ECT362 Homework #1

NOTE: Homework must be completed on computers in KL322. Students log into these computers using the username “ECT Student” with the password “ECT Student”. Note on your homework sheet which computer was used for the assignment. Before starting, make sure that all windows are closed and then open the command console window by running cmd.exe.

1) Start perfmon.exe (performance monitor). Select the “+” icon to add metrics to monitor the percent of time the processor spends servicing interrupts, in privileged time, and in user time. (Leave this tool running through question 3.) (6 pts.)
   a) What do the plots represent?
   b) What operations can you perform to make the amount of privileged time change, and explain why this occurs?
   c) What operations can you perform to make the amount of processor time change and explain why this occurs?

2) Run the Spy++ program. Notice that this provides a static display of information. To update the information, hit the “Refresh” button. (Leave this tool running through question 3.) (5 pts.)
   a) How many processes are running?
   b) List the fraction of time that the idle process spends in privileged time and in user time and explain what this information is telling you.
   c) What is the base priority of the idle process?
   d) What is the Spy++ process ID?
   e) How many threads are running in the Spy++ process?

3) Start the task manager. (6 pts.)
   a) What applications are currently running?
   b) What is the correlation between the PID (process’s internal identifier) field in task manager and the parenthesized hexadecimal number in Spy++ (must use the view→select columns to get the desired information)?
   c) Which plot in the perfmon.exe program is the same as the “CPU Usage History” curve in the task manager display?
   d) What is the plot in perfmon.exe that provides the same curve found in the “Physical Memory Usage History” plot in task manager (must select the correct performance object)?

4) Run cpuload.exe with the correct command line parameters, “cpuload.exe N RUN_TIME”. This program creates a process with N threads that will run for RUN_TIME seconds and then halt to provide a synthetic load for the computer system. Run the program with N=3 for any runtime you choose (perhaps a couple of minutes). Use the system analysis tools investigated above to answer the following questions. (6 pts.)
   a) How many threads are running in the process? If it is not the same as N, why not?
   b) What is the effect of the threads on the CPU usage?
   c) Is the CPU load primarily privileged or user computing?