Learning Craps

November 4, 2021 12:53 PM

Craps is a game where you bet on outcome of 2 Dice

- need 2 Random number generators from 1-6 (or 1 from 1-12)

Player wins if 7 or 11

Player loses if 2 3 or 12

Otherwise

2 6 = 8 — Point — Match win

4 4 → 8

4 3 → 7 — loose

5 2 — loose

6 1 — loose

6 4 → 10 Not 8 Roll again

6 2 → 8 Win

Component RNG x2

Component 1/2 adder

Architecture

Roll

7-Seg lookup Table

1001 → 000001

if — win

else if — loose

else if — ReRoll

X needs to be able to handle both

need a randomizer that goes from 1 to 6

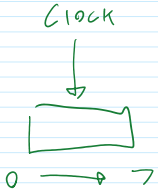
however

$2^3 = 2 \times 2 \times 2 = 4 \times 2 = 8$: 0 — 7

this means with 3 JK flip flops I can have 0 1 2 3 4 5 6 7

Q & 7 are not needed, how to configure LFSR such that 0 & 7 are never used in 3 JK-FF LFSR

Clock



4 to 8 MUX

7

6 x 7

0 1 2 3 4 5 6 7

1-6 1-6 1-6 1-6 1-6 1-6 1-6 1-6

On start

1.00001

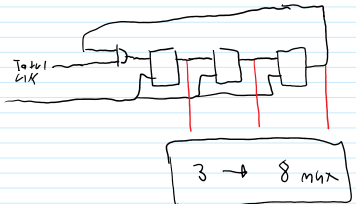
1.00003

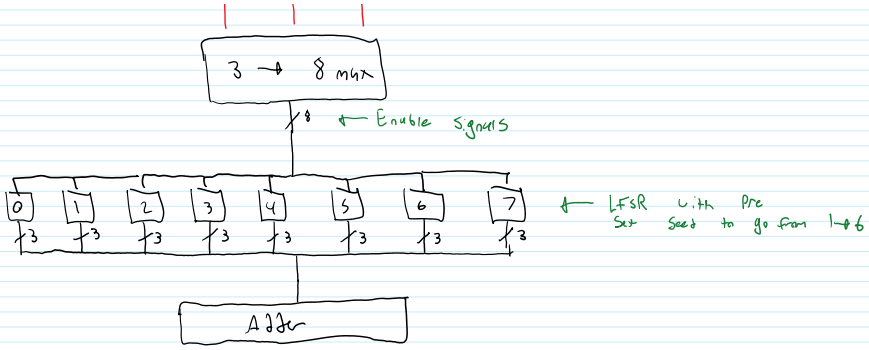
12 bit

me	
11	2, 6, 12
22	4, 10
33	6, 8
44	8

20

team	
11	2
22	4
33	6
44	8




3 → 8 mux
8
Enable signals
0
1
2
3
4
5
6
7
3
LFSR with Pre Set Seed to go from 1→6
Adder

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7 OR 11 → Instant win

2, 3, OR 12 → Instant loose

4, 5, 6, 8, 9, 10 → next Phase

↳ What ever you Rolled Previously is held called Point

I Roll an 8 ← Point

Roll again to match Point
If I match Point I win

If I dont I Roll again

Input
- Reset
- Roll dice

Output
- "Point" display
- "current Roll" display

Supp Components

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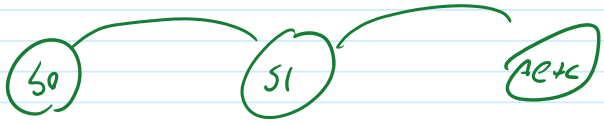
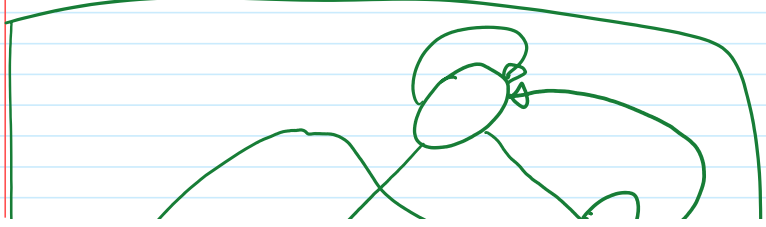
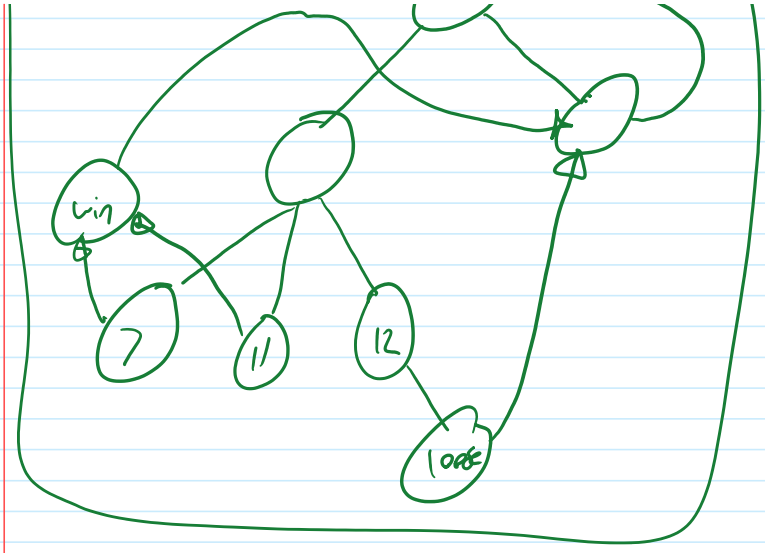
first thing doc is controller

FSM






win
7
11
12
lose