Homework 1 CS/ECE 252: Sec 1 & 2 [Due at lecture on Wed, Jan 29]

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Instructions: You must do this homework alone. Please hand in ONE copy of the homework listing your section number, full name (as appear in Learn@UW) and UW ID. You must staple all pages of your homework together to receive full credit.

Problem 1 (4 points)

a. How many Midterm exams do you have for this course? What are the dates on which they are held? In what room and building are your exams?

b. Do you have a conflict with any of the exams? If so, have you informed your instructor about the conflict?

c. Do you have a final exam for this course?

Problem 2 (3 points)

(This question has no wrong answer)

a. What is your expected major(s)?

b. Have you taken any other Computer Science courses in the past? If yes, please list them.

c. What do you hope to learn from this course?

Problem 3 (2 points)

What is the difference between a high level language and an assembly language?

Problem 4 (3 points)

Name at least three things specified by an Instruction Set Architecture (ISA).

Problem 5 (2 points)

In your own words, explain how does a microarchitecture differ from an ISA? Why do you think we might want to design a different microarchitecture for an existing ISA?

Problem 6 (3 points)

Frank said : "I saw the man on the ship with a telescope"

a. How many reasonable interpretations can you provide for Frank's statement. List them.
b. What property does this sentence demonstrate that makes it unacceptable as a statement in a program.

Problem 7 (3 points)

If your father asks you to "Order a Pizza online", is it an abstraction? If so, break it down into a few of its component parts.

Problem 8 (5 points)

Assume that we had a "black box," which takes two numbers as input and outputs their sum, as shown in Figure 1(a). Also assume that we had another box capable of multiplying two numbers together, as shown in Figure 1(b). We can connect these boxes together to compute p × (m + n), as shown in Figure 1(c).

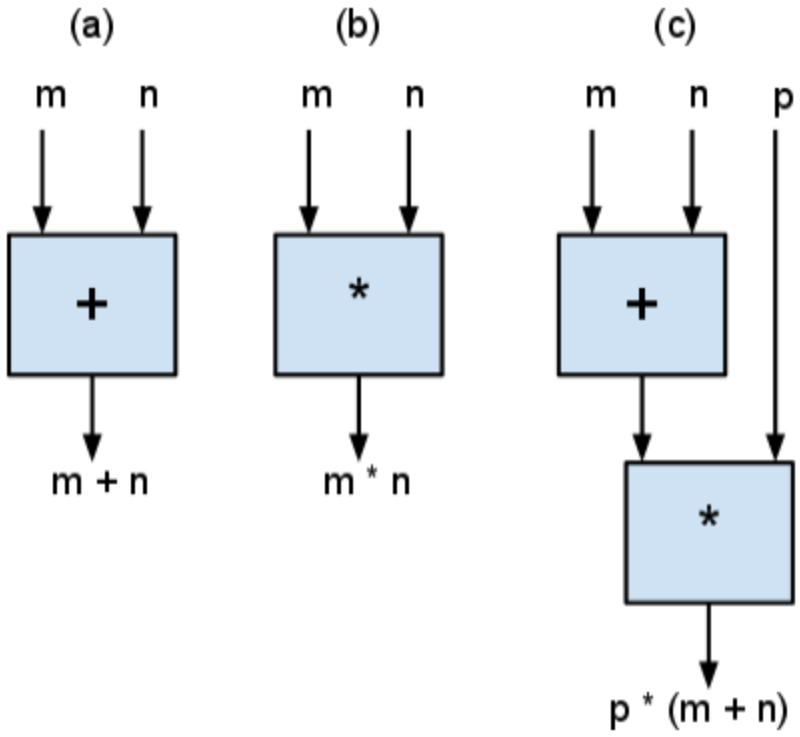

Fig 1. "Black boxes" capable of (a) Addition, (b) Multiplication and (c)A combination of both

Now, assume we have unlimited number of these boxes (ie, the ones shown in Fig 1(a) and 1(b)).

a) Show how to connect them together to compute:
(i) 2a + 2b
(ii) a^2 + b^2
(iii) a + b + c

b) What is the minimum number of boxes required to compute a^8? Also, show the connections involved.

Problem 9 (5 points)

In the table below, fill in the number of the following term (1 through 5) that best matches the corresponding statement:

1) Definiteness
2) Effective Computability
3) Finiteness
4) Abstraction
5) Language/Code

	Determines whether or not a problem is solvable
	Underlying mechanisms are hidden or unknown
	Each step of a process must be clearly laid out
	Can be used to write an algorithm that a computer can understand
	Will not run on forever, will stop at some point