PROBLEM SOLVING :

Agenda :

i) Rev a digit
ii) Pattern printing
iii) Hollow diamond pattern
iv) Normal diamond
v) Revision

Q1. Reverse the given digit.

Ans :

n = 3251

s = str(3251) => print(int(s[::-1]))

i) n = 0
d = 3

n x 10 + d

Ans : 3 => 0 x 10 + 3 = 3

ii) n = 3
d = 2

Ans : 32 => 3 x 10 + 2 = 32

iii) n = 32
d = 5

⇒ 32 x 10 + 5 = 325

Ans = 325

iv) n = 325
d = 1

⇒ 325 x 10 = 3250 + 1

Ans = 3251

⇒ n x 10 + d

★ 1 2 3 4

rev = 0

⇒ last = 4

⇒ rev x 10 + last

⇒ 4

→ rev x 10 + 3

→ 4 x 10 + 3

→ 43

→ 432

→ 4321

Code :

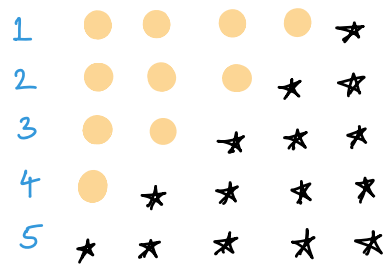
```
n = 1234
rev = 0

while n > 0 :
    dig = n % 10
```

```
n = n // 10
rev = rev x 10 + dig
print (rev)
```

★ Pattern

n = 5



i	stars	space
1	1 (i)	4 (5-1) (n-i)
2	2 (i)	3 (5-2) (n-i)
3	3 (i)	2 (5-3) (n-i)
4	4 (i)	1 (5-4) (n-i)
5	5 (i)	0 (5-5) (n-i)

★ outer loop range (1, n+1)
★ star loop range (i)
★ spaces loop range (n-i)

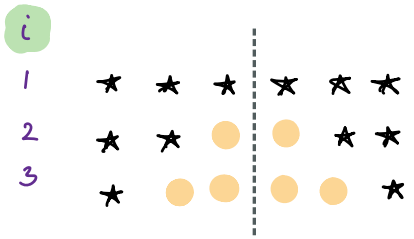
★ Pattern

n = 5

i	stars	spaces
1	5 (n-i+1)	0 (i-1)
2	4 (n-i+1)	1 (i-1)
3	3 (n-i+1)	2 (i-1)
4	2 (n-i+1)	3 (i-1)
5	1 (n-i+1)	4 (i-1)

★ Pattern :

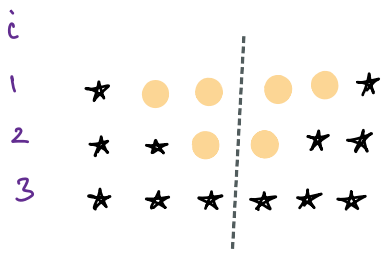
n = 3



star	Space
3	0 → 0
2	1 → 2
1	2 → 4
(n - i + 1)	2 x (i - 1)

★ Lower part of hollow diamond :

n = 3



Stars	spaces (1st half)
1	2
2	1
3	0
i	(n - i)

total = 2 x (n - i)

★ full Diamond

n = 3