Mackintosh Compiler Example Programs

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1 Valid Test Cases

These programs are confirmed to compile, and show off various features of the grammar.

1.1 Simple Assignment

```
{
    int a
    a = 1
    string b
    b = "blake"
    boolean c
    c = true
    print(a)
    print(b)
}$
```

1.2 While Loops

```
{
    int a
    int b
    int c
    a = 1
    b = 1
    c = 1
    while(a == 1) {
        print(b)
        a = 2
    }
}$
```

1.3 Code generation with comments

```
{
    int a
    int b
    int c
    /*comments still work*/
    a = 1
    b = 1
    c = 1
    while(a == 1) {
        print(b)
        a = 2
    }
}$
```

1.4 If Statements

```
{
    int a
    a = 3
    int b
    b = 4
    a = b
    print(a)
    if (a == b) {
        print(a)
    }
}$
```

1.5 Advanced Multi Scope Code Generation

```
{
    int a
    a = 1
    {
        int a
        a = 2
        print(a)
    }
    string b
    b = "alan"
    if (a == 1) {
        print(b)
    }
    string c
    c = "james"
    b = "blackstone"
    print(b)
}$
```

1.6 Print Statements

```
{
    int a
    a = 1+2+3+4+5
    print(a)
    print(7)
    print(7+a)
    print("")
    print("aa")
    print("inta")
    print(1+2+3+4+5)
    print(false)
    print(true)
}$
```

2 Invalid Test Cases

These programs intentionally will not compile, and show off the type system's errors.

2.1 Invalid Token

```
{
    print(@)
}$
```

2.2 Type Mismatch/Invalid Type

```
{
    int a
    a = true
}$
```

```
{
    DateTime d
    d = new DateTime('05/25/2021')
}$
```

2.3 Missing End of Program Marker

```
{
    string b
    b = "blake"
    string r
    r = "richard"
    string m
    m = "mackey"
    print(b)
    print(r)
    print(m)
}
```

2.4 Malformed If/While Statement

```
{
    while (a + b) {
        int a
        a = 1
        print(a)
    }

    if ("string") {
        boolean b
        b = false
    }
}$
```

2.5 Assignment vs Check Equals

```
{
    int a
    a == 1
    string b
    b != "blake"
    if(a = b) {
    }
}$
```

2.6 Multiple Var Declaration

```
{
    int a
    a = 1
    int a
}$
```

3 Warning Test Cases

These programs will throw a warning. They are still valid, but they probably contain something the user didn't do intentionally.

3.1 Unused Identifiers

```
{
    boolean b
    string s
    int i
}$
```

3.2 Assignment to an id with no value

```
{
    string s
    s = "blake"
    string b
    s = b
    print(s)
}$
```