SE 101: Introduction to the Methods of Software Engineering

In-Lab Quiz #2

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November 1, 2001 10:30 a.m.
20 min.

The only aid allowed is an electronic calculator in which notes cannot be stored. No texts or notes are permitted.

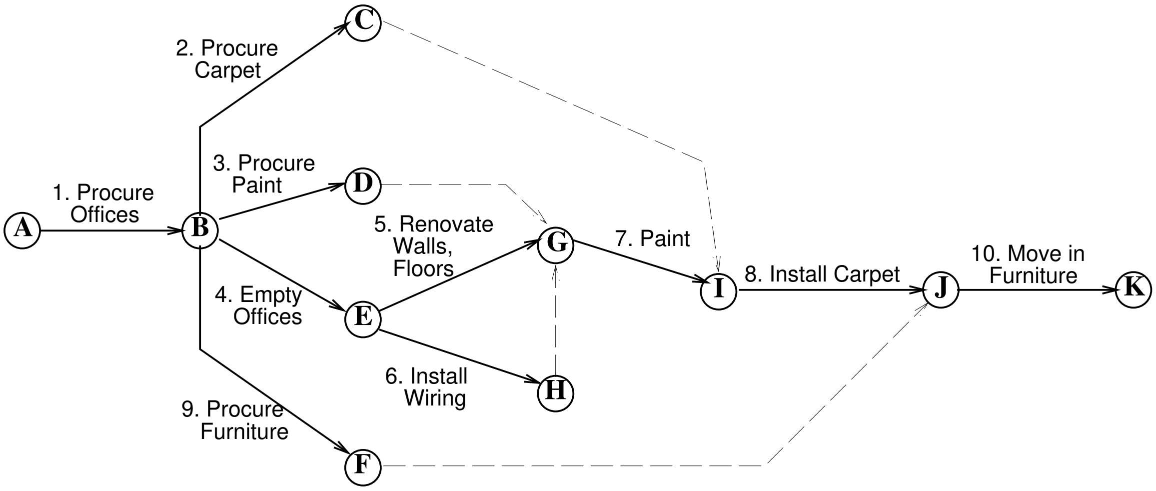
1. Consider an 8-bit floating-point word in which the leftmost bit represents the sign of the number, the next four bits represent the exponent, and the three rightmost bits represent the fractional part of the significand. Assume that numbers are stored as normalized numbers, and assume that the exponent value ranges from -7 to 8. What is the *largest* floating-point value that can be represented in this system?

   - ☐ 2^8
   - ☐ 15×2^8
   - ☐ 15×2^5
   - ☐ 7×2^8

2. Let x, y, and z be 8-bit floating-point numbers in which the leftmost bit represents the sign of the number, the next four bits represent the exponent, and the three rightmost bits represent the fractional part of the significand. Assume that the numbers are stored as normalized numbers, and that the exponent ranges from -7 to 8. Let $x = 1$, $y = 2^{-4}$, and $z = 1$. Match each of the floating point computations on the left with its nearest floating-point result on the right; in each case, evaluate the expression by evaluating the parenthesized sub-expression first and rounding its exact intermediate value to the nearest floating point value (of the same format as the operands).

Expressions	**Values**
A. $(x \oplus y) \ominus z$	A. 0
B. $(x \ominus z) \oplus y$	B. 2^{-4}
B. $x \oplus (y \ominus z)$	C. None of the above

3. Consider the following Critical Path Method (CPM) activity chart that depicts the schedule for creating a new lab out of existing offices:



The times of the activities are listed in the following table:

1	Procure office rooms	180 days
2	Procure carpet	14 days
3	Procure paint	1 day
4	Empty offices	7 days
5	Renovate walls, floor	40 days
6	Install wiring	20 days
7	Paint	3 days
8	Install new carpet	1 day
9	Procure furniture	40 days
10	Move in new furniture	1 day

Which lab renovation activities lie on the critical path?

- ☐ 1,2,8,10
- ☐ 1,3,8,10
- ☐ 1,2,3,4,5,6,7,8,9,10
- ☐ 1,4,5,7,8,10
- ☐ 1,9,10

4. If in the preceding problem the furniture procurement is delayed by 14 days, then

- ☐ The lab renovation as a whole will be delayed 14 days.
- ☐ The lab renovation as a whole will be delayed 3 days.
- ☐ The lab renovation as a whole will not be delayed at all.

5. Techniques that estimate the cost of a project in person-months are

- ☐ Often accurate to within 1/10 of a person-month
- ☐ Often accurate to within 1 person-month
- ☐ Inaccurate, but better than no information
- ☐ Too inaccurate to be worthwhile

6. The university is developing a new transcripts system that will allow students and alumni to view their transcripts over the Internet. In the space below, specify one quality requirement you would like to see this system exhibit; provide a testable specification of this requirement.

7. Which of the following sentences makes the most sense?

- ☐ Walking through the woods, the trees had just started to change colour.
- ☐ While driving with the headlights on, the car was more visible in the rain.
- ☐ Carrying a heavy pile of books, her foot caught on the step.
- ☐ While dining in town, Ken and Joe decided to take a vacation.
- ☐ While grocery shopping, the oranges went on sale.

8. Which of the following sentences makes the most sense?

- ☐ They ate vegetarian meals flying to California.
- ☐ Professor Harris described her trips through the jungle in our anthropology class.
- ☐ Nancy sighted a plane through binoculars that she could not identify.
- ☐ Jonathan wore a hat on his head which was obviously too small.
- ☐ Myra almost made the mistake of diving into the deep end when the pool was empty.

9. Which of the following sentences is grammatically incorrect?

- ☐ To really anger Jim, Gus left his dirty dishes in the kitchen sink.
- ☐ Fiction never claims to be fact.
- ☐ I was afraid you had been hurt badly.
- ☐ I am too busy to go to the movies tonight.

10. Match each of the sentences on the left with its literal meaning on the right.

C I only decided to buy candy.	A. No one else decided to buy candy.
A Only I decided to buy candy.	B. I decided not to buy anything else.
B I decided to buy only candy.	C. I made just one small decision.

11. Which of the following is ambiguous?

- ☐ Rob's sentence structure is not good, but most of his errors are due to carelessness.
- ☐ The paper announced that a university-wide party would be held on Saturday. It was a huge success.
- ☐ Ruth saw Mike when she was in town last week.
- ☐ For his history project, Jeff chose to write about the Vietnam War. This topic interested him because his father fought in that war.

Extra credit
The following sentence is grammatically incorrect:

> Angela enjoys all types of exercise: jogging, swimming, weights, biking, and, especially, cross-country skiing.

Which of the following actions will fix the error?

- ☐ Replace the colon with a comma followed by the phrase "such as".
- ☐ Replace "weights" with "weight training".
- ☐ Remove the commas surrounding the word "especially".
- ☐ Remove the hyphen in "cross-country".