* Number System in Java

1> Binary (base 2)(0 1)
2> Octal (base 8)(0 to 7)
3> Decimal (base 10)(0 to 9)
4> Hexadecimal (base 16)(0 to F)

- Normal numbers we use are decimal numbers.
- These have base 10

⊙ Binary Number System. | 0b is prefix |
- base is [2]   - Range 0 to 1

$$int\ b = 0b1110;$$

This indicates it is
a binary number.

128	64	32	16	(8)	(4)	(2)	1
0	0	0	0	1	1	1	0

2^7 2^6 2^5 2^4 2^3 2^2 2^1 2^0 ←

Add the numbers which have 1
$8+4+2 \rightarrow \underline{14}$ ← Answer.

e.g. int x = 0b11000110;

128	64	32	16	8	4	2	1
0	0	1	1	0	0	0	1	1	0

2^0

$2+4+64+128 \rightarrow 198$

⊙ Octal Number System. | 0 is the prefix |

- base is 8
- Range 0 to 7

int x = 010

shows
it is an
octal number

8^0

8^1

$$1^* 8 + 0^* 1 = 8$$

e.g.

int x = 0234;

Indicates
Octal number

8^0

8^1

8^2

$$2 \times 8^2 + 8^1 \times 3 + 4 \times 8^0 = 156$$

e.g.   int x = 0786; → error : integer number too large.

- This will throw compile time error bec it is
out of range from hexadecimal no.
- Numbers should ranges from 0 to 7 only.
- First check the range then perform calculation.

⊙ Hexadecimal Numbers   [OX is the prefix]

- Base 16
- Ranges from 0 to f

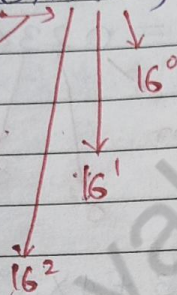|		
0	6	C → 12
1	7	D → 13
2	8	E → 14
3	9	F → 15
4	A → 10	
5	B → 11	

e.g. int x = 0xc;   ⟹ 12

indicates it
is an ~~Octal~~ Hexadecimal
number.

e.g. int x = 0xf;   ⟹ 15

e.g.   int x = 0xff8;

indicate it is
an hexadecimal
no.

16^0

16^1

16^2

$15 \times 16^2 + 15 \times 16 + 8 \times 16^0 \Rightarrow 4088$

✴ Taking Input in binary, octal and hexadecimal.
⊙ Input in decimal
+ Generally we give input in decimal numbers.
  for that we use
       int x = sc.nextInt();

this is empty means
we putting decimal
no.

✦ Input in binary.
  we just have to put '2' in the empty
  brackets of int method using to take int
  input
       int x = sc.nextInt(2);

Bec binary number
have base 2

⊙ Input in Octal.

We just have to put 8 in those brackets.

int x = sc.nextInt(8);

↳ Bec octal numbers have base 8.

⊙ Input in ~~16~~ Hexadecimal.

we just have to put 16 in those brackets.

int x = sc.nextInt(16);

↳ Bec octal numbers have base 16.

⊙ Note: This works as we input specific type of number and it get converted into normal Integer.

✳ ASCII Values

(American Standard Code for Information Interchange)

A   to   Z   a   to   z
↑   ↑   ↑   ↑
65   90   97   122

✳

char answer = 65;

   S.O.u.t (answer);

Then this will print the ASCII value
for 65 number which is "A"

91 → [96 → `

92 → \

93 →]

94 → ^

95 → -