

## COP4020 Homework Assignment 4

1. Name and briefly describe the six development tools that are commonly integrated within an IDE.
2. Take a small C program from any one of your CS class projects (or any other C program you have written) and compile it on linprog with:  

```
$ gcc -v program.c
```

Which tools are invoked by gcc when you run this? What other files besides a.out are generated temporarily?
3. Errors in a computer program can be classified according to when they are detected and, if they are detected at compile time, what part of the compiler detects them. Using the C programming language, give an example of each of the following.
  - a) A lexical error, detected by the scanner (hint: the scanner accepts only legal characters)
  - b) A syntax error, detected by the parser
  - c) A static semantics error, detected by semantic analysis
  - d) A dynamic semantic error, detected by the code generated by the compiler
  - e) An error that the compiler can neither catch nor easily generate code to catch (this could be a violation of the language definition, not just a program bug).