# Tutorial 2: Problems

CSC 467 Compilers and Interpreters
Fall Semester, 2005

1. (**Parsing**) The following two context–free grammars describe the same language but they belong to a different parsing category:

| Grammar $G_1$ | Grammar $G_2$ |
|---|---|
| $S' \rightarrow S\$$ | $S' \rightarrow S\$$ |
| $S \rightarrow x \mid Ay$ | $S \rightarrow x \mid Ay$ |
| $A \rightarrow Bx$ | $A \rightarrow x \mid zx$ |
| $B \rightarrow \epsilon \mid z$ | |

   (a) Show the $LR(1)$ items and *goto* graph for $G_1$.

   (b) Indicate whether $G_1$ is $LR(0)$ and whether it is $LR(1)$. Explain why.

   (c) Repeat part (a) for $G_2$.

   (d) Repeat part (b) for $G_2$.

   (e) Of the language classes that we have discussed in class, what is the *smallest* category (i.e. "lowest" in the language hierarchy) into which $L(G_1)$ fits?

2. Problem 5.14, page 338

3. Problem 5.16, page 339