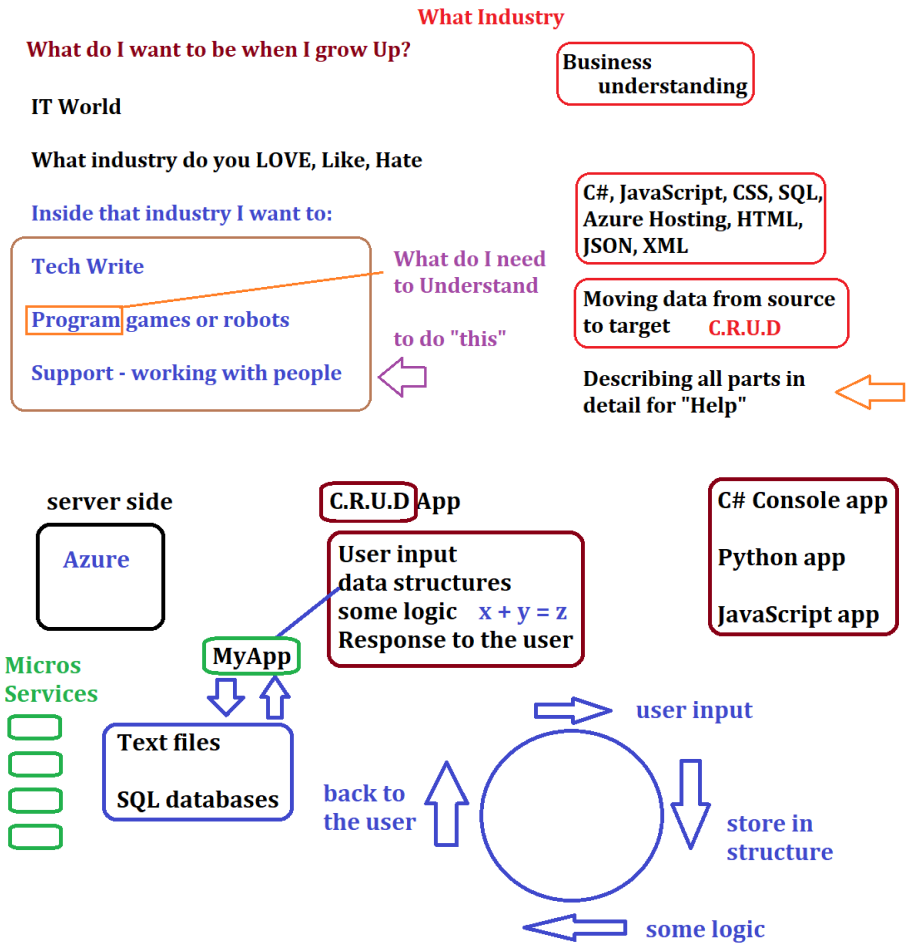
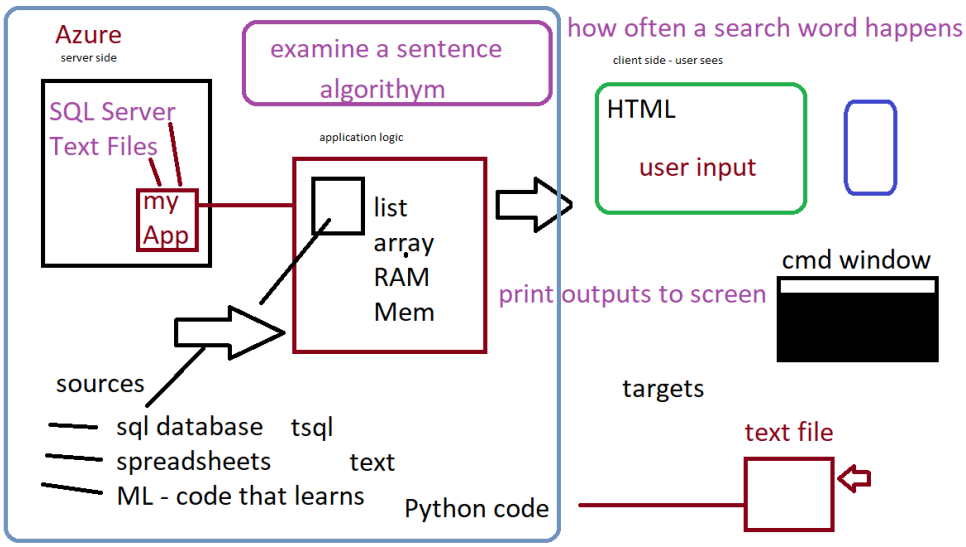
App Structure: C.R.U.D. App – 2 kinds of pages – forms collect – displays content



Azure as "Server Side"



Vocabulary C.R.U.D.

Data structure - in RAM or a database saved on a disk..

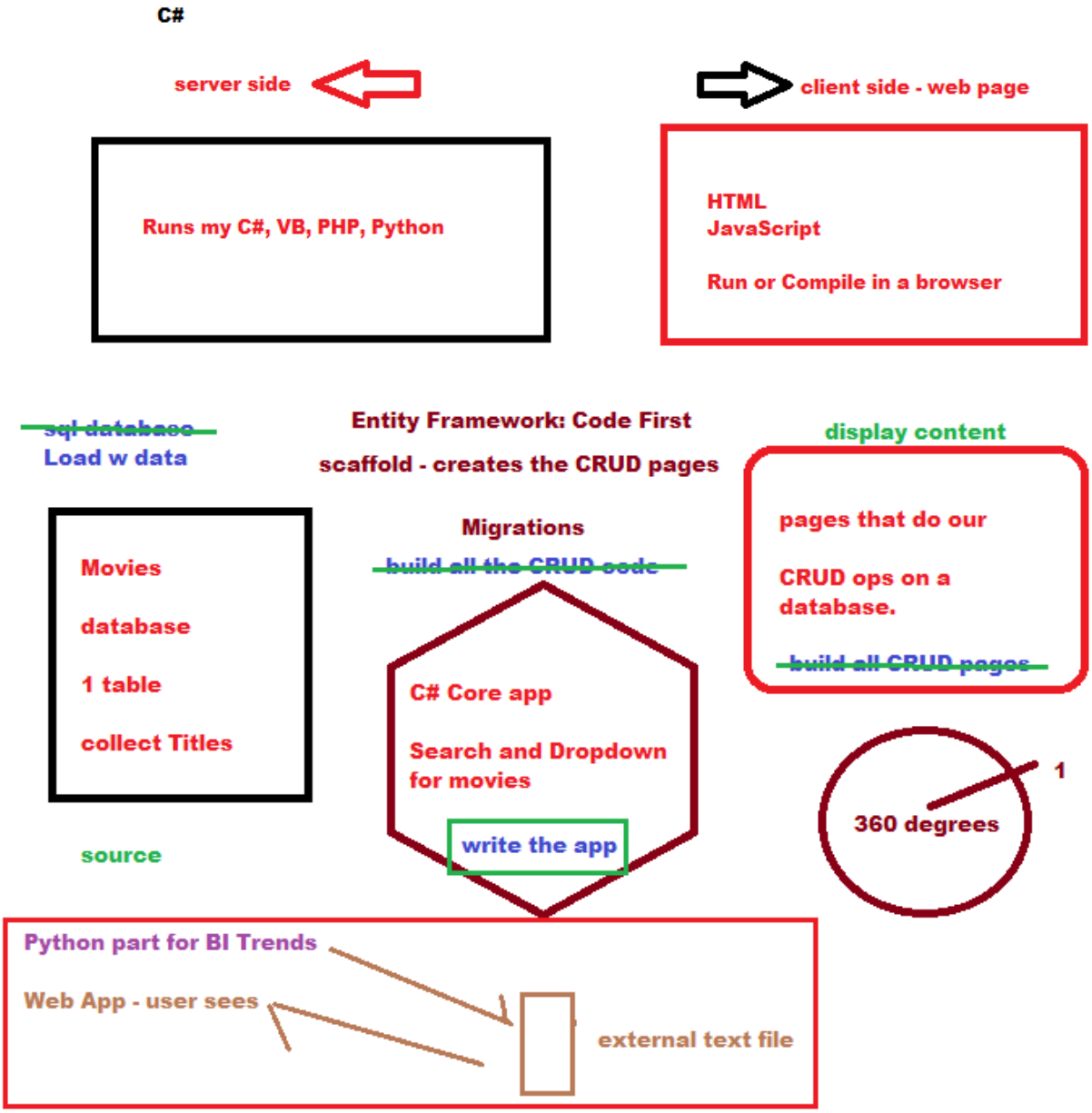
-OPERATIONS-T-SQL

CREATE - INSERT -

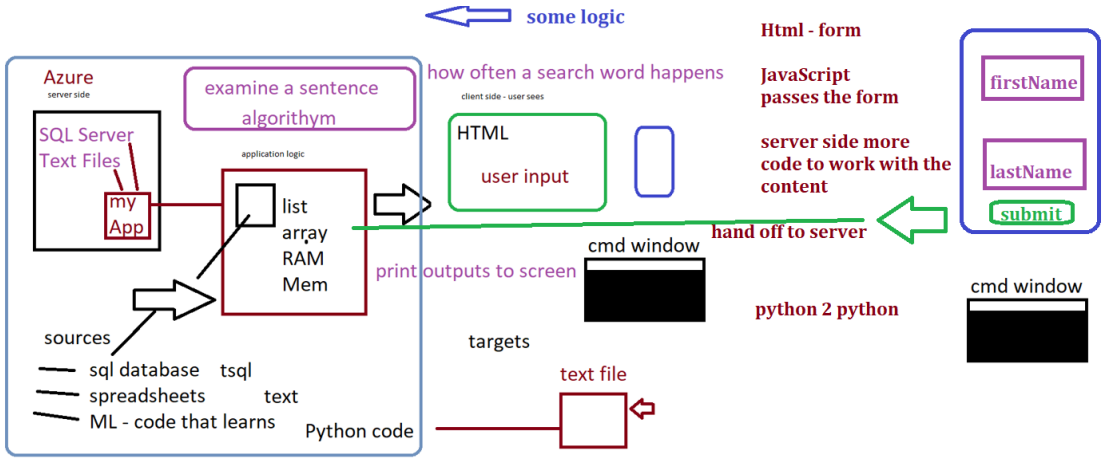
READ - SELECT -

UPDATE - UPDATE - APPEND

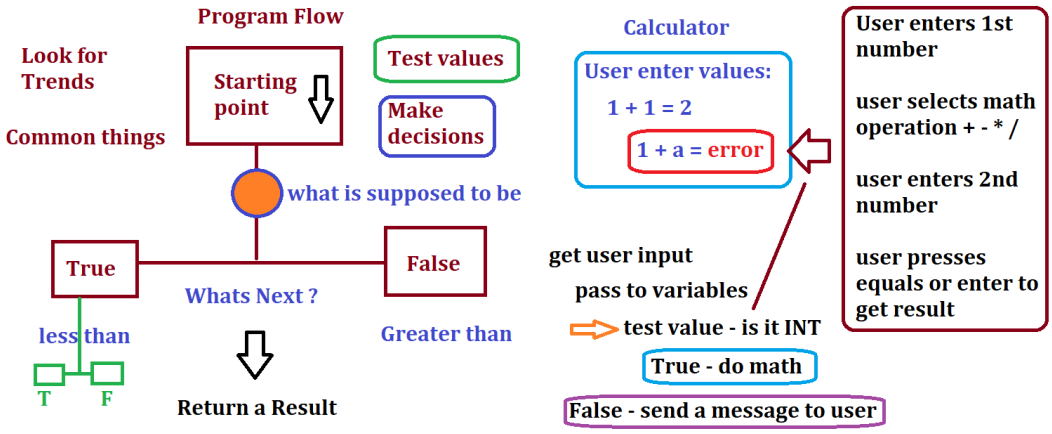
DELETE - DELETE -



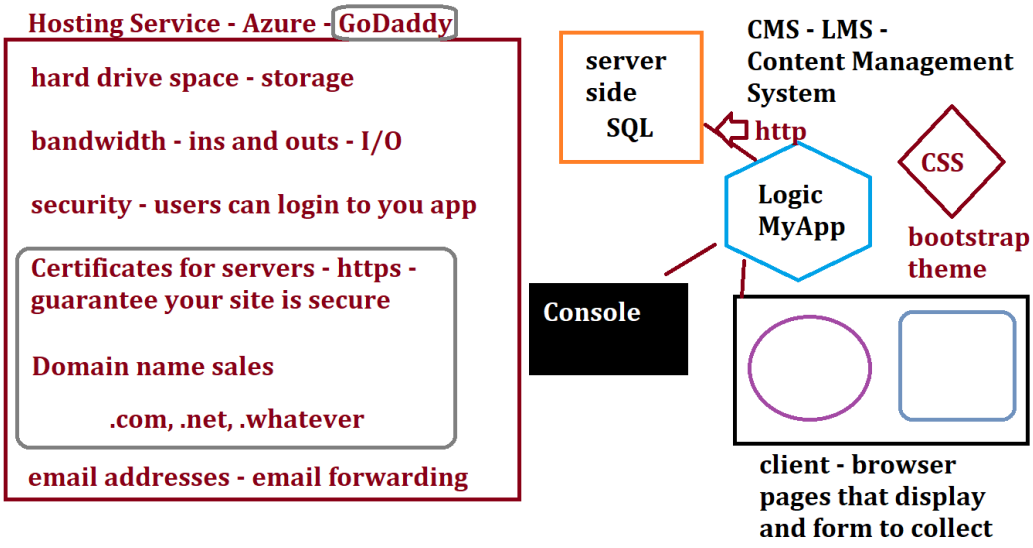
More detail on "Client": Separating the "Parts" then connect them



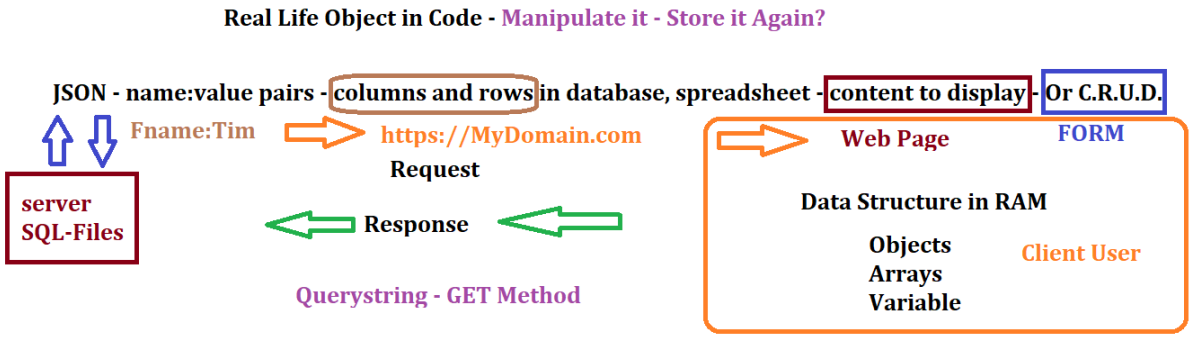
Controlling Program Flow: What happens or happens next?



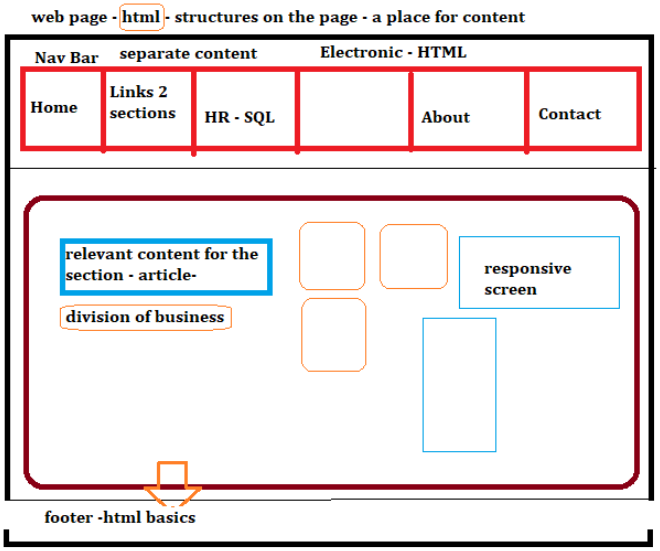
Hosting

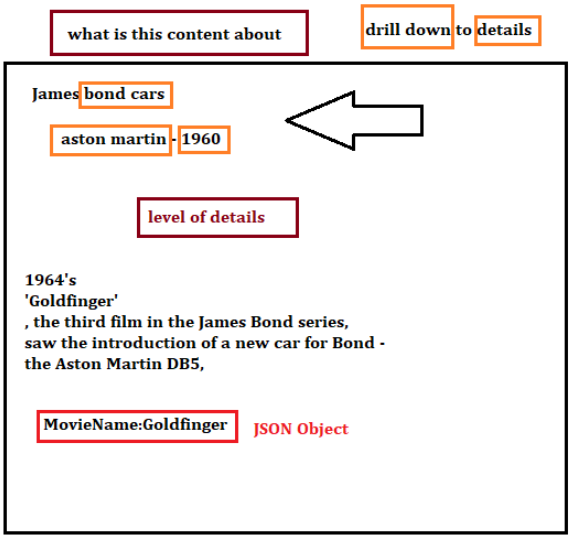


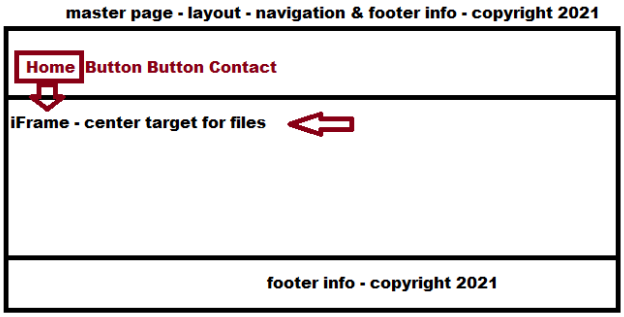
Thinking about moving content from Point A to Point B…

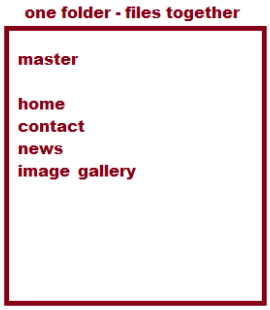


Concept of a Master or Layout page: Single source Common Navigation & Footer – Using <Iframe>

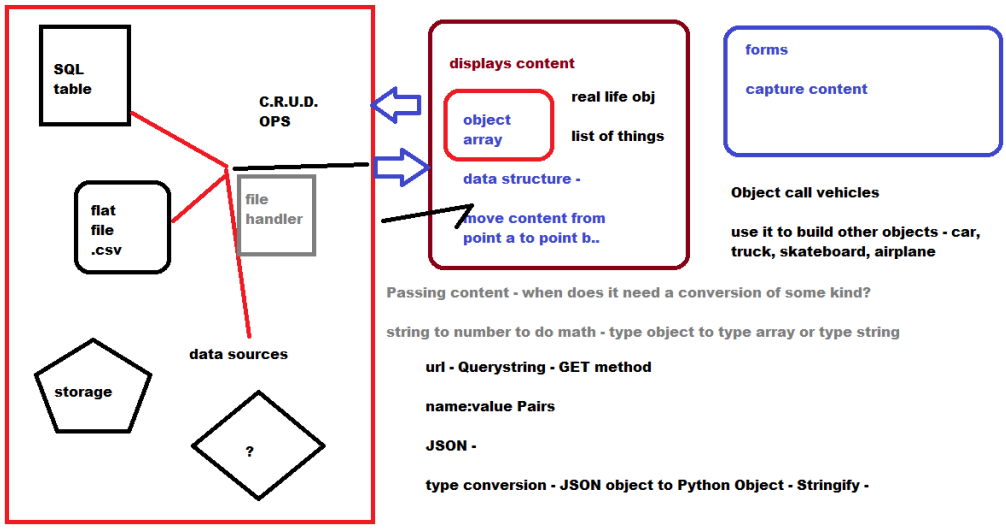




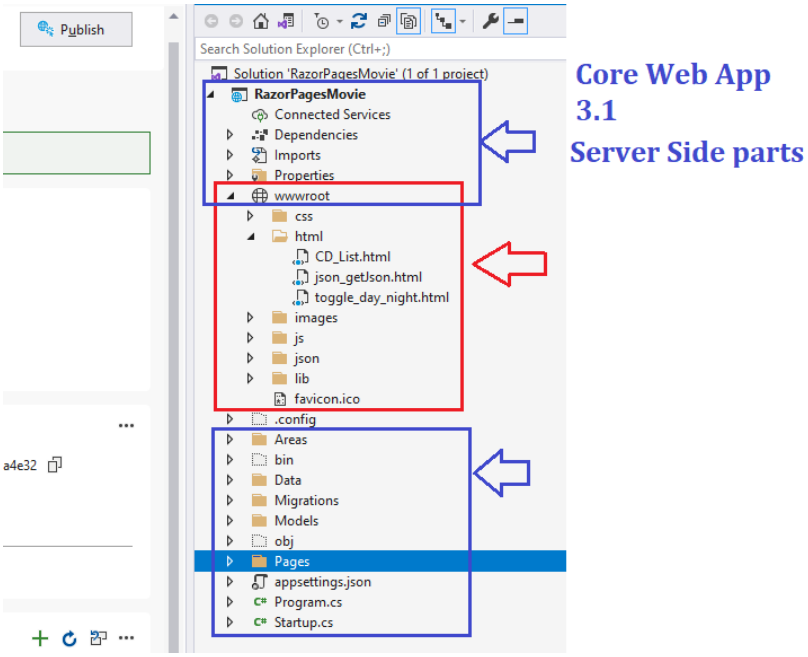




Content Sources & Targets – Coded data structures in this case



Core 3.1 Web App Folder Structure from Visual Studio Template



Finding HTML elements: Traversing the DOM: Document Object Model

html element

javaScript to do something

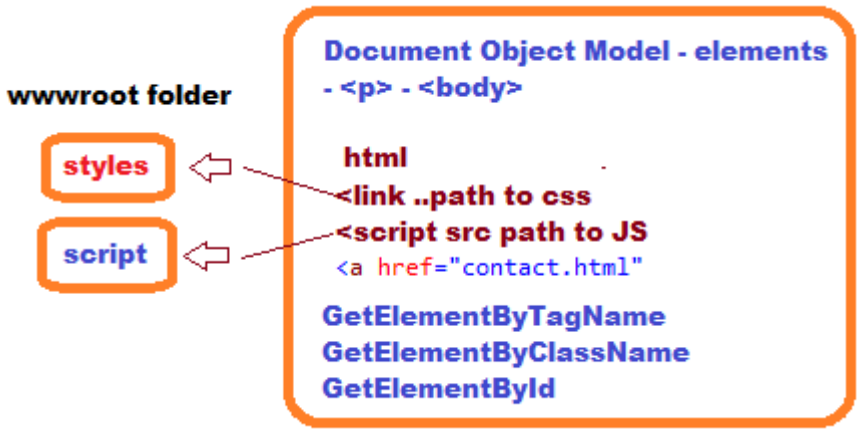
css to make it look like something

Traversing the DOM - Up or down
Document Object Model - "tree"

getElementByID - ID → **i get one unique item - ID**

class name - group by class name

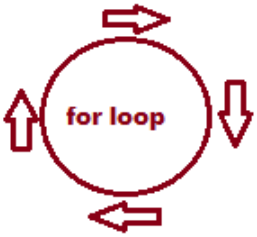
element itself - <p> → **find all the same element <p> as a group**



Arguments, Values, Parameters, Variables: Passing Content in Code

```
<p id="demo"></p>

<script>
var x = myFunction(4, 3);

document.getElementById("demo").innerHTML = x;

function myFunction(a, b) {
  return a * b;
}
</script>
```

For Loop Diagram



array of values
[a, b, c, d, e]

content
one value - Tim
name=value pairs

Items
List
Example 1
Example 2
Example 3
Example 4
Example 5

length of the array
- how many items are in it
-use this to stop a loop action

Web Page Positions Content with Coordinates: 0, 0 Upper left corner is the starting point

0 web page coordinates - upper left = zero zero

0

```
<img  />
```

```
<p> The function bigImg() is triggered when the user moves the mouse pointer over the image. </P>
```

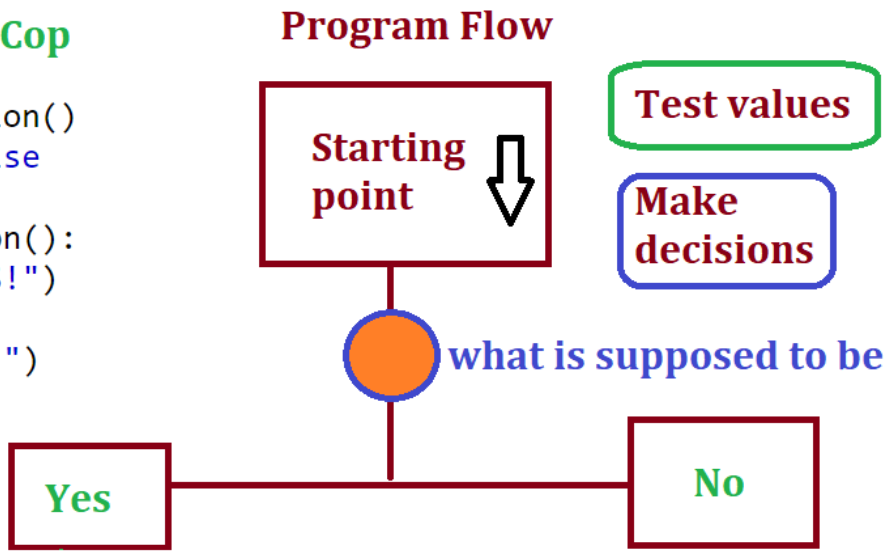
Old School Table with images for borders

```
<table>
<Tr><Td></td></tr>
```

Program Flowcharts

Play Traffic Cop

```
def myFunction()
  return False

if myFunction():
  print("YES!")
else:
  print("NO!")
```



Real Life Objects, Properties, and Methods

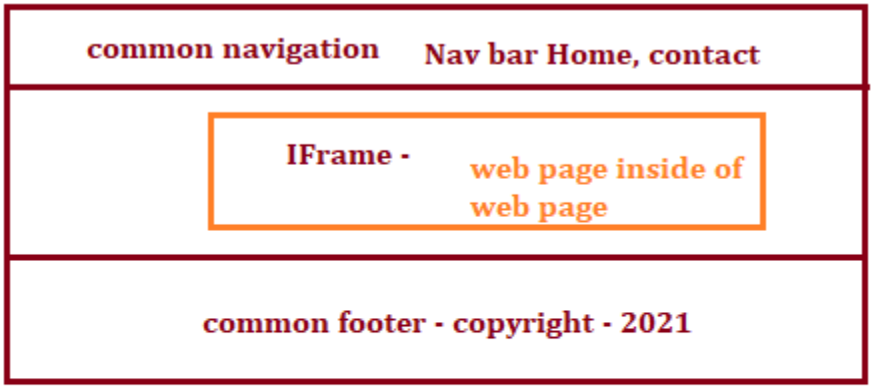
In real life, a car is an **object**.

parent to a car - vehicle
air planes - trucks

A car has **properties** like weight and color, and **methods** like start and stop:

nouns verbs

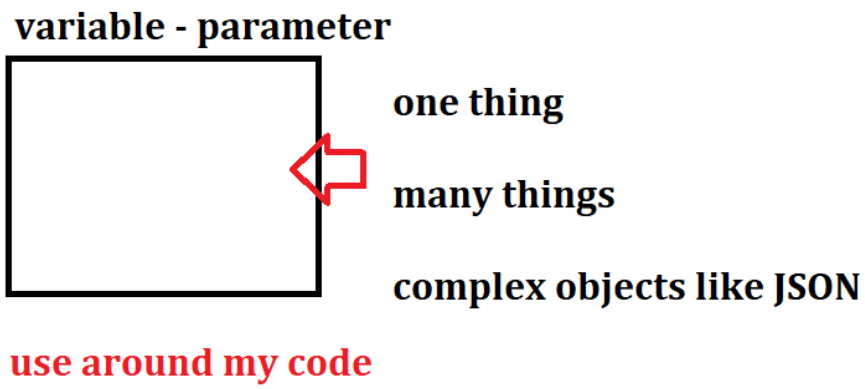
Object	Properties	Methods
	car name = Fiat car model = 500 car weight = 850kg car color = white	car start() car drive() car brake() car stop()



My App does This =

How do I react to users?

Variables: The "Empty Bucket" used to pass values, functions, data structures inside code blocks



JavaScript & Node.js

Node.js is fast, high-performing, and able to handle real-time applications and heavy data flows.

- An example use case might be building a device that can send control commands to your standing desk.
- You could install Node.js on your IoT board, or use a device that comes with Node.js preinstalled.
- You'd then write your application logic in JavaScript and deploy it on the device.

vscode-docs-archive/nodejs-tutorial.md at master · microsoft/vscode-docs-archive (github.com)

Build JavaScript applications with Node.js - Training | Microsoft Learn

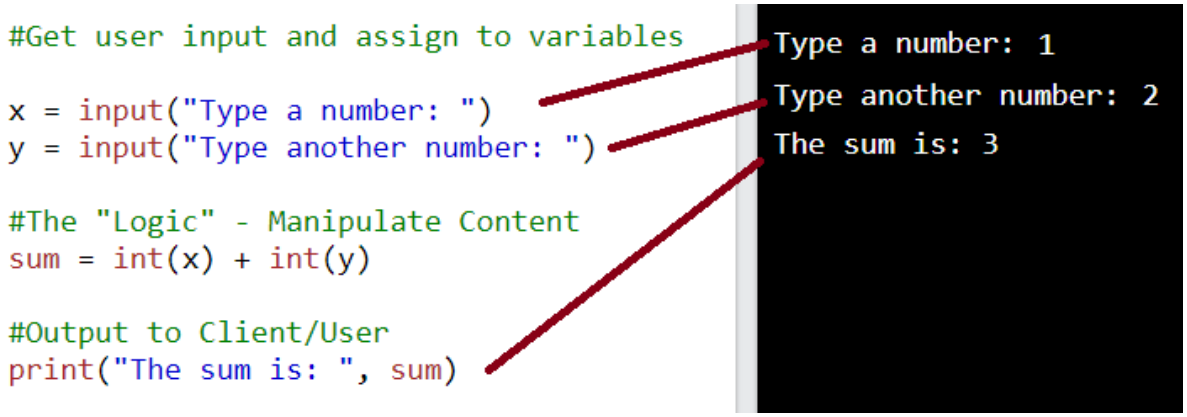
Because Node.js can interpret and run JavaScript code on a host machine outside of a browser, the runtime has direct access to the operating system I/O, file system, network and handles incoming tasks.

In Node.js, I/O operations such as reading or writing to a file on the disk, or making a network call to a remote server, are considered blocking operations. A blocking operation blocks all subsequent tasks until the operation is finished before the next operation can proceed.

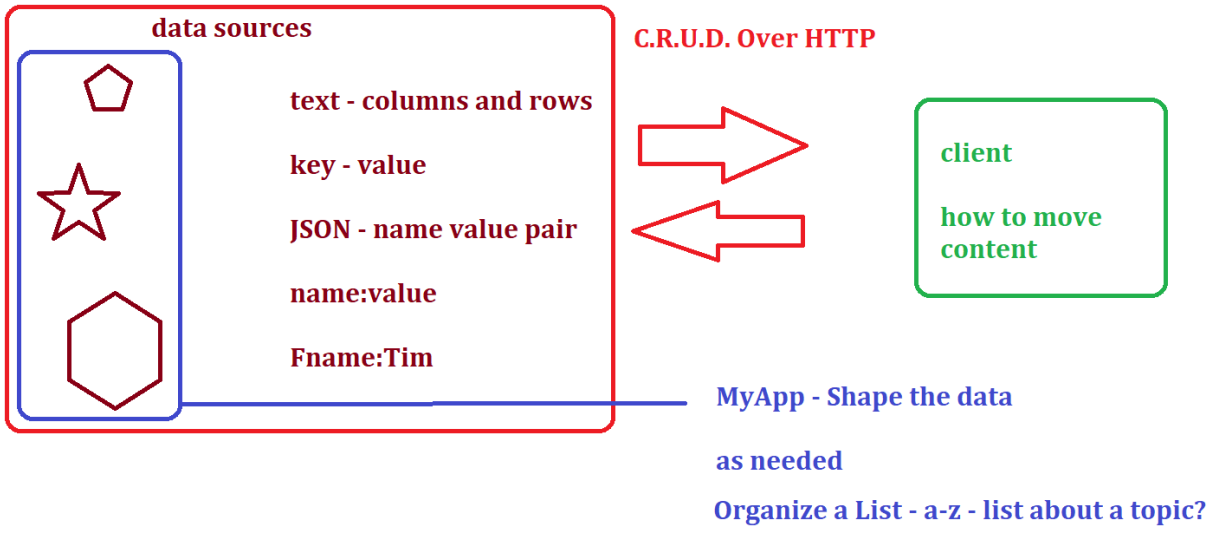
Node.js has a built-in module called HTTP, which allows Node.js to transfer data over the Hyper Text Transfer Protocol (HTTP). Node.js HTTP Module (w3schools.com)

- Azure for JavaScript and Node.js developers | Microsoft Learn

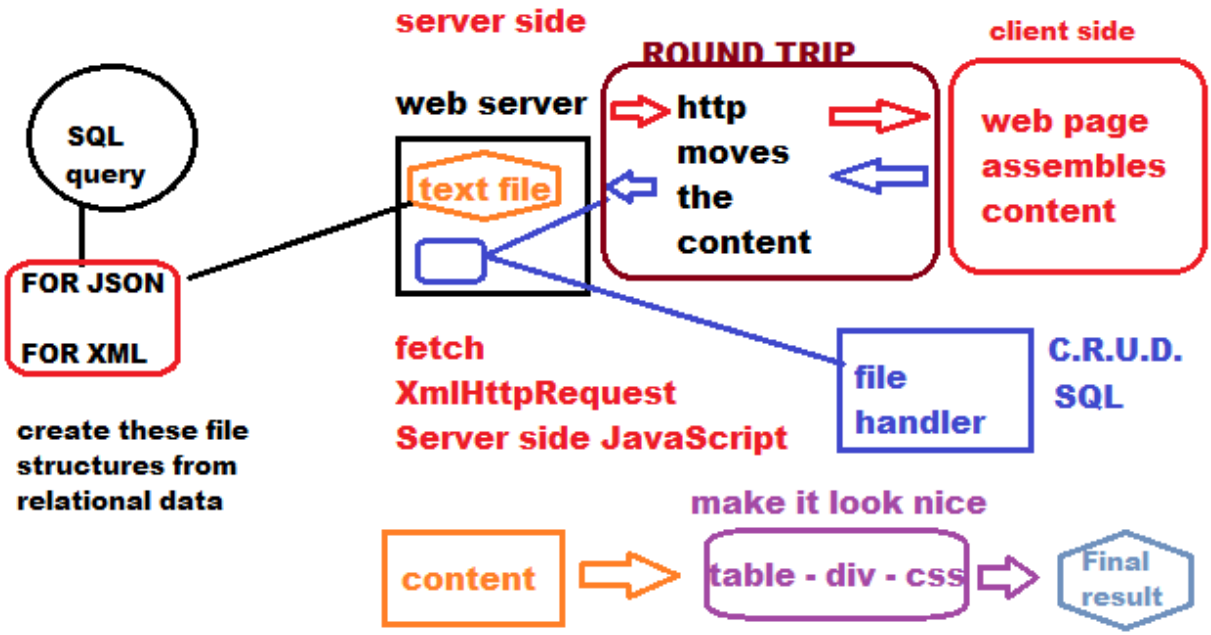
Blend of Python and other discussions



What is the "data structure" (JSON?) used to pass data with C.R.U.D. Ops?

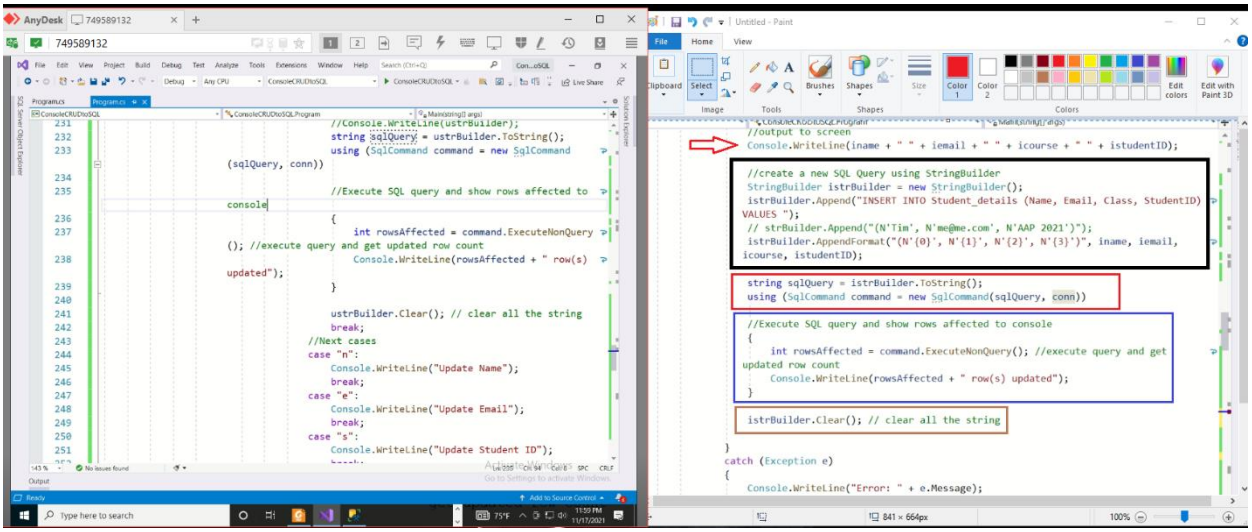


From Point A to Point B


server side
ROUND TRIP
client side
SQL
query
web server
http
moves
the
content
web page
assembles
content
text file
FOR JSON
FOR XML
fetch
XmlHttpRequest
Server side JavaScript
file
handler
C.R.U.D.
SQL
create these file
structures from
relational data
make it look nice
content
table - div - css
Final
result

Creating connection string with StringBuilder

```
//output to screen
Console.WriteLine(iname + " " + iemail + " " + icourse + " " + istudentID);

//create a new SQL Query using StringBuilder
StringBuilder istrBuilder = new StringBuilder();
istrBuilder.Append("INSERT INTO Student_details (Name, Email, Class, StudentID)
VALUES ");
// strBuilder.Append("(N'Tim', N'me@me.com', N'AAP 2021')");
istrBuilder.AppendFormat("(N'{0}', N'{1}', N'{2}', N'{3}')", iname, iemail,
icourse, istudentID);

string sqlQuery = istrBuilder.ToString();
using (SqlCommand command = new SqlCommand(sqlQuery, conn))

//Execute SQL query and show rows affected to console
{
    int rowsAffected = command.ExecuteNonQuery(); //execute query and get
updated row count
    Console.WriteLine(rowsAffected + " row(s) updated");
}

istrBuilder.Clear(); // clear all the string

}
catch (Exception e)
{
    Console.WriteLine("Error: " + e.Message);
}
break;
case "u":UPDATE Student Record - change sql statement - what fields get updated?
    try
    {
```



Creating Objects/Classes: Real World to the Machine

__init__

The `__init__` method is similar to **constructors** in `C++` and `Java`. Constructors are used to initialize the object's state. The task of constructors is to initialize(assign values) to the data members of the class when an object of class is created. Like methods, a constructor also contains collection of statements(i.e. instructions) that are executed at time of Object creation. It is run as soon as an object of a class is instantiated. The method is useful to do any initialization you want to do with your object.

Example:

```
# A Sample class with init method
class Person:

    # init method or constructor
    def __init__(self, name):
        self.name = name

    # Sample Method
    def say_hi(self):
        print('Hello, my name is', self.name)

p = Person('Nikhil')
p.say_hi()
```

Output: **Hello, my name is Nikhil**

Working with JSON

Convert from JSON to Python:

```
import json

# some JSON: Give variable 'x' a value from external source
x =  '{ "name":"John", "age":30, "city":"New York"}'

# parse x:
y = json.loads(x)

# the result is a Python dictionary:
print(y["age"])
```

imports pandas and uses a data frame:

Python running a Python script in Power BI Desktop Copy

```
import pandas as pd
data = [['Alex',10],['Bob',12],['Clarke',13]]
df = pd.DataFrame(data,columns=['Name','Age'],dtype=float)
print (df)
```

When run, this script returns:

Python Copy

```
     Name   Age
0    Alex  10.0
1     Bob  12.0
2  Clarke  13.0
```

Containers

var x = 5 //numeric can do math - has no quotes around the 5

var x = "5" - string

Know the value of variable as it moves around you code.

array = [0, 1, 2]

variables in other containers that could be a variable

JSON - Name:Value pairs

Key:Value pairs

x + y = z

myNumbers = {};

```
const letters = new Set(["a","b","c"]);
```

containers of some sort - how to access content - C.R.U.D.

Can it be sorted ?

Are duplicate values allowed?

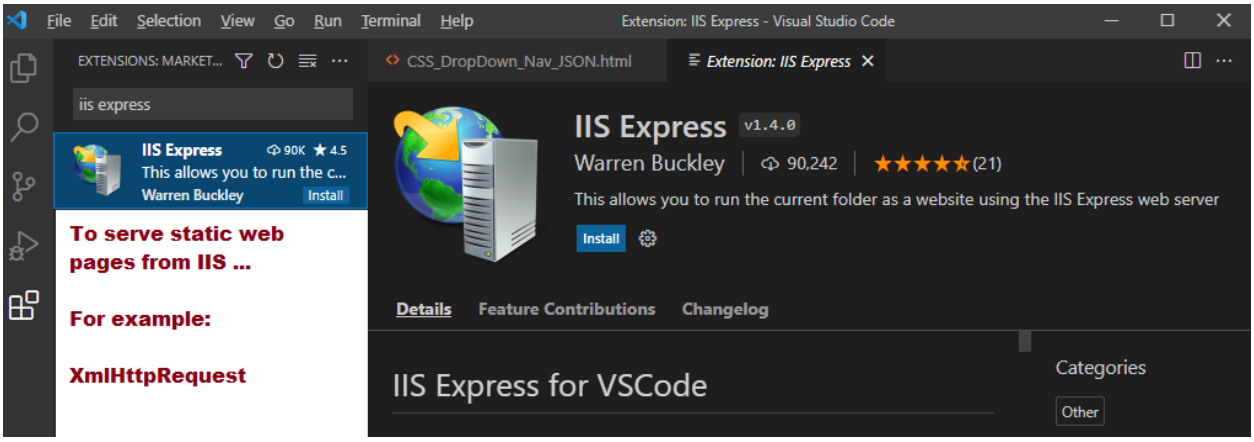
Can I change or add values

Homemade Iterable

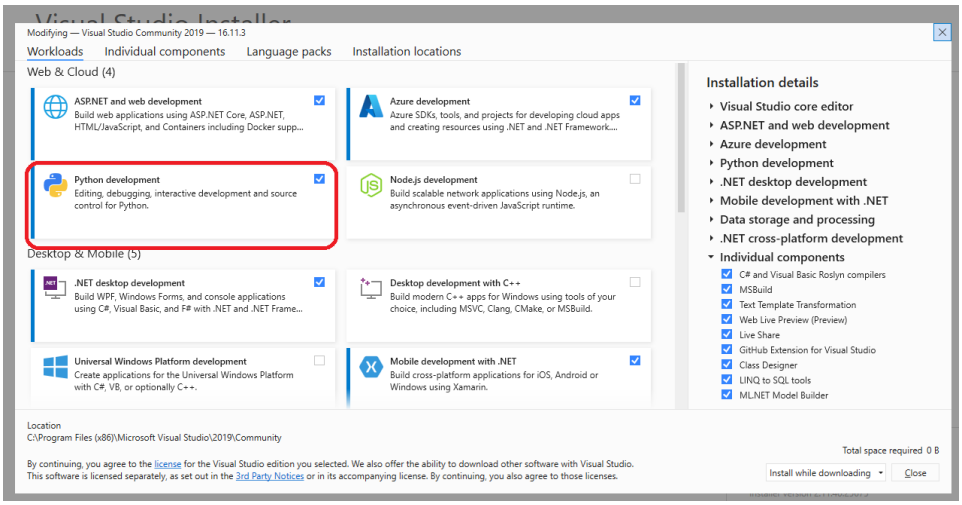
```
// Home Made Iterable
function myNumbers() {
  let n = 0;
  return {
    next: function() {
      n += 10;
      return {value:n, done:false};
    }
  };
}
```

```
// Create Iterable
const n = myNumbers();
n.next(); // Returns 10
n.next(); // Returns 20
n.next(); // Returns 30
```

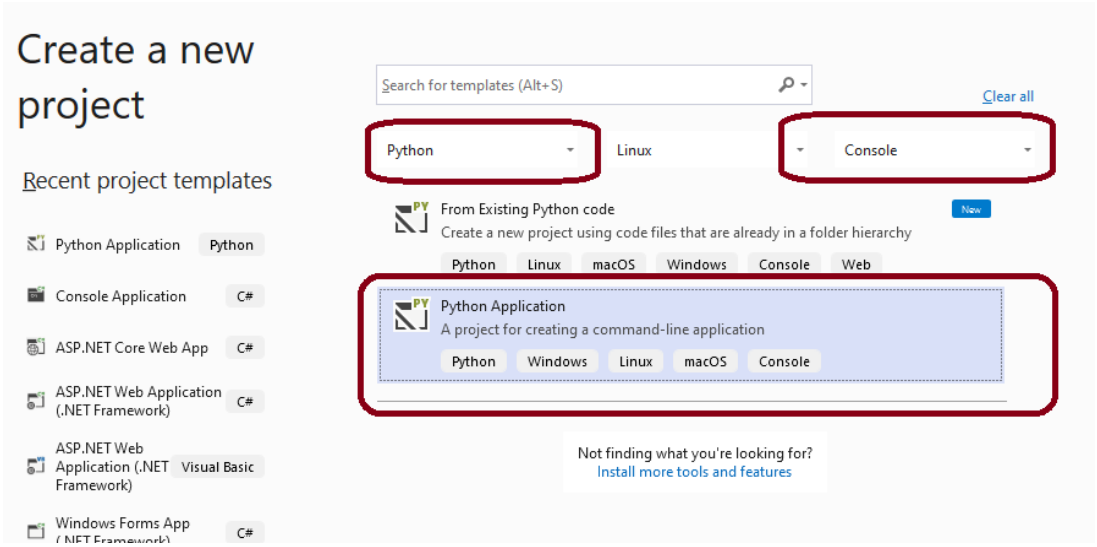
Add IIS Express Support to Visual Studio Code



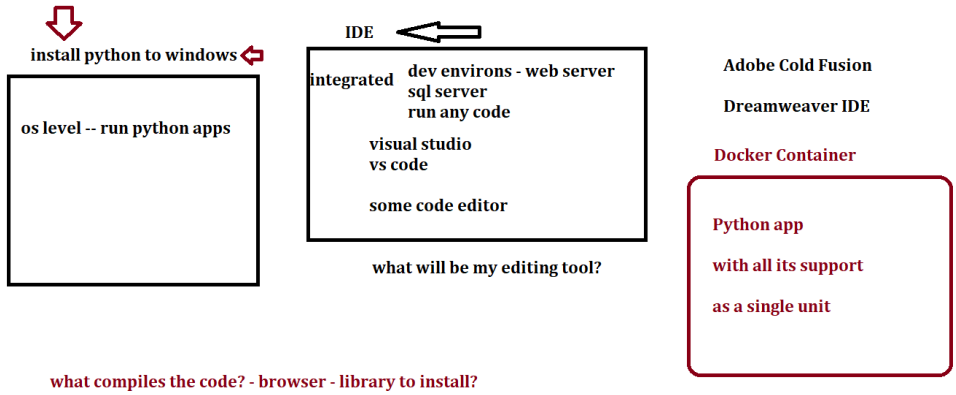
Add Python Support to Visual Studio



Create New Project



Install directly to OS



Things to try

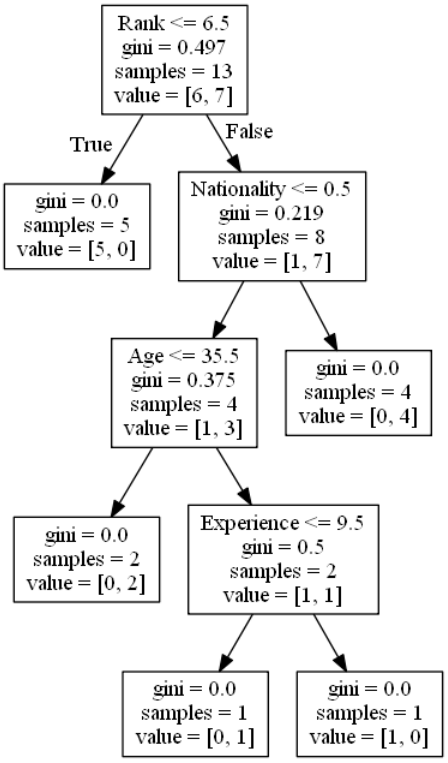
[How to Add Two Numbers in Python (w3schools.com)]

Why Do I Python?

https://learn.arcgis.com/en/projects/create-a-map/

Connect to – Manipulate Content using Modules, Sources, Output to Target

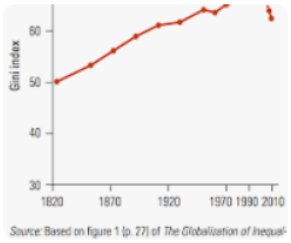
1. A Decision Tree is a Flow Chart, and can help you make decisions based on previous experience.
2. The decision tree uses your earlier decisions to calculate the odds for you to wanting to go see a comedian or not.
3. Example person has
    a. Registered every time there was a comedy show in town
    b. Registered some information about the comedian
    c. Registered if he/she went or not.
4. https://www.w3schools.com/python/python_ml_decision_tree.asp



5.
6. https://www.w3schools.com/python/showpython.asp?filename=demo_ml_dtree4
7. The Gini index, or Gini coefficient, is a measure of the distribution of income across a population developed by the Italian statistician Corrado Gini in 1912. It is often used as a gauge of economic inequality, measuring income distribution or, less commonly, wealth distribution among a population.

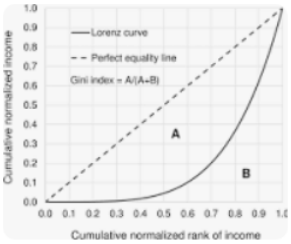
   What is Gini method?

   The Gini index, or Gini coefficient, is **a measure of the distribution of income across a population developed** by the Italian statistician Corrado Gini in 1912. It is often used as a gauge of economic inequality, measuring income distribution or, less commonly, wealth distribution among a population.

   How is Gini calculated?

   The Gini index is calculated as the **ratio of the area between the perfect equality line and the Lorenz curve (A) divided by the total area under the perfect equality line (A + B)**. Jun 4, 2020

8. https://www.w3schools.com/python/python_mysql_where.asp

References

Python

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3. Get started with Python in Visual Studio Code:
    a. https://docs.microsoft.com/en-us/learn/modules/python-install-vscode/
4. Get Started Tutorial for Python in Visual Studio Code
5. Learning Python - First Python Program With Visual Studio Code (c-sharpcorner.com)

Visual Studio

6. Visual Studio | Python documentation:
    a. https://docs.microsoft.com/en-us/visualstudio/python/?view=vs-2022space
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8. Quickstart - Create a Python project using a template - Visual Studio (Windows) | Microsoft Docs
9. Python web app using Visual Studio (not from template – Install Flask for routing)
    a. https://docs.microsoft.com/en-us/visualstudio/ide/quickstart-python
10. Create Power BI visuals by using Python
    a. https://docs.microsoft.com/en-us/power-bi/connect-data/desktop-python-visuals
11. Run Python scripts in Power BI Desktop
    a. https://docs.microsoft.com/en-us/power-bi/connect-data/desktop-python-scripts#run-python-scripts
12. Do I Time Stamp?
    a. https://www.w3schools.com/python/python_datetime.asp
13. C.R.U.D
    a. https://www.w3schools.com/python/python_json.asp
14. `json.loads()` method & XmlHttpRequest
15. Get started using Python for web development on Windows:
    a. https://docs.microsoft.com/en-us/windows/python/web-frameworks
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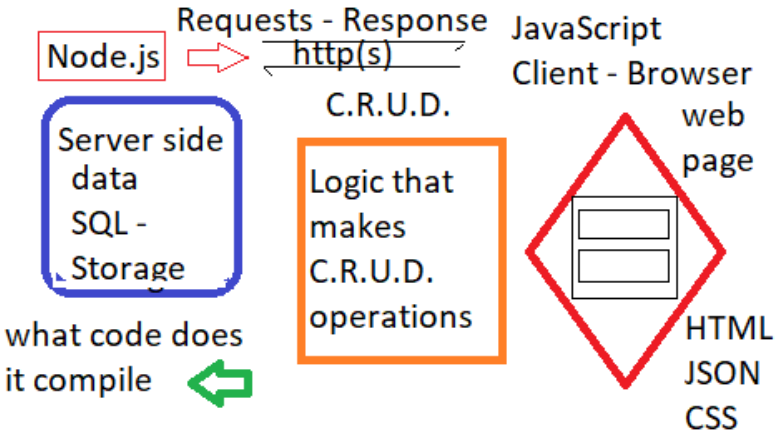
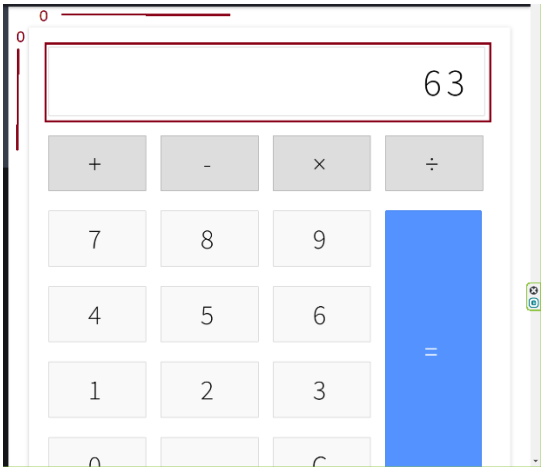
    a. https://powerbi.microsoft.com/en-us/power-bi-esri-arcgis/
17. ArcGIS Maps
    a. https://learn.arcgis.com/en/projects/create-a-map/
    b. https://doc.arcgis.com/en/arcgis-online/reference/add-layers.htm
    c. https://www.w3schools.com/code/tryit.asp?filename=G5H6ULIGCCCB
18. Pipelines
    a. https://docs.microsoft.com/en-us/azure/devops/pipelines/ecosystems/python-webapp?view=azure-devops
19. Space

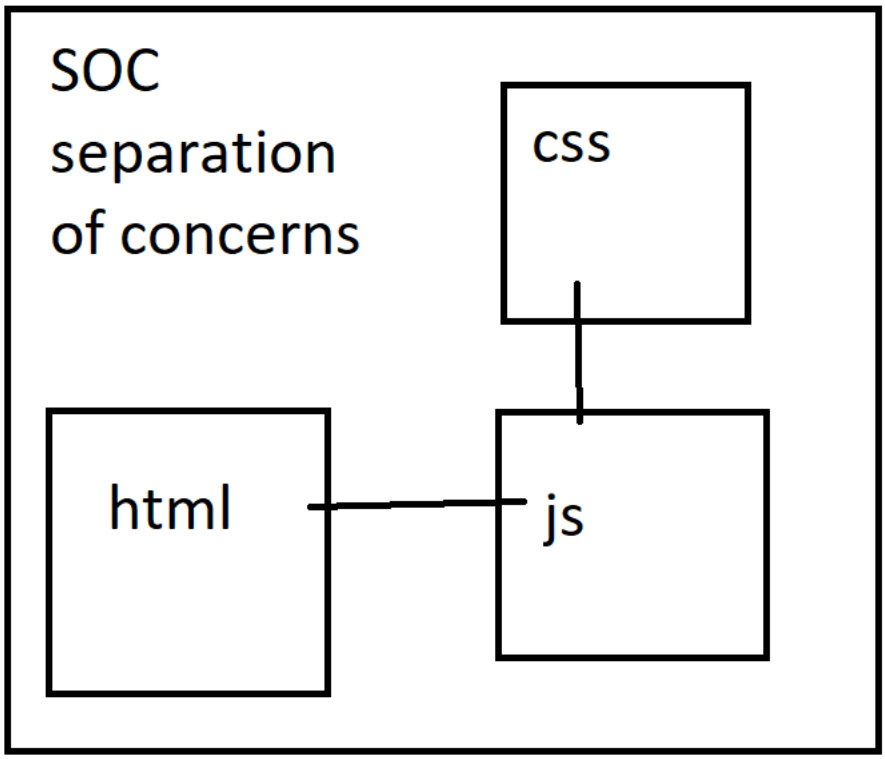
New notes – JsPy – 01/09/23



https://www.w3schools.com/asp/coll_querystring.asp

https://www.w3schools.com/nodejs/ref_querystring.asp





Create Calculator: from CMD – create folder – open VS – create files

1. Introduction to Node.js with JavaScript - Training | Microsoft Learn
2. Build JavaScript applications with Node.js - Training | Microsoft Learn
3.

For the advanced (Python easy – JS Overview (n-riesco.github.io)

1. What is the Jupyter Notebook? — Jupyter/IPython Notebook Quick Start Guide 0.1 documentation (jupyter-notebook-beginner-guide.readthedocs.io)
1. Jupyter Notebooks in Visual Studio Code
2. Install nodejs and execute javascript in Jupyter Notebook Anaconda - PythonBaba.com
3. JavaScript Charts on Jupyter Notebooks | by Andrea Ialenti | Towards Data Science
4. The IJavascript kernel executes Javascript code inside a Node.js session.