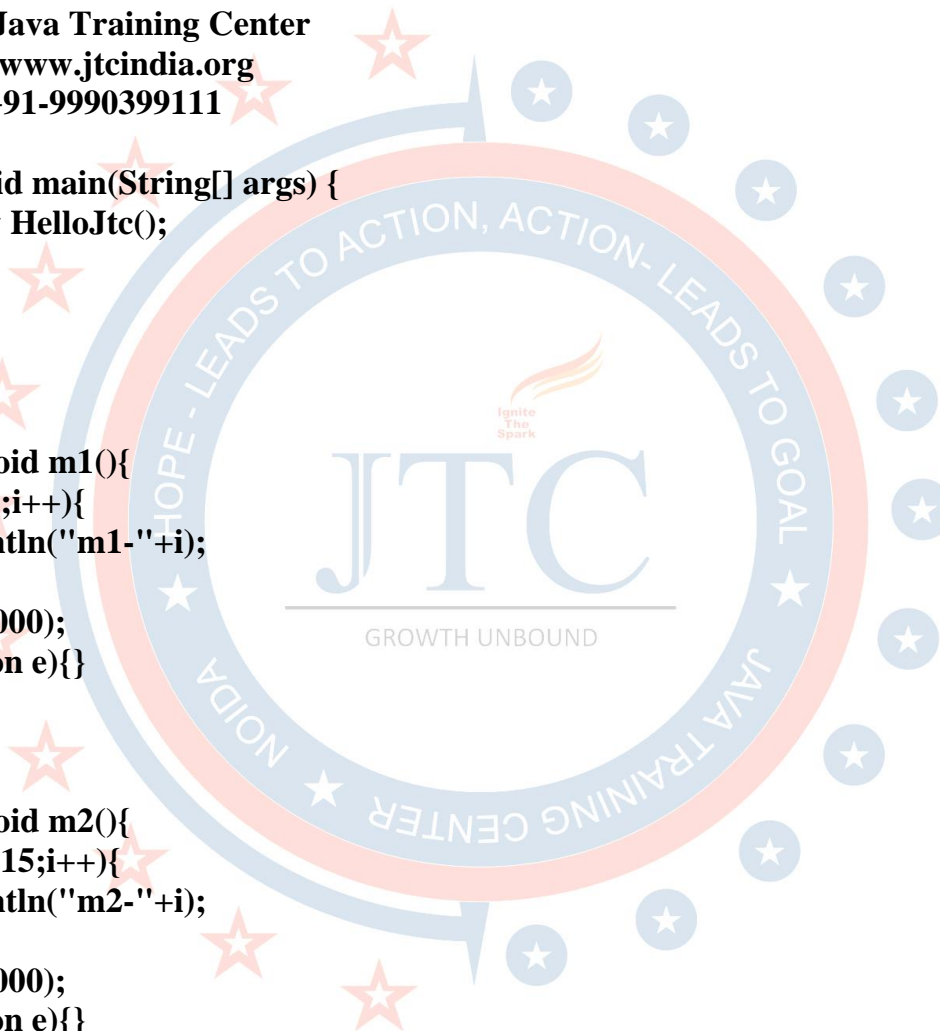
Jtc 5: Example Example using block level Synchronization

1) Jtc5.java

```
public class Jtc5{
/*
 * @Author   : Som Prakash Rai
 * @Join     : Java Training Center
 * @visit    : www.jtcindia.org
 * @Call     : +91-9990399111
 */
public static void main(String[] args) {
HelloJtc h=new HelloJtc();
new A(h,"A");
new B(h,"B");
}
}
class HelloJtc{
synchronized void m1(){
for(int i=1;i<=5;i++){
System.out.println("m1-"+i);
try{
Thread.sleep(1000);
}catch(Exception e){}

}
}
synchronized void m2(){
for(int i=10;i<=15;i++){
System.out.println("m2-"+i);
try{
Thread.sleep(1000);
}catch(Exception e){}

}
}
}
class A implements Runnable{
HelloJtc h=null;
A(HelloJtc h,String name){
this.h=h;
Thread t=new Thread(this,name);
```



JAVA TRAINING CENTER

```
t.start();
System.out.println(t.getThreadGroup().getName());
}
public void run(){
h.m1();
}
}
class B implements Runnable{
HelloJtc h=null;
B(HelloJtc h,String name){
this.h=h;
Thread t2=new Thread(this,name);
t2.start();
System.out.println(t2.getThreadGroup().getName());

}
public void run(){
h.m2();
}
}
```

Jtc 6: Exmaple using simple sleep and run Methods

1) Jtc6.java

```
public class Jtc6 {
/*
 * @Author   : Som Prakash Rai
 * @Join     : Java Training Center
 * @visit    : www.jtcindia.org
 * @Call     : +91-9990399111
 * */
public static void main(String[] args) {
Account acc = new Account();
new AccThread(acc);
}
}
class Account {
int bal = 970;

public void withdraw(int amt) {
if (bal >= amt) {
System.out.println(Thread.currentThread().getName()
+ "is going to withdraw..." + bal);
```


JAVA TRAINING CENTER

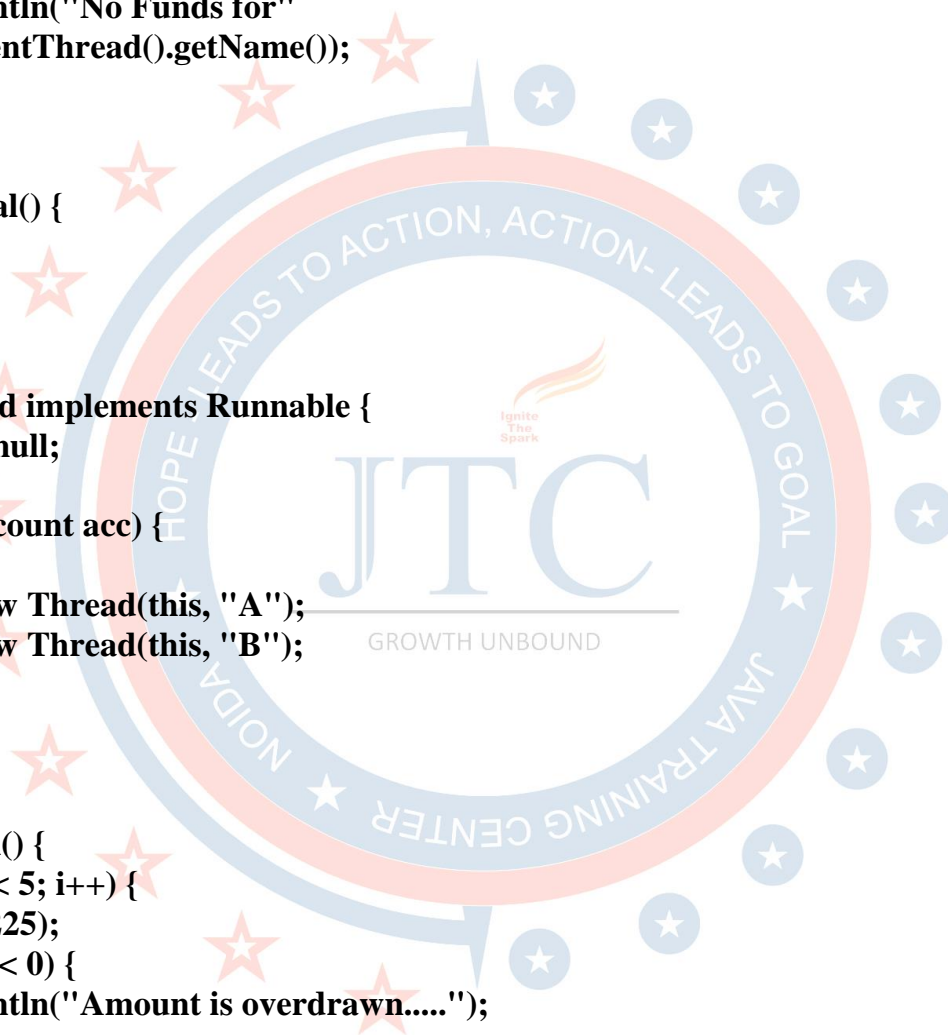
```
try {  
    Thread.sleep(1200);  
} catch (Exception e) {  
}  
bal -= amt;  
System.out.println(Thread.currentThread().getName()  
+ "is Completed withdraw...." + bal);  
} else {  
    System.out.println("No Funds for"  
+ Thread.currentThread().getName());  
}  
}
```

```
public int getBal() {  
    return bal;  
}  
}
```

```
class AccThread implements Runnable {  
    Account acc = null;
```

```
    AccThread(Account acc) {  
        this.acc = acc;  
        Thread t1 = new Thread(this, "A");  
        Thread t2 = new Thread(this, "B");  
        t1.start();  
        t2.start();  
    }
```

```
    public void run() {  
        for (int i = 0; i < 5; i++) {  
            acc.withdraw(225);  
            if (acc.getBal() < 0) {  
                System.out.println("Amount is overdrawn.....");  
            }  
        }  
    }  
}
```



JAVA TRAINING CENTER

Jtc 7: Exmample using wait(),notify(),notifyAll() Methods

Jtc7.java

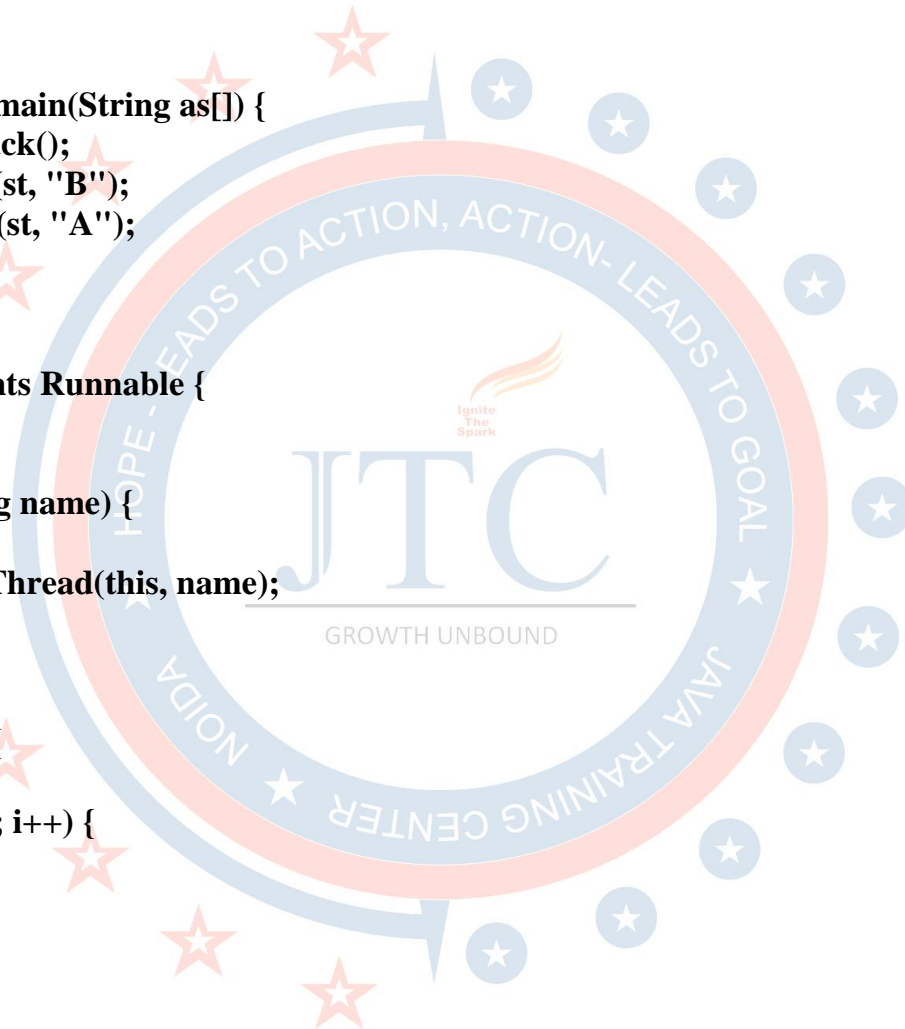
```
class Jtc7 {  
    /*  
    * @Author   : Som Prakash Rai  
    * @Join     : Java Training Center  
    * @visit    : www.jtcindia.org  
    * @Call     : +91-9990399111  
    * */
```

```
    public static void main(String as[]) {  
        Stack st = new Stack();  
        B1 obj2 = new B1(st, "B");  
        A1 obj1 = new A1(st, "A");  
    }  
}
```

```
    class A1 implements Runnable {  
        Stack st = null;  
  
        A1(Stack st, String name) {  
            this.st = st;  
            Thread t1 = new Thread(this, name);  
            t1.start();  
        }
```

```
        public void run() {  
            int a = 1;  
            for (int i = 0; i < 7; i++) {  
                st.push(a++);  
            }  
        }  
    }
```

```
    class B1 implements Runnable {  
        Stack st = null;  
  
        B1(Stack st, String name) {  
            this.st = st;  
            Thread t2 = new Thread(this, name);  
            t2.start();  
        }
```



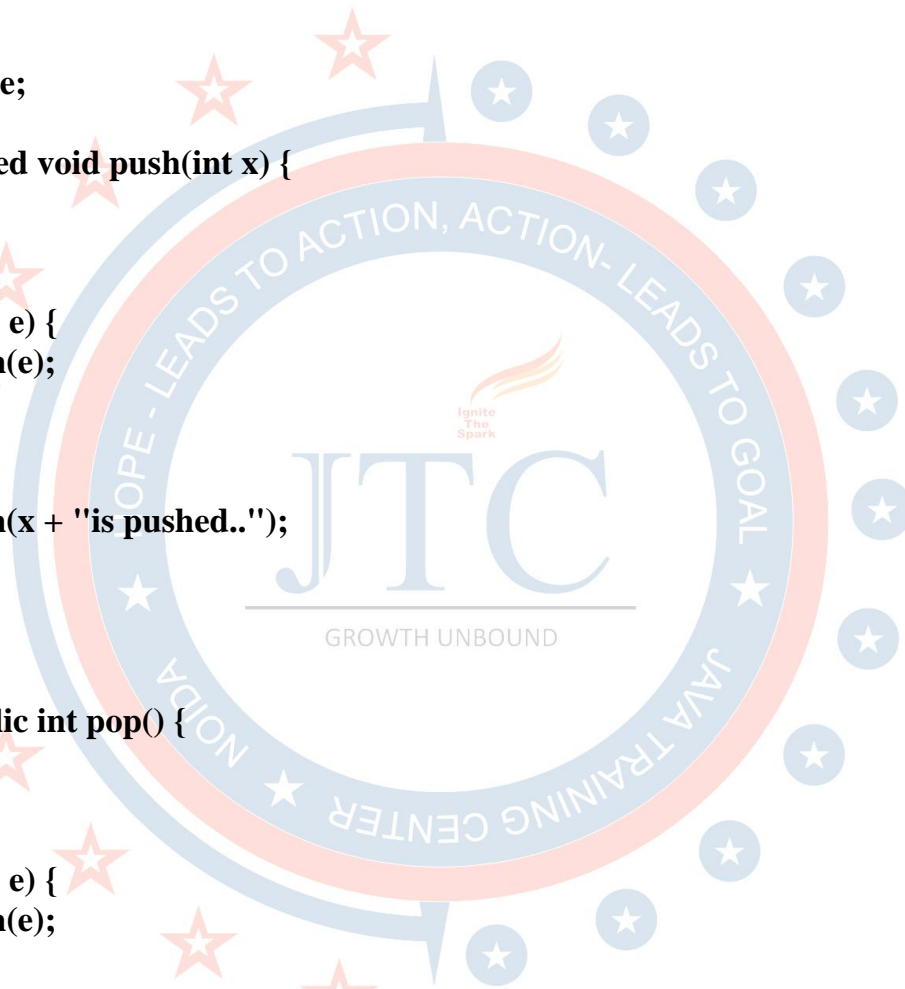
JAVA TRAINING CENTER

```
public void run() {  
    for (int i = 0; i < 7; i++) {  
        st.pop();  
    }  
}
```

```
class Stack {  
    int x;  
    boolean flag = false;
```

```
    public synchronized void push(int x) {  
        if (flag) {  
            try {  
                wait();  
            } catch (Exception e) {  
                System.out.println(e);  
            }  
        }  
        this.x = x;  
        System.out.println(x + "is pushed..");  
        flag = true;  
        notify();  
    }
```

```
    synchronized public int pop() {  
        if (!flag) {  
            try {  
                wait();  
            } catch (Exception e) {  
                System.out.println(e);  
            }  
        }  
        System.out.println(x + "is popped");  
        try {  
            Thread.sleep(2000);  
        } catch (Exception e) {  
            System.out.println(e);  
        }  
        flag = false;  
        notify();  
    }
```



JAVA TRAINING CENTER

```
return x;  
}  
}
```

Jtc 8: Example using join() methods.

1) Jtc8.java

```
class Jtc8{  
/*  
* @Author   : Som Prakash Rai  
* @Join     : Java Training Center  
* @visit    : www.jtcindia.org  
* @Call     : +91-9990399111  
* */
```

```
public static void main(String arg[]) {  
JtcThread1 ath = new JtcThread1();  
JtcThread2 bth = new JtcThread2();  
bth.setThreadToJoin(ath);  
ath.start();  
bth.start();  
}  
}
```

```
class JtcThread1 extends Thread {  
public void run() {  
for (int i = 0; i < 15; i++) {  
System.out.println("JTH1\t" + i);  
try {  
Thread.sleep(100);  
} catch (Exception e) {  
e.printStackTrace();  
}  
}  
}  
}
```

```
class JtcThread2 extends Thread {  
Thread th = null;
```

```
void setThreadToJoin(Thread th) {  
this.th = th;  
}
```

JAVA TRAINING CENTER

```
public void run() {  
    for (int i = 100; i < 115; i++) {  
        System.out.println("Jth2 \t" + i);  
        try {  
            if (i == 105) {  
                th.join();  
            }  
            Thread.sleep(100);  
        } catch (Exception e) {  
            e.printStackTrace();  
        }  
    }  
}
```

Jtc 9: Example using daemon thread

1) Jtc9.java

```
public class Jtc8 {  
    /*  
    * @Author   : Som Prakash Rai  
    * @Join     : Java Training Center  
    * @visit    : www.jtcindia.org  
    * @Call     : +91-9990399111  
    * */  
    public static void main(String args[]) {  
        HelloJtc h = new HelloJtc();  
        JtcThread1 jth = new JtcThread1(h);  
        jth.setDaemon(true);  
        jth.start();  
        new Employee();  
        System.gc();  
        Thread th = Thread.currentThread();  
        for (int i = 0; i < 15; i++) {  
            System.out.println("In Main\t:" + h.val + "\t" + th.isDaemon());  
            try {  
                Thread.sleep(100);  
            } catch (Exception e) {  
                e.printStackTrace();  
            }  
        }  
    }  
}
```

JAVA TRAINING CENTER

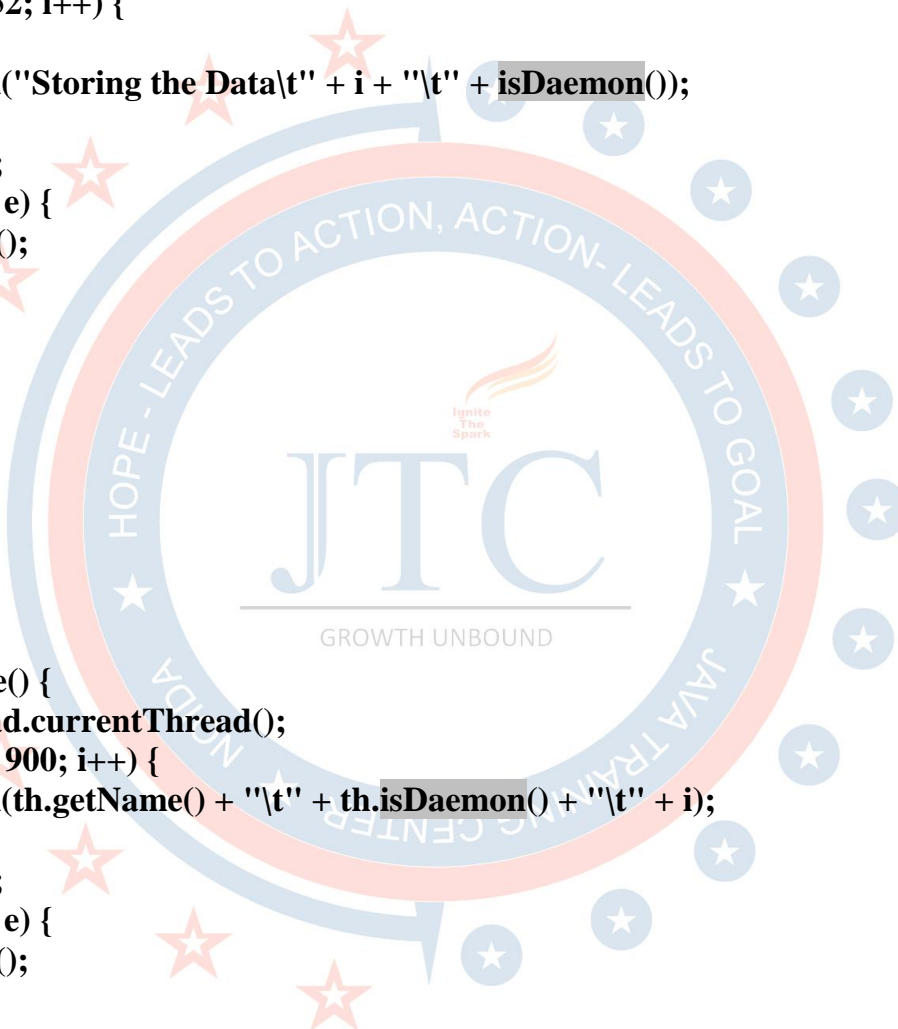
```
class JtcThread1 extends Thread {  
    HelloJtc h = null;
```

```
    JtcThread1(HelloJtc h) {  
        this.h = h;  
    }
```

```
    public void run() {  
        for (int i = 0; i < 152; i++) {  
            h.val = i;  
            System.out.println("Storing the Data\t" + i + "\t" + isDaemon());  
            try {  
                Thread.sleep(100);  
            } catch (Exception e) {  
                e.printStackTrace();  
            }  
        }  
    }
```

```
class HelloJtc {  
    int val;  
}
```

```
class Employee {  
    public void finalize() {  
        Thread th = Thread.currentThread();  
        for (int i = 100; i < 900; i++) {  
            System.out.println(th.getName() + "\t" + th.isDaemon() + "\t" + i);  
            try {  
                Thread.sleep(100);  
            } catch (Exception e) {  
                e.printStackTrace();  
            }  
        }  
    }  
}
```



JAVA TRAINING CENTER

Jtc 10: Example using simple thread.

Jtc10.java

```
public class Jtc10 {
/*
* @Author   : Som Prakash Rai
* @Join     : Java Training Center
* @visit    : www.jtcindia.org
* @Call     : +91-9990399111
* */

public static void main(String arg[]) {
    ThreadGroup tg = new ThreadGroup("B10-12");
    JtcThread1 jth1 = new JtcThread1(tg, "JAVA");
    JtcThread1 jth2 = new JtcThread1("JDBC");
    jth2.setPriority(9);
    // jth2.setPriority(0);
    JtcThread1 jth3 = new JtcThread1(tg, "EJB");
    jth3.setPriority(2);
    JtcThread1 jth4 = new JtcThread1("XML");
    new HelloStudent();
    System.gc();
    jth1.start();
    jth2.start();
    jth3.start();
    jth4.start();
    Thread th = Thread.currentThread();
    ThreadGroup tg1 = th.getThreadGroup();
    System.out.println("IN Main\t:" + tg1.getName());
    try {
        // tg1.stop();
        Thread.sleep(1000);
    } catch (Exception e) {
        e.printStackTrace();
    }
}

class JtcThread1 extends Thread {
    JtcThread1(String name) {
        super(name);
    }
}
```

JAVA TRAINING CENTER

```
JtcThread1(ThreadGroup tg, String name) {  
    super(tg, name);  
}
```

```
public void run() {  
    for (int i = 0; i < 10; i++) {  
        ThreadGroup tg = getThreadGroup();  
        System.out.println(getName() + "\t" + i + getPriority() + "\t"  
+ tg.getName());  
    }  
}
```

```
class HelloStudent {  
    public void finalize() {  
        Thread th = Thread.currentThread();  
        ThreadGroup tg = th.getThreadGroup();  
        System.out.println(th.getName() + "\t" + th.getPriority() + "\t"  
+ tg.getName());  
        JtcThread1 jth1 = new JtcThread1("JSP");  
        jth1.start();  
        ThreadGroup tg1 = new ThreadGroup("JTC");  
        JtcThread1 jth2 = new JtcThread1(tg1, "-WS");  
        jth2.start();  
    }  
}
```

