Week 10

**Inter process communication**

class Q {

int n;

boolean valueSet = false;

synchronized int get() {

while(!valueSet)

try {

System.out.println("\nConsumer waiting\n");

wait();

} catch(InterruptedException e) {

System.out.println("InterruptedException caught");

}

System.out.println("Got: " + n);

valueSet = false;

System.out.println("\nIntimate Producer\n");

notify();

return n;

}

synchronized void put(int n) {

while(valueSet)

try {

System.out.println("\nProducer waiting\n");

wait();

} catch(InterruptedException e) {

System.out.println("InterruptedException caught");

}

this.n = n;

valueSet = true;

System.out.println("Put: " + n);

System.out.println("\nIntimate Consumer\n");

notify();

}

}

class Producer implements Runnable {

Q q;

Producer(Q q) {

this.q = q;

new Thread(this, "Producer").start();

}

public void run() {

int i = 0;

while(i<15) {

q.put(i++);

}

}

}

class Consumer implements Runnable {

Q q;

Consumer(Q q) {

this.q = q;

new Thread(this, "Consumer").start();

}

public void run() {

int i=0;

while(i<15) {

int r=q.get();

System.out.println("consumed:"+r);

i++;

}

}

}

class PCFixed {

public static void main(String args[]) {

Q q = new Q();

new Producer(q);

new Consumer(q);

System.out.println("Press Control-C to stop.");

}

}

**Deadlock**

class A {

synchronized void foo(B b) {

String name = Thread.currentThread().getName();

System.out.println(name + " entered A.foo");

try {

Thread.sleep(1000);

} catch(Exception e) {

System.out.println("A Interrupted");

}

System.out.println(name + " trying to call B.last()");

b.last();

}

void last() {

System.out.println("Inside A.last");

}

}

class B {

synchronized void bar(A a) {

String name = Thread.currentThread().getName();

System.out.println(name + " entered B.bar");

try {

Thread.sleep(1000);

} catch(Exception e) {

System.out.println("B Interrupted");

}

System.out.println(name + " trying to call A.last()");

a.last();

}

void last() {

System.out.println("Inside A.last");

}

}

class Deadlock implements Runnable

{

A a = new A();

B b = new B();

Deadlock() {

Thread.currentThread().setName("MainThread");

Thread t = new Thread(this,"RacingThread");

t.start();

a.foo(b); // get lock on a in thisthread.

System.out.println("Back in main thread");

}

public void run() {

b.bar(a); // get lock on b in other thread.

System.out.println("Back in other thread");

}

public static void main(String args[]) {

new Deadlock();

}

}



