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Assignment Questions = 14th and 21st

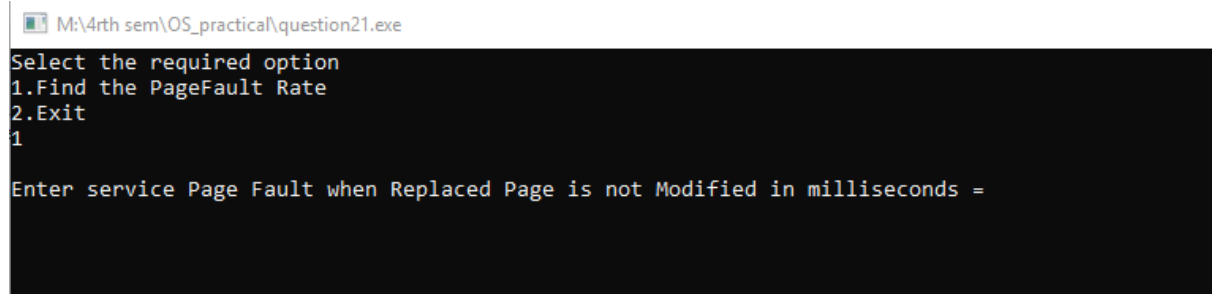
Project Link (Github): https://github.com/Shivendra690/Operating_system_assignment

Question – 21

Consider a scenario of demand paged memory. Page table is held in registers. It takes 8 milliseconds to service a page fault if an empty page is available or the replaced page is not modified and 20 milliseconds if the replaced page is modified. Memory access time is 100 nanoseconds. Assume that the page to be replaced is modified 70 percent of the time. Generate a solution to find maximum acceptable page-fault rate for access time that is not more than 200 nanoseconds.

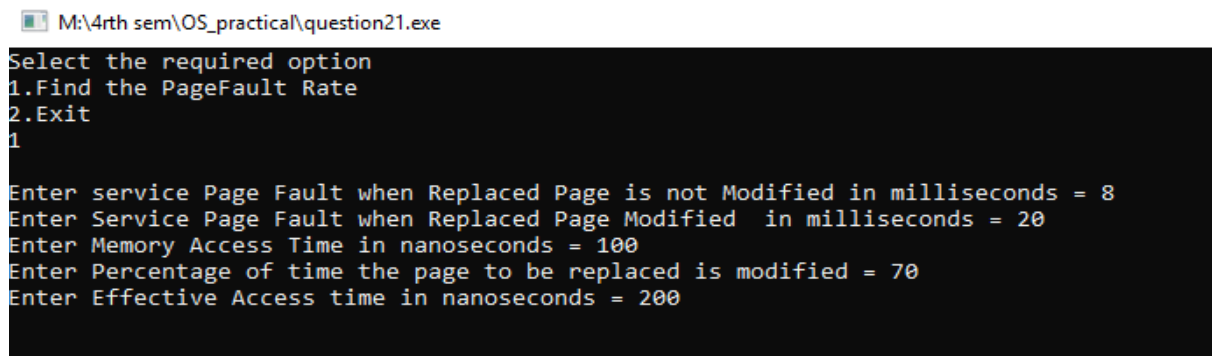
Step 1: Taking Inputs from user-

- A) Select the required option.
 - 1.Find the PageFault Rate
 - 2.ExitWhen User enters option 1:
Output(screenshot)



```
M:\4rth sem\OS_practical\question21.exe
Select the required option
1.Find the PageFault Rate
2.Exit
1
Enter service Page Fault when Replaced Page is not Modified in milliseconds =
```

From here user can enter all the given values to get required results:



```
M:\4rth sem\OS_practical\question21.exe
Select the required option
1.Find the PageFault Rate
2.Exit
1
Enter service Page Fault when Replaced Page is not Modified in milliseconds = 8
Enter Service Page Fault when Replaced Page Modified in milliseconds = 20
Enter Memory Access Time in nanoseconds = 100
Enter Percentage of time the page to be replaced is modified = 70
Enter Effective Access time in nanoseconds = 200
```

Entered Service page fault when page is not modified = 8(ms)
Entered Service page fault when page is modified = 20(ms)
Memory access time = 100(ms)
Percentage of time the page to be replaced is modified = 70(ms)
Effective Access time = 200(ms)

Step 2: Press Enter after all input is taken from user

Output (Screenshot)

```
M:\4rth sem\OS_practical\question21.exe
Select the required option
1.Find the PageFault Rate
2.Exit
1

Enter service Page Fault when Replaced Page is not Modified in milliseconds = 8
Enter Service Page Fault when Replaced Page Modified in milliseconds = 20
Enter Memory Access Time in nanoseconds = 100
Enter Percentage of time the page to be replaced is modified = 70
Enter Effective Access time in nanoseconds = 200

Page Fault rate calculated For:
Service Page FaultWhen Page Not Modified =8000000.000000
Service Page Fault ,page Modified Page in nanoseconds = 20000000.000000
Memory Access Time in nanoseconds =100.000000
Effective Access Time =200.000000

Maximum Acceptable Page Fault rate = 6.10e-006[exponential notation]

Select the required option
1.Find the PageFault Rate
2.Exit
```

- User can calculate page fault rate again for new set of values after selecting option 1.

Output (Screenshot)

```
M:\4rth sem\OS_practical\question21.exe
Select the required option
1.Find the PageFault Rate
2.Exit
1

Enter service Page Fault when Replaced Page is not Modified in milliseconds = 8
Enter Service Page Fault when Replaced Page Modified in milliseconds = 20
Enter Memory Access Time in nanoseconds = 100
Enter Percentage of time the page to be replaced is modified = 70
Enter Effective Access time in nanoseconds = 200

Page Fault rate calculated For:
Service Page FaultWhen Page Not Modified =8000000.000000
Service Page Fault ,page Modified Page in nanoseconds = 20000000.000000
Memory Access Time in nanoseconds =100.000000
Effective Access Time =200.000000

Maximum Acceptable Page Fault rate = 6.10e-006[exponential notation]

Select the required option
1.Find the PageFault Rate
2.Exit
1

Enter service Page Fault when Replaced Page is not Modified in milliseconds =
```


Question- 14

Write a program to implement priority scheduling algorithm with context switching time. Prompt to user to enter the number of processes and then enter their priority, burst time and arrival time also. Now whenever operating system preempts a process and shifts cpu's control to some another process of higher priority assume that it takes 2 seconds for context switching (dispatcher latency). Form a scenario, where we can give the processes are assigned with priority where the lower integer number is higher priority and then context switch .. as the process waits the priority of the process increase at rate of one per 2-time units of wait. Calculate waiting time and turnaround time for each process.

Step 1:


Take input from user

1: Enter total number of process.

 M:\4rth sem\OS_practical\Assignmebt_question_14.exe


```
Enter Total Number of Process:4
```

2: Enter Arrival time for each process

 M:\4rth sem\OS_practical\Assignmebt_question_14.exe

```
Enter Total Number of Process:4
Enter Arrival time for each process
Arrival Time:0
Arrival Time:0
Arrival Time:0
Arrival Time:0
```

3: Enter Burst time and priority for each process

 M:\4rth sem\OS_practical\Assignmebt_question_14.exe

```
Enter Total Number of Process:4
Enter Arrival time for each process
Arrival Time:0
Arrival Time:0
Arrival Time:0
Arrival Time:0

Enter Burst Time and Priority
P[1]
Burst Time:3
Priority:1

P[2]
Burst Time:4
Priority:2

P[3]
Burst Time:6
Priority:4

P[4]
Burst Time:5
Priority:8
```

Final Output (Screenshot)

M:\4rth sem\OS_practical\Assignmebt_question_14.exe

Enter Burst Time and Priority

P[1]
Burst Time:3
Priority:1

P[2]
Burst Time:4
Priority:2

P[3]
Burst Time:6
Priority:4

P[4]
Burst Time:5
Priority:8

Process	Arrival Time	Burst Time	Waiting Time	Turnaround Time
P[1]	0	3	0	3
P[2]	0	4	3	7
P[3]	0	6	4	10
P[4]	0	5	6	11

Average Waiting Time=3
Average Turnaround Time=7

Process exited after 226.8 seconds with return value 27
Press any key to continue . . .