Intro to Programming.

Why Programming?

Lets get started with a daily life example.

How do you direct a child from this Lab to Bridge?

Probably you will tell him..

1.Start from Lab.

2.Go straight till lobby.

3. Exit from the college through main gate and follow the path till Sowbhagya Mess hall.

4.From there if the road towards left is proper without water then take left , else go straight and take left.

5.You reach the Bridge.

Even the computers are so dumb that...
You need to direct them for each task.

Big Question is how can we direct them.

Can computers understand English as such?

This is where, programming language comes into picture

What is a programming language?

What came first to your mind,
When we say the word
“Python”

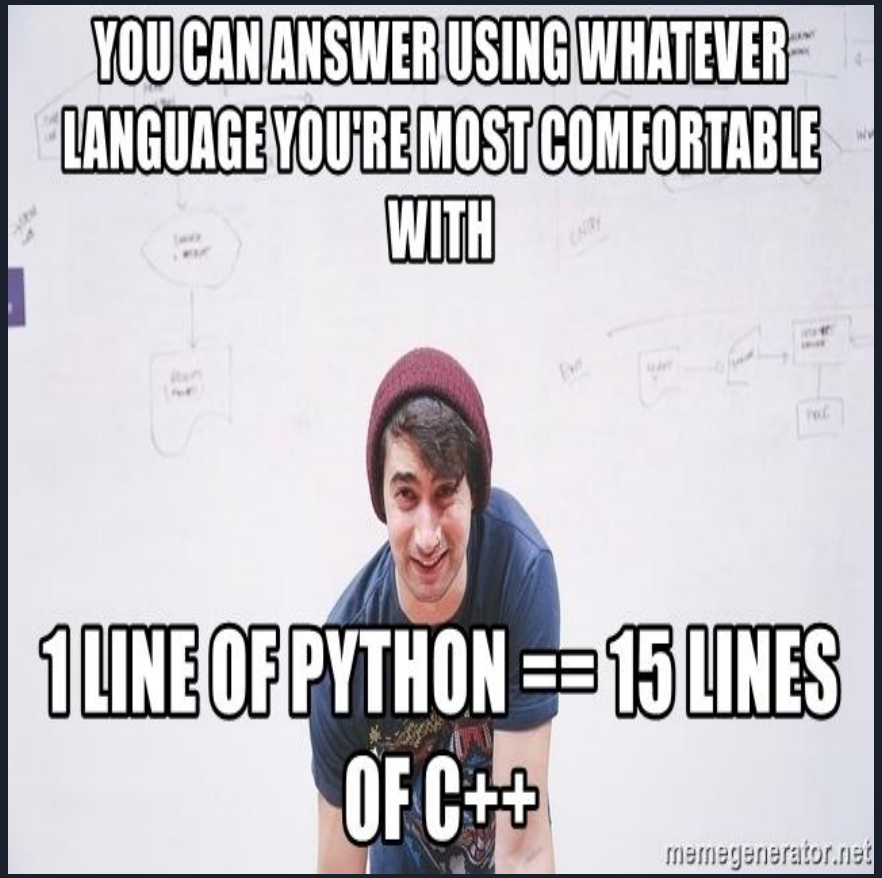
- Python programming language is developed by Guido Van Rossum.
- Named after Monty Python, (a British comedy group) and Not from the from the snake.

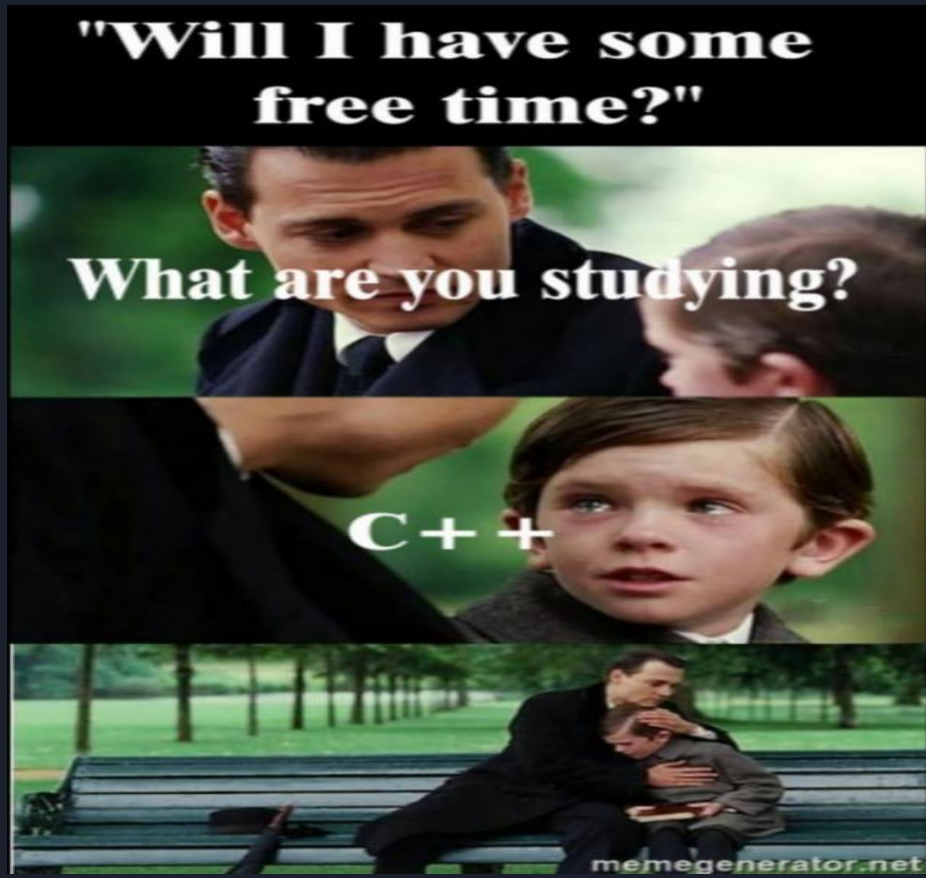

WHY
Python
01
Simplicity
02
Large Community
03
High
Demand-Supply Ratio
04
Large
Number of Frameworks
05
Chosen Language
for AI and ML
06
Make your own DIYs

We love python

- Simple and easy Syntax.
- Dynamic. (It’s really important)
- A rich standard libraries of modules.
- High level language.
- Best for beginners.

No offence for C++ programmers





Top Companies using Python

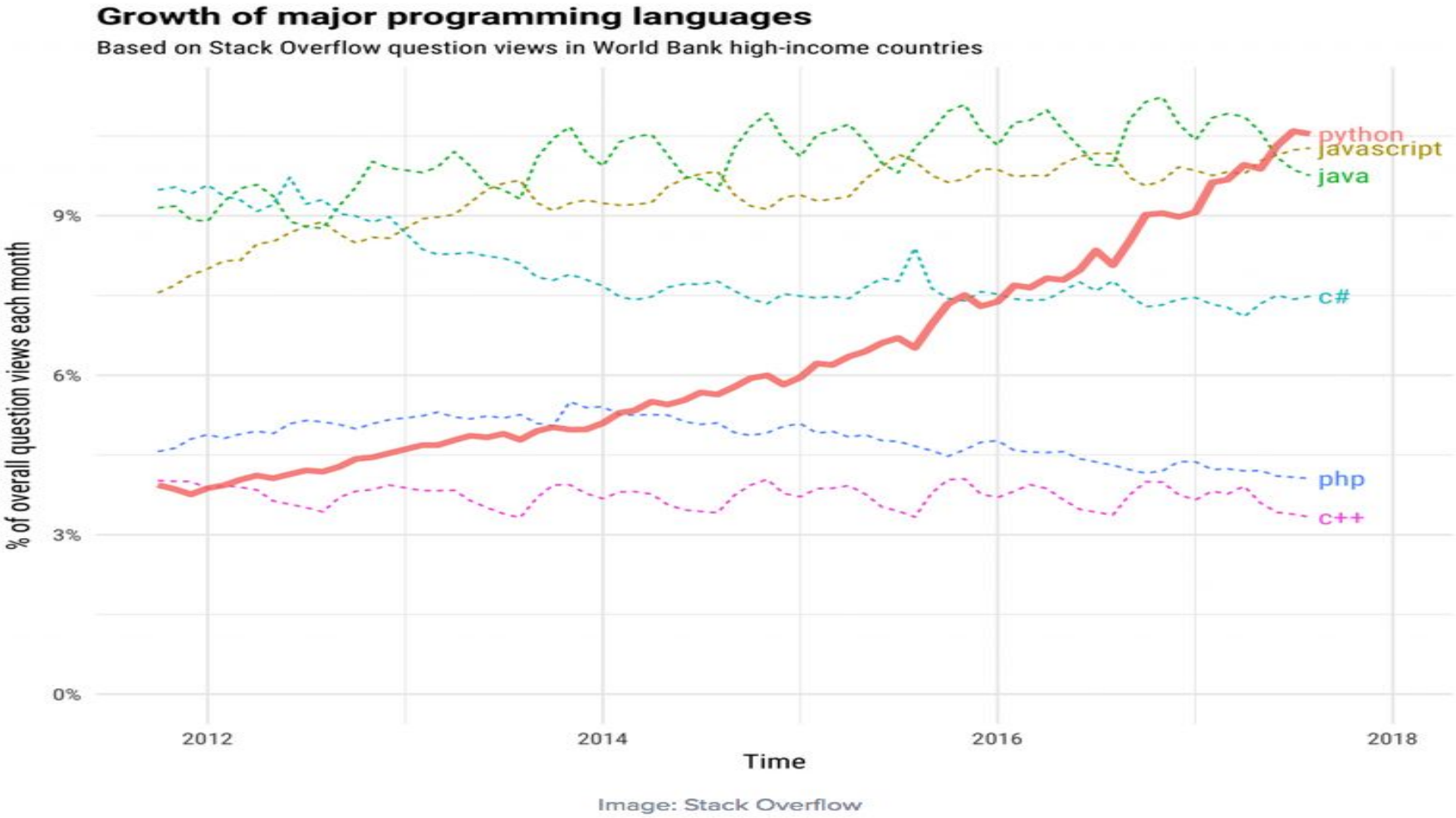


Image: Stack Overflow

KEEP
CALM
AND
LEARN
PYTHON

Let us know about the vocabulary and grammar of Python.

Data types.

- Integer.
- Float.
- Complex.
- Strings.
- Boolean.

Integers:

- 123, 45, 0, -4 etc

Floats:

- 1.212, -3.14, 4.56 etc

Complex:

- 5 + 4j, 2-3j, 8j, 3.2+5.24j etc

Strings:

- “NOTA”, “The mask of zorro”, “Jai Balayya”,

  “123”, “W@W!!!”, “Thalaiva”.

Boolean:

- True
- False

Variable

It is just a container where it provides some space to store a certain data type.

Ex: a=5 then a is an integer variable.

When you destroy 10 years of work and $370million dollars in 37 sec just due to Integer Overflow.

Those kind of problems will never occur in Python because it is Dynamic :)

That’s one of the reason why

WE LOVE PYTHON

To go further we need a Python environment to work.

We use python shell or Idle for this

On Ubuntu machines,

- Open terminal.
- Type “python3” to start the Python shell.

For working with Python Idle

- We need to install Idle first.
- For this, Go to python.org
- And go to Downloads section and download the package.

Let’s do some math

Arithmetic operators

Eg :- a = 5 , b = 3

- a+b
- a-b
- a*b

Some more operators..

- a/b
- a%b
- a**b
- a//b(floor division)

Interested in comparing :)

Comparision operators :-

- a == b a < b a >= b a <= b
  a != b a > b

Assignment Operator ‘=’.

B’s value is assigned to A

A’s value is assigned to B

Always Rightside value is given to Left side variable

Give and take policy (I/O)

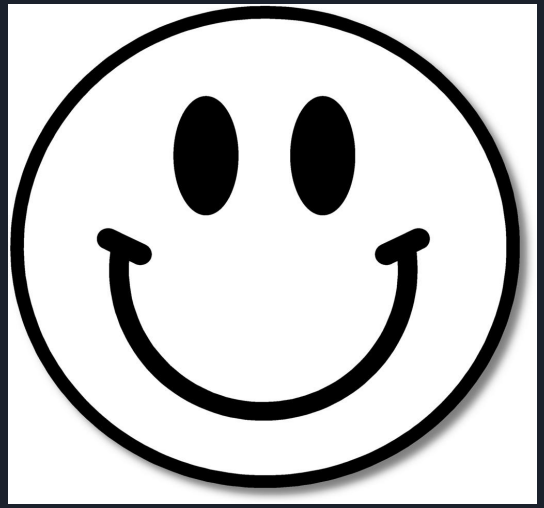
- Only input( )
- A = input( )
- A, becomes a string variable because the default data type of input is a string.
- print(“Hello ”+ A)

- The way we manipulate input and output is always dependent on what intermediate states the variable passes through.
  - for Eg :- a = input( )

a = 5

print(a)

Any wild guesses?



Binary

Similarly in the system

Volunteers ⇒ Transistors/Diodes

Chocolates ⇒ Power supply

Happy emoji⇒ On or represents bit 1.

Sad emoji⇒ Off or represents bit 0.


156 10
2 | 156
2 | 78
2 | 39
2 | 19
2 | 9
2 | 4
2 | 2
2 | 1
0
0
1
1
1
0
0
1
10011100

There are 10 types of people in this world one can understand and other cannot

Binary Operators or Bitwise Operators:-

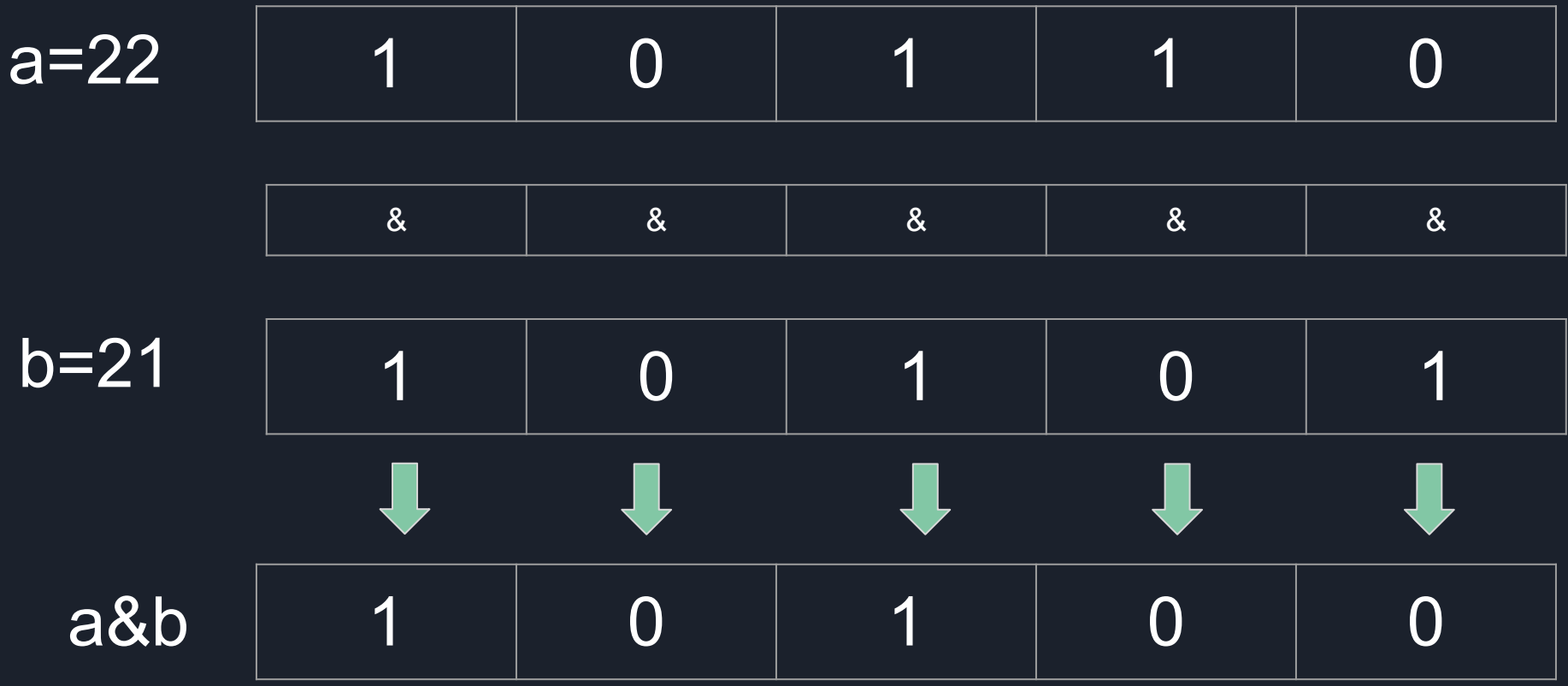
a = 22 (10110) , b=21 (10101)

- a&b = ? a|b =?
- a^b = ?
- a<< 1 =? a>>1=?

AND(&)

p	q	p & q
0	0	0
0	1	0
1	0	0
1	1	1

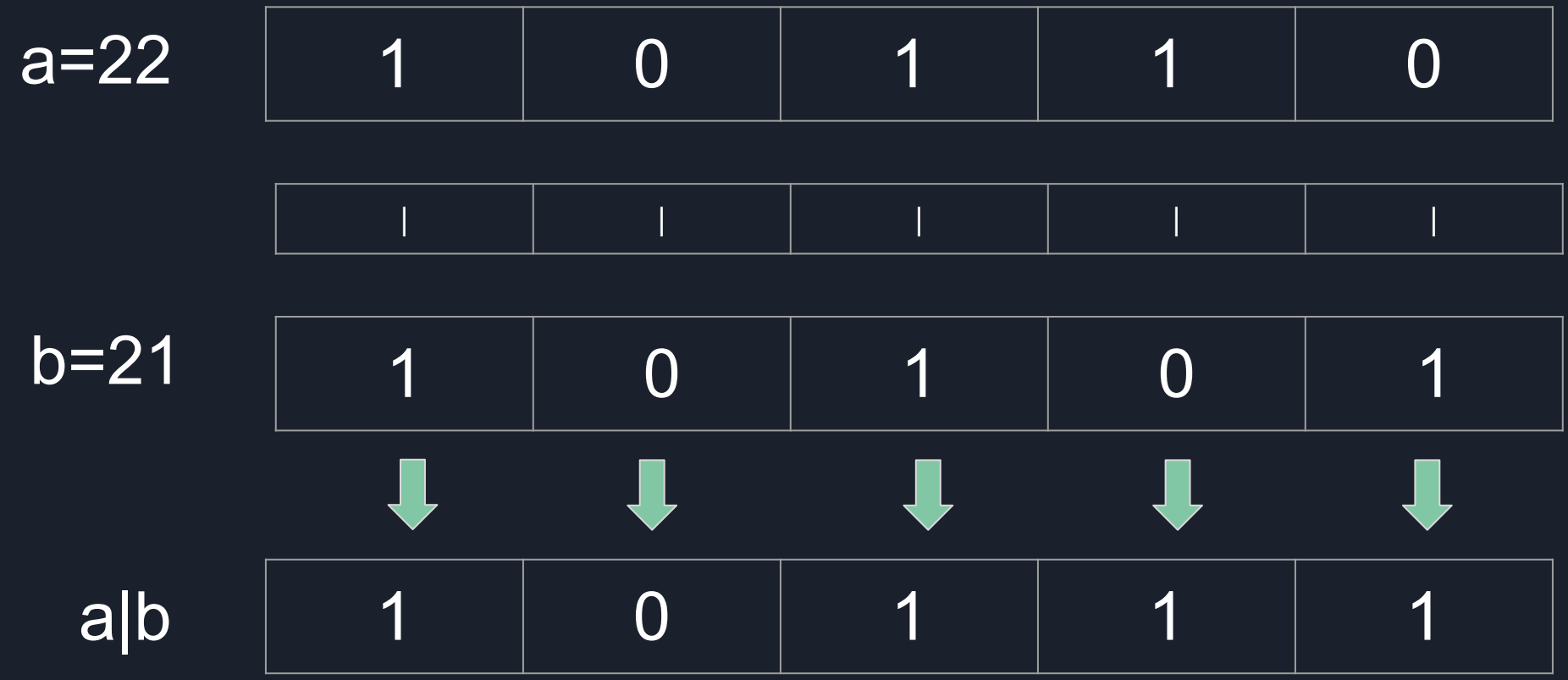
Bitwise And (&)



OR(|)

p	q	p | q
0	0	0
0	1	1
1	0	1
1	1	1

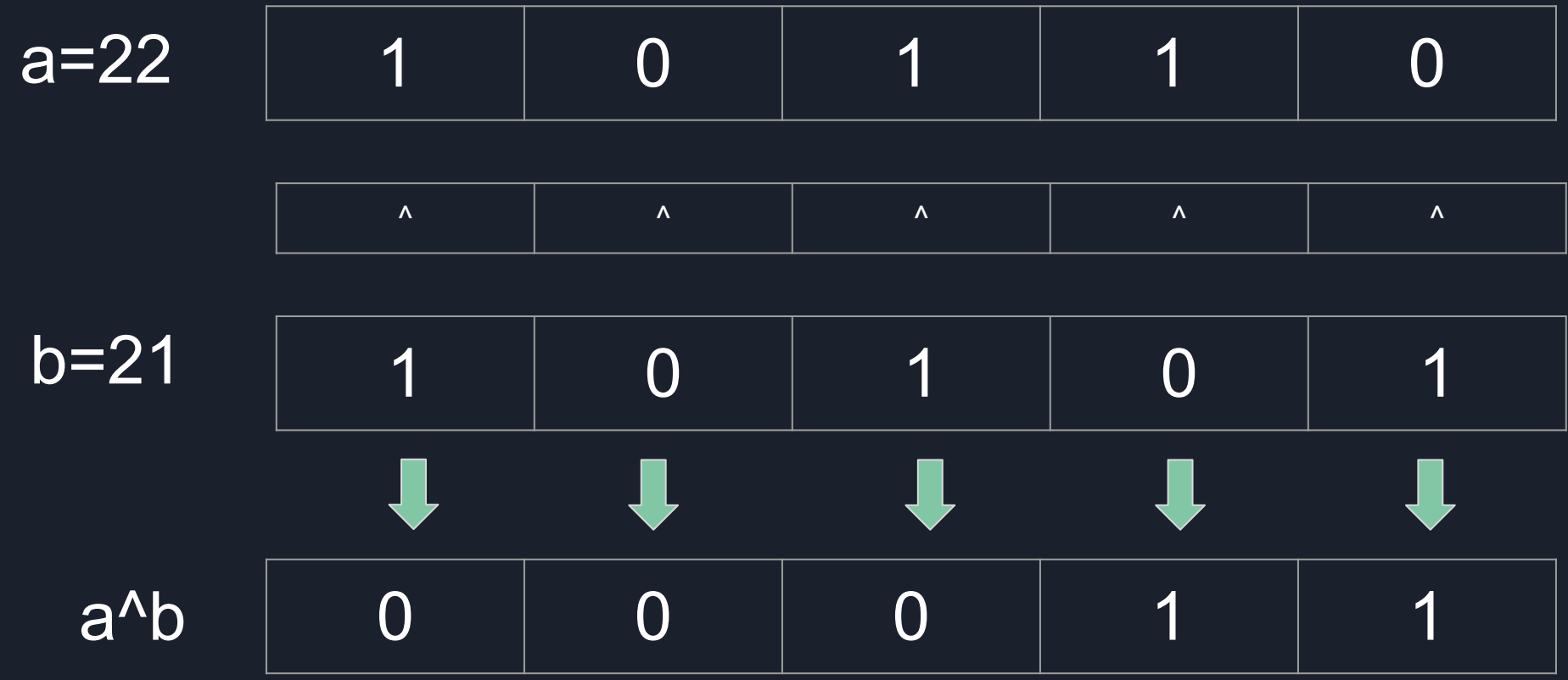
Bitwise Or (|)



XOR (^)

p	q	p ^ q
0	0	0
0	1	1
1	0	1
1	1	0

Bitwise Xor (^)



Left shift operator.

a<<1 means shift the bits left 1 time.

Intially a=21:

After left shifting once:

= 42

Right shift operator.

a>>1 means shift the bits right 1 time.

Intially a=21:

After left shifting once:

= 10

Our python can judge your logic even you write in english as we say

- and
- or
- not
- in
- is

Not only humans our python has got priorities it’s called precedence of operators

High to low

** (exponent)

* / % // (multiplication , division,modulo , Integral division)

+ - (plus , minus)

>> << (Right shift , Left shift)

& (bitwise and)

^ | (Bitwise Xor , Bitwise Or)

<= >= (Less than or Equal ,Greater than or Equal)

== != (Equal to , Not Equal to)

Some Handy shortcuts

a+=2 ⇒ a=a+2

a-=2 ⇒ a=a-2

a*=2 ⇒ a=a*2

a/=2 ⇒ a=a/2

a//=2 ⇒ a=a//2

Example:

a=2, b=3, c=4

a +b*c-(b**2-a//c)

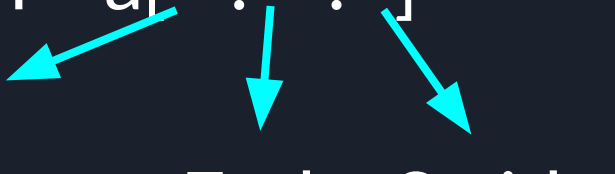
a+b*c-(9-a//c) ⇒ a+b*c-(9-0) ⇒ a+12-(9)

a+3 ⇒ 2+3 ⇒ 5

Strings(You can’t change me)

Set of characters closed with double or single quotes are called strings

- Eg :- a = “vipin pavithran” a[: :]
- a[2] = ?
- a[2 :5] = ?
- a[: : -1] = ?
- a[4:2:-1] = ?



String methods

- Eg : -a = “Vijay Deverakonda”
- a.upper() .isalpha() .istitle()
- a.lower() .isalnum() .startswith()
- a.isupper() .isdecimal() .endswith()
- a.islower() .isspace() .ljust(len)
- .join() . split() .rjust(len)
- .center(len) .strip() .rstrip() .lstrip()

EOF

-Thank you.