

q_0 001 # WWW

$0 q_1$ 01 # WWW

$02 q_{accept}$ 1 # WWW



sample
accepting
computation
history

①

L q_1 0101 R

LBA sample
start configuration

PDA

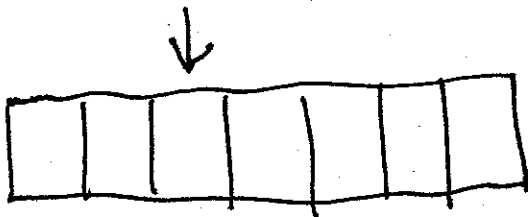
Context-free language

e.g. $A \rightarrow bBC$

LBA

Context-sensitive language

e.g. $aAa \rightarrow B$
 $bAb \rightarrow C$



q | states

q size of tape alphabet

n # of symbols on
the tape

LBA

maximum # of ambiguities:

$$g * n * g^n$$

(2)

decidable

undecidable

A_{DFA}

A_{TM}

A_{PDA}

A_{LBA}

E_{DFA}

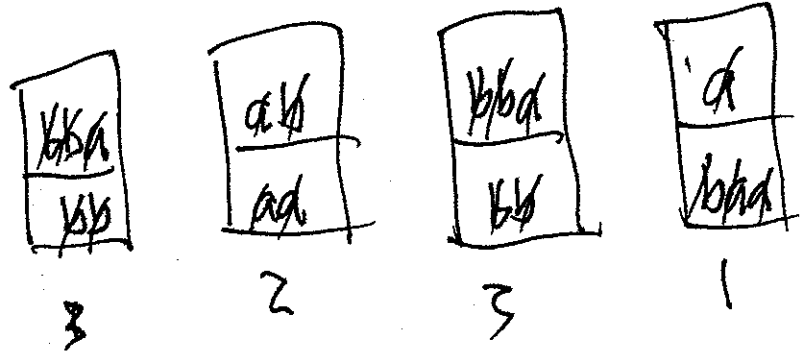
E_{LBA}

$(A_{TM} \leq_{m} E_{LBA})$

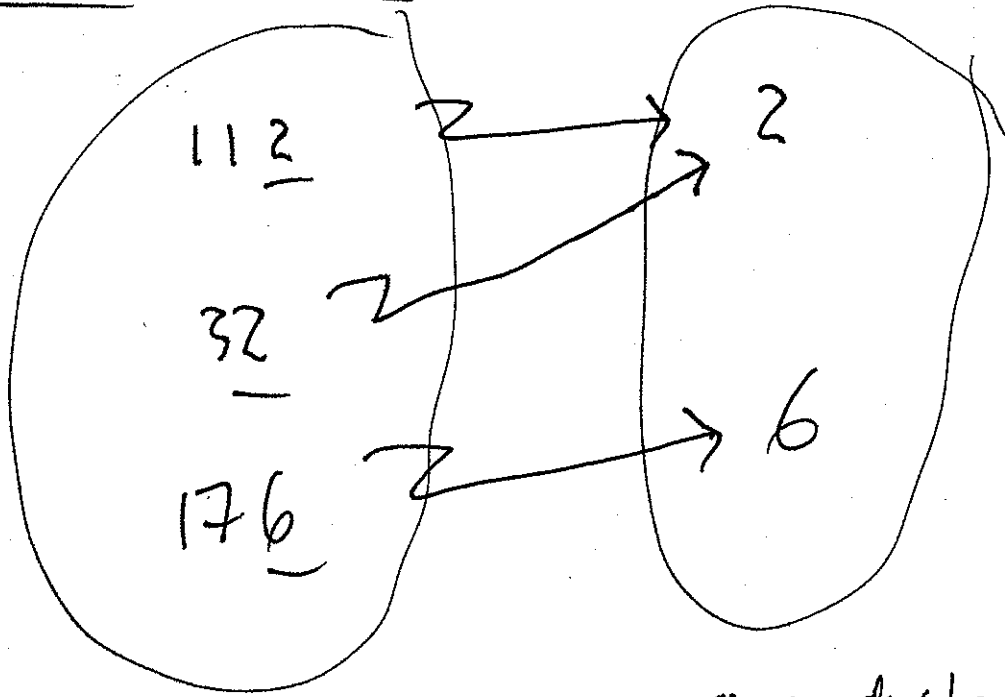
E_{PDA}

E_{TM}

PCA example from Wikipedia



Mapping Reduction Example



natural #s

single digits, 0-9