TECHNOLOGICAL UNIVERSITY OF THE PHILIPPINES VISAYAS
Capt. Sabi St., City of Talisay, Negros Occidental

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OFFICE OF THE COLLEGE DEAN

College of <u>Engineering Technology</u>
<u>Computer Engineering Technology</u> Department
(End-User)

MIDTERM TAKE HOME EXAM
(Term)

COMP 312- OPERATING SYSTEM
(Subject Code and Descriptive Title)
2ND TERM, 2022-2023
(Term)   (SY)

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Instructor: _____Date:_____

Answer the following questions.

1. Describe the word deadlock and give at least 2 examples (pictures) of deadlock.
   A deadlock is a situation in which two computer programs sharing the same resource are effectively preventing each other from accessing the resource, resulting in both programs ceasing to function. The earliest computer operating systems ran only one program at a time.
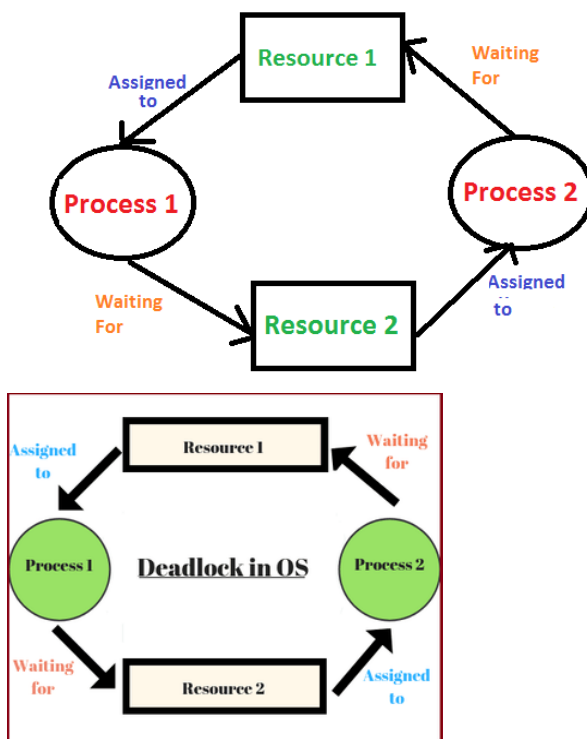
2. What causes deadlock?
   Deadlock occurs when a set of processes are in a wait state, because each process is waiting for a resource that is held by some other waiting process. Therefore, all deadlocks involve conflicting resource needs by two or more processes.

3. Give at least four (4) conditions of deadlock?

   Mutual Exclusion

   A resource can only be shared in mutually exclusive manner. It implies, if two process cannot use the same resource at the same time.

Hold and Wait

A process waits for some resources while holding another resource at the same time.

No preemption

The process which once scheduled will be executed till the completion. No other process can be scheduled by the scheduler meanwhile.

Circular Wait

All the processes must be waiting for the resources in a cyclic manner so that the last process is waiting for the resource which is being held by the first process.

4. What are the possible prevention and avoidance of deadlock?
   Deadlock can be prevented by eliminating any of the four necessary conditions, which are mutual exclusion, hold and wait, no preemption, and circular wait. Mutual exclusion, hold and wait and no preemption cannot be violated practically. Circular wait can be feasibly eliminated by assigning a priority to each resource.Feb 15, 2022

5. What are the concepts of deadlock detection and recovery?
   In this approach, The OS doesn't apply any mechanism to avoid or prevent the deadlocks. Therefore the system considers that the deadlock will definitely occur. In order to get rid of deadlocks, The OS periodically checks the system for any deadlock.

6. Explain briefly how process termination and resource pre-emption help eliminate deadlock?
   Process Termination: To eliminate the deadlock, we can simply kill one or more processes. ...
   Resource Preemption: To eliminate deadlocks using resource preemption, we preempt some resources from processes and give those resources to other processes.

7. What happen to the OS if deadlock occurs frequently?

If deadlock occurs very frequently in the system then the detection algorithm is used frequently. If there is more usage of the detection algorithm then there will be more overhead and more computation time.