**//Experiment 6 B**

**//Aim :** Implement and Ring algorithm for leader election.

**//B. Ring algorithm**

import java.util.Scanner;

public class Ring {

public static void main(String[] args) {

// TODO Auto-generated method stub

int temp, i, j;

char str[] = new char[10];

Rr proc[] = new Rr[10];

// object initialisation

for (i = 0; i < proc.length; i++)

proc[i] = new Rr();

// scanner used for getting input from console

Scanner in = new Scanner(System.in);

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

int num = in.nextInt();

// getting input from users

for (i = 0; i < num; i++) {

proc[i].index = i;

System.out.println("Enter the id of process : ");

proc[i].id = in.nextInt();

proc[i].state = "active";

proc[i].f = 0;

}

// sorting the processes from on the basis of id

for (i = 0; i < num - 1; i++) {

for (j = 0; j < num - 1; j++) {

if (proc[j].id > proc[j + 1].id) {

temp = proc[j].id;

proc[j].id = proc[j + 1].id;

proc[j + 1].id = temp;

}

}

}

for (i = 0; i < num; i++) {

System.out.print(" [" + i + "] " + "" + proc[i].id);

}

int init;

int ch;

int temp1;

int temp2;

int ch1;

int arr[] = new int[10];

proc[num - 1].state = "inactive";

System.out.println("\n process" + proc[num - 1].id + "select as co-ordinator");

while (true) {

System.out.println("\n 1.election 2.quit ");

ch = in.nextInt();

for (i = 0; i < num; i++) {

proc[i].f = 0;

}

switch (ch) {

case 1:

System.out.println("\n Enter the Process number who initialsied election : ");

init = in.nextInt();

temp2 = init;

temp1 = init + 1;

i = 0;

while (temp2 != temp1) {

if ("active".equals(proc[temp1].state) && proc[temp1].f == 0) {

System.out.println("\nProcess " + proc[init].id + "send message to " + proc[temp1].id);

proc[temp1].f = 1;

init = temp1;

arr[i] = proc[temp1].id;

i++;

}

if (temp1 == num) {

temp1 = 0;

} else {

temp1++;

}

}

System.out.println("\nProcess" + proc[init].id + "sendmessage to " + proc[temp1].id);

arr[i] = proc[temp1].id;

i++;

int max = -1;

// finding maximum for co-ordinator selection

for (j = 0; j < i; j++) {

if (max < arr[j]) {

max = arr[j];

}

}

// co-ordinator is found then printing on console

System.out.println("\n process " + max + " select as co-ordinator");

for (i = 0; i < num; i++) {

if (proc[i].id == max) {

proc[i].state = "inactive";

}

}

break;

case 2:

System.out.println("Program terminated ...");

return ;

default:

System.out.println("\n invalid response \n");

break;

}

}

}

}

class Rr {

public int index; // to store the index of process

public int id; // to store id/name of process

public int f;

String state; // indiactes whether active or inactive state of node

}

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**Run:**

javac Ring.java

java Ring

**Output:**

Enter the number of process :

4

Enter the id of process :

1

Enter the id of process :

4

Enter the id of process :

2

Enter the id of process :

3

[0] 1 [1] 2 [2] 3 [3] 4

process 4select as co-ordinator

1.election 2.quit

1

Enter the Process number who initialsied election :

3

Process 4 send message to 1

Process 1 send message to 2

Process 2 send message to 3

Process 3 send message to 4

process 4 select as co-ordinator

1.election 2.quit

1

Enter the Process number who initialsied election :

2

Process 3 send message to 1

Process 1 send message to 2

Process 2 send message to 3

process 3 select as co-ordinator

1.election 2.quit

1

Enter the Process number who initialsied election :

3

Process 4 send message to 1

Process 1 send message to 2

Process 2 send message to 4

process 4 select as co-ordinator

1.election 2.quit

