Name: Naitik Malav

Roll No. : CS19BTECH11026

Ans1. When system calls are executed in the supervisor mode, operating system changes the processor execution mode to more privileged one and no process context switch is required, although a privileged context switch does occur which provides safety to the system.

Ans2. Let's say processor1 reads data A with value 5 from main memory into it's local cache. And processor2 reads data A into it's local cache as well.
Processor1 then updates A to 10, becuse A resides in processor1's local cache, the update will only occurs there and not in the local cache for processor2.

Ans3. In the given program, the command line printf("LINE J") will be reached if pid becomes 0 and it starts to execute the execlp() command. If the execution is successful then the memory assigned to child process gets modified by the process which is given in the arguments of the execlp() function. In this case, the command line printf("LINE J") will not be executed as new process started.

If execlp() fails, then the command line printf("LINE J") will print LINE J as the o/p on screen.

Ans4. O/p is as follows:

LINE X	LINE Y
Child = 0,1	Parent = 0,0
Child = 1,0	Parent = 1.-1
Child = 2,-1	Parent = 2,-2
Child = 3,-2	Parent = 3,-3
Child = 4,-3	Parent = 4,-4

Reason: if pid equals to 0 then the output for child(LINE X) is given above.

If pid is greater than zero, then while the child runs, parent can issue a wait() system call
to move itself off the ready queue until the termination of the child.

Whenever a process tried to change the data in the file it doesn't change as it is open in read-only mode, by which interrupt is generated , so we have to take own different variables for the parent and children.

Ans5.

1. Synchronous and Asynchronous communication:

- As we know send and receive can have diff combination of blockings, so the main advantage of synchronous communication is that it can allow blocking state b/w receive() and send() which is most useful as message will travel instantaneously for system. The main disadvantage is that due to blocking state, communication can become asynchronous communication.
- In case of asynchronous communication blocking state of send and receive could not exist which is the advantage at system level. Because complexity gets decreases while it create that the message may not delivered in time as they have to wait due to no blocking.

2. Fixed and Variable sized:

- Advantages of fixed size message goes to the system level because the implementation becomes straight forward and much easier. But the programming is little bit difficult which is the disadvantage of this type.
- While in variable sized programming is much simpler but variable size implementation becomes very complex for system.