

CSC488 Statements

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1 Assignment statement:

In an assignment statement, the address of the variable will first be pushed onto the stack, and then the expression will be fully evaluated. Once the expression is fully evaluated, it's final result will be on top of the stack, with the address behind it.

Given the assignment statement

```
1 a := expr
```

the compiler would generate this sequence of instructions:

```
1 ADDR lexical_level offset_of_a;
2 ...
3 (instructions for expression)
4 ...
5 STORE
```

2 If statement:

Given the if statement

```
1 if expression then statement
```

the compiler would generate this sequence of instructions:

```
1 ...
2 (instructions to evaluate expression)
3 ...
4 PUSH offset_to_skip_if_body
5 BF
6 ...
7 (if_body)
8 ...
```

If there is an else statement, then the compiler will need to insert a branch at the end of the if body.

Given the if and else statements

```
1 if expression then
2     statement
3 else
4     statement
```

the compiler should generate this sequence of instructions

```
1 ...
2 (instructions to evaluate expression)
3 ...
4 PUSH offset_to_else_body
5 BF
6 ...
7 (if_body)
8 ...
9 PUSH offset_to_skip_else_body
10 BR
11 (else_body)
12 ...
```