# COMP3500: Handling Deadlocks

**Exercise 1:** (1.1) In this gridlock problem, what corresponds to a thread in a software process? What are the shared resources in this example?



(1.2) Can you offer a basic idea to solve this problem?

**Exercise 2:** Please propose the first deadlock prevention approach that addresses the mutual exclusion issue?

**Exercise 3:** (3.1) Please propose the second deadlock prevention approach dealing with the “hold-and-wait” problem. (**Hint:** There are two solutions)

(3.2) What are potential problems with the above solutions?

**Exercise 4:** Please propose the third deadlock prevention approach dealing with the “no preemption” requirement. (**Hint:** How to implement a preemption policy?)

**Exercise 5:** Please propose the fourth deadlock prevention approach dealing with the “circular wait” problem. How does the following solution work?

* Impose a total ordering of all resource types
* Require each process requests resources in an increasing order of enumeration