

CISC324

Winter 2022

Assignment 2

Deadline: March 11, 2022, 11:59 PM

Full Mark: 10/10

Question 1: True/False (1 Point, No partial points)

The best avoidance algorithm that are recommended to be used in case of having multiple instances of a resource type is to use Resource-allocation graph.

- a) True
- b) False

Question 2: Multiple Choices (1 Point, No partial points)

Which of the following cases could force a process removed from the CPU?

- A) I/O request
- B) fork a child
- C) interrupt or time slice expired
- D) all of the above

Question 3: (2 Points)

Name and describe the different states that a process can exist in at any given time.

Question 4: (3 Points)

Draw a process precedence graph (a.k.a., dependency graph) that reflects the parallelism in the following code. Recall a precedence graph is a *directed graph* in which the nodes (vertices) represent processes and the edges represent the causal relation between two processes. If an edge exists from process node P_i to P_j then the process P_j must start executing its code C_j only when process P_i finishes executing its code C_i . Also we use the notation `ParBegin` and `ParEnd` to indicate a block in which program codes (or instructions) must run in parallel. An alternative notation that can be found in the literature is `CoBegin` and `CoEnd` for concurrent begin/end.

```
Begin
  C0;
  ParBegin
    C1,
    Begin
      C2;
      C3;
      C4;
    End
    C5,
    C6,
    Begin
      C7;
      C8;
      C9;
    End
  ParEnd
  C10;
End
```

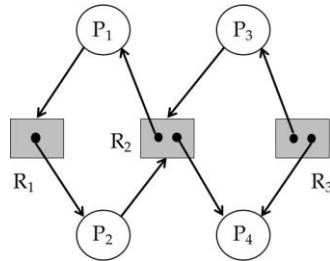
Question 5: (1 Point)

Can a process be interrupted (context switched) during the execution of its critical section? Explain.

Question 6: (2 Points)

Consider the following RAG. Is the system in a deadlocked state? Explain.

Hint: if a process is satisfied – by having all required resources - it will execute then release used resources before it terminates.



How to Submit:

Write your answers to the given questions on a file and name it according to the following format :
324-1234 –Assn2.pdf

where 1234 stands for your last 4 digits of your students ID. Notice the extension is “pdf.” It is preferred to submit a pdf file. If you can not save your file as pdf then you may save it and submit it as a document.

Then upload “324-1234 –Assn2.pdf” into Assignment 2 dropbox on onQ. You may upload several times if you wish , however, onQ only keeps the last uploaded file. Please check your files after uploading.

An “*I uploaded the wrong file*” excuse will result in a mark of zero, no exceptions please!

Also note that last uploaded file always replaces previous file, and onQ is set for this assignment to have/show/keep only the last uploaded file, and all previous files will be deleted from the system.