

CS328, Winter 2000, Test 2

Time 50 min. Use extra paper as needed, but make sure to identify each answer.

YOU MUST RETURN THIS PAGE. NAME _____

1 Given:

S → SabC | abC | aC

C → ccC | c | empty

Make all necessary changes and show all necessary sets to prove the above can be written as LL(1). If not possible, argue why.

2 Design unambiguous grammar to parse expressions involving +, -, *, / and unary -. Also (). () override any operator. Then, unary minus is strongest, followed by -/+ (same precedence, right associative) and *, left associative, then finally /, left associative.

3 Given the production:

S → aSAb | Ab

A → bbb

implement a complete pseudocode for a recursive descent parser. Assume scanner() returns the next token.

4 Assume function f() has local variables a, b, and function g is nested inside of f() and has local variable a. There is also a global variable c.

a) show the complete memory space for the program when it begins execution

b) show the stack after f() is called, which subsequently calls g(), which calls itself once.

c) assume we have three statements in g()

stat1: c=10;

stat2: a=20;

stat3: b=30;

how would they be translated by the compiler: explain in words.