Swapping

There are some instances in multi-programming when there is no memory for executing a new process. In this case, if a process is taken out of memory, there will be space for a new process.

Following factors matters during this implementation:

1. Where will this process reside?
2. which process will be taken out?
3. where in the memory will the process be brought back?

For the first question, the help of any secondary storage known as backing store, is taken & the process is stored there.

The action of taking out a process from memory is called swap-out, and the process is known as swapped-out process.

The action of bringing back the swapped-out processes into memory is called swap-in. A saperate space in the hard disk, known as swap space, is reserved for swapped-out processes.

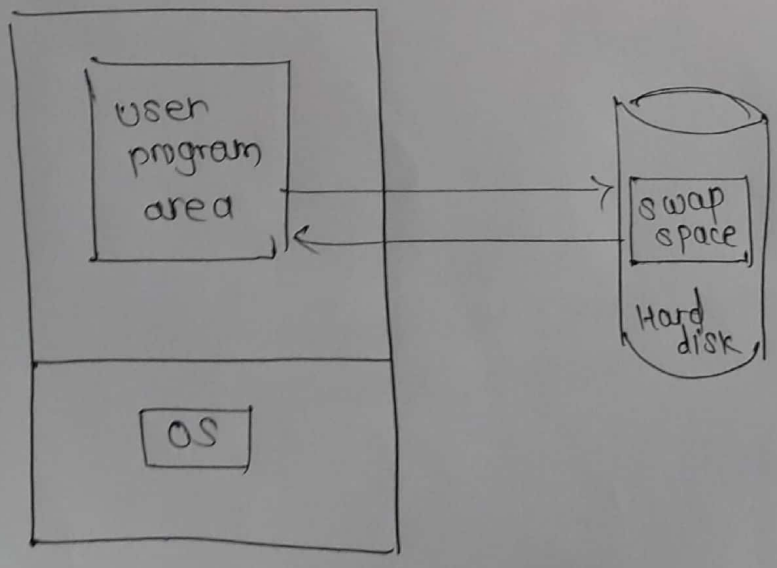

fig. swapping

For second question, some of the processes that can be swapped out are:

- In round-robin process-scheduling, the processes are executed, according to their time quantum. If the time quantum expires and a process has not finished its execution, it can be swapped out.
- In priority-driven scheduling, if a higher-priority process wishesh to execute, a lower-priority process in memory will be swapped out.
- The blocked processes, which are waiting for an I/O, can be swapped out.

For third question, there are two options to swap in a process. The first method is to swap-in the process at the same location, if there is compile time or load time binding, which is inconvinient.
Therefore, another method is to place the swapped-in process anywhere in the memory where there is space. But this requires the relocation.