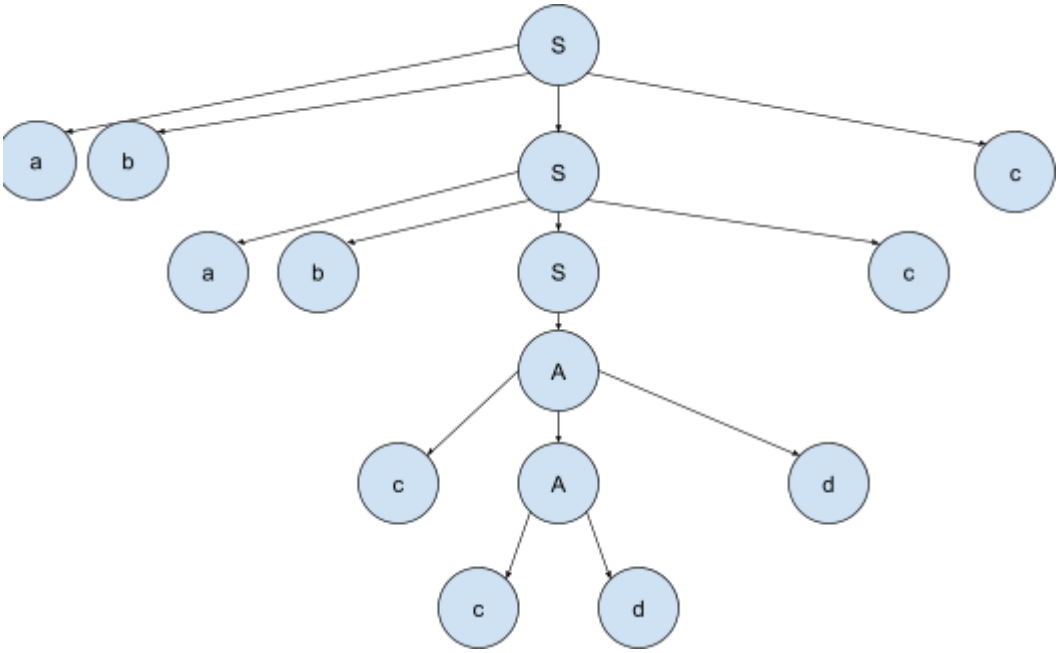
Thiago Corso Capuano 163996

1.

a) S -> abSc -> ababScc -> ababAcc -> ababcAdcc -> ababccddcc

b)



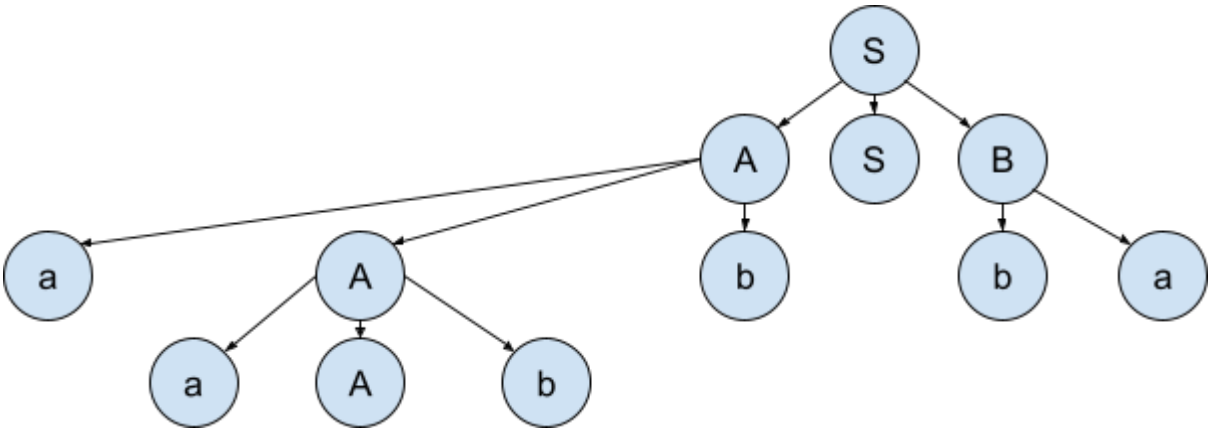
c) {w | a^i, b^i, d^j e c^(i + j)}

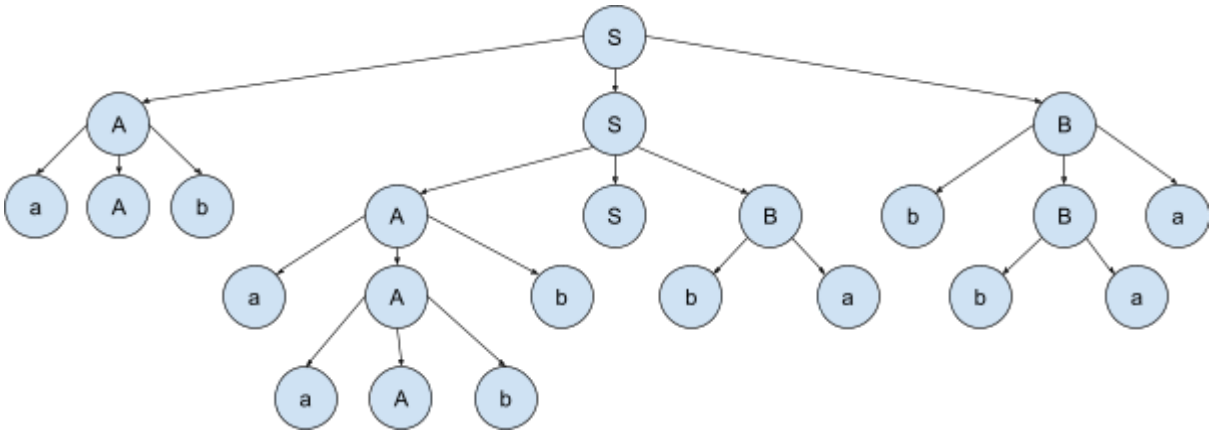
2.

a) S -> ASB -> aAbSB -> aaAbbSB -> aabbSB -> aabbB -> aabbba

b) S -> ASB -> ASbBa -> ASbbaa -> AASBbbaa -> AASbabbaa -> AAbabbaa -> AaAbbabbaa -> AaaAbbbabbaa -> Aaabbbabbaa -> aAbaabbbabbaa -> abaabbbabbaa

c)





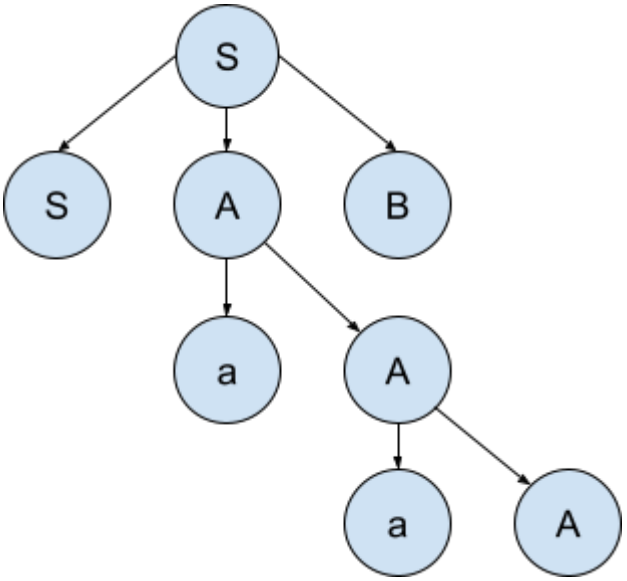
d) {w | a^i, b^i, i >= 0}

3.

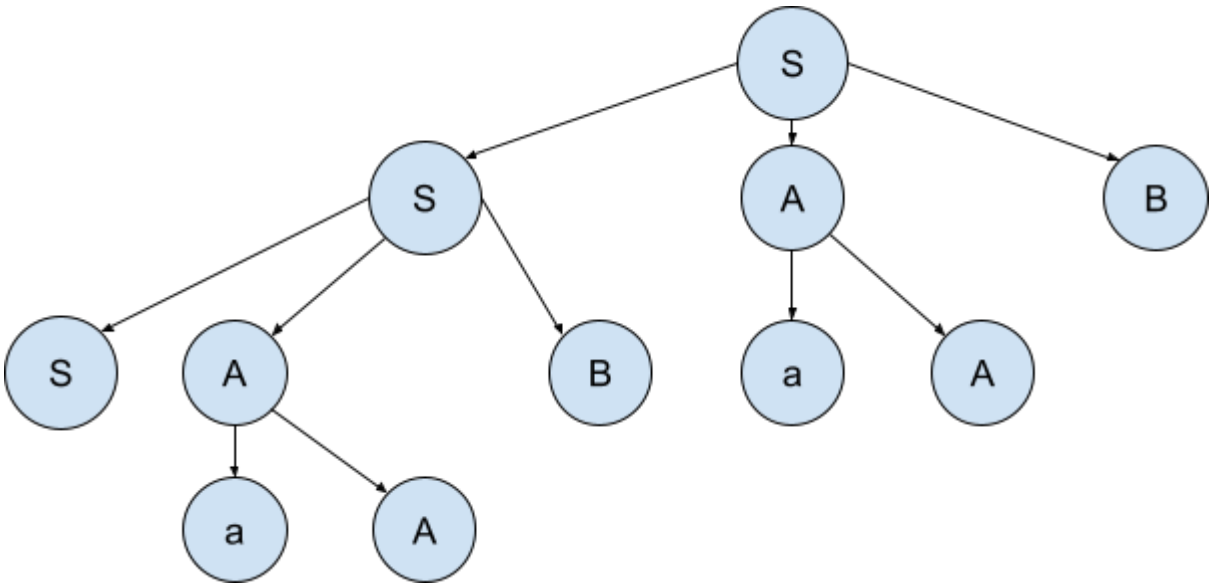
a) S -> SAB -> SABAB -> ABAB -> aBAB -> abBAB -> abbBAB -> abbAB -> abbaAB -> abbaaAB -> abbaaB -> abbaabB -> abbaab

b) 1. S -> SAB -> AB -> aAB -> aaAB -> aaB -> aa
2. S -> SAB -> SABAB -> ABAB -> aABAB -> aBAB -> aAB -> aaAB -> aaB -> aa

c) 1.



2.



d) e + (aa*b*)*

4.

a) S -> AB -> aAB -> aaB -> aaAB -> aaaB -> aaab
b) S -> AB -> AAB -> AAb -> Aab -> aAab -> aaab
c) 6 derivações diferentes

5.

a) Esquerda: S -> AA -> aA -> aAAA -> abAAA -> abaAA -> ababAA -> ababaA -> ababaa
Direita: S -> AA -> AAAA -> AAAa -> AAbAa -> AAbaa -> AbAbaa -> Ababaa -> ababaa

b) Árvore inválida, já que temos caracteres (valores) sendo tratados como variáveis (indo para outros valores)

c) Esquerda: S -> AA -> AAAA -> AAAa -> AAbAa -> AAbaa -> AbAbaa -> Ababaa -> ababaa
Direita: S -> AA -> aA -> aAAA -> abAAA -> abaAA -> ababAA -> ababaA -> ababaa

d) Exatamente igual ao ítem a)

6.

a) {a^i bb* |i seja par}U{vazio}
b) {a^i b^(2i) | i >0}U{c^i | i > 0}
c) {(ab)^i (dc)^i | i >= 0}U{(cd)^i (ba)^i | i >= 0}
d) {w | a*, b^i tal que i seja par}

7.

A -> aAbb | e
C -> cC | e

S -> aAbbcC

8.

A -> aAcc | B
B -> bBc | bc
S -> aAcc

9.

A -> aAc | aA | B
B -> bBc | bB | e
S -> A

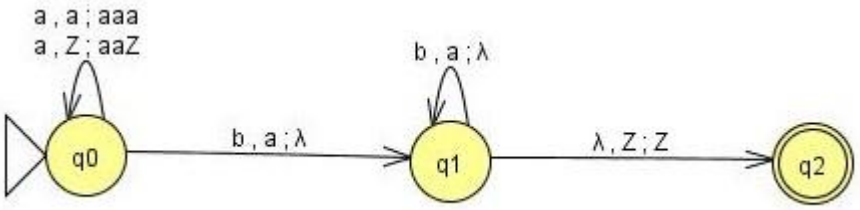
10.

11.

A -> aAb | e
B -> bAa | e
S -> AB

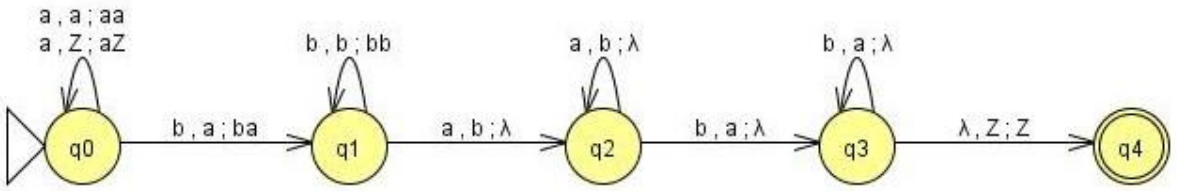
12.

a)



b)

c)



d)