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Assignment 2: Compilers

Heba Alaa Ahmed Diaa Abdelrazek
37-5660 T18

CFG Production Rules	Semantic Rules
S -> A C B	C.inh1 = A.count2nA C.inh2 = A.count3nA S.check = (A.n == B.n) * (A.count2nA == B.count2nB) * (A.count3nA == B.count3nB) * C.minValueReached * (C.maxValuePassed == 0)
A -> a A1	A.count2nA = A1.count2nA * 2 A.count3nA = A1.count3nA * 3 A.n = A1.n + 1
A -> ε	A.count2nA = 1 A.count3nA = 1 A.n = 0
C -> c C1	C1.inh1 = C.inh1 C1.inh2 = C.inh2 C.m = C1.m+ 1 C.minValueReached = (C.m == C1.inh1) + C1.minValueReached C.maxValuePassed = (C.m == C1.inh2 +1) + C1.maxValuePassed
C -> ε	C.m = 0 C.minValueReached = 0 C.maxValuePassed = 0
B -> b B1	B.count2nB = B1.count2nB * 2 B.count3nB = B1.count3nB * 3 B.n = B1.n +1
B -> ε	B.count2nB = 1 B.count3nB = 1 B.n = 0

The CFG above generates the language a*c*b*, its start variable S has an attribute “S.check” that is equal to 1 if string is in form of **a^n c^m b^n** & **2^n <= m <= 3^n.**