

17-355/17-655/17-819: Program Analysis

In-Class Exercises

January 15, 2019

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0. What program analysis topics are you are most excited about? These can be from the list on the course topics slide or a topic of personal interest.

1. Draw a parse tree for the body of the function below. You don't need to include the function header, it's just there for your context—assume that the “for” statement is at the top of the parse tree. You can make up plausible AST nodes for C code.

```
void copy_bytes(char dest[], char source[], int n) {  
    for (int i = 0; i < n; ++i)  
        dest[i] = source[i];  
}
```

2. How would you translate a WHILE statement of the form `while P do S` into WHILE3ADDR?

3. Write pseudocode for a simple syntactic analysis that warns when string concatenation occurs in a loop. Note:

- In Java and .NET it is more efficient to use a StringBuffer
- Assume any appropriate AST elements that you need