import java.util.\*;

class Process

{

int id;

boolean active;

Process(int id)

{

this.id=id;

active=true;

}

}

public class Main

{

//class variables

static int no;

static Process p[];

public static int getMax()

{

int max=-99;

int max\_index=0;

for(int i=0;i<p.length;i++)

{

if(p[i].active&&p[i].id>max)

{

max=p[i].id;

max\_index=i;

}

}

return max\_index;

}

public static void main(String args[])

{

Scanner sc= new Scanner(System.in);

System.out.println("Enter your Choice");

System.out.println("1) Ring");

System.out.println("2) Bully");

System.out.println("3) Exit");

int choice = sc.nextInt();

System.out.println("Enter the number of processes");

no=sc.nextInt();

p=new Process[no];

for(int i=0;i<p.length;i++)

{

p[i]=new Process(i);

}

System.out.println("Process with Process ID "+p[getMax()].id+" Fails");

p[getMax()].active=false;

System.out.print("Enter the process id who will initiate the election :");

int initiator = sc.nextInt();

int c;

switch(choice)

{

case 1:

int prev=initiator;

int next=prev+1;

while(true)

{

if(p[next].active)

{

System.out.println("P"+p[prev].id+" Passes Msg 'Election("+p[prev].id+")' to P"+p[next].id);

prev=next;

}

next=(next+1)%no;

if(next==initiator)

{

break;

}

}

System.out.println("Process with Process ID "+p[getMax()].id+" becomes the coordinator");

// c stands for coordinator

c=p[getMax()].id;

prev=c;

next=(prev+1)%no;

while(true)

{

if(p[next].active)

{

System.out.println("P"+p[prev].id+" Passes Msg 'Coordinator("+c+")' to P"+p[next].id);

prev=next;

}

next=(next+1)%no;

if(next==c)

{

break;

}

}

break;

case 2:

while(true)

{

boolean is\_high=false;

for(int i=initiator+1;i<no;i++)

{

if(p[i].active)

{

System.out.println("P"+initiator+" Passes Msg 'Election("+initiator+")' to P"+i);

is\_high=true;

}

}

if(is\_high)

{

for(int i=initiator+1;i<no;i++)

{

if(p[i].active)

{

System.out.println("Process"+i+" Passes Msg 'OKay("+i+")' to P"+initiator);

is\_high=true;

}

}

initiator++;

}

else

{

c=p[getMax()].id;

System.out.println("Process with Process ID "+p[getMax()].id+" becomes the coordinator");

for(int i=c-1;i>=0;i--)

{

if(p[i].active)

{

System.out.println("P"+c+" Passes Msg 'Coordinator("+c+")' to P"+i);

}

}

break;

}

}

break;

case 3:

System.exit(0);

break;

}

}

}

