PYTHON

For Beginners

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RECAP

- Last Time we learned
  - Setup
  - Basic about computers, Algorithms
  - Basic Python Syntax
  - Touched on variables, expressions, data types, control statements, loops

FEEDBACK FROM HW

- Functions are hard !!
  - Got it loud and clear and we ll cover an entire class in the coming weeks on them.
- Programming is fun !! (Hopefully everyone enjoyed it :))
- Good job by everyone !!

TODAY'S LECTURE

- Practice Numbers
- Learn about
  - Strings
  - Lists

NUMBERS

NUMBERS - TYPE MIXING

- We learned about basic maths and learned about expressions
- First we will focus on type conversion, lets try an example:
    - In your notebooks type 1 + 2.0 and see what do you get
        - How about 1 + int(2.3) ?
    - Important because it is a cause of common error
    - Python provides some handy functions (https://docs.python.org/3/library/functions.html) like abs() , round() to deal with this problem. Try it out
    - What should be result for round(2.5) ?

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NUMBERS - COMMON LIBS

- Lets try two common lib used with numbers
  - Math library (https://docs.python.org/3/library/math.html)
    - Notebooks +code - import math
    - Offers advance functions like pi, sin, cos, log etc)
    - Use math library and write a func to calculate the area of a circle A = π r^2
  - Random library (https://docs.python.org/3/library/random.html)
    - Notebooks +code - import random
    - Try random(), random(10)
    - Use random and write a func to emulate a roll a dice

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BOOLEAN

GETS GO BACK TO 0 & 1

- Data type which only has two values True or False
- Used for control statements like if
- Comparison operations internally resolve to boolean value
- Lets try these

```
print(10 > 9)

print(10 == 9)

print(10 < 9)
```

STRINGS

STRINGS

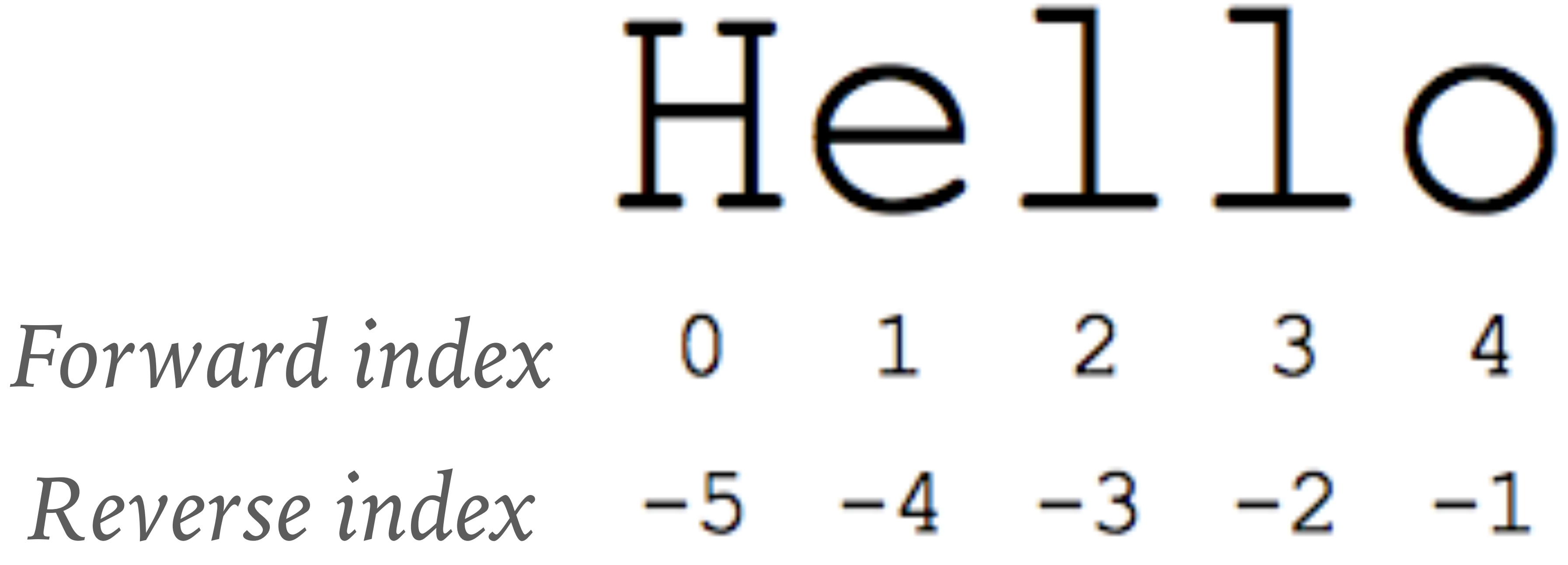
- Numbers are great, but what about characters ? (english, special, even numbers)
- String is data type which is nothing but a collection of characters
- Lets try

```
s = "This is a string"
print(s)
```

- Any number of characters enclosed in “” or ‘’ [this tells python to treat them as a string]

ACCESSING STRINGS

- Index - every character in a string can be accessed using a index starting at 0
- For our string defined before try str[0], str[4], str[-1], str[-5]
- String slicing - you can get part of the string by using slicing, for example
- For “hello”
  - s[1:4] is 'ell'
  - s[1:] is 'ello'
  - s[:] is 'Hello'
- Try the same for reverse index
- Functions to try for strings, len(), str.split(), str.strip(), str.lower(), str.upper()



	H	e	l	l	o
Forward index	0	1	2	3	4
Reverse index	-5	-4	-3	-2	-1

FIND IN STRING

- If you want to find a string within another string
  - If you just want to know it exists use the keyword ‘in’

```
txt = "The rain in Spain stays mainly in the plain"
x = "ain" in txt
print(x)
```

  - If you want to know where it exists we will use str_var.find

```
txt = "Hello, welcome to world of programming."
x = txt.find("welcome")
print(x)
```

STRING FORMATTING

- Two strings can be add str1 + str2 and it joins the string but a string and a number cannot be +. What do we do ?
  - Use str(num) which will convert number into a string
  - Or use string formatting much better to print friendly messages.

```
age = 36
txt = "My name is John, and I am {}"
print(txt.format(age))
```