Assignment 1

DUE DATE: Wednesday, October 5, 2011. Time: 11:55am

This assignment is worth 5% of your final mark.

STUDENT NAME / SFUID: _____

SECTION: _____

How to submit: Online submission through WebCT only. Email submissions are not accepted.

Late assignment policy: the mark for a late assignment will be marked down 25% for each day it is late.

This is an individual assignment. The work is expected to be completed by individuals and not in collaboration with others. If we detect that two assignments are identical or close enough that it is clear that copying was involved, BOTH assignments will receive a grade of 0.

Question 1 (2 marks)

Neumann computer architecture: Explain why the name 'Program Counter' can be misleading. Suggest and justify a more appropriate name.

Question 2 (3 marks)

Two computers, A and B, are identical except for the fact that A has a subtract instruction and B does not. Both have add instructions. Both have instructions that can take a value and produce the negative of that value. Which computer is able to solve more problems? Justify your answer.

Question 3 (1 mark)

The FETCH phase of the instruction cycle does two important things. One is that it loads the instruction to be processed next into the IR. What is the other important thing?

Question 4 (3 marks)

An electronic thermometer's reading changed from 53.0°F to 55.7°F, a change of 2.7 divisions on its output scale as a result of a 3.4°F actual change in the measured temperature. What is the instrument's sensitivity?

Question 5 (2 marks)

Explain why it is needed to have analog - to - digital conversion when using a sensor to measure a quantity from the environment and process it with a computer system.

Question 6 (3 marks)

Give one example of negative feedback and one example of positive feedback. Explain each example, by justifying why the feedback is negative or positive (note: your examples should be others than those presented in the lecture).

Question 7 (2 marks)

Thinking of the role of the operating system within a computer system, do all computer systems need an operating system? Justify your answer.