# CS F351: Theory of Computation

## Assignment-2 Report

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# Context-Free Grammar for the problem:

\<program\> -> \<declaration_statement\>";"\<statement_set\> | \<statement_set\> | \<declaration_statement\>";"

\<statement_set\> -> \<statement\>";"\<statement_set\> | \<statement\>";"

\<statement\> -> \<read_statement\> | \<write_statement\> | \<assignment_statement\> | \<for_loop_statement\>

\<declaration_statement\> -> "int" \<set_of_variables\>

\<read_statement\> -> "read" \<variable\>

\<write_statement\> -> "write" \<variable\> | "write" \<integer_constant\>

\<assignment_statement\> -> \<variable\>"="\<expression\>

\<for_loop_statement\> ->
"for""("\<assignment_statement\>";"\<expression\>";"\<assignment_statement\>")""{"\<statement_set\>"}"

\<expression\> -> \<expression\> \<low_precedence_operator\> \<expression_level_2\> | \<expression_level_2\>

\<expression_level_2\> -> \<expression_level_2\> \<med_precedence_operator\> \<expression_level_3\> | \<expression_level_3\>

\<expression_level_3\> -> \<expression_level_3\> \<high_precedence_operator\> \<expression_level_4\> | \<expression_level_4\>

\<expression_level_4\> -> "("\<expression\>")" | \<integer_constant\> | \<variable\>

\<low_precedence_operator\> -> ">"|"=="

\<med_precedence_operator\> -> "+"|"-"

\<high_precedence_operator\> -> "*"|"/"

\<variable\> -> "{a - z}+ - {'for','read','write','int'}"

\<integer_constant\> -> "{0 - 9}+"

\<set_of_variables\> -> \<variable\> | \<variable\>","\<set_of_variables\>