CS162, Spring 1998
Midterm #1
Professor Alan Smith

Problem #1
Explain the difference between a process and a thread. Define both. What are the tradeoffs between using one and using the other? (14)

Problem #2
We discussed two mathematical quantities that are reasonable targets for optimization in scheduling: minimizing ave(f(i)) and minimizing ave(f(i)/s(i)). Please explain what each is, and explain why we would like to minimize it. (14)

Problem #3
Please provide code (of the same sort used in class) that will implement P & V using the "swap" operation described in class. (18)

Problem #4
What is the difference between an interrupt and a trap? Define both. Please give at least two examples of each. (12)

Problem #5
Why does rollback usually require checkpoints? Please define both terms and explain. (11)

Problem #6
For each of FIFO, SRPT, and RR (Q=.25), and for the following set of arrival and service times, please show a time line for which process is executing, and compute the mean flow time. Show your computations. (We might give partial credit, if you made a simple and obvious error; we're not going to try to decode your calculations if they aren't obvious.) (15)

	arrival	service
A	0	1.5
B	.3	.8
C	1.1	1.1

Problem #7
For the following two cases, please either show a complete safe sequence or show that there isn't one. (16)

PROCESS	has-X	has-Y	max needs-X	max needs-Y
A	10	20	75	50
B	0	70	50	90

C	30	10	60	40
D	50	80	100	220

a. available: X: 40 Y: 40
b. available: X: 40 Y: 35
