6.101 Recitation 21: Week 12 Lisp part 1 Mid-point **5/1/24**

This sheet is yours to keep!

Question 1: Discuss with someone near you: what are the similarities and differences between tokenizing and parsing in the Symbolic Algebra lab and the LISP lab?

Question 2: What will the code below output? Draw an environment diagram to represent the program execution.

```
1     x = 0
2     def outer():
3         x = 1
4         def inner():
5             x = 2
6             print("inner:", x)
7
8         inner()
9         print("outer:", x)
10
11    outer()
12    print("global:", x)
```

R21 Participation Credit **Kerberos : _____@mit.edu**

Hand this sheet in at the end of recitation to get participation credit for today.

Question 4: Rewrite each of the Python expressions below in Scheme.

```
# example 1
(5 + 4) / (7 - 3 – 2 – 1) / 2
```

```
# example 2
(lambda x: x*x)(4)
```

```
# example 3
def area(r):
     return 3.14 * r ** 2
x = area(5)
y = x
```

```
# example 4
def four():
    return 4
four()
```

Question 3: What will each of the programs output below? If running the code would result in an error, write error instead.

Example A:

```
1     x = 0
2     def outer():
3         x = 1
4         def inner():
5             # x = 2
6             print("inner:", x)
7
8         inner()
9         print("outer:", x)
10
11    outer()
12    print("global:", x)
```

Example B:

```
1     x = 0
2     def outer():
3         # x = 1
4         def inner():
5             # x = 2
6             print("inner:", x)
7
8         inner()
9         print("outer:", x)
10
11    x = 3
12    outer()
13    print("global:", x)
```

Relatedly, what properties and methods would a Python class representing a frame object need? What about a function object?