CS315 Project Part 2
BNF GRAMMAR FOR GRAPH QUERY LANGUAGE
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```
entry:
    MAIN LPARAN RPARAN LBRACKET functionbody RBRACKET
;

functionbody:
    stmt functionbody
    |stmt
    ;

stmt:
    predicate_declaration end
    |filter_declaration end
    |query_declaration end
    |assignment end
    |exec_function end
    |conditional
    |loop
    |COMMENT
    ;

exec_function:
    EXEC LPARAN VARIABLE COMMA VARIABLE RPARAN
    ;


query_declaration:
    QUERY VARIABLE ASSIGNMENT tail
    ;

filter_declaration:
    FILTER VARIABLE ASSIGNMENT tail
    ;

predicate_declaration:
    PREDICATE VARIABLE ASSIGNMENT DOLAR method
    |PREDICATE VARIABLE ASSIGNMENT HASH method
    ;

tail:
    tail ALTERNATION tail_stmt
    |tail_stmt
    ;

tail_stmt:
    tail_stmt CONCATENATION tail_factor
    |tail_factor
    ;


tail_factor:
    tail_factor REPETITION
    |tail_expr
    ;
```

```
tail_expr:
    LPARAN tail RPARAN
    |VARIABLE
    |RANDVERTEX
    |RANDEDGE
    ;



method:
    EQUALSM LPARAN STRING COMMA element RPARAN
    |LESSTHANM LPARAN STRING COMMA INTEGER RPARAN
    |LESSTHANM LPARAN STRING COMMA FLOAT RPARAN
    |MORETHANM LPARAN STRING COMMA INTEGER RPARAN
    |MORETHANM LPARAN STRING COMMA FLOAT RPARAN
    |CHARATM LPARAN STRING COMMA INTEGER COMMA STRING RPARAN
    |LENGTHM LPARAN STRING COMMA INTEGER RPARAN
    |EQUALSM LPARAN STRING COMMA VARIABLE RPARAN
    |LESSTHANM LPARAN STRING COMMA VARIABLE RPARAN
    |MORETHANM LPARAN STRING COMMA VARIABLE RPARAN
    ;

assignment:
    |VARIABLE ASSIGNMENT element
    ;

conditional:
    if_cond | ifelse_cond
    ;

if_cond:
    IFSTATEMENT LPARAN cond RPARAN LBRACKET functionbody RBRACKET
    ;


ifelse_cond:
    IFSTATEMENT LPARAN cond RPARAN LBRACKET functionbody RBRACKET
ELSESTATEMENT LBRACKET functionbody RBRACKET
    ;

cond:
    |BOOLEAN
    |VARIABLE booleanopr element
    |element booleanopr VARIABLE
    |VARIABLE booleanopr VARIABLE
    ;



booleanopr:
    ISEQUAL
    |GREATER
    |LESS
    |GREATEREQUAL
    |LESSEQUAL
    |NOTEQUAL
    ;

loop:
    for
```

```
        |while
        ;

for:
    FOR LPARAN assignment SEMICOLON cond SEMICOLON assignment RPARAN
LBRACKET functionbody RBRACKET
        ;


while:
    WHILE LPARAN cond RPARAN LBRACKET functionbody RBRACKET
        ;

element:
    INTEGER|FLOAT|STRING|map|set|list
        ;


map:
    LBRACKET mapbody RBRACKET
        ;

set:
    SLBRACKET setbody SRBRACKET
        ;
list:
    LBRACKET listbody RBRACKET
        ;

mapbody:
    mapbody COMMA map_tail
    |map_tail
    |
        ;
listbody:
    element COMMA listbody
    |element
        ;
map_tail:
    STRING COLON element
        ;

setbody:
    element COMMA setbody
    |element
        ;

end:
    SEMICOLON
        ;
```