1. Indexing Strings:

In [2]:
```
s = "PYTHON"
```

In [59]:
```
#a
print(s[0])
#b
print(s[5])
#c
print(s[3])
#d
print(type(s[3]))
```

```
P
N
H
<class 'str'>
```

2. Indexing Tuples:

In [8]:
```
t = (10, 20, 30, 40, 50, 60)
```

In [61]:
```
#a
print(t[0])
#b
print(t[2])
#c
t[2]=30.4
print(t)
```

```
10
30
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
Cell In[61], line 6
      4 print(t[2])
      5 #c
----> 6 t[2]=30.4
      7 print(t)

TypeError: 'tuple' object does not support item assignment
```

3. Indexing Lists and Lists of Lists

In [12]:
```
lst = [5, 15, 25, [35, 45, [55, 65, 75], 85], 95]
```

In [60]:
```
#a
print(lst[0])
#b
print(lst[4])
#c
print(lst[3][2])
```

```
#d
print(lst[3][2][1])
```

```
5
95
[55, 65, 75]
65
```

4. Lists of Lists as Arrays

In [16]:
```
matrix = [
    [1, 2, 3],
    [4, 5, 6],
    [7, 8, 9]
]
```

In [58]:
```
#a
print(matrix[1])
#b
print(matrix[0][2], "\n", matrix[1][2], "\n", matrix[2][2], "\n")
#c
matrix[1][1]=0
print(matrix)
```

```
[4, 0, 6]
3
 6
 9

[[1, 2, 3], [4, 0, 6], [7, 8, 9]]
```

5. Using Sets:

In [22]:
```
A = [1, 2, 2, 3, 4, 4, 5]
B = [4, 5, 5, 6, 7, 7,  8]
```

In [54]:
```
#a
A_but_its_a_set = set(A)
B_but_its_a_set = set(B)
```

In [62]:
```
#b/c/d/e
print(A_but_its_a_set | B_but_its_a_set)
print(A_but_its_a_set & B_but_its_a_set)
print(A_but_its_a_set - B_but_its_a_set)
print(A_but_its_a_set ^ B_but_its_a_set)
```

```
{1, 2, 3, 4, 5, 6, 7, 8}
{4, 5}
{1, 2, 3}
{1, 2, 3, 6, 7, 8}
```

6. Working with Dictionaries:

In [49]:
```
stock = {
    "apple": 50,
    "banana": 25,
    "orange": 30,
    "grape": 45
}
```

In [50]:
```
print(stock["apple"])
```

```
50
```

In [51]:
```
stock["pear"]= 40
print(stock)
```

```
{'apple': 50, 'banana': 25, 'orange': 30, 'grape': 45, 'pear': 40}
```

In [52]:
```
stock["banana"]=30
print(stock)
```

```
{'apple': 50, 'banana': 30, 'orange': 30, 'grape': 45, 'pear': 40}
```

In [53]:
```
del stock['orange']
print(stock)
```

```
{'apple': 50, 'banana': 30, 'grape': 45, 'pear': 40}
```