FIFO : FIFO in frame

LRU : Replace "oldest" in frame

Optimal: Look into the "future" ; replace with farthest # in "future"
non existent

Clock: "Advanced" FIFO?

FIFO Algorithm

Ref. String: 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 1, 2, 0

✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓

	F_1	F_2	F_3	F_1	F_2	F_2	F_3	F_1	F_2	F_3	F_1	F_2	F_2	F_3	F_1
F_1	7	7	7	2	2	2	2	4	4	4	0	0	0	0	0
F_2		0	0	0	0	3	3	3	2	2	2	2	1	1	1
F_3			1	1	1	1	0	0	0	3	3	3	3	2	2

Done!

Note: Can't have two same #'s in same Frame!

- We're at F_1, replace 7 with 2
- 0 stays, so we "ignore" it and stay in F_2
- 3 already in Frame, ignore, stay F_2

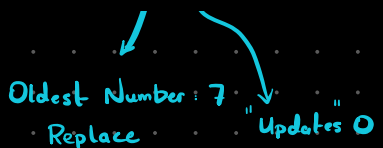
LRU Algorithm

Ref. String: 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 1, 2, 0 → Use marks to keep track of # "date"

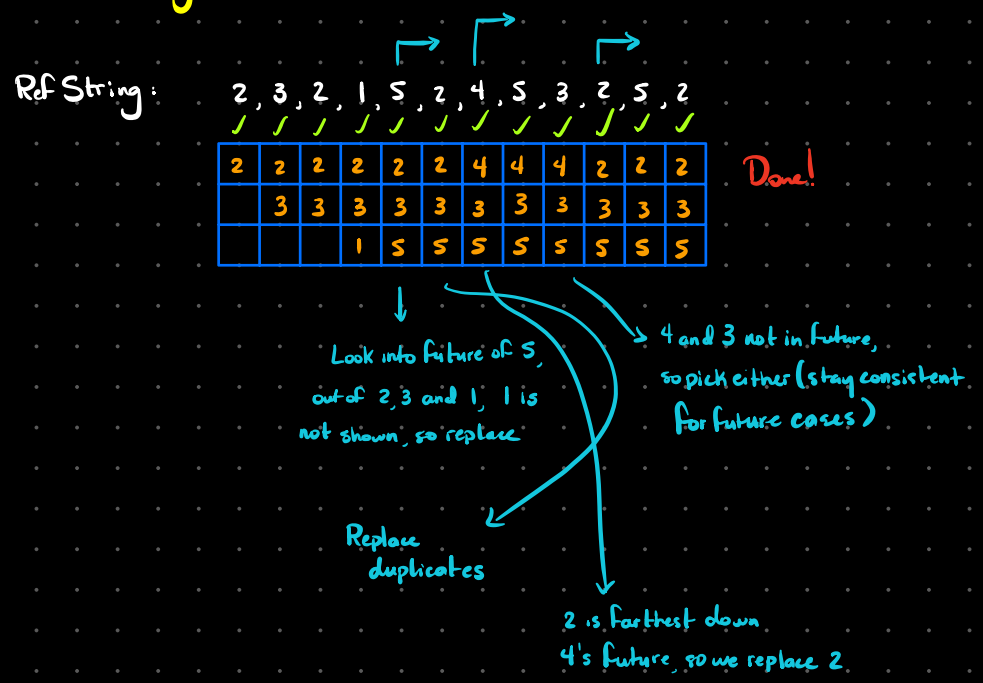
✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓

7	7	7	2	2	2	2	4	4	4	0	0	0	2	2
	0	0	0	0	0	0	0	0	3	3	3	3	3	0
		1	1	1	3	3	3	2	2	2	2	1	1	1

Done!



Optimal Algorithm



Clock Algorithm

Ref. String: 2, 3, 2, 1, 5, 2, 4, 5, 3, 2, 5, 2

2*	2*	2*	2*	5*	5*	5*	5*	3*	3*	3*	3*
	3*	3*	3*	3	2*	2*	2*	2	2*	2	2*
			1*	1	1	4*	4*	4	4	5*	5*

End!

- Pointer moves each turn (except when repeating #'s)

Must be dereferenced to replace with

Since adding 2 to dereferenced bit, reference it (pointer stays)

- Can only remove/replace number with new #

When • regains its bit, doesn't move