Lab 4 Solution
CMPT432 Spring 2022
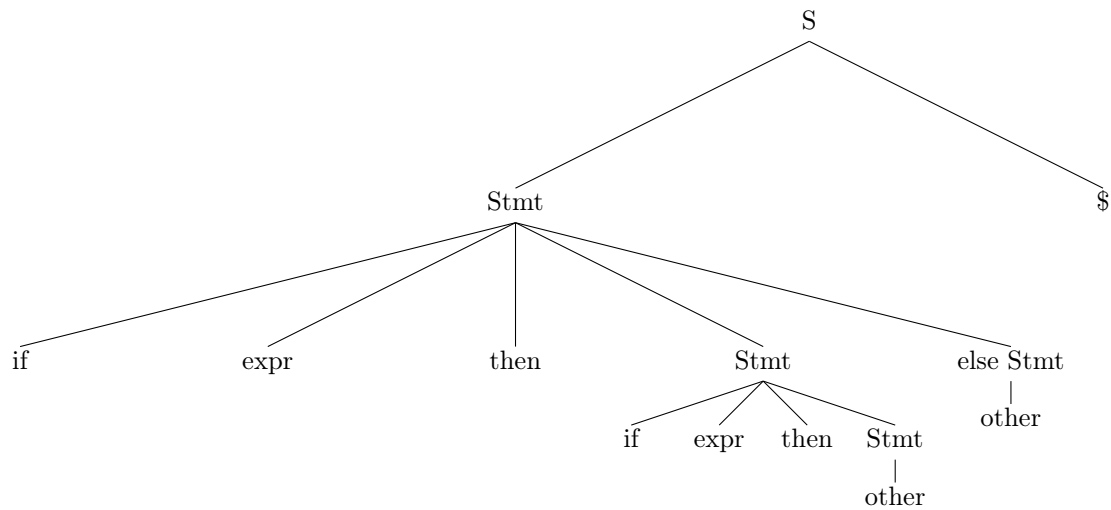
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1.   Problem One (CaC Exercise 4.9)
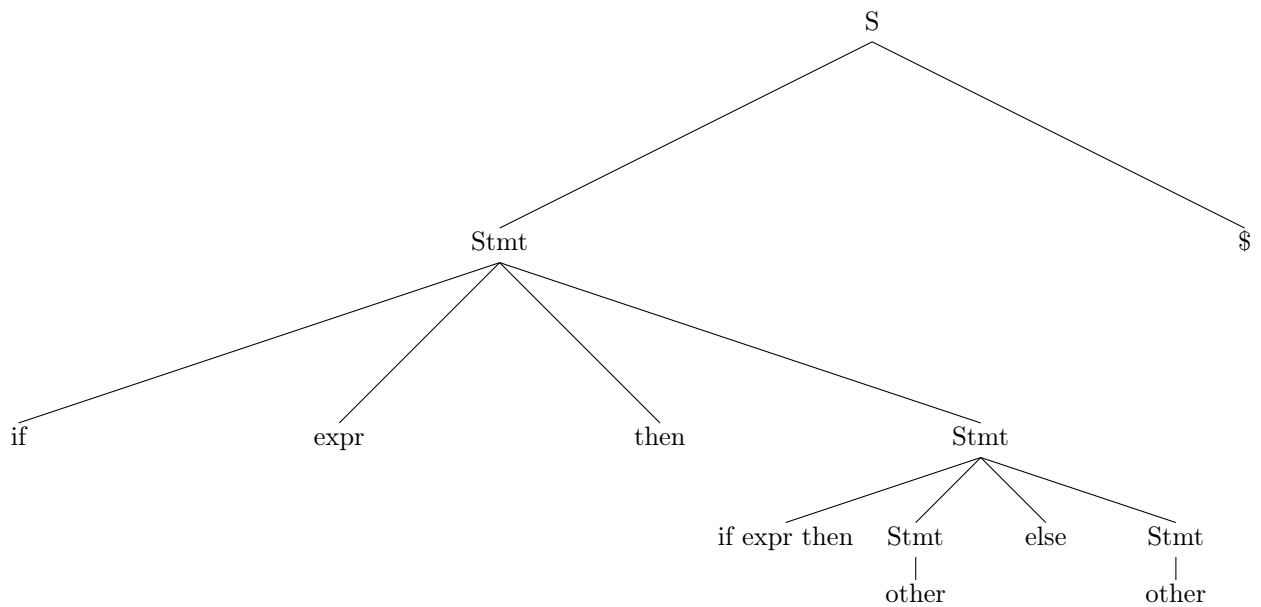
	Nullable	First	Follow
S	yes	a	e
B	yes	a b	e
C	yes	a b c	e

2.   Problem Two (CaC Exercise 5.10)

2.a   Solution 1

2.b Solution 2

```
                                            S
                          _____/ _____
                         /                                   \
                       Stmt                                   $
          _____/|_____
         /        |           |           \
        if       expr        then         Stmt
                                      _____/|_____
                                     /    |     |    \
                              if expr then Stmt else  Stmt
                                            |           |
                                          other       other
```

2.c Explanation

Note: Both trees have leaf nodes that should be separate but I could not find a way to give more than 5 children to each parent node with the package I am using for trees.

Because not every if statement requires an else at the end of it, the parser can interpret the String in two different ways. The first tree is an example of the else being a part of the first if statement, with the nested if not having an else. In the second tree the else is a part of the nested if statement and not the first one.

3. Problem Three (Dragon Exercise 4.4.3)

	Nullable	First	Follow
S	yes	a	+ *