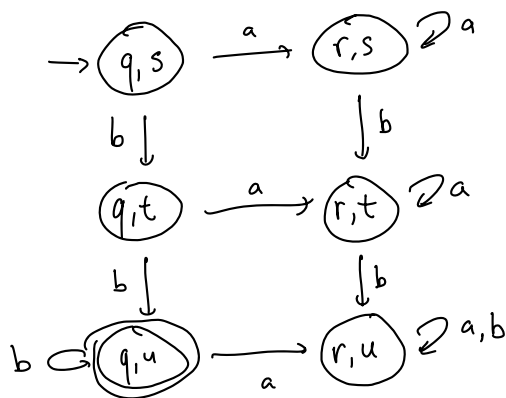


Math 3342

Homework #2

Chapter 3 #4b, 10
Chapter 5 #4d, 5d

Chapter 3 #4b $\bar{L}_1 \cap L_2$



Chapter 3 #10 Binary #'s div by 5.

look at values of $x \bmod 5$

$x = 0 \bmod 5$: $x = 5k$, then $0 \rightarrow 2 \cdot 5k = 0 \bmod 5$
 $1 \rightarrow 2 \cdot 5k + 1 = 1 \bmod 5$

$x = 1 \bmod 5$, $x = 5k + 1$, $0 \rightarrow 2(5k + 1) = 10k + 2 = 2 \bmod 5$
 $1 \rightarrow 2(5k + 1) + 1 = 10k + 3 = 3 \bmod 5$

$x = 2 \bmod 5$, $x = 5k + 2$, $0 \rightarrow 2(5k + 2) = 10k + 4 = 4 \bmod 5$
 $1 \rightarrow 2(5k + 2) + 1 = 10k + 5 = 0 \bmod 5$

$$\underline{x=3 \pmod 5} \quad x=5k+3$$

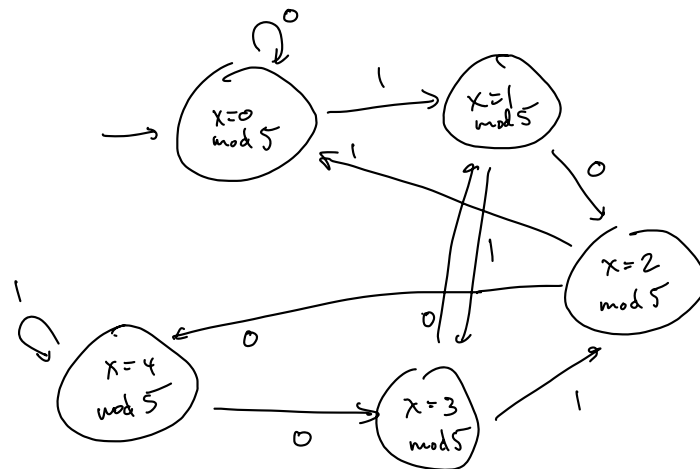
$$0 \rightarrow 2(5k+3) = 10k+6 = 1 \pmod 5$$

$$1 \rightarrow 2(5k+3)+1 = 10k+7 = 2 \pmod 5$$

$$\underline{x=4 \pmod 5} \quad x=5k+4$$

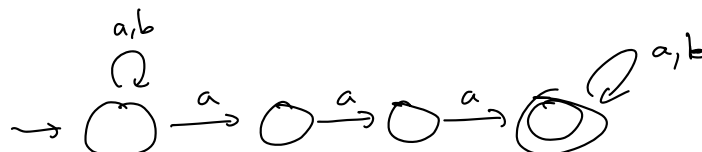
$$0 \rightarrow 2(5k+4) = 10k+8 = 3 \pmod 5$$

$$1 \rightarrow 2(5k+4)+1 = 10k+9 = 4 \pmod 5$$



Chapter 5 #4d

3 consecutive a's :



Chapter 5 #5d

a's is odd or $b^n, n \text{ odd}$ or $(aba)^n$

