

UCF

School of computer Science

COP 5611: Operating Systems Design Principles
Spring 2005

HW1 (Due Feb. 3rd)

1. Consider a system with one resource R, which can be used by two different sets of processes, say $P = \{p_1, p_2, p_3, \dots, p_n\}$ and $Q = \{q_1, q_2, q_3, \dots, q_m\}$, with both $n > 1$ and $m > 1$. When a process from set P is using resource R, other process from set P may share resource R, but no process from set Q may be allowed to share resource R, and vice versa.

Resource R may be in three possible states:

- a) Idle.
- b) Used by processes belonging to set P.
- c) Used by processes belonging to set Q.

Give a deadlock-free implementation in BACI of the following procedures using semaphores: `Process_type_P_request_R`, `Process_type_Q_request_R`, `Process_type_P_release_R`, and `Process_type_Q_release_R`.

You must turn in the pseudo code of the above mentioned procedures and clearly indicate the initial values, and a running version of your solution in BACI with results for different data sets.