**TITLE:: Election Algorithm (Bully And Ring Algorithm)**

**ROLL NO. :: B3041**

**#include<stdio.h>**

**#include<conio.h>**

**#include<process.h>**

**struct proc**

**{**

**int live;**

**int identifier;**

**}process[10];**

**int n,cordinator=1;**

**/\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* DISPLAY PROCESSES \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/**

**void display()**

**{**

**int i;**

**printf("\n PROCESSES ARE\n\n");**

**printf("Processes ");**

**for(i=1;i<=n;i++)**

**{**

**printf("P%d\t",i);**

**}**

**printf("\nlive ");**

**for(i=1;i<=n;i++)**

**{**

**printf("%d\t",process[i].live);**

**}**

**printf("\nidentifier ");**

**for(i=1;i<=n;i++)**

**{**

**printf("%d\t",process[i].identifier);**

**}**

**}**

**/\*\*\*\*\*\*\*\*\*\*\*\* BULLY ALGORITHM \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/**

**void bully()**

**{**

**int ch,c,id,i=0,cordinator,init,max=-99;**

**cordinator=i;**

**for(i=1;i<=n;i++)**

**{**

**if(process[cordinator].identifier<process[i].identifier&& process[i].live==1)**

**cordinator=i;**

**}**

**printf("\n\n CURRENT CO-ORDINATOR IS=P%d",cordinator);**

**while(ch!=4)**

**{**

**printf("\n\n\n \*\*\* BULLY ALGORITHM \*\*\*");**

**printf("\n1.Crash a Process\n2.Activate Process\n3.Display\n4.Exit");**

**printf("\nENTER UR CHOICE");**

**scanf("%d",&ch);**

**switch(ch)**

**{**

**case 1:printf("\n Enter the process id to crash");**

**scanf("%d",&id);**

**if(process[id].live==0)**

**{**

**printf("\n Already crashed process");**

**}**

**else**

**{**

**process[id].live=0;**

**printf("\n process P%d is crashed",id);**

**if(id==cordinator)**

**{**

**while(1)**

**{**

**printf("\n Enter process id who initiates election");**

**scanf("%d",&init);**

**if(process[init].live==0)**

**{**

**printf("\n the selected process is crashed");**

**}**

**else**

**{**

**for(i=1;i<=n;i++)**

**{**

**if(i!=init && process[i].identifier>process[init].identifier)**

**printf("\n Election MSG sent from %d to %d",init,i);**

**}**

**for(i=1;i<=n;i++)**

**{**

**if(i!=init)**

**{**

**if(process[i].identifier>process[init].identifier && process[i].live!=0)**

**{**

**printf("\n OK from %d to %d",i,init);**

**}**

**}**

**}**

**for(i=1;i<=n;i++)**

**{**

**if(max<process[i].identifier && process[i].live!=0)**

**{**

**cordinator=i;**

**max=process[i].identifier;**

**}**

**}**

**printf("\n\n NEW CO-ORDINATOR IS=P%d",cordinator);**

**break;**

**}**

**}**

**}**

**}**

**break;**

**case 2:printf("\n Enter process id to activate");**

**scanf("%d",&id);**

**if(process[id].live==1)**

**{**

**printf("\n Process %d is already active",id);**

**}**

**else**

**{**

**process[id].live=1;**

**printf("\n Process %d activated",id);**

**}**

**if(process[id].identifier>process[cordinator].identifier)**

**{**

**coordinator=id;**

**printf("\n NEW CO-ORDINATOR IS=P%d\n\n",id);**

**}**

**break;**

**case 3:display();**

**break;**

**case 4:break;**

**}**

**}**

**}**

**/\*\*\*\*\*\*\*\*\*\*\*\* RING ALGORITHM \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*/**

**void ring()**

**{**

**int ch,c,id,i=0,init,max=-99,last;**

**for(i=1;i<=n;i++)**

**{**

**if(process[cordinator].identifier<process[i].identifier&&process[i].live==1)**

**cordinator=i;**

**}**

**printf("\n\n CURRENT CO-ORDINATOR IS=P%d",cordinator);**

**while(ch!=4)**

**{**

**printf("\n\n\n \*\*\* RING ALGORITHM \*\*\*");**

**printf("\n1.Crash a Process\n2.Activate Process\n3.Display\n4.Exit");**

**printf("\nENTER UR CHOICE");**

**scanf("%d",&ch);**

**switch(ch)**

**{**

**case 1:printf("\n Enter the process id to crash");**

**scanf("%d",&id);**

**if(process[id].live==0)**

**{**

**printf("\n Already crashed process");**

**}**

**else**

**{**

**process[id].live=0;**

**printf("\n process P%d is crashed",id);**

**if(id==cordinator)**

**{**

**while(1)**

**{**

**printf("\n Enter process id who intiates election");**

**scanf("%d",&init);**

**if(process[init].live==0)**

**{**

**printf("\n the selected process is crashed");**

**}**

**else**

**{**

**last=init;**

**printf("\nElection MSG sent from =%d",last);**

**for(i=init+1;i<=n;i++)**

**{**

**if(i!=init && process[i].live!=0)**

**printf(" ->%d",i);**

**else**

**continue;**

**}**

**for(i=1;i<init;i++)**

**{**

**if(i!=init && process[i].live!=0)**

**printf("->%d",i);**

**last=i;**

**}**

**for(i=init+1;i<=n;i++)**

**{**

**if(max<process[i].identifier && process[i].live==1)**

**{**

**cordinator=i;**

**max=process[i].identifier;**

**}**

**}**

**for(i=1;i<=init;i++)**

**{**

**if(max<process[i].identifier && process[i].live==1)**

**{**

**cordinator=i;**

**max=process[i].identifier;**

**}**

**}**

**printf("\n\n NEW CO-ORDINATOR IS=P%d",cordinator);**

**break;**

**}**

**}**

**}**

**}**

**break;**

**case 2:printf("\n Enter process id to activate");**

**scanf("%d",&id);**

**if(process[id].live==1)**

**{**

**printf("\n Process %d is already active",id);**

**}**

**else**

**{**

**process[id].live=1;**

**printf("\n Process %d activated",id);**

**if(process[id].identifier>process[cordinator].identifier)**

**{**

**printf("\n NEW CO-ORDINATOR IS=P%d\n\n",id);**

**cordinator=id;**

**}**

**}**

**break;**

**case 3:display();**

**break;**

**case 4:break;**

**}**

**}**

**}**

**void main()**

**{**

**int ch,i,c;**

**clrscr();**

**printf("\n ENTER NO. OF PROCESSES");**

**scanf("%d",&n);**

**for(i=1;i<=n;i++)**

**{**

**printf("\nEnter P%d process live or not(0/1)",i);**

**scanf("%d",&process[i].live);**

**printf("\nEnter P%d process identifier",i);**

**scanf("%d",&process[i].identifier);**

**}**

**display();**

**while(1)**

**{**

**printf("\n\n\n\*\*\*\* ELECTION ALGORITHM \*\*\*\*");**

**printf("\n1.BULLY ALGORITHM\n2.RING ALGORITHM\n3.EXIT");**

**printf("\n\n ENTER UR CHOICE");**

**scanf("%d",&ch);**

**switch(ch)**

**{**

**case 1: bully();**

**break;**

**case 2: ring();**

**break;**

**case 3: exit(0);**

**}**

**}**

**}**

**\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* OUTPUT \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\***

**ENTER NO. OF PROCESSES6**

**Enter P1 process live or not(0/1)1**

**Enter P1 process identifier1**

**Enter P2 process live or not(0/1)1**

**Enter P2 process identifier2**

**Enter P3 process live or not(0/1)1**

**Enter P3 process identifier3**

**Enter P4 process live or not(0/1)1**

**Enter P4 process identifier4**

**Enter P5 process live or not(0/1)1**

**Enter P5 process identifier5**

**Enter P6 process live or not(0/1)1**

**Enter P6 process identifier6**

**PROCESSES ARE**

**Processes P1 P2 P3 P4 P5 P6**

**live 1 1 1 1 1 1**

**identifier 1 2 3 4 5 6**

**\*\*\*\* ELECTION ALGORITHM \*\*\*\***

**1.BULLY ALGORITHM**

**2.RING ALGORITHM**

**3.EXIT**

**ENTER UR CHOICE1**

**CURRENT CO-ORDINATOR IS=P6**

**\*\*\* BULLY ALGORITHM \*\*\***

**1.Crash a Process**

**2.Activate Process**

**3.Display**

**4.Exit**

**ENTER UR CHOICE1**

**Enter the process id to crash 4**

**process P4 is crashed**

**\*\*\* BULLY ALGORITHM \*\*\***

**1.Crash a Process**

**2.Activate Process**

**3.Display**

**4.Exit**

**ENTER UR CHOICE1**

**Enter the process id to crash6**

**process P6 is crashed**

**Enter process id who initiates election3**

**Election MSG sent from 3 to 4**

**Election MSG sent from 3 to 5**

**Election MSG sent from 3 to 6**

**OK from 5 to 3**

**NEW CO-ORDINATOR IS=P5**

**\*\*\* BULLY ALGORITHM \*\*\***

**1.Crash a Process**

**2.Activate Process**

**3.Display**

**4.Exit**

**ENTER UR CHOICE2**

**Enter process id to activate6**

**Process 6 activated**

**NEW CO-ORDINATOR IS=P6**

**\*\*\* BULLY ALGORITHM \*\*\***

**1.Crash a Process**

**2.Activate Process**

**3.Display**

**4.Exit**

**ENTER UR CHOICE3**

**PROCESSES ARE**

**Processes P1 P2 P3 P4 P5 P6**

**live 1 1 1 0 1 1**

**identifier 1 2 3 4 5 6**

**\*\*\* BULLY ALGORITHM \*\*\***

**1.Crash a Process**

**2.Activate Process**

**3.Display**

**4.Exit**

**ENTER UR CHOICE4**

**\*\*\*\* ELECTION ALGORITHM \*\*\*\***

**1.BULLY ALGORITHM**

**2.RING ALGORITHM**

**3.EXIT**

**ENTER UR CHOICE2**

**CURRENT CO-ORDINATOR IS=P6**

**\*\*\* RING ALGORITHM \*\*\***

**1.Crash a Process**

**2.Activate Process**

**3.Display**

**4.Exit**

**ENTER UR CHOICE2**

**Enter process id to activate 4**

**Process 4 activated**

**\*\*\* RING ALGORITHM \*\*\***

**1.Crash a Process**

**2.Activate Process**

**3.Display**

**4.Exit**

**ENTER UR CHOICE 3**

**PROCESSES ARE**

**Processes P1 P2 P3 P4 P5 P6**

**live 1 1 1 1 1 1**

**identifier 1 2 3 4 5 6**

**\*\*\* RING ALGORITHM \*\*\***

**1.Crash a Process**

**2.Activate Process**

**3.Display**

**4.Exit**

**ENTER UR CHOICE1**

**Enter the process id to crash4**

**process P4 is crashed**

**\*\*\* RING ALGORITHM \*\*\***

**1.Crash a Process**

**2.Activate Process**

**3.Display**

**4.Exit**

**ENTER UR CHOICE1**

**Enter the process id to crash6**

**process P6 is crashed**

**Enter process id who intiates election 3**

**Election MSG sent from =3 ->5->1->2**

**NEW CO-ORDINATOR IS=P5**

**\*\*\* RING ALGORITHM \*\*\***

**1.Crash a Process**

**2.Activate Process**

**3.Display**

**4.Exit**

**ENTER UR CHOICE2**

**Enter process id to activate6**

**Process 6 activated**

**NEW CO-ORDINATOR IS=P6**

**\*\*\* RING ALGORITHM \*\*\***

**1.Crash a Process**

**2.Activate Process**

**3.Display**

**4.Exit**

**ENTER UR CHOICE4**

**\*\*\*\* ELECTION ALGORITHM \*\*\*\***

**1.BULLY ALGORITHM**

**2.RING ALGORITHM**

**3.EXIT**

**ENTER UR CHOICE3**