



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF ENGINEERING

SCHOOL OF COMPUTING

SESSION 2020/2021 SEMESTER 2

SCSJ3203 THEORY OF COMPUTER SCIENCE
SECTION 04

TUTORIAL 10
TURING MACHINE PART 1

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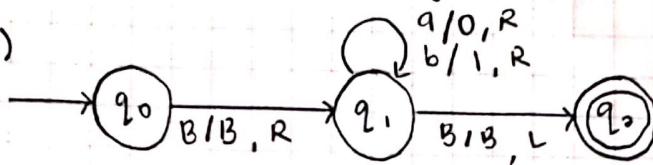
Matrics : B19EC0006

Lecturer : DR ZALMIYAH ZAKARIA

Due Date : 28th June 2021

TCS Tutorial 10 : Turing Machines Part 1.

1. a)



1. b) string baba

$q_0 B b a b a B \vdash B q_1 b a b a B$
 $\vdash B 1 q_1 a b a B$
 $\vdash B 1 0 q_1 b a B$
 $\vdash B 1 0 1 q_1 a B$
 $\vdash B 1 0 1 0 q_1 B$
 $\vdash B 1 0 1 q_2 O B$

1. c) The machine will read a and will replace a by 0. Then, it will read b and will replace b by 1.

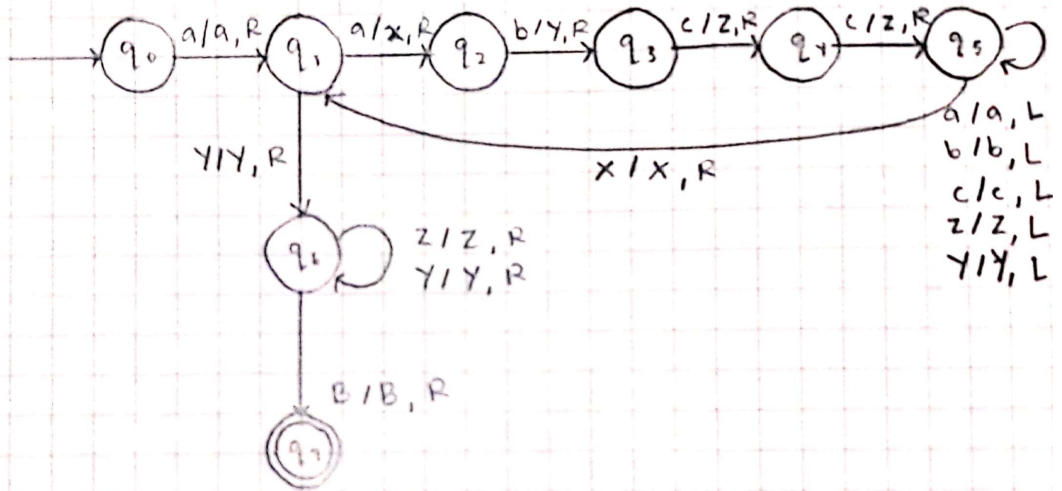
2. a)

	δ	B	a	b	c	x	y	z
q_0	-	-	q_1, a, R	-	-	-	-	-
q_1	q_6, B, R	q_2, x, R	-	-	-	-	q_5, y, R	-
q_2	-	-	q_2, a, R	q_3, y, R	-	-	q_2, y, R	-
q_3	-	-	-	q_3, b, R	q_4, z, L	-	-	q_3, z, R
q_4	-	-	q_4, a, L	q_4, b, L	-	q_1, x, R	q_4, y, L	q_4, z, L
q_5	q_6, B, R	-	-	-	-	-	q_5, y, R	q_5, z, R
q_6	-	-	-	-	-	-	-	-

2. b) $\{a^{n+1}b^n c^n \mid n \geq 0\}$

2. c) a, aabc

3. a)



3. b) $abcc$

3. c) Pushdown Automata (PDA)