Ques Max sum of contiguous subarray

0	1	2	3	4	5	6	7
-2	-3	4	-1	-2	1	5	-3

Sum = 0 -2 -5 -1 -2 -4 -3 -1   n=8

Max : -∞ -2 -1 2

S = 0   e = 0 → 7   8
S = 1   1 - 7   7
   2   2 7   6
            ⋮
S = 7   7 - 7   1

1 + 2 + 3 ..... n

$$\frac{n \times (n+1)}{2} \Rightarrow O(n^2)$$

Kadanes Algo

	0	1	2	3	4	5	6	7
	-2	-3	4	-1	-2	1	5	-3

↑

sum = ~~0~~ ~~-2~~ ~~-5~~ ~~4~~ ~~3~~ ~~1~~ ~~2~~ ~~7~~ 4

max = ~~-∞~~ ~~-2~~ ~~4~~ 7

<u>Ques</u> Toys

100	20	50	10	2	5
2	5	10	20	50	100
2	7	17	37	87	187

3

4   odd + 1/2

2   even/2

total toys on 1 purchase ⟹ 1 + k

Buy 1 get k

6/(3+1)   6/4   (1.5)

↓

2

n=100   100/4   n= 103

                                                 103/4 ⇒ 25.7

1+3   2.4

no of toys   ⇒ | Math. ceil (n/(k+1)) |
  to be purchased

        n × q   +   n log n

Prefix   n log n + n + q
Sum

                                            ↓
    2   ~~5~~   ~~10~~   ~~20~~   ~~50~~   ~~100~~
             7   17   37   87   187

Max Circular subarray sum

8	- 8	9	- 9	10	-11	12
0	1	2	3	4	5	6
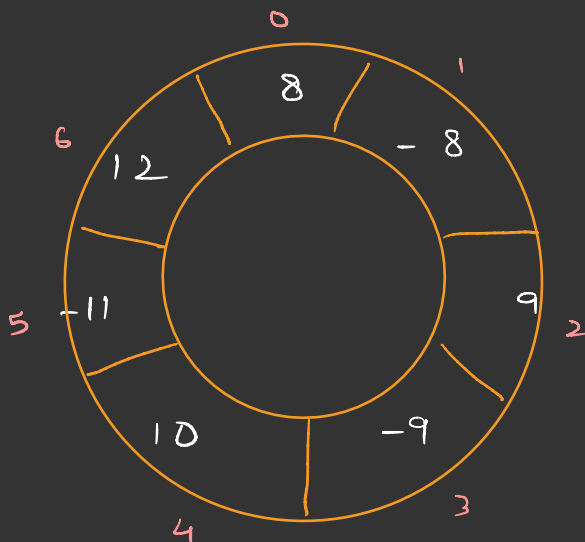
$i = i \% 7$

8	- 8	9	- 9	10	-11	12
0	1	2	3	4	5	6

s ↓

0	1	2	3	4	5	6	7	8	9	10	11	12	13
8	- 8	9	-9	10	-11	12	8	-8	9	-9	10	-11	12

↑ e

sum = 8̶ 0̶ 9̶ 0̶ 10

max = 8̶ 9

8	- 8	9	- 9	10	-11	12
0	1	2	3	4	5	6

↓

Sum   10   - 3   - 4   7   6   5   - 4   1

Sum = ~~10~~ ~~-3~~ ~~-7~~ ~~0~~ ~~6~~ ~~5~~ ~~-4~~ -3

min = ~~10~~ ~~-3~~ -7

2   - 4   22   - 10   1

Sum — min Subarray Sum ,   max Subarray Sum