

Assignment No 2

**Spring 2021
CSE-204 Operating System
Submitted by: Ashfaq Ahmad
Registration No: 19PWCSE1795
Class Section: B**

"On my honor, as student of University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work."

Student Signature: _____

Submitted to:

Prof: Tariq Kamal

June 16, 2021

**Department of Computer Systems Engineering
University of Engineering and Technology, Peshawar**

Answer No 1:→ Context Switching, and Uses

In Computing Context Switching is the process of saving state of process or thread, so that it can be restored and resume execution at a later point. This allows multiple processes to share a single CPU and is an essential feature of multitasking Operating System.

→ Registers Involved in Context Switching:

firstly, if the OS is not pre-emptively multi-tasking then it only has to save those registers which are not saved by the usual procedure call convention. In a non-preemptively multi-tasking kernel, task switches only take place in explicit calls to the kernel. The kernel has to save only the "procedure context".

For instance, Suppose there are some special floating point registers, but not

(2)

System does not use them.
the "canonical answer" is
to "Save all aspects of
processor state which pertain
to a task. any register or
other processor state which is
not saved and restored will,
in a given task appear to
spontaneously change value.
For instance MIPS, there
are "Kernel registers" called
K0 & K1.

— x x ————— x x ————— x x —————

but in MIPS, kernel registers are
not used

(3)

Answer NO - 2:

→ Ready queue:

Ready queue is simplified version of a kernel data structure consisting of a queue with one entry per priority. Each entry in turn consist of another queue of the thread that are **READY** at the priority. Any thread that are not ready are not in any of the queue - but they will be when they become ready.

→ IO queue:

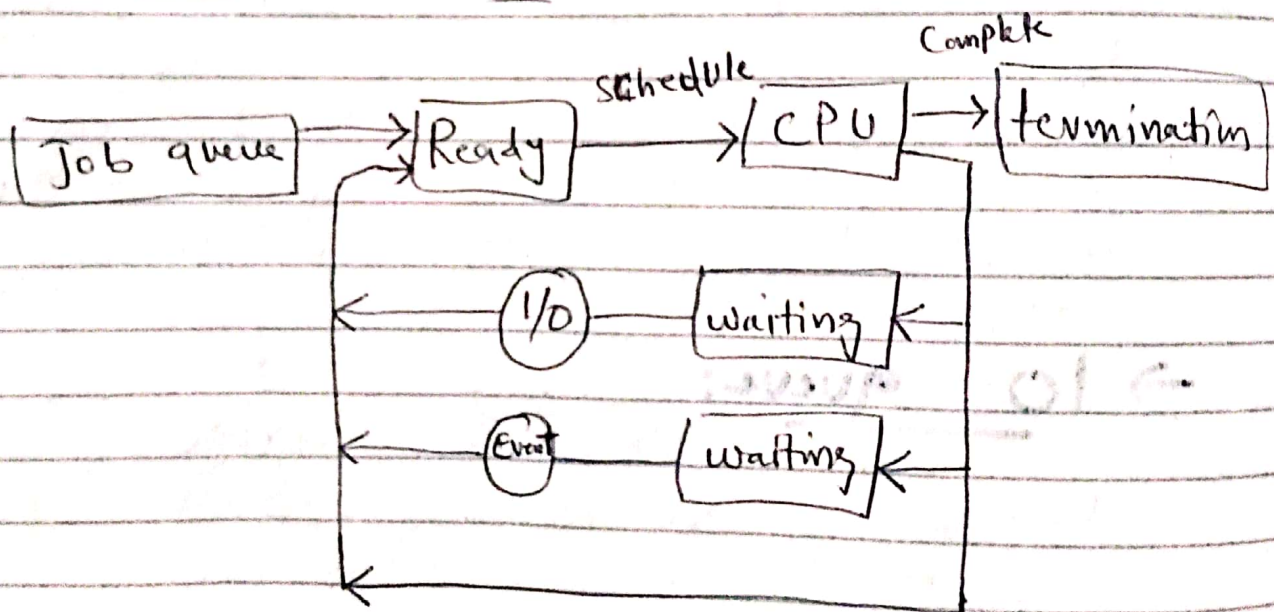
Queues arise because multiple input ports on a router might want to send packets to the same output port. A no of scenarios can result in this type of multiple-input signal-output behaviour.

(4)

How it related to PCB:

The queue also store PCB of the same state when PCB need some input and output for the operation. if take these operation from IO and READY queue

Flow Diagram.



— x x x — x x — x x —

5

Answer NO - 3:

D/Q b/w Asymmetric
and Symmetric multiprocessing

① Asymmetric multiprocessing:

- ① In asymmetric multiprocessing the processors are not treated equally.
- ② Tasks of operating system are done by master processor.
- ③ no communication b/w processors as they are controlled by the master processor.
- ④ In asymmetric multi-processing, process are master-slave.
- ⑤ Asymmetric multi-processing system are cheaper.
- ⑥ Asymmetric multiprocessing system are easier to design.

③ Symmetric Multi-processing:

① In Symmetric multi-processing all processors are treated equally.

② Tasks of OS are done individually processor.

③ All processors communicate with another processor by a shared memory.

④ In symmetric multi-processing the process is taken from ready queue.

⑤ Symmetric multiprocessing systems are costlier.

⑥ Symmetric multiprocessing systems are complex to design.

—xx —xx —xx
The END

By AS HFAEQ AHMAD
Reg No: 19PWCE1795