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import java.util.*;

class Process
{
    int id;

    boolean active;

    Process(int id)
    {
        this.id=id;

        active=true;
    }
}

public class _6_ring_bully
{
    //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;
    }
}

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}

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)

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{
    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;
    }
}

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        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");
            }
        }
    }
}

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        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;
}
}
}
```