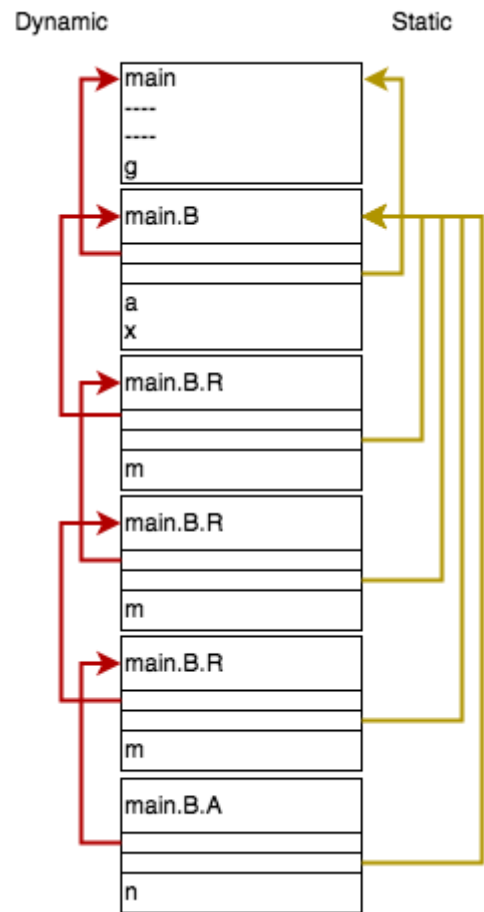


Problem 1

a)

9423

b)



c)

The program is static scoping, so when searching variables, 1) it will search `local variable g` first. However, there isn't one, so 2) it will try following the static link to `procedure B`. In scope of B, there is still no variable `g`, so 3) we continue following the static link to `main`, which we find `g` here.

Problem 2

a)

Production	Semantic Rule
<code>B -> O B1 B2</code>	<code>B.val = '(' + B1.val + O.val + B2.val + ')'</code>
<code>B -> not B1</code>	<code>B.val = '(' + 'not' + B1.val + ')'</code>
<code>B -> id</code>	<code>B.val = id.val</code>

Production	Semantic Rule
<code>O -> and</code>	<code>O.val = 'and'</code>
<code>O -> or</code>	<code>O.val = 'or'</code>

b)

Productions -> List of Semantic Rules

- `B -> id`
 - `B.pri = 4`
 - `B.val = id.val`
- `B -> not B1`
 - `B.pri = 3`
 - ```
if B1.pri < B.pri:
 B.val = 'not' + '(' + B1.val + ')'
else:
 B.val = B1.val
```
- `B -> O B1 B2`
  - `B.pri = O.pri`
  - ```
if B2.pri <= B.pri:
    if B1.pri >= B.pri:
        B.val = B1.val + O.val + '(' + B2.val + ')'
    else:
        B.val = '(' + B1.val + ')' + O.val + '(' + B2.val + ')'
else:
    if B1.pri < B.pri:
        B.val = '(' + B1.val + ')' + O.val + B2.val
    else:
        B.val = B1.val + O.val + B2.val
```
- `O -> and`
 - `O.val = 'and'`
 - `O.pri = 2`
- `O -> or`
 - `O.val = 'or'`
 - `O.pri = 1`