JAVA TRAINING CENTER

Java Training Center

(No.1 in Training & placement)

MultiThreading WorkBook

Master the Content…

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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
```

```
* @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
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*@Call         :+91-9990399111
* */

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

```
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 + "\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");
}
}
```

```
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();
```

```
}
}
```

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);
```

```
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);
```

```
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.....");

}
}
}
}
```

Jtc 7: Exmaple using wait(),notify(),notifiyAll() 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();
}
```

```
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 poped");
try {
Thread.sleep(2000);
} catch (Exception e) {
System.out.println(e);
}
flag = false;
notify();
```

```
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;
}
```

```
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();
}
}
}
}
```

```
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();
}

}
}
}
```

Jtc 10: Example using simple thread.

Jtc10.java

```
public class Jtc10 {
/*
* @Author    : Som Prakash Rai
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* @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);
}
```

```
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();
}
}
```