**Khang Nguyen 300007277 Devoir 3**

Exercise 1:

<program> = {<statement\_list>}

<statement\_list> = <statement>;<statement\_list’>

<statement\_list’> = <statement\_list> | ε

<statement> = call: <procedure\_call> | compute: <expression>

<procedure\_call>= id(<parameters>)

<parameters>= <factor><parameters’>

<parameters’>= ,<parameters> | ε

<expression> = id=<factor><expression’>

<expression’> = +<factor> | -<factor> | ε

<factor> = id|num

Exercise 2:

FOLLOW(statement\_list’) = FOLLOW(<statement\_list>) = { } }

FOLLOW(<parameters’>) = FOLLOW(<parameters>) = { ) }

FOLLOW(expression’) = FOLLOW(<expression>) = FOLLOW(<statement>) = { ; }

Exercise 3:

FIRST(<statement\_list>) = FIRST(<statement>) = call ∪ compute

FIRST(<statement\_list’>) = FIRST(<statement\_list>) ∪ ε = FIRST(<statement>) ∪ ε = call ∪ compute ∪ ε

FIRST(<statement>) = call ∪ compute

FIRST(<parameters>) = FIRST(<factor>) = id ∪ num

FOLLOW(<statement\_list’>) = FIRST(<statement\_list>) ∪ $ = call ∪ compute ∪ ε

FOLLOW(<procedure\_call>) = FOLLOW(<statement>) = ;

FOLLOW(parameters’) = FOLLOW(parameters) ∪ ε = ) ∪ ε

FOLLOW(<expression>) = FOLLOW(<statement>) = ;

FOLLOW(<expression’>) = FOLLOW(<expression>) ∪ ε = FOLLOW(<statement>) ∪ ε = ; ∪ ε

FOLLOW(<factor>) = FOLLOW(<expression’>) ∪ FIRST(<expression’>) ∪ FIRST(<parameters’>) = {;} ∪ {+, -, ε} ∪ {,, ε}

|  |  |  |
| --- | --- | --- |
|  | First | Follow |
| <program> | {{} | {$} |
| <statement\_list> | {call, compute} | {}} |
| <statement\_list’> | {call, compute, ε} | {call, compute, $} |
| <statement> | {call, compute} | {;} |
| <procedure\_call> | {id} | {;} |
| <parameters> | {id, num} | {)} |
| <parameters’> | {,, ε} | {), $} |
| <expression> | {id} | {;} |
| <expression’> | {+, -, ε} | {;, $} |
| <factor> | {id, num} | {;,+, -, ,, $} |