

BBM 301 - Programming Languages - Fall 2020 Midterm  
December 1, 2020 – Part 3

Name: \_\_\_\_\_

Student ID number: \_\_\_\_\_

Please write your name, ID and following honor pledge:

"On my honor, I pledge that I have neither given nor received any unauthorized assistance on this exam. "

and **sign** your answer sheet.

**Question 4: 20 points, 20 mins.**

Here is a simple grammar for very limited programming language:

```
<program> → begin <stmt-list> end
<stmt-list> → <stmt-list> ; <stmt>
              | <stmt>
<stmt> → for <id> = <val> to <val> { <stmt-list> }
          | print hello
```

In this grammar, non-terminals are shown in <> and terminals are shown in lower bold case. <id> represents a variable name that can consist of numbers and characters, <val> represents an integer value.

Write the **lex** and **yacc** files for the interpreter that will compute the number of *print hello* commands that will be executed. Note: Use yacc's expression value assignment features (\$\$'s).