

Variable Review

COMP3220 – Principle of Programming Languages

2016 Spring

1 General Design Issue

1. In what way are reserved words better than keywords?
2. Consider the following code snippet.

```
int a = 3;

void foo(int a) {
    // [1]
    int b = 3;
    // [2]
}

int main() {
    // [3]
    int c = 3;
    foo(c);
    // [4]
}
```

What is the referencing environment for each of the four positions in the program?

3. Consider the following code snippet.

```
function fun1() {
    var v0 = 0;

    // [1]
    function fun2() {
```

```

    var v0 = 1;
    // [2]
    fun3();
}

function fun3() {
    int v1 = 2;
    // [3]
}
}

```

What is the referencing environment for each of the three positions in the program

- if static scoping is used?
- if dynamic scoping is used?

4. Consider the following code snippet.

```

function fun1() {
    var v1 = 0;

    function fun2() {
        var v1 = 1;
        fun3();
    }

    function fun3() {
        console.log(v1);           // output v1
    }

    fun2();
}

fun1();

```

- Assume static/lexical scoping, what is the output?
- Assume dynamic scoping, what is the output?

5. Consider the following code snippet.

```

function fun1() {
    var v1 = 0;

```

```

function fun2() {
  var v1 = 1;

  function fun3() {
    console.log(v1);           // output v1
  }

  fun3();
}

fun2();

fun1();

```

- Assume static/lexical scoping, what is the output?
- Assume dynamic scoping, what is the output?

6. Consider the following code snippet.

```

int a = 0;

int foo(int e) {
  static int b = 3;
  int c = 4;
}

int main() {
  {
    int d = 0;
  }
  foo();
}

```

What is the lifetime and scope of **a**, **b**, **c**, **d** and **e**?

2 Show Me Your Code

1. Show me an alias in C++ code. What are the potential problems with alias in C++?