

SUSTech CS302 OS Lab7 Report

Title: Deadlock

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Time: 2019 Year 4 Month 13 Day

Experimental Environment: linux C++

Objective: Understand the reason of deadlock, and the solution of deadlock.

Understand several algorithm about dealing with deadlock, such as Banker's algorithm.

Deadline: **11:59 AM, 2019-04-17**

Summit by: Blackboard

Task :

Task 1. Implement the Banker's algorithm.

Task 2. Finish the report.

Experiments:

1. fundamental :

□ What is deadlock?

Deadlock is a state where a set of processes are blocked because each process is holding a resource and waiting for another resource acquired by some other processes.

□ What are the requirements of deadlock?

(1)Mutual exclusion. (2)Hold and wait (3)No preemption (4)Circular wait

□ What's different between deadlock prevention and deadlock avoidance?

Deadlock prevention prevent deadlocks by constraining how requests for resources can be made in the system and how they handled. The goal is to ensure that at least one of the necessary conditions for deadlocks can never hold. Deadlock avoidance use the system to dynamically considers every request and decides whether it is safe to grant it at this point. The system requires additional apriori information regrading the overall potential of each resource for each process

- How to prevent deadlock? Give at least two examples.

Eliminate hold and wait, allocate all required resources to the process before the start of its execution.

Eliminate No preemption, preempt resources from the process when resources required by other high priority processes.

- Which way does recent UNIX OS choose to deal with deadlock problem, why?

Ignore the problem and pretend the deadlocks never occur in the system. Because it is simple, and simple is great.

2. Banker' s algorithm

- What data structures you use in your implementation? Where and why you use them?

Are they optimal for your purpose?

I use hash map to store all the processes and their maximum needs, its key is process id, and value is resource list. I use hash map because each process would have a different process id, using hash map can save the space and find quickly.

Conclusion:

Through this lab, I learn about banker' s algorithm.

Submission:

-OS_Lab7_studentID (directory)

---OS_Lab7_report_studentID.pdf (pdf version report)

---banker.cpp (code file)

Zip the directory with the same name and submit it