Worksheet 5A

Quiz 1: *Semantics of functions*

Fill in the result of evaluating the following programs.

Program *Result*

```
(fun (incr n)
  (add1 n)
)

(incr 100)
```

```
(fun (fac n)
  (if (= n 0)
    1
    (* n (fac (sub1 n)))
  )
)

(fac 5)
```

Quiz 2: *Assembly: Caller*

Program *Assembly*

```
(incr 100)
```

```
mov rax, 200
```

```
(f e)
```

```
; << e >>
```

Quiz 3: *Assembly: Callee*

Program *Assembly*

```
(fun (incr n)
  (add1 n)
)
```

```
; setup frame


; body


; teardown frame
```

```
(fun (go n acc)
  (if (= n 0)
    acc
    (go (sub1 n) (+ acc n))
  )
)
```

```
; setup frame



; body









; teardown frame
```

Quiz 4: *Frame Allocation*

How many stack slots do the following functions need to allocate for their frames?

Program

```
(fun (incr n)
  (let (x1 (add1 n))
  (let (x2 (add1 x1))
    x2)))
```

Stack Slots

```
(fun (incr n)
  (let (x1 (add1 n))
  (if (= n 99)
    x1
    (let (x2 (add1 x1))
      (+ x1 x2))))
```

Quiz 5: *Your turn!*

What is something you found confusing in today's lecture (or earlier)?