Worksheet 2A

Quiz 1: *Variable Storage*

Program

```
(let (x 10)
  (let (y (add1 x))
    (let (z (add1 y))
      (add1 z))))
```

Number of variables

```
(let (a 1)
  (let (c
    (let (b (add1 a))
      add1(b)))
  add1 c))
```

Quiz 2: *Stack Position*

Which stack position do we store `c` in this program?

```
  (let (a 1)
    (let (c
      (let (b (add1 a))
        add1(b)))
    add1 c))
```

Quiz 3: *Assembly*

Program

```
(let (x 10)
  (let (y (add1 x))
    (add1 y)))
```

Assembly

```
mov rax, 10
```

```
(let (a 1)
  (let (c
    (let (b (add1 a))
      add1(b)))
  add1 c))
```

```
mov rax, 1
```

Quiz 4: *Addition Semantics*

Program

```
(+ (+ 1 2) (+ 3 4))
```

Result

```
(+ (let (x 10) (add1 x))
   (let (y 7) (+ x y)))
```

```
(+ (let (x 10) (add1 x))
   (let (y 7) (+ 10 y)))
```

Quiz 5: *Stack Layout*

Program

Stack Layout

```
(+ (+ 1 2) 3)
```

```
(let (x 10)
  (let (y 10)
    (+ x y)))
```

```
(+ (let (x 10) (add1 x))
   (let (y 7) (+ 10 y)))
```

Quiz 6: *Assembly*

Program

Assembly

```
(+ (+ 1 2) (+ 3 4))
```

```
mov rax, 1
```

```
(let (x 10)
  (let (y 10)
    (+ (+ x y) 99)))
```

```
mov rax, 10
```

Quiz 7: *Your turn!*

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