Experiment No. 6-A

Aim– Implement Bully algorithm for leader election.

import java.io.\*;

class BullyAlgo

{

int cood,ch,crash; int

prc[];

public void election(int n) throws IOException

{

BufferedReader br=new BufferedReader(new InputStreamReader(System.in)); System.out.println("\nThe Coordinator Has Crashed!");

int flag=1;

while(flag==1)

{

crash=0;

for(int i1=0;i1<n;i1++)

if(prc[i1]==0) crash++;

if(crash==n)

{

System.out.println("\n\*\*\* All Processes Are Crashed \*\*\*"); break;

}

else

{

System.out.println("\nEnter The Intiator"); int

init=Integer.parseInt(br.readLine());

if((init<1)||(init>n)||(prc[init-1]==0))

{

System.out.println("\nInvalid Initiator"); continue;

}

for(int i1=init-1;i1<n;i1++)

System.out.println("Process "+(i1+1)+" Called For Election"); System.out.println("");

for(int i1=init-1;i1<n;i1++)

{

if(prc[i1]==0)

{

System.out.println("Process "+(i1+1)+ " Is Dead");

}

else

System.out.println("Process "+(i1+1)+" Is In");

}

for(int i1=n-1;i1>=0;i1--)

if(prc[i1]==1)

{

cood=(i1+1);

System.out.println("\n\*\*\* New Coordinator Is "+(cood)+" \*\*\*"); flag=0;

break;

}

}

}

}

public void Bully() throws IOException

{

BufferedReader br=new BufferedReader(new InputStreamReader(System.in));

System.out.println("Enter The Number Of Processes: ");

int n=Integer.parseInt(br.readLine());

prc=new int[n];

crash=0;

for(int i=0;i<n;i++)

prc[i]=1;

cood=n;

do

{

System.out.println("\n\t1. Crash A Process");

System.out.println("\t2. Recover A Process");

System.out.println("\t3. Display New Cordinator");

System.out.println("\t4. Exit");

ch=Integer.parseInt(br.readLine());

switch(ch)

{

case 1: System.out.println("\nEnter A Process To Crash"); int

cp=Integer.parseInt(br.readLine());

if((cp>n)||(cp<1)){

System.out.println("Invaid Process! Enter A Valid Process");

}

else if((prc[cp-1]==1)&&(cood!=cp))

{

prc[cp-1]=0;

System.out.println("\nProcess "+cp+ " Has Been Crashed");

}

else if((prc[cp-1]==1)&&(cood==cp))

{

prc[cp-1]=0;

election(n);

}

else

System.out.println("\nProcess "+cp+" Is Already Crashed"); break;

case 2: System.out.println("\nCrashed Processes Are: \n"); for(int

i=0;i<n;i++)

{

if(prc[i]==0)

System.out.println(i+1);

crash++;

}

System.out.println("Enter The Process You Want To Recover"); int

rp=Integer.parseInt(br.readLine());

if((rp<1)||(rp>n))

System.out.println("\nInvalid Process. Enter A Valid ID"); else

if((prc[rp-1]==0)&&(rp>cood))

{

prc[rp-1]=1;

System.out.println("\nProcess "+rp+" Has Recovered"); cood=rp;

System.out.println("\nProcess "+rp+ " Is The New Coordinator");

}

else if(crash==n)

{

prc[rp-1]=1;

cood=rp;

System.out.println("\nProcess "+rp+ " Is The New Coordinator"); crash--;

}

else if((prc[rp-1]==0)&&(rp<cood))

{

prc[rp-1]=1;

System.out.println("\nProcess "+rp+" Has Recovered");

}

else

System.out.println("\nProcess "+rp+" Is Not A Crashed Process"); break;

case 3: System.out.println("\nCurrent Coordinator Is "+cood); break;

case 4: System.exit(0);

break;

default: System.out.println("\nInvalid Entry!"); break;

}

}

while(ch!=4);

}

public static void main(String args[]) throws IOException

{

BullyAlgo ob=new BullyAlgo();

ob.Bully();

}

}

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[C:\java](file:///C:\C:\java) BullyAlgo

