**CIS 657 Lab 1**

Submit your Lab 1 document (doc or pdf) including the disclosure form and answers to the Turnitin link on the blackboard (under Assignments).

Due: Sep. 14 (Friday, end of the day)

Late submission: you have total 72 hours throughout the semester.

*Download Nachos.tar from the blackboard and unpack it. Answer all of the following questions by examining the Nachos code (all sub-directories of code directory).*

(1) **(5pts)** What are the possible NachosProcess (called Thread) states and where are they defined (filename & line number)?

(2) **(5 pts)** In threadtest.cc, how many lines are printed when you change:

for(int num = 0; num < 5; num++)

to  
for(int num = 0; num < which; num++)

Why is that?

(3) **(10 pts)** Draw the call graph of creating a new NachoProcess with SimpleThread function.

(4) **(25 pts)** Using flags will help you design and test your operating system (later in other labs and programming assignments).

To use a flag: **./nachos -flag <flag parameters>**

Examine source code for all the predefined flags and discuss briefly how Nachos operates and what information is displayed if it exists for each flag and its parameter(s).

(5) **(10pts)** What system calls are currently implemented in Nachos? Explain what it does in detail and find a corresponding UNIX system call if exists.

(6) **(15pts)** What would happen when you execute the halt program (code/test/halt.c) - ./nachos -x ~/test/halt? Explain why it happens. Draw the call graph from a user program (halt) instruction to running a system call implementation.

(7) **(10 pts)** What would happen when you execute the shell program (code/test/shell.c)? Explain why it happens.

(8) **(5pts)** Which emulated MIPS CPU register contains the system call code?

(9) **(15 pts)** Explain the difference between the threads created in ThreadTest() and the thread created for executing halt (or shell).