

1) let T be the set of all Terminals s.t.

a)  $T = \{0, 1, \#\}$

b)  $N = \{S, B\}$

c)  $S \Rightarrow 1S0$   
 $\Rightarrow 10S10$   
 $\Rightarrow 101S010$   
 $\Rightarrow 1010S1010$   
 $\Rightarrow 10101\#01010$

2)

$\Rightarrow C_1; C_2$   
 $\Rightarrow C_1; C_2; C_3$   
 $\Rightarrow C_1; C_2; X := e - e$   
 $\Rightarrow C_1; C_2; X := y - e + 1$   
 $\Rightarrow C_1; C_2; X := y - 0 + 1$   
 $\Rightarrow C_1; C_2; C_3; X := y - 0 + 1$   
 $\Rightarrow C_1; C_2; \text{while } b \text{ do } e; X := y - 0 + 1$   
 $\Rightarrow C_1; C_2; \text{while } e > e \text{ do } e; X := y - 0 + 1$   
 $\Rightarrow C_1; C_2; \text{while } e > e \text{ do } x := e; X := y - 0 + 1$   
 $\Rightarrow C_1; C_2; \text{while } y > e \text{ do } x := e + 1; X := y - 0 + 1$   
 $\Rightarrow C_1; C_2; \text{while } y > x \text{ do } x := e + 1; X := y - 0 + 1$   
 $\Rightarrow C_1; C_2; \text{while } y > x \text{ do } x := x + 1; X := y - 0 + 1$   
 $\Rightarrow C_1; X := e; \text{while } y > x \text{ do } x := e + 1; X := y - 0 + 1$   
 $\Rightarrow C_1; X := e * e; \text{while } y > x \text{ do } x := e + 1; X := y - 0 + 1$   
 $\Rightarrow C_1; X := e + (6) * e + (7); \text{while } y > x \text{ do } x := e + 1; X := y - 0 + 1$   
 $\Rightarrow C_1; Y := 42; \text{while } y > x \text{ do } x := e + 1; X := y - 0 + 1$   
 $\Rightarrow X := 5; Y := 42; \text{while } y > x \text{ do } x := e + 1; X := y - 0 + 1$



