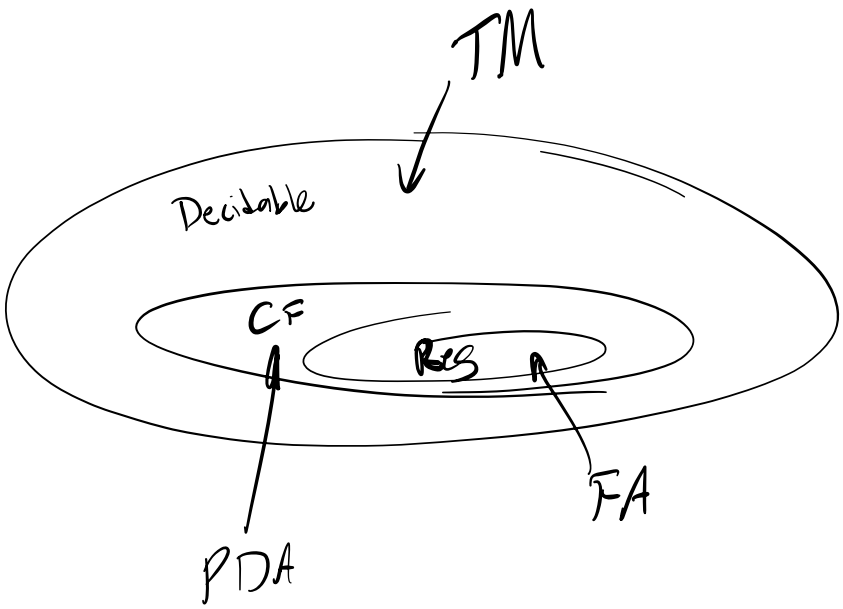
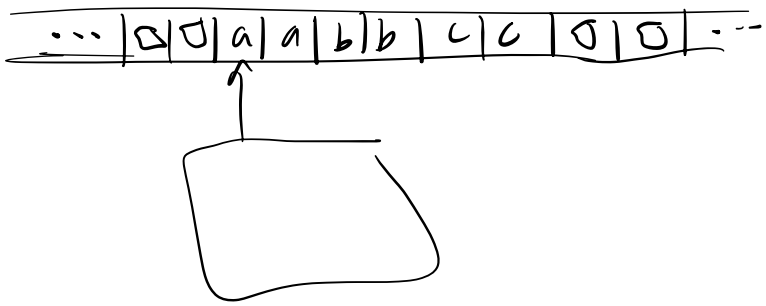
CSCI 301 - Lecture 34 - Turing Machines!



$$L = \{a^n b^n c^n : n \geq 0\}$$



~~X~~ a c ~~X~~ b b ~~Y~~ c c

~~X~~ ~~X~~ b c ~~Y~~ ~~Y~~

$a^* b^* c^*$

$\Sigma = \{a, b, c\}$

$\Gamma = \{a, b, c, \square, x\}$

Phase 1: $a^* b^* c^*$

Q: q_a start state, find an a, read a's
q_b reading b's
q_c reading c's
q_L go to start

Phase 2: $a^n b^n c^n$

q_a' find leftmost a, x it
q_b' find leftmost b, x it
q_c' find leftmost c, x it
q_L' goto start

↓ q_{reject}, q_{accept}

	a	b	c	□	x
→ q_a	$q_a a R$	$q_b b R$	$q_c c R$	$q_L \square L$	q_{reject}
q_b	q_{reject}	$q_b b R$	$q_c c R$	$q_L \square L$	q_{reject}
q_c	q_{reject}	q_{reject}	$q_c c R$	$q_L \square L$	q_{reject}
q_L	$q_L a L$	$q_L b L$	$q_L c L$	$q_a \square R$	q_{reject}
q_a'	$q_b' x R$	q_{reject}	q_{accept}		$q_a' x R$
q_b'	$q_b' a R$	$q_c' x R$	q_{reject}		$q_b' x R$