

How to Think, Research and Develop – Few Tips

Kindly note, spoon feeding does not work in software development (especially in Artificial Intelligence-Machine Learning), because **complexity, fast pace evolution and research oriented nature of content.** So, how you think, plan, solve, for development matters a lot.

Tips:

- **First level**, Read – software development editor (our case: Visual Studio Code- VSCode, help – IntelliSense.

Function – IntelliSense View as:

A screenshot of the Visual Studio Code interface. On the left is a file tree showing a directory structure with files like Case2-1-Functions.py, Case2-2-FileOperations.py, etc. In the center, there is a code editor window with the following Python code:

```
# Next run
print ("Next run")
# Example: Python library Function
import math

# sqrt computes the square root
square_root = math.sqrt(4)

print("Square Root: " + str(square_root))

# pow() computes the power
power = pow(2, 3)

print("2 to the power of 3 is: " + str(power))

# Next run
print ("Next run")
# Note that the order of parameters does not matter.
# Function definition is here
def printinfo(name, age):
    print("Hello! My name is " + name + " and I am " + str(age) + " years old.")

printinfo("Naveed", 25)
```

The cursor is at the end of the line `print("Square Root: " + str(square_root))`. A red arrow points from the text "Function – IntelliSense View as:" to the `sqrt` method in the dropdown menu. The dropdown shows the `sqrt` method with its documentation: "Return the square root of x." Below the dropdown, the status bar shows "Used Positional arguments: 1".

Function parameters – input / return type- brief help line – view:

A screenshot of the Visual Studio Code interface, similar to the previous one. The file tree and code editor are identical. The cursor is now at the end of the line `square_root = math.sqrt(4)`. A red arrow points from the text "Function parameters – input / return type- brief help line – view:" to the `sqrt` method in the dropdown menu. The dropdown shows the `sqrt` method with its documentation: "Return the square root of x." and the parameter annotation "(x: SupportsFloatOrIndex, /) -> float".

Explicitly, give time to explore and study, this aspect. Important, very important.

- **Second Level:** Get Google to land page on **official documentation**, some pattern for search from yesterday class.

Google

"python official documentation file operation .read()"

"python official documentation map"

"python official documentation reduce"

See view as:



Google

python official documentation file operation .read()

All Videos Images Short videos Forums Web News More Tools

Python Docs
<https://docs.python.org/3/library/os.html#os.read>

File and Directory Access — Python 3.13.2 documentation

The modules described in this chapter deal with disk files and directories. For example, there are modules for reading the properties of files, manipulating ...

Pathlib Os.path — Common pathname ... Shutil Tempfile — Generic ...

Python.org
<https://docs.python.org/3/doc/>

Our Documentation

Browse the docs online or download a copy of your own. Python's documentation, tutorials, and guides are constantly evolving. Get started here.

Python Version Python Examples Searching Python 2 Beginner's Guide

Missing: operation | Show results with: operation

Note results from official python, web site.

Such documentation, is detail oriented , a lot of theory, have detail for all function details, all input parameters, all output parameter. Reading help, is beneficial, when you need very , detail orientation.

Note links from official web site of python as below.

<https://docs.python.org>

Very important.

Sometimes, it is not possible read all information, so you can skim read, the content.

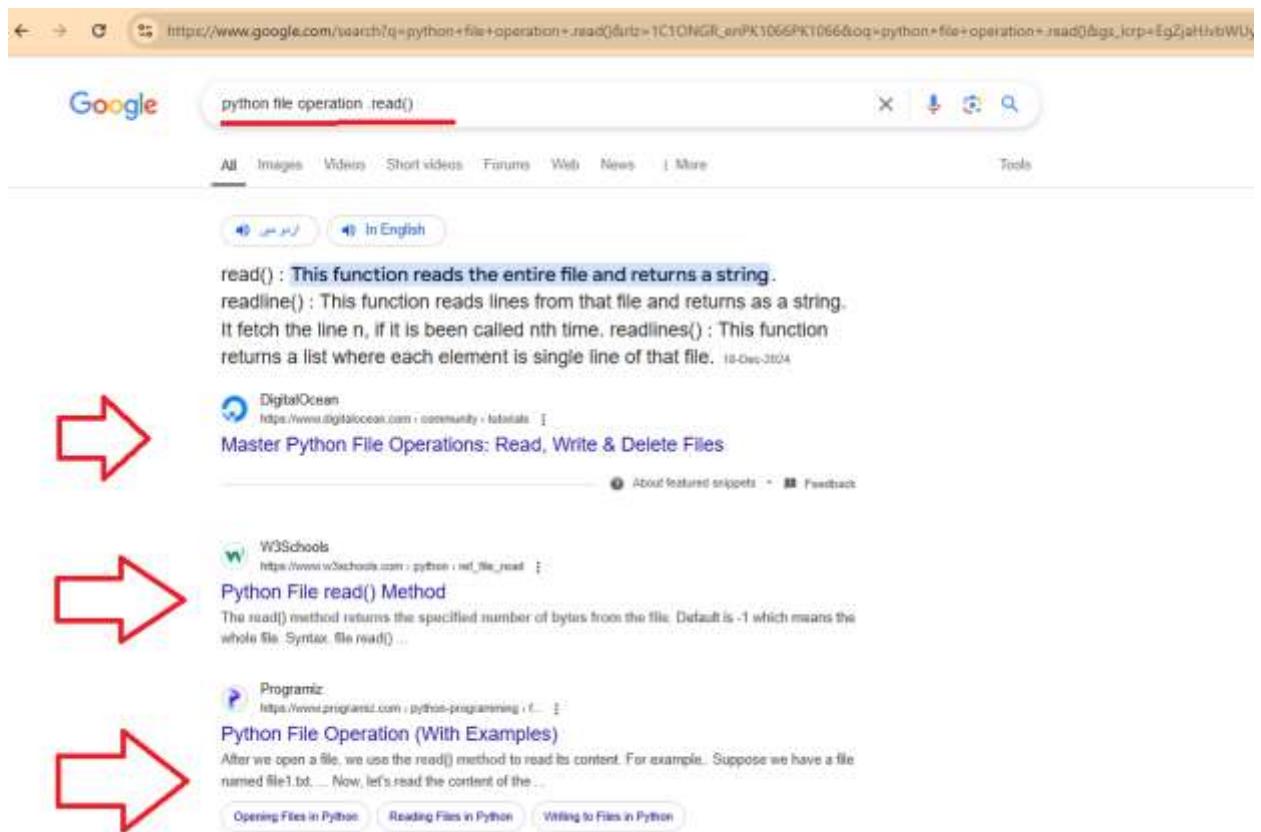
- **Third Level:** Get Google to land page on third party content, blog, tutorial and , some pattern for search from yesterday class.

“python file operation .read()”

“python map”

“python reduce”

Such links and its material, is good for reading to create a foundation for a concept. **This type of information, is ideal for fast, medium size, medium complexity content reading.** It is not official python documentation, so there is chance of – miss-guided information from third party. Or the information is obsolete, mean old content.



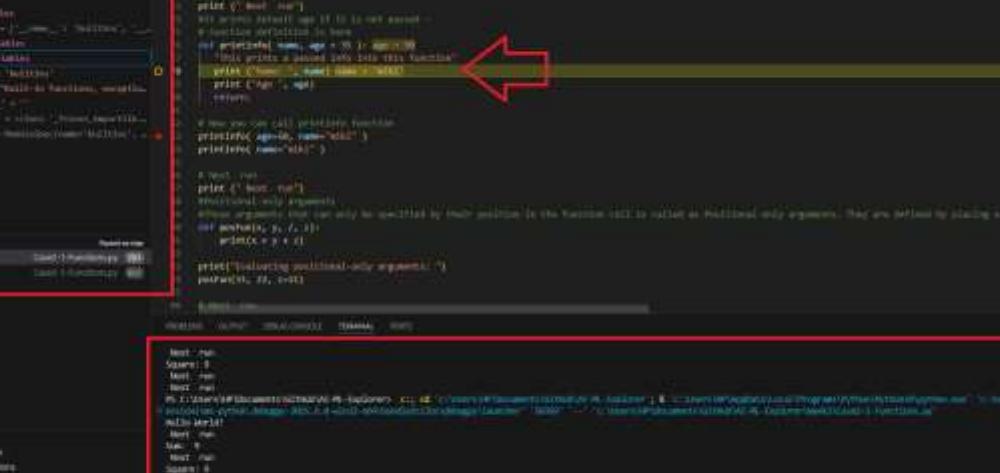
Forth Level: Putting the IDE – Code editor, debugger in action. DEBUGGING, is ideal for understanding, how code statements behave. What values of different parameters, objects – as your program goes by – line by line, statement by statement. You should be able to trace and debug, any complexity of code with ease.

See below, the debugging view of program, you should be able to see:

- ✓ All local variables
- ✓ All global variables
- ✓ All debug trace print command output
- ✓ All debug watches.
- ✓ And a lot more

You should be able to put “BREAK POINT in code in any code statement.

You should be able to “Step Over” “Step Into”, “Step out”, “full run” in IDE debug session, as per your debugging requirements. DEBUGGING, is very important.



The screenshot shows a PyCharm interface with several windows open. The left sidebar shows project files like 'C:\Users\...'. The main editor window contains Python code:

```
def print(*args, **kwargs):
    """This function prints the given message to the standard output device with optional arguments.

    :param args: Variable length argument list. Only the first argument is mandatory, the rest are optional.
    :param kwargs: Arbitrary keyword arguments.
    """
    print(*args, **kwargs)
```

A red arrow points from the word 'print' in the code to a yellow bar at the top of the editor, indicating that the code completion feature is active. A red box highlights the bottom right corner of the editor area, where the code continues:

```
    print('Hello, world!')
```

Kindly recommend, suggest and provide feedback.

Thanks.

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