April 12, 2024 at 7:39 PM

TASK 1 (Similar from the previous assignment)

Table explanation: This table represents a process output of simulation. Table consists of 8 columns and each and every one of them is giving us some information. First one is showing a time slice, its just a like a tag number of how long processes are executing, next we have PID (1,2,3,4,5) which stands for Process ID and shows us in what state is each process during the execution. CPU column shows that at one single time, cpu is running one process.

Execution: Process with ID 0 is running until it's done at (5), by the time process with ID 1,2,3,4,5 are in READY state. After PD0 finishes, Process 1 is starting to run and in that time, PID 0 is already finished, and PID2, 3, 4, 5 are still in ready state. Next, PID (1) is done at Time 9, and PID2 starts to run, at that time process before are in DONE state, while others after process that is currently running are in READY state, waiting to execute. This process continues until all of the 6 processes finishes their execution.

TASK #2

First, calculate total number of bits per a virtual address which is 16 bits.

Offset $= \log_2(4KB \cdot 1024) = \log_2(4096) = 12$ bits

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① VA 0x0000 15577$_{(16)}$ = 0000 0000 0000 0000 0001 0101 0111 0111$_{(2)}$

0101 0111 0111 — offset bits

VPN (decimal number system)

VPN	Page Frame
0	0
1	0
2	8 valid
3	0

eight

Check if this page number exists

1 = VPN (on this page stored 0)

0000 0101 0111 0111$_{(2)}$ = 0557 = 0x0557

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② VA 0x0000 22C5

4x "0000" 0010 0010 1100 0101

0010 1100 0101 — offset bits

2 = VPN (stored 8)

1000 0010 1100 0101 = 82C5 = 0x82C5

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③ VA 0x0000 14fa

4x "0000" 0001 0100 1111 1010

0100 1111 1010 — offset bits

VPN = 1 (stored 0)

0000 0100 1111 1010 = 04FA = 0x04FA

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④ VA 0x0000 2D6E

4x "0000" 0010 ~~0000~~ 1101 0110 1110

1101 0110 1110 — offset bits

VPN = 2 (stored 8)

1000 1101 0110 1110 = 8D6E = 0x8D6E

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⑤ VA 0x0000 07DC

4x "0000" ~~0000~~ 0111 1101 1100

0111 1101 1100 — offset bits

VPN = 0 (stored 0)

0000 0111 1001 1100 = 07DC

= 0x07DC

TASK #3

VPN	PF
0	0
1	0
2	0
3	0

① VA 0x000004A1

4x "0000" 0000 | 0100 1010 0001 |
offset bits

VPN = 0 (stored 0)

0000 0100 1010 0001 = 0x04A1

② VA 0x0000 00B4 VPN = 0 (stored 0) = 0000 0000 1011 0100

4x "0000" 0000 | 0000 1011 0100 |
offset bits

= 0x00B4

③ VA 0x0000 122A

4x "0000" 0001 | 0010 0010 1010 |
offset bits

VPN = 1 (stored 0)

0000 0010 0010 1010

= 0x022A

④ VA 0x0000 0788

4x "0000" 0000 | 0111 1000 1000 |
offset bits

VPN = 0 (stored 0)

0000 0111 1000 1000

= 0x0788

⑤ 0x0000 13e8

4x "0000" 0001 | 0011 1110 1000 |
offset bits

VPN = 1 → 0

0000 0011 1110 1000

= 0x03E8