

Hope University College
Department of Information Technology
Compiler Design
Assignment I (15%)

1. What is compiler?
2. Write the use of the following phases of compilation.
 - a. Semantic analysis
 - b. Intermediate code generation
3. Why we study compilers?
4. Why is lexical analyzer called a scanner?
5. A DFA is a collection of _____ and _____.
6. The symbol for final state is _____.
7. Consider the alphabet $\Sigma = \{a, b, c\}$. write a regular expression that generates the set of all:
 - a. Strings containing exactly one b
 - b. Strings containing at most one b
8. Describe the languages denoted by the following regular expressions.
 - a. $a^*ba^*ba^*ba^*$.
 - b. $a(a|b)^*a$
9. For the questions of no 8, write the equivalent expression in JavaCC.
10. For the questions of no 8, draw the equivalent DFA.
11. Assume we have a language that has else, for, while, do, int, double and float keywords. It uses semicolon, colon, less than and greater than and identifies integer literals and identifiers. For this language, identifiers consist of letters, underscore and digits and they start with letters or underscores. Write the JavaCC code that generates the lexical analyzer for this language.