

# CSSE304 Exam 2 Paper Review

## Instructions

Please complete the following problems. If you have questions, come up and ask. I will send out an answer key after the review session is over.

1. **Problem 1:** Draw an E&C diagram for the following code

```
((lambda (x) (lambda (y) (+ x y))) 5) 8)
```

2. **Problem 2:** Draw an E&C diagram for the following code

```
((lambda (x) ((lambda (y) (+ x y)) 12)) ((lambda (z) (add1 z)) 2))
```

3. **Problem 3:** Draw an E&C diagram for the following code

```
((lambda (x y z) (lambda (w) ((lambda (v) (list ((lambda (u)
(sub1 w)) w) v x y z)) 12))) 1 2 4) 9)
```

4. **Problem 4:** What does an abstract datatype consist of?

5. **Problem 5:** Implement a binary tree datatype based on the following grammar.

$\text{<bintree>} ::= \text{<number>} \mid (\text{<number> } \text{<bintree> } \text{<bintree>})$

6. **Problem 6:** Provide an implementation for snlist-recur

7. **Problem 7:** Provide an implementation for Y-combinator \*(may be smart to look at other things implemented in class)\*