Sample of Quiz 1 (theory)

topics

name, scope, binding, control flow, types

1) name scope

This language has static scope. What this program prints?

```
def fun1()
    x = 10
    def fun2(y)
        x = 5
        print(x+y)
    print(x)
    fun2(3)

fun1()
```

These two are not the same

5+3

10

10

8

2) Convert the following program into pseudo assembly language.

```
a = 0
do
  a += 1
while a < 10
```

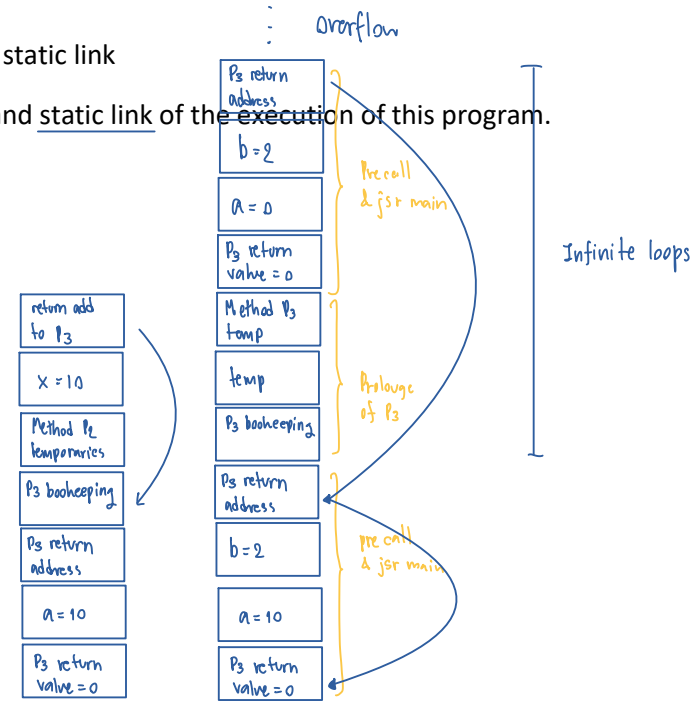
L1 let a = 0
L2 a = a + 1
L3 if a < 10 goto L2
L4 terminate

a = 0
add a by 1
if a < 10 goto L2
terminate

3) stack frame and static link

draw stack frame and static link of the execution of this program.

```
def p1():
    x = 10
def p2(a):
    print(x)
def p3(b):
    p2(b)
    p3(2)
  p1()
```



4) assume the following language is "dynamic" scoping. When run this program, what does it print? (of course, this program looks like C, and C has static scope. However, assume this program is "dynamic scope").

```
int x = 10;

int f() {
 return x;
}

int g() {
 int x = 20; ← dynamic scope, x is volatile
 return f();
}

                          20
main() {
 printf(g());
}
```