Introductory Python Course - Session 1

Delivered to you by DUCSS

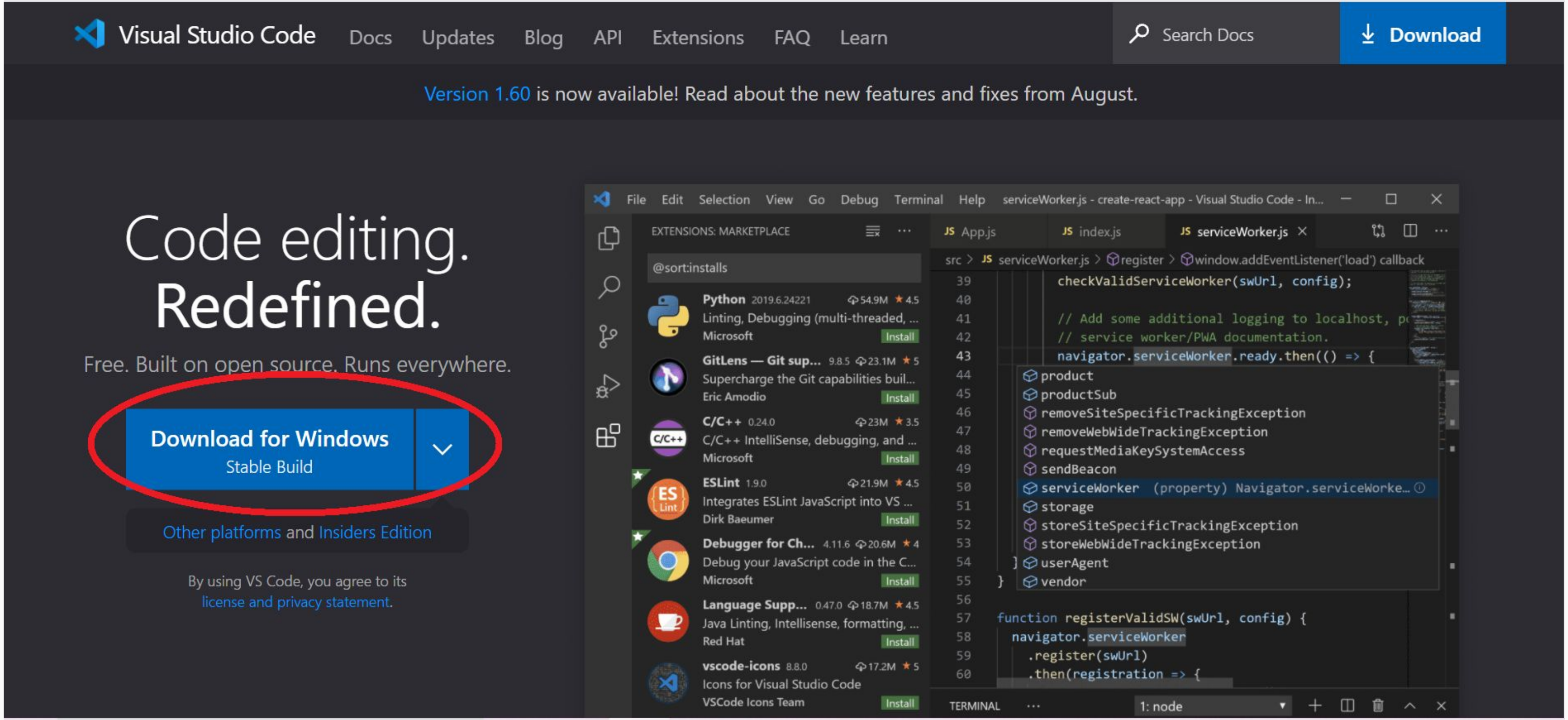
What is python?

- Interpreted programming language.
- Variety of usages: web, statistics and AI, research, scripting .
- Relatively easy to learn due to its somewhat similarity with the English language.
- Two major versions used nowadays: Python 2 & Python 3, we will focus on Python 3.

Tools we are going to use

- For simple python we just need Visual Studio Code: https://code.visualstudio.com/
- Latest version of python interpreter.

Step 1: Download and install Visual Studio Code https://code.visualstudio.com/



Version 1.60 is now available! Read about the new features and fixes from August.

Code editing.
Redefined.

Free. Built on open source. Runs everywhere.

Other platforms and Insiders Edition

By using VS Code, you agree to its license and privacy statement.

File
Edit
Selection
View
Go
Debug
Terminal
Help
serviceWorker.js - create-react-app - Visual Studio Code - In...
EXTENSIONS: MARKETPLACE
@sort:installs
App.js
index.js
serviceWorker.js
src > serviceWorker.js > register > window.addEventListener('load') callback

Python 2019.6.24221 54.9M ★4.5
Linting, Debugging (multi-threaded, ...
Microsoft Install

GitLens — Git sup... 9.8.5 23.1M ★5
Supercharge the Git capabilities buil...
Eric Amodio Install

C/C++ 0.24.0 23M ★3.5
C/C++ IntelliSense, debugging, and ...
Microsoft Install

ESLint 1.9.0 21.9M ★4.5
Integrates ESLint JavaScript into VS ...
Dirk Baeumer Install

Debugger for Ch... 4.11.6 20.6M ★4
Debug your JavaScript code in the C...
Microsoft Install

Language Supp... 0.47.0 18.7M ★4.5
Java Linting, Intellisense, formatting, ...
Red Hat Install

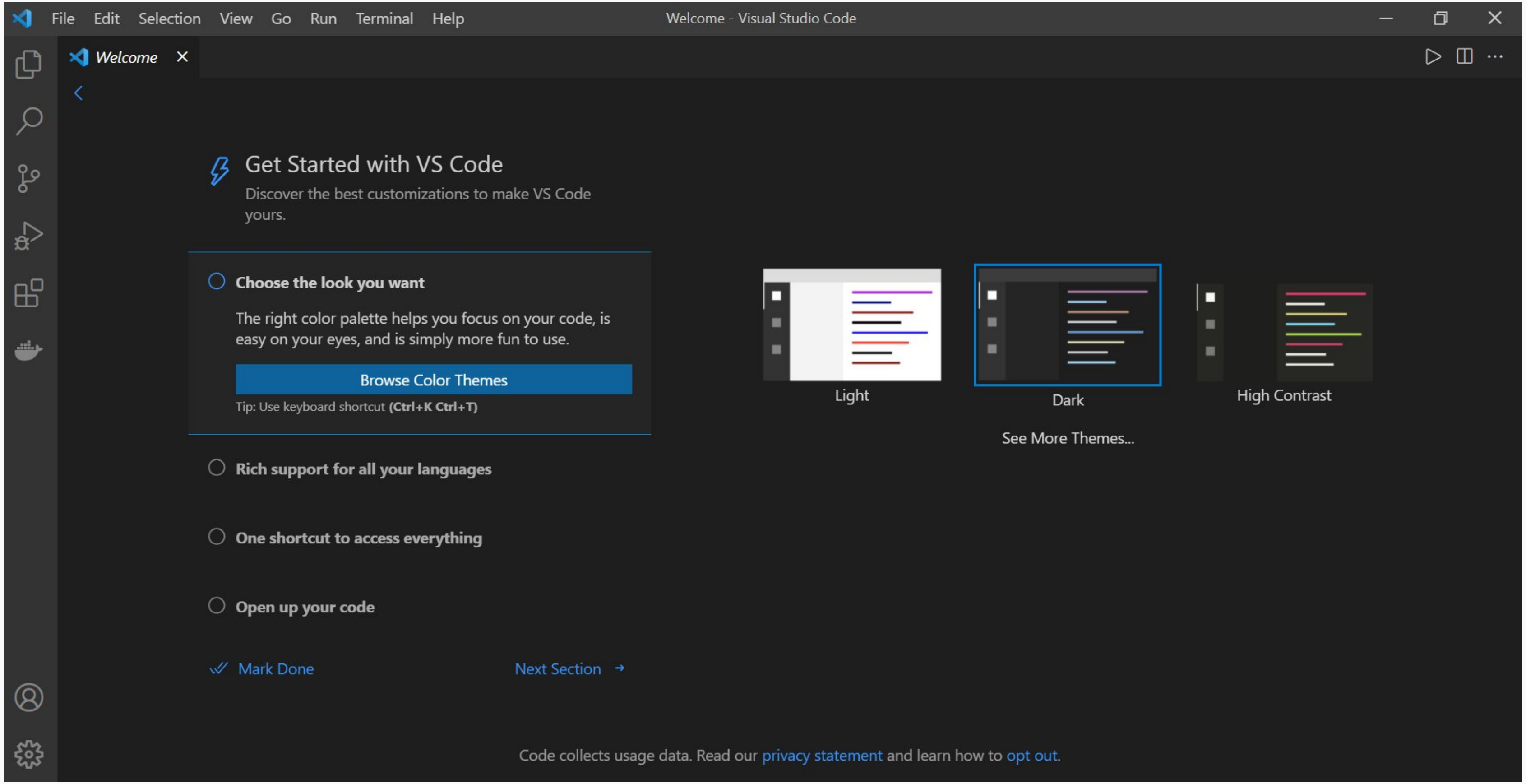
vscode-icons 8.8.0 17.2M ★5
Icons for Visual Studio Code
VSCode Icons Team Install

```
        checkValidServiceWorker(swUrl, config);

        // Add some additional logging to localhost, po
        // service worker/PWA documentation.
        navigator.serviceWorker.ready.then(() => {
```

product
productSub
removeSiteSpecificTrackingException
removeWebWideTrackingException
requestMediaKeySystemAccess
sendBeacon
serviceWorker (property) Navigator.serviceWorke...
storage
storeSiteSpecificTrackingException
storeWebWideTrackingException
userAgent
vendor

```
      }
    }

function registerValidSW(swUrl, config) {
  navigator.serviceWorker
    .register(swUrl)
    .then(registration => {
```

Step 2: Choose color scheme



Get Started with VS Code

Discover the best customizations to make VS Code yours.

○ **Choose the look you want**

The right color palette helps you focus on your code, is easy on your eyes, and is simply more fun to use.

Browse Color Themes

Tip: Use keyboard shortcut **(Ctrl+K Ctrl+T)**

○ **Rich support for all your languages**

○ **One shortcut to access everything**

○ **Open up your code**

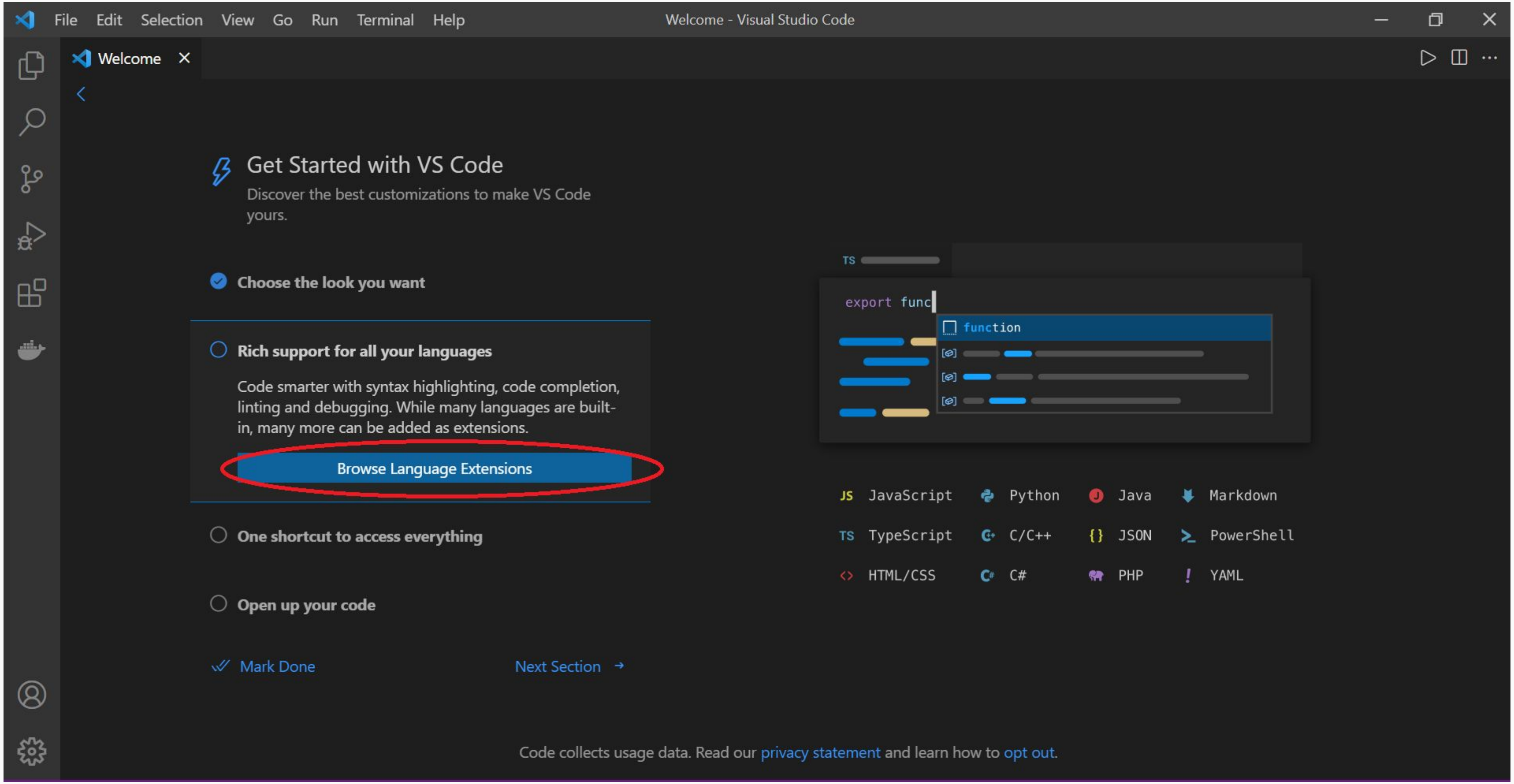
✓ Mark Done

Next Section →

See More Themes...

Code collects usage data. Read our privacy statement and learn how to opt out.

Step 3: Enable support for Python



Get Started with VS Code

Discover the best customizations to make VS Code yours.

Choose the look you want

Rich support for all your languages

Code smarter with syntax highlighting, code completion, linting and debugging. While many languages are built-in, many more can be added as extensions.

Browse Language Extensions

One shortcut to access everything

Open up your code

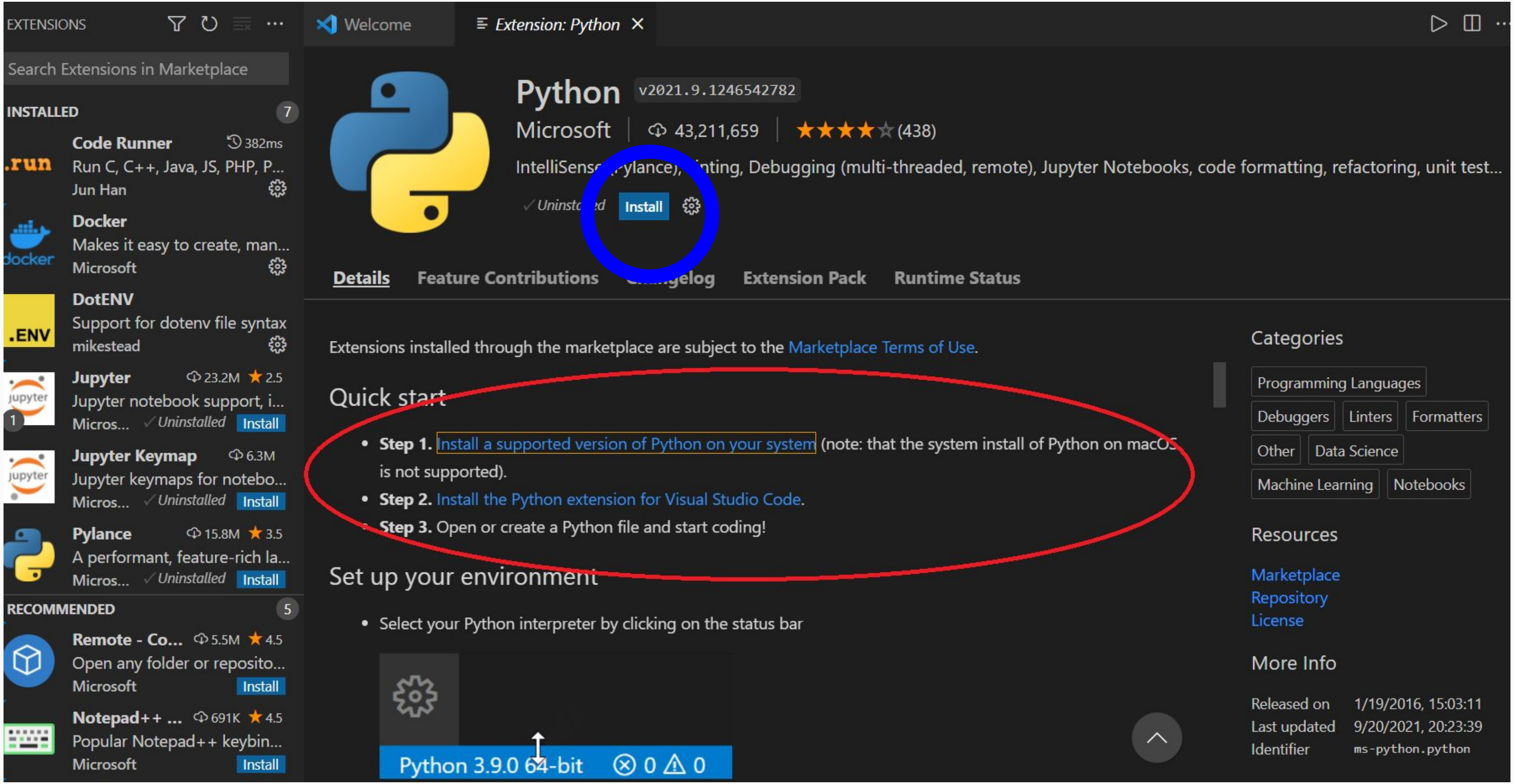
Mark Done

Next Section →

```
export func
```

Code collects usage data. Read our privacy statement and learn how to opt out.

Step 3: Enable support for Python -


EXTENSIONS
Search Extensions in Marketplace
INSTALLED 7
Code Runner 382ms
Run C, C++, Java, JS, PHP, P...
Jun Han
Docker
Makes it easy to create, man...
Microsoft
DotENV
Support for dotenv file syntax
mikestead
Jupyter 23.2M ★ 2.5
Jupyter notebook support, i...
Micros... ✓Uninstalled Install
Jupyter Keymap 6.3M
Jupyter keymaps for notebo...
Micros... ✓Uninstalled Install
Pylance 15.8M ★ 3.5
A performant, feature-rich la...
Micros... ✓Uninstalled Install
RECOMMENDED 5
Remote - Co... 5.5M ★ 4.5
Open any folder or reposito...
Microsoft Install
Notepad++ ... 691K ★ 4.5
Popular Notepad++ keybin...
Microsoft Install
Welcome
Extension: Python
Python v2021.9.1246542782
Microsoft 43,211,659 ★★★★☆ (438)
✓Uninstalled Install
Details
Feature Contributions
Changelog
Extension Pack
Runtime Status
Categories
Programming Languages
Debuggers
Linters
Formatters
Other
Data Science
Machine Learning
Notebooks
Resources
Marketplace
Repository
License
Python 3.9.0 64-bit ⓧ 0 ⚠ 0

IntelliSense (Pylance), Linting, Debugging (multi-threaded, remote), Jupyter Notebooks, code formatting, refactoring, unit test...

Extensions installed through the marketplace are subject to the Marketplace Terms of Use.

Quick start

- **Step 1.** Install a supported version of Python on your system (note: that the system install of Python on macOS is not supported).
- **Step 2.** Install the Python extension for Visual Studio Code.
- **Step 3.** Open or create a Python file and start coding!

Set up your environment

- Select your Python interpreter by clicking on the status bar

More Info

Released on	1/19/2016, 15:03:11
Last updated	9/20/2021, 20:23:39
Identifier	ms-python.python

Step 4: Running python

- Create a directory where we will put the source files
- Open the directory in Visual Studio Code
- Add a python file to it
- Copy code from: https://gist.github.com/cppavel/f8a7cd755e58504d956ea5c06fa5986e
- Let’s do these steps together first go to https://code.visualstudio.com/docs/python/python-tutorial#_prerequisites

Structure of single file python program

- A number of import statements which add the necessary libraries (don’t worry about it now, we will cover that in the next classes)
- Several functions
- The main entry point:
  - if __name__ == “__main__”:

    main()

Blocks of code in python

- Instead of using curly brackets like some of the other popular languages do (Java, C and etc.), python uses indentation for specifying that a particular set of statements (lines of code) belongs to this particular block of code

Defining variables

- We do not have to specify types for variables, however python will complain if we try to perform an operation with wrong types i.e trying to add a numeral (integer, float) to a piece of text (string).

- Variable names in Python can be any length and can consist of uppercase and lowercase letters (A-Z , a-z), digits (0-9), and the underscore character (_). An additional restriction is that, although a variable name can contain digits, the first character of a variable name cannot be a digit.

Basic operations with variables

- We can assign new values to the variables by doing:
  - a = 1 - integer
  - a = “abcdefg” - string
  - a = 1.9 - float
- We can use other variables to define the new ones:
  - suppose a = 1 and b = 2, then c = a + b will make c be equal to 3
  - suppose a = “abc” and b = “cba” then c = a + b will make c be equal to “abccba”

Printing

- print(a) - will print the value of variable a
- print(“Hello”) - prints the string “Hello”
- print(f”The value of variable a is {a}”) - so called “f-strings”, should start with f and allow you to format strings easily, you can put variable name inside {}, for example {age}, where age is the variable

What if we want to make our program interactive (User input)?

- You can use input(), for example:
  - a = input()
- When the program reaches the input statement it will wait for you to enter something into this console (terminal).

Exercise - 1

- Create a program which asks for the length and width of a rectangle from the user and prints its area and perimeter.

Housekeeping

- Feedback form:
    - Should we run this workshop regularly? Weekly/Biweekly?
    - Developing a project in semester 2?
- Take home exercise:
    - Learn how to do division in Python and hence come up with a program that takes in 4 decimal values and prints their mean
        - For that you will have to search something about “integer division” and “floating point division” and understand the differences between the two.

Thank you!