Upper School 1

Long Live the Listless!

Nasri Academy
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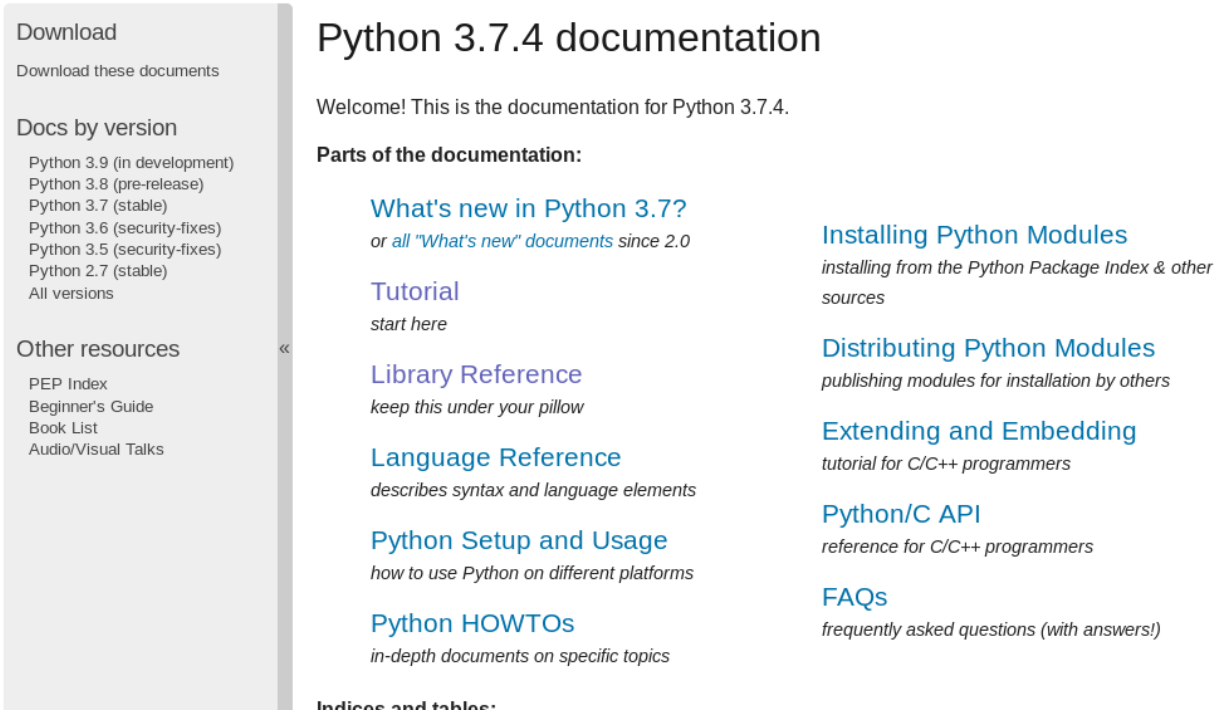
Overview

- **Review**
- **List**
- **Tuples, Sets, and Dictionaries**
- **Indices**
- **Classwork Assignment: (Dictionary)**
- **Introduction to matrices**

Review

- **https://docs.python.org/3/**
- **Click on tutorial to get started**



Lists

- **Written as a data type with comma separated values**
  - Values, that are separated by commas
- **Lists are created using brackets []**
- **Values are assigned to a variable like so**
  - ListA = [1, 2, 3, 4]
  - ListB = [“car”, “planes”, “boat”]
- **ListA, and ListB are the variables**
- **1,2, “car”, “planes” are values**

Lists (cont.)

Welcome | listMath.py

```
1  listA = [3, 4, 3, 3, 1, 2]
2  listB = [1, 1.1, 2, 2, 3, 3]
3
4  listC = ["fruit", "vegetable", "herb"]
5  listD = ["apple", "carrot", "basil"]
6
7  print(listA+listB)
8  print(listC+listD)
9  # what happens when you do listA+listD?
```

Lists (cont.)

What happens when your list is too long?

```
listLong = ["longstring", "longerString", "longestString",
            "evenLongerString", "ridicuouslyLongerString",
            "whyAretheseStringssoLong?"]
print(listLong)
```

```
listLong = ["longstring", "longerString", "longestString", \
            "evenLongerString", "ridicuouslyLongerString", \
            "whyAretheseStringssoLong?"]
print(longList)
```

Tuples

- **Tuples are not mutable**
  - Or non-mutable
  - It means they can’t be modified like lists
- **Tuples are parentheses ()**
  - Lists use brackets []
- **Use Tuples for constants, or things that you don’t want changed**

Sets

- **Sets are not mutable**
  - Or non-mutable
  - It means they can’t be modified like lists
- **Used to check for membership**
  - Sets use curls {}
- **Use sets to check for membership or to delete duplicate entries**
  - Ask if c is a set of B
    - B = {a, b, c, d, e, f}
  - You can’t have duplicate entries
    - B \= {a, b, a, d, e, f}

Indices

- **To search through lists, tuples, and sets we use an index**
  - A = [1, 2, 3, 4]
- **An index is like a house address**
  - A[0] = 1
  - A[1] = 2
  - A[2] = 3
  - A[3] = 4
- **The index starts at 0, and runs through 3 in this example**
  - 0, 1, 2, 3
- **What if?**
  - B = [1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1028]
  - What is B[2] + A[3]
  - What is A[5] + B[0]

Classwork Assignment: (Dictionary)

- **There are 100’s of pokemon**
  - (originally referred to as pocket monsters)
- **Make a dictionary containing your favorite 10.**
  -
  - Set the key to their name
  - For reference visit: https://pokemondb.net/pokedex/national

Classwork Assignment: (Dictionary)

- **Mr. Figueroa’s favorite**

Introduction to matrices

- **Singular Matrix**
- **Plural Matrices**
  - Aka the rice of mathematics
- **The index address uses 2 values**
  - A[1,2] = A_{12}

$$\boldsymbol{A} = \begin{bmatrix} A_{11} & A_{12} & \cdots & A_{1n} \\ A_{21} & & & A_{2n} \\ \vdots & & & \vdots \\ A_{n1} & A_{n2} & \cdots & A_{nn} \end{bmatrix}$$

$$\boldsymbol{A} = \begin{bmatrix} A_{11} & A_{12} & A_{13} \\ A_{21} & A_{22} & A_{23} \\ A_{31} & A_{32} & A_{33} \end{bmatrix}$$