Assignment 14

Automata & Theory of Computation

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1. Answer the following questions.

1) Fill in the blanks to construct an npda $M=(\{q_0,q_1,q_2\},\{a,b\},\{c,z\},\delta,q_0,z,\{q_2\})$ that accepts the language $L=\{a^n b^{3n} : n \geq 0\}$.

$\delta(q_0,\ \lambda,\ z)\ =\ \{\ (q_1,\ z)\ \},$] $\lambda=0$.

$\delta(q_1,\ \lambda,\ z)\ =\ \{\ (q_2,\ z)\ \},$

$\delta(q_0,\ a,\ z)\ =$ $\{q_0, ccz\}$

$\delta(q_0, a, c) = \{q_0, cccc\}$

$\delta(q_0, b, c) = \{q_1, \lambda\}$

$\delta(q_1, b, c) = \{q_1, \lambda\}$

2) Fill in the blanks to show the npda above accepts the string *abbb*.

$(q_0,\ abbb,\ z) \vdash$ q_0, bbb, ccz $\vdash$ q_1, bb, cz $\vdash$

q_1, b, z $\vdash$ q_1, λ, z $\vdash (q_2,\ \lambda,\ z)$