



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF ENGINEERING

SCHOOL OF COMPUTING

SESSION 2020/2021 SEMESTER 2

SCSJ3203 THEORY OF COMPUTER SCIENCE
SECTION 04

TUTORIAL 9
PUSH-DOWN AUTOMATA PART 2

Name : AQILAH HANIM BINTI MOHD TAUFIK

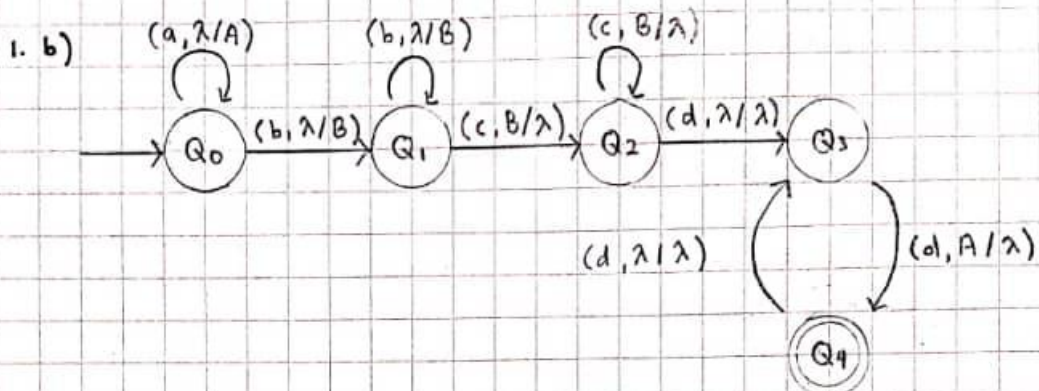
Matrics : B19EC0006

Lecturer : DR ZALMIYAH ZAKARIA

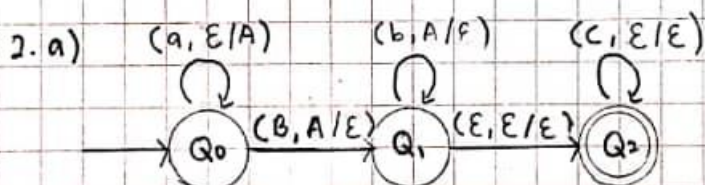
Due Date : 14th June 2021

TCS Tutorial 9: Pushdown Automata Part 2.

1. a) $L = \{a^m b^n c^n d^{2m} \mid m, n > 0\}$



1. c) $abcdd, abbccdd, aabccdd$



2. b) $aabbc$

$\vdash (q_0, aabbc, A)$
 $\vdash (q_0, bbc, AA)$
 $\vdash (q_1, bc, A)$
 $\vdash (q_1, c, \lambda)$
 $\vdash (q_2, c, \lambda)$
 $\vdash (q_2, \lambda, \lambda)$
 $= \text{Accepted}$

ab

$\vdash (q_0, b, A)$
 $\vdash (q_1, \lambda, \lambda)$
 $\vdash (q_2, \lambda, \lambda)$
 $= \text{Accepted}$

$abbc$

$\vdash (q_0, bbc, A)$
 $\vdash (q_1, bc, \lambda)$

= Rejected because it failed to pop A from the stack.

2. c) $L = \{a^m b^m c^n \mid m \geq 0, n \geq 0\}$

2. d) $S \rightarrow AB$
 $A \rightarrow aAb \mid ab$
 $B \rightarrow cB \mid \lambda$

2. e) IN: ab
 NOT IN: λ

3. 1) 4
 2) 3
 3) 5
 4) 2
 5) 1

4. A) B, C
 B) C, A
 C) A, B

5. 1) 3
 2) 4
 3) 1
 4) 6
 5) 7
 6) 2
 7) 5