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31124

Assignment 8

Title : Ring and bully simulation

Problem statement:
Simulation of election algorithms. write an program in python

learning Objective:
1. To learn and understand election algorithms
2. To implement ring and bully algorithm.

learning outcomes:
students will be able to understand and simulate various election algorithms.

S/W H/W Requirements:
Windows 10, 64 bits, python 3.9
vs code editor

Theory :
Election algorithm choose a coordinator from processes.
If coordinator process crashes due to some reason, then a new coordinator is elected.

Teacher's Signature

Bully algorithm:

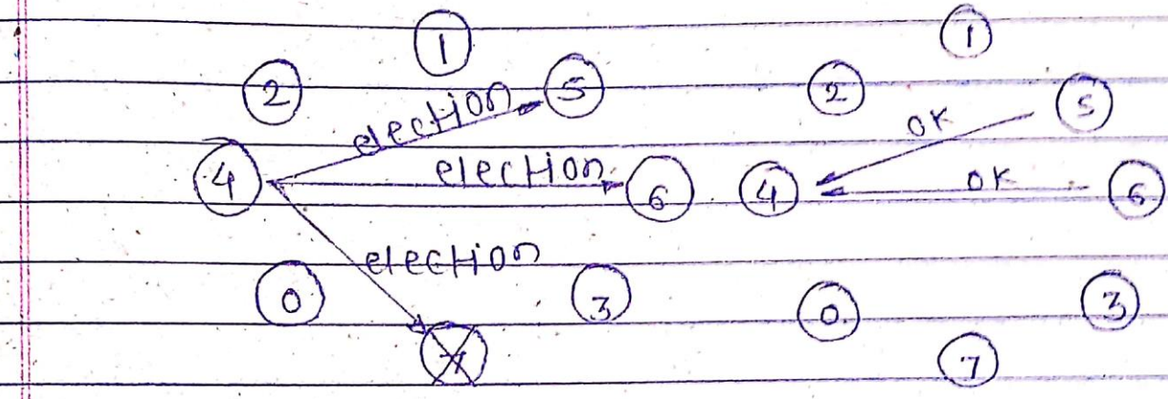
If a process do not get responce from coordinator it initiates election.

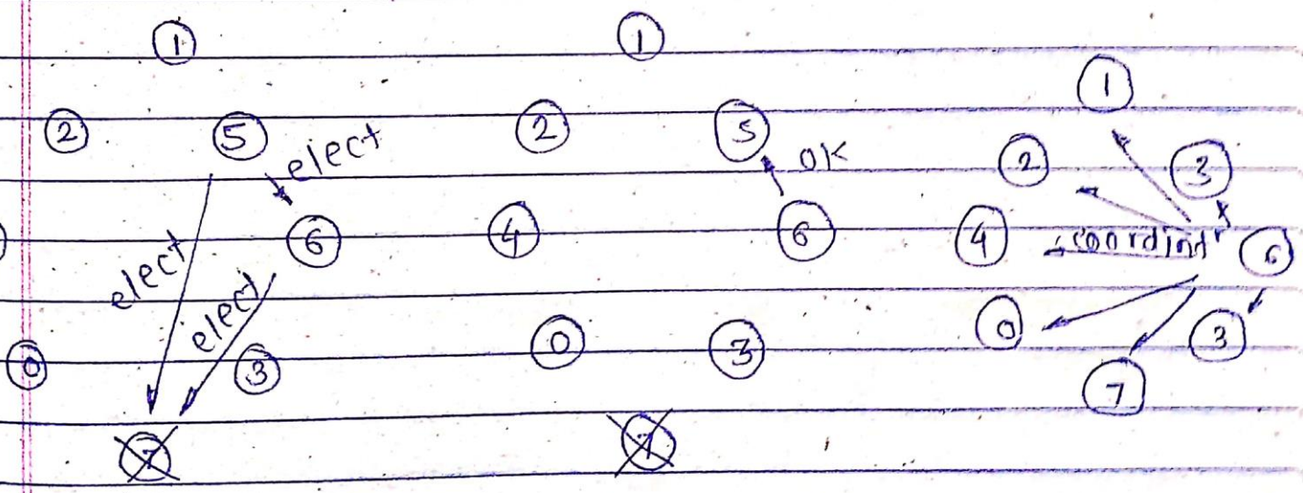
A process 'P' holds an election.

i. P sends election msg to all process with higher number.

ii. If no one responds P wins.

iii. If a number responds, it takes P's job.





If process 7 ever restarted, it will just send all the nodes a coordinator msg and bully them into submission.

Ring algorithm

When a process notices that coordinator is not functioning, it builds an election message containing it's own process and number and sends message to it's successor.

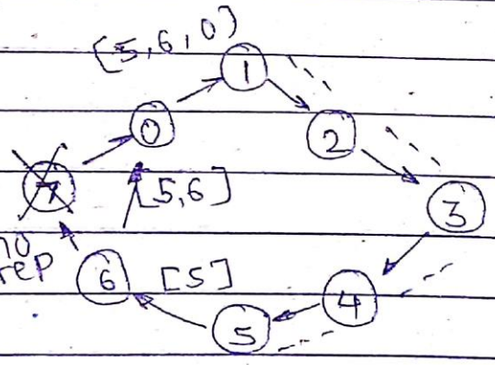
i. If successor is down, next successor is approached.

ii. In each sted the process add's its own number in list in message effectively making itself an election candidate

iii. eventually the message gets back to process that started it all.

That process recognises this event when it recieves an incoming message containing it's own process number.

iv. At that point, the process with highest priority sends coordinator and circulates once again to tell the roles and gets back to work.



6 is chosen as new coordinator

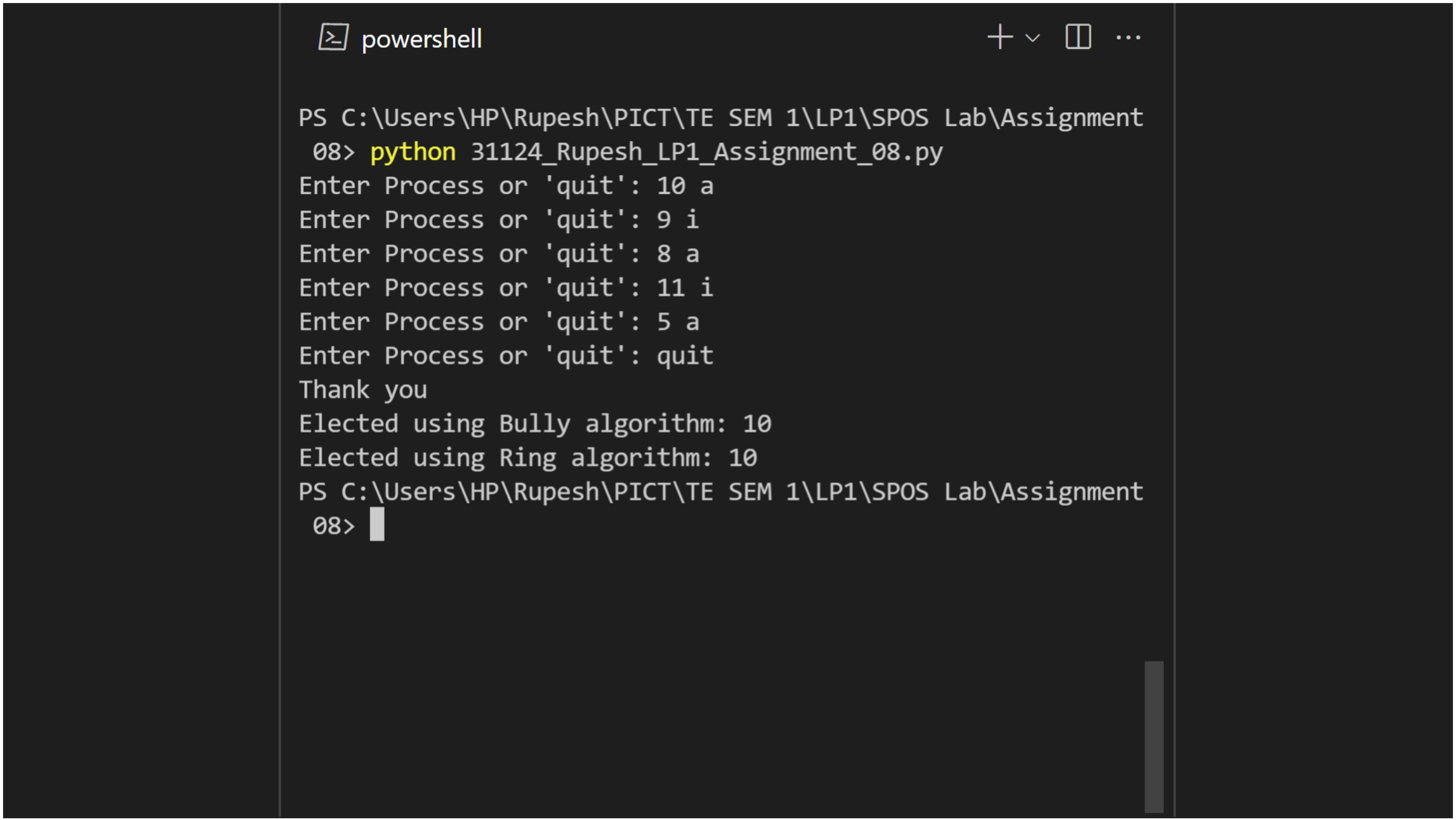
one more loop to notify this.

conclusion: successfully implemented and simulated the election algorithms Ring and bully algorithm.

Teacher's Signature

powershell

```
PS C:\Users\HP\Rupesh\PICT\TE SEM 1\LP1\SPOS Lab\Assignment 08> python 31124_Rupesh_LP1_
Assignment_08.py
Enter Process or 'quit': 1 a
Enter Process or 'quit': 3 i
Enter Process or 'quit': 4 a
Enter Process or 'quit': 8 a
Enter Process or 'quit': quit
Thank you
Elected using Bully algorithm: 8
Elected using Ring algorithm: 8
PS C:\Users\HP\Rupesh\PICT\TE SEM 1\LP1\SPOS Lab\Assignment 08> python 31124_Rupesh_LP1_
Assignment_08.py
Enter Process or 'quit': 2 a
Enter Process or 'quit': 1 a
Enter Process or 'quit': 11 i
Enter Process or 'quit': 55 a
Enter Process or 'quit': 12 i
Enter Process or 'quit': 128 a
Enter Process or 'quit': quit
Thank you
Elected using Bully algorithm: 128
Elected using Ring algorithm: 128
PS C:\Users\HP\Rupesh\PICT\TE SEM 1\LP1\SPOS Lab\Assignment 08>
```


powershell
PS C:\Users\HP\Rupesh\PICT\TE SEM 1\LP1\SPOS Lab\Assignment 08> python 31124_Rupesh_LP1_Assignment_08.py
Enter Process or 'quit': 10 a
Enter Process or 'quit': 9 i
Enter Process or 'quit': 8 a
Enter Process or 'quit': 11 i
Enter Process or 'quit': 5 a
Enter Process or 'quit': quit
Thank you
Elected using Bully algorithm: 10
Elected using Ring algorithm: 10
PS C:\Users\HP\Rupesh\PICT\TE SEM 1\LP1\SPOS Lab\Assignment 08>