## Programming Language Translation

## Practical 4 Handin – Group <Name>

### Task 2 Palindromes

Does grammar 1 describe palindromes? If not, why not?

Is it an LL(1) grammar? If not, why not?

Does grammar 2 describe palindromes? If not, why not?

Is it an LL(1) grammar? If not, why not?

Does grammar 3 describe palindromes? If not, why not?

Is it an LL(1) grammar? If not, why not?

Does grammar 4 describe palindromes? If not, why not?

Is it an LL(1) grammar? If not, why not?

Can you find a better grammar to describe palindromes? If so, give it, if not, explain why not.

### Task 3 Thinking about ambiguity

Which of the following statements are true? Justify your answers.

(a) An LL(1) grammar cannot be ambiguous.

(b) A non-LL(1) grammar must be ambiguous.

(c) An ambiguous language cannot be described by an LL(1) grammar.

(d) It is possible to find an LL(1) grammar to describe any non-ambiguous language.

### Task 4 Roman numerals

Is it LL(1) compliant? If not, which productions break the LL(1) rules, and why?

Is it ambiguous? Why?

### Task 5 Boolean grammar

Do the two parse trees discussed in the question correspond? Explain.