

CS252
TA 6 ^{Beric} Beermann

1. 3.1d

$q_1 000000$ $Ux0x0q_50u$ Uxq_2x0x0u $Uxxx0q_5xU$
 $Uq_200000u$ $Ux0q_5x0u$ Uxq_20x0u $Uxxxq_5xxu$
 Uxq_30000u $Ux0q_50x0u$ $Uxxxq_3x0u$ $Uxxxq_50xxu$
 $Ux0q_4000u$ Uxq_5x0x0u $Uxxx0q_40u$ Uxq_5x0xxu
 $Ux0xq_500u$ $Uq_50x0x0u$ $Uxxx0xq_4u$ Uq_5x0xxu
 $Ux0x0q_40u$ $q_5x0x0x0u$ $Uxxx0xxq_3$ $q_5xxx0xxu$
 $Ux0x0xq_3u$ $Uq_20x0x0u$ $Uxxx0xq_5u$ $Uq_2xx0xxu$

Uxq_2x0xxu $Uxxxxxxq_3$ Uxq_5xxxxu $Uxxxq_2xxu$
 $Uxxxq_20xxu$ $Uxxxxxxq_5u$ $Uq_5xxxxxU$ $Uxxxq_2xxu$
 $Uxxxq_2xxu$ $Uxxxxxxq_5u$ $q_2xxxxxxu$ $Uxxxq_2xxu$
 $Uxxxq_3xu$ $Uxxxq_5xxu$ $Uq_2xxxxxU$ $Uxxxq_2xu$
 $Uxxxxxxq_3u$ $Uxxxq_5xxu$ $Uxq_2xxxxxU$ $Uxxxxxxq_2$
 $Uxxxxxxu$ Uq_{accept}

2. 3.2c

$q_1 10\#10$ $Ux0q_6x0u$ $Uxx\#040u$ $Uxxq_1xxu$
 $Uq_30\#10u$ $Uxq_7\#x0u$ $Uxx\#xq_4u$ $Uxx\#q_8xu$
 $Uxq_3\#10u$ $Uq_70\#x0u$ $Uxx\#06xu$ $Uxx\#xq_8u$
 $Ux0q_310u$ $Uxq_1\#x0u$ $Uxxq_6xxu$ $Uxx\#xxq_8u$
 $Ux0\#q_50u$ $Uxxq_2x0u$ $Uxq_7\#xxu$ $Uxx\#xxUq_{accept}$

3.8b. Scan the tape for 0 or 1. if 0 is encountered,
 mark the zero as X and cycle to the next Blank.
 Once Blank is found, cycle to the next Blank
 and mark X. cycle back to the X.
 if 1 is encountered, ~~mark~~ mark as x, cycle to
 Blank, cycle to next blank move left and mark
 if x to Blank. Do this twice. if Blank encountered
 move back to x. Once no 0 or 1 after x move to
 next blank, if next Right is X reject, else accept.

4. Same as previous machine except
 accept condition at the end is reversed.
 if empty reject, if present accept.

Also you must make a case for when
 $\# of 1$ is greater than 0's.

5. 3.15 d ?

3.16d

every machine that accepts
 a language in decidable languages
 will halt.

Run w on M a machine
 that takes L .

if M rejects, accept
 otherwise reject.

3.16d.

Suppose L^1, L^2 are recognizable languages.
 M_1 and M_2 recognize these lang.
 if M_1 on $\langle w \rangle$ if accept, continue.
 if M_2 on $\langle w \rangle$ if accept, accept.