

Programming language midterm examination (11/6/2001)

2. 1. What is writability in the context of programming language? Describe the concept and give two examples on good/bad writability. 6
- +2 2. Describe the implementation method of Java. Is it interpreted or compiled? Hint: Despite that fact that Java applets can run in your browser, no matter which hardware platform you are using, does your browser support Java compilation?
- +2 3. What does it mean by that a context-free grammar is ambiguous? Give an example and explain it in details.
4. Give a general description on how to convert an extended BNF into a syntax graph. Keep in mind that in an EBNF the grammar could have optional construct, repetition, and multiple choices. Explain your construction by giving a complete example.
5. Explain the concept of the weakest precondition and give an example to explain the idea.
- +2 6. What is strong typing according to the textbook? Please indicate a feature or a mechanism such that a language becomes ~~not~~ strongly typed because of it. ~~✗~~ 4
7. Is it possible that a variable is in its scope but not in its lifetime, or vice versus? 5 No. 5 Yes
Explain your answers in details.
- +2 8. Explain the following concepts: static variables, stack-dynamic variables, explicit heap-dynamic variables, and implicit heap-dynamic variables. Give an example for each of them. 3
解释 2分. 例子 1分
9. Describe the array address calculation in details, especially when the array has multiple dimensions. What factor should you consider in the calculation? 2 column. row major
- X 10. Both array and records are collection of related data. What is the fundamental difference between them?

$$9. \text{ start-address} + \left\{ \sum_{i=1}^{m-1} \left[(X_i) \cdot \prod_{j=i+1}^{m-1} L_j \right] + X_m \right\} \cdot \text{element-size}$$

其所写的不是 multiple dimension 例子。扣分 4 分