1.5 - Nested loops

Saturday, August 30, 2025

- Math library
- Post | pre increment - decrement
- Pattern printing
- ASCII conversions
- break | continue

Math Library

pre-written java code which helps you do some math operations

- Math.pow(a, b) ⇒ a^b (double)
- Math.abs(ε) ⇒ ε if ε > 0, −ε if ε < 0 — |ε|

⇒ (0.4 ⇒ 0

(12.7) ⇒ 12 ↳ ⇒ 13

floor - lowest
ceil - upper int

Pre | post increment decrement

- Pre Increment | Decrement (++i, --i): first update the value and then use
- ... | Post : first use, then update the value ⇒

→ post Inc/Dec : first use, then update

(i++, i--)

```
int a = 5
int b = ++a;
int c = a++;
```

ASCII conversions

↳ character → no

break / continue

→ keywords that are used to control the flow of the loop

⇒ break : used to end the loop

Q) keep taking input from a user, until he gives a no divisible by 7

⇒ continue : used to skip an iteration

Q) Print all the nos b/w 1-100 except the multiples of 3 or multiples of 5.

Answer range of %

0 % 3 = 0
1 % 3 = 1
2 % 3 = 2
3 % 3 = 0
4 % 3 = 1
5 % 3 = 2
6 % 3 = 0
7 % 3 = 1
8 % 3 = 2
9 % 3 = 0
10 % 3 = 1

% 3 : [0-2]

n % 6 → [0, 6-1]

0 % 4 = 0
1 % 4 = 1
2 % 4 = 2
3 % 4 = 3
4 % 4 = 0
5 % 4 = 1
6 % 4 = 2

5 % 4 = 1
6 % 4 = 2
7 % 4 = 3
8 % 4 = 0
9

Pattern Printing

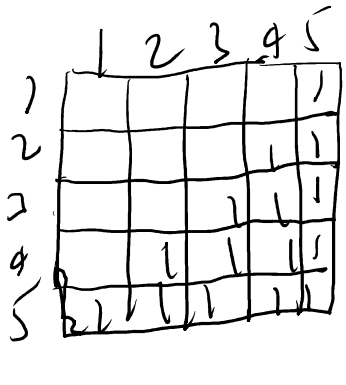
(1) Outer loop runs for the no. of rows.

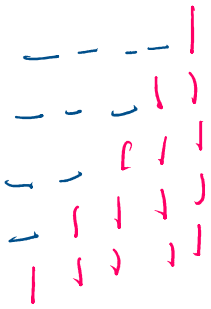
(2) Inner loop runs for the no. of elements in each row

(3) Find relation b/w the contents to be printed and i and j
outer inner

0)
1 1 1 1
1 1 1
1 1
1 1
1

n-1 i-1 n-i
n+1 n-(i+1)
i+1 n+i-1
n+i

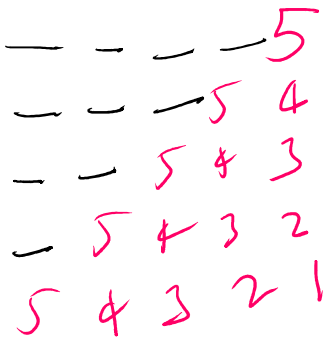




i	space	char
1	4	1
2	3	2
3	2	3
4	1	4
5	0	5

n-i

j <= i



i	spaces	char
1	4	5 - 5
2	3	5 - 4
3	2	5 - 3
4	1	
5	0	

n-i

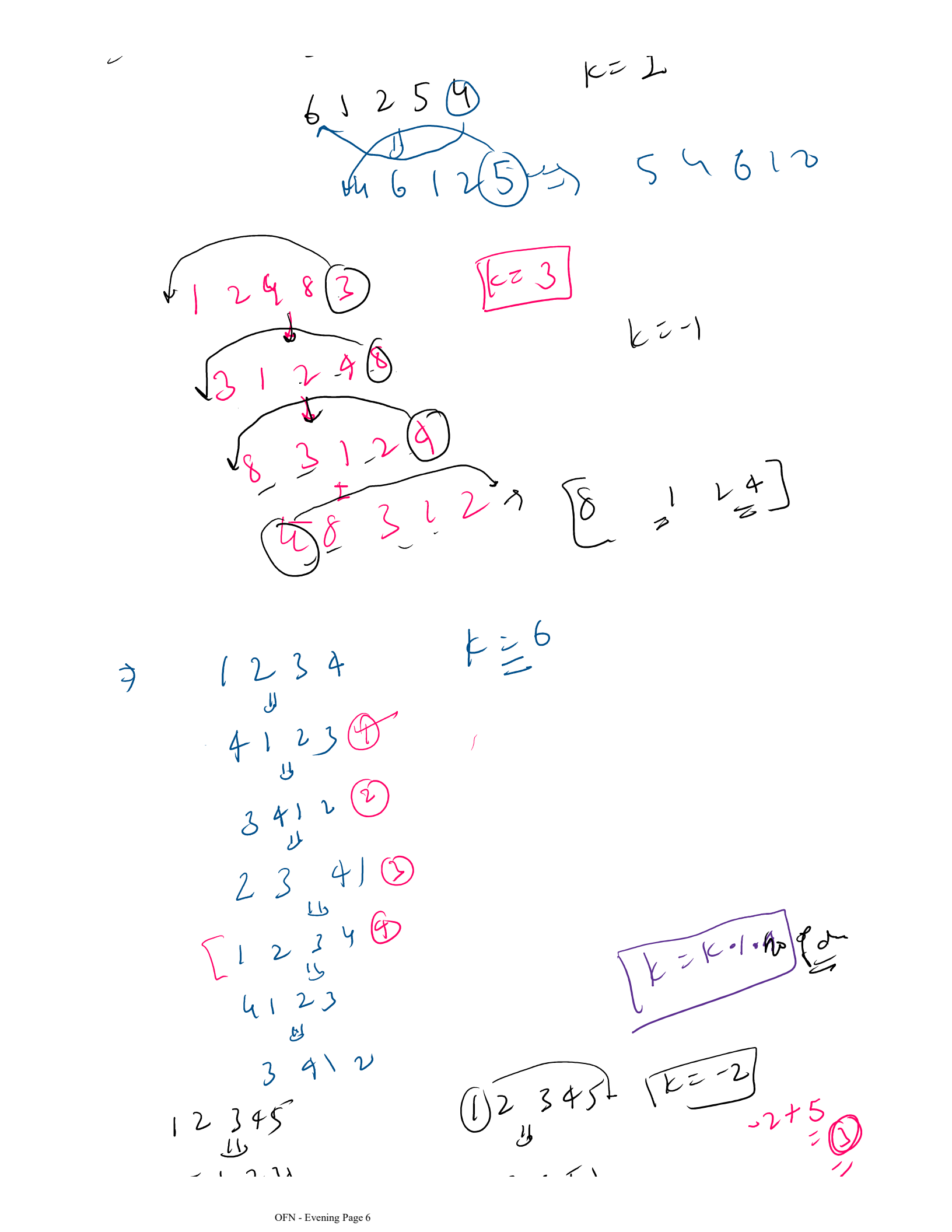
j

5 - (n - i + 1)

Rotate a no

k = 1

1 1 2 5 (9)


k = 2
6 1 2 5 4
4 6 1 2 5
5 4 6 1 2
k = 3
1 2 4 8 3
k = -1
3 1 2 4 8
8 3 1 2 4
4 8 3 1 2
1 2 3 4
k = 6
4 1 2 3
3 4 1 2
2 3 4 1
1 2 3 4
4 1 2 3
3 4 1 2
1 2 3 4 5
k = -2
1 2 3 4 5
-2+5 = 3