Quiz 1: do it yourself; use course notes - Results

Attempt 1 of 1

Written May 10, 2024 9:14 PM - May 10, 2024 10:32 PM

Attempt Score	8 / 8 - 100 %
Overall Grade (Highest Attempt)	8 / 8 - 100 %

Question 1 — 1 / 1 point

In your own words, explain the difference between translation and interpretation.

Translation - It is when you convert a higher level program to an equivalent lower level program all at once. Requires the use of a compiler, which generates a new program called an executable that gets executed. Translation or compiling is a slow process but running the executable is fast.

Interpretation - Converting one higher level program instruction to equivalent lower level program instructions and then executing it immediately. No compiler is required and no new program is generated. The original program gets interpreted by the interpreter instruction by instruction.

The correct answer is not displayed for Written Response type questions.

Question 2 — 4 / 4 points

Consider a multilevel computer in which all the levels are different. Each level has instructions that are c times as powerful as those of the

level below it; that is, one level y instruction can do the work of c level y − 1 instructions. If a level-two program requires two seconds to run, how long would equivalent programs take at levels one and five, assuming six level y instructions are required to interpret a single y + 1 instruction? Always show your work.

c = number of LLL instructions it takes to replace one HLL instructions
y = the level in question
k = 2 (seconds to run a level 2 program)
n = 6 (number of interpreter interpretations to one HLL instruction into c LLL instructions)

Level 5 = k * (n^3)/(c^3) seconds = 2 * (6^3)/(c^3) seconds = 432/(c^3) seconds
Level 4 = k * (n^2)/(c^2) seconds
Level 3 = k * n/c seconds
Level 2 = k seconds
Level 1 = k * c/n seconds = 2 * c/6 seconds = c/3 seconds

The correct answer is not displayed for Written Response type questions.

Question 3 — 1 / 1 point

Answer like we did in class: what is 2^33 divided by 2^12? Use the SI prefixes. Always show your work.

(2^33) / (2^12) = 2^(33-12) = 2^21 = 2^20 * 2^1 = 1M * 2 = 2M

The correct answer is not displayed for Written Response type questions.

Question 4 — 2 / 2 points

What are three advantages and one disadvantage of having a six-level computer (as opposed to a one-level computer? Explain clearly.

Advantages:

Modular – If any of the computer levels are changed, then we only need to modify the interpreters or compilers above and or below the level.

Easy for people – The higher up the levels you go in a multilevel computer, the easier it gets for humans to write code for that level.

Cheap – It is cheaper to create more software than hardware. That's why we have a lot more of software than hardware.

Disadvantages:

Slower – A multilevel computer is slower as the program execution time increases due to the necessary interpreter interpretations needed to go down each level.

The correct answer is not displayed for Written Response type questions.

Done