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CS 360 - 002
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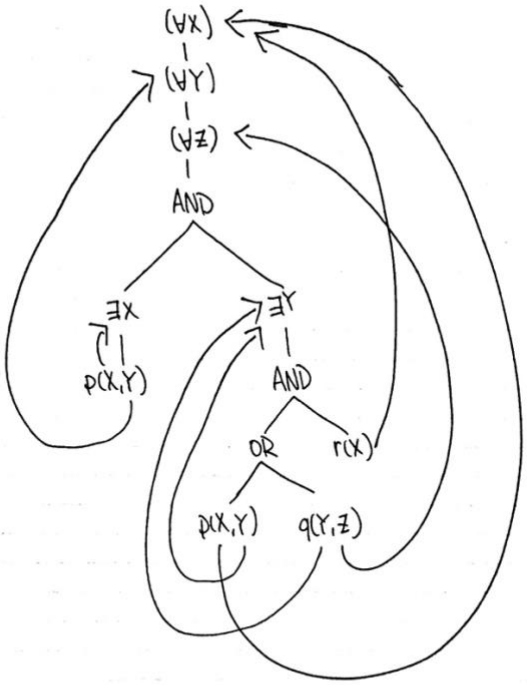
August 13, 2020

Quiz 4

1.

(i)



(ii)

$(\forall X)((\forall Y)((\forall Z)((\exists X)p(X,Y) \text{ AND } (\exists Y)((p(X,Y) \text{ OR } q(Y,Z)) \text{ AND } r(X)))))$

$=(\forall X)((\forall Y)((\forall Z)(\exists X)p(X,Y) \text{ AND } (\exists A)((p(X,A) \text{ OR } q(A,Z)) \text{ AND } r(X)))))$

$=(\forall X)((\forall Y)((\forall Z)(\exists B)p(B,Y) \text{ AND } (\exists A)((p(X,A) \text{ OR } q(A,Z)) \text{ AND } r(X)))))$

$=(\forall X)(\forall Y)(\forall Z)(\exists B)(\exists A)(p(B,Y) \text{ AND } (p(X,A) \text{ OR } q(A,Z)) \text{ AND } r(X))$

2) 1. $E_1 \rightarrow E_2 + T$ (The sum of values of E_2 and T will be assign as the value of E_1)

1. $E_1 \rightarrow E_2 - T$ (Difference of values of E_2 and T will be assign as the value of E_1)

3. $E \rightarrow T$ (The value of T will be assign as the value of E)

4. $T_1 \rightarrow T_2 * F$ (The multiplication of values of T_2 and F will be assign as the value of T_1)

5. $T_1 \rightarrow T_2 / F$ (The division of values of T_2 and F will be assign as the value of T_1)

6. $T \rightarrow F$ (The value of F_2 will be assign as the value of T)

7. $F_1 \rightarrow -F_2$ (The value of F_1 will be equal to the additive inverse of the value of F_2)

8. $F \rightarrow (E)$ (The value of E will be assign as the value of F)

9. $F \rightarrow$ const (A constant value will be assigned as the value of F)

ext.
Semantic rules attached to the productions of a tree grammar can be used to define the attribute flow of a syntax tree in exactly the same way that semantic rules attached to the productions of a context-free grammar are used to define the attribute flow of a parse tree

2.

3. C → dgt$_x$. dgt$_y$
C.val := dgt$_x$.val + dgt$_y$.val × 10$^{-dgt_x.len}$
dgt → dgt more_dgt
dgt.val := dgt.val × 10$^{more_dgt.len}$ + more_dgt.val
dgt.len := more_dgt.len+1
more_dgt → dgt
more_dgt.val := dgt.val
more_dgt.len := dgt.len
more_dgt → ϵ
more_dgt.val := 0
more_dgt.len := 0
dgt → 0 dgt.val := 0
dgt → 1 dgt.val := 1
dgt → 2 dgt.val := 2
dgt → 3 dgt.val := 3
dgt → 4 dgt.val := 4
dgt → 5 dgt.val := 5
dgt → 6 dgt.val := 6
dgt → 7 dgt.val := 7
dgt → 8 dgt.val := 8
dgt → 9 dgt.val := 9

3.