



Introduction to Programming Applications with Python

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Today

- Course Information
- Discussion about Programming and Python in Research and Industries
- Why we use Python
- How to use Python

Course Information



Grading

- Approx. 20% Programming Assignments
- Approx. 2% Challenging Questions and Contributions in Class
- Approx. 13% Mid-term Project (alone)
- Approx. 35% Final Project (team work~5 member)
 - *Proposal (about real needs)*
 - *Coding*
 - *Release*
- Approx. 30% Final Exam
- Approx. 5% Presentation with Code(extra score)



Contact me

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- Telegram: [@IKJ1992](https://t.me/IkJ1992)





Main links for our class

- Telegram group: t.me/SharifPythonSpace1401
- GitHub organization: github.com/SharifPythonSpace



Together

Send your feedback about the
class whenever you want!

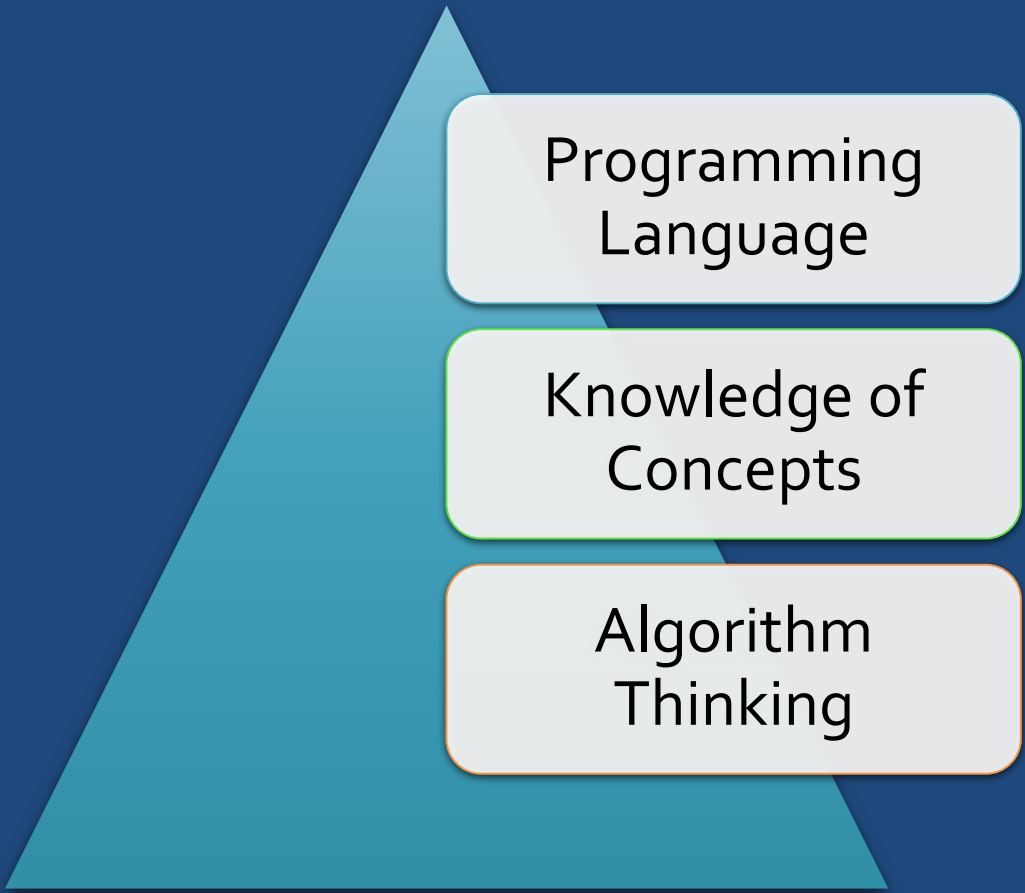


Course plan

- Fundamental concepts in computer science
- Algorithm thinking
- Coding with Python
- Some meetings with Python experts in different domains (maybe)



Be in path



Programming
Language

Knowledge of
Concepts

Algorithm
Thinking



TAs plan

- Python workshop about AI and DS
- Python Coding class for assignments
- Python Event for CE department (maybe)
- Useful Python toolkits in industry:
 - Git, GitHub
 - Docker
 - FastAPI
 - Dask
 - ...



MANY Thanks to...



Dr. Abbas Nowzari
Associate Professor, Tehran University



Dr. Mohammad Ganjtabesh
Associate Professor, Tehran University

Discussion about Python in Research and Industries



What is programming?



What is Python?



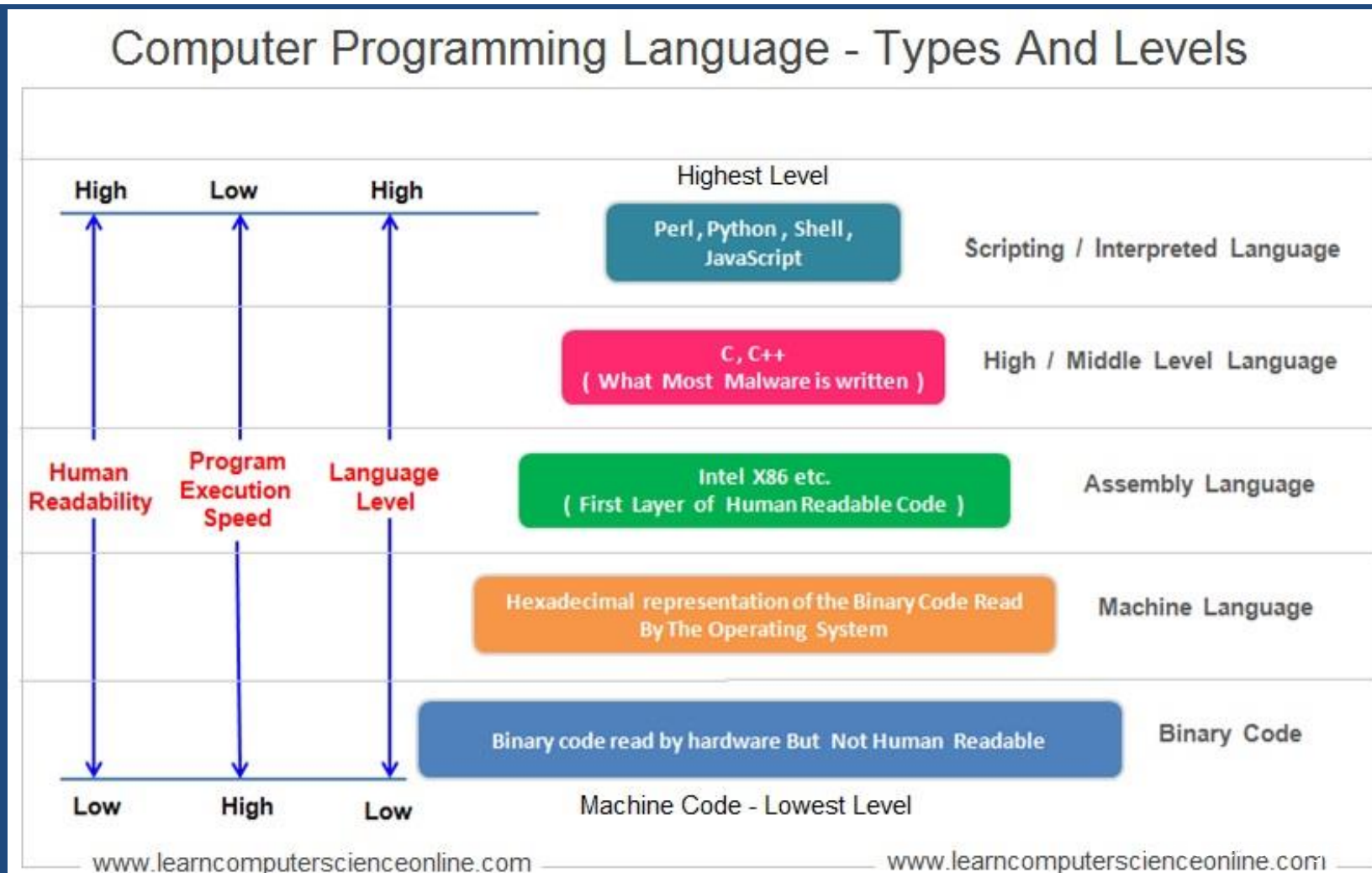
Do you know about its applications?



Why we use Python?



Language!



How to use Python?



First, install Python

The screenshot shows the Python.org website. At the top, there's a navigation bar with links to Data Science, Research, Speech Processing, Utils, DS ML Projects, DS ML Courses, See it, VoXera, Shelf, English, LP Chapter, and Sharif Python Course. Below this is a secondary navigation bar with links to Python, PSF, Docs, PyPI, Jobs, and Community. The main content area features the Python logo, a search bar, and a 'Donate' button. Below the logo, there's a row of links: About, Downloads, Documentation, Community, Success Stories, News, and Events. The main content area is divided into two columns. The left column contains a code snippet for a Fibonacci series, and the right column contains a section titled 'Functions Defined' with a paragraph about defining functions in Python.

```
# Python 3: Fibonacci series up to n
>>> def fib(n):
>>>     a, b = 0, 1
>>>     while a < n:
>>>         print(a, end=' ')
>>>         a, b = b, a+b
>>>     print()
>>> fib(1000)
0 1 1 2 3 5 8 13 21 34 55 89 144 233 377 610 987
```

Functions Defined

The core of extensible programming is defining functions. Python allows mandatory and optional arguments, keyword arguments, and even arbitrary argument lists. [More about defining functions in Python 3](#)

1 2 3 4 5



Second, install visual studio code (vscode)

The screenshot shows the Visual Studio Code website with the URL `code.visualstudio.com` in the browser address bar. The website features a navigation bar with links to Docs, Updates, Blog, API, Extensions, FAQ, and Learn, along with a Search Docs button and a Download button. A banner below the navigation bar states: "Version 1.75 is now available! Read about the new features and fixes from January."

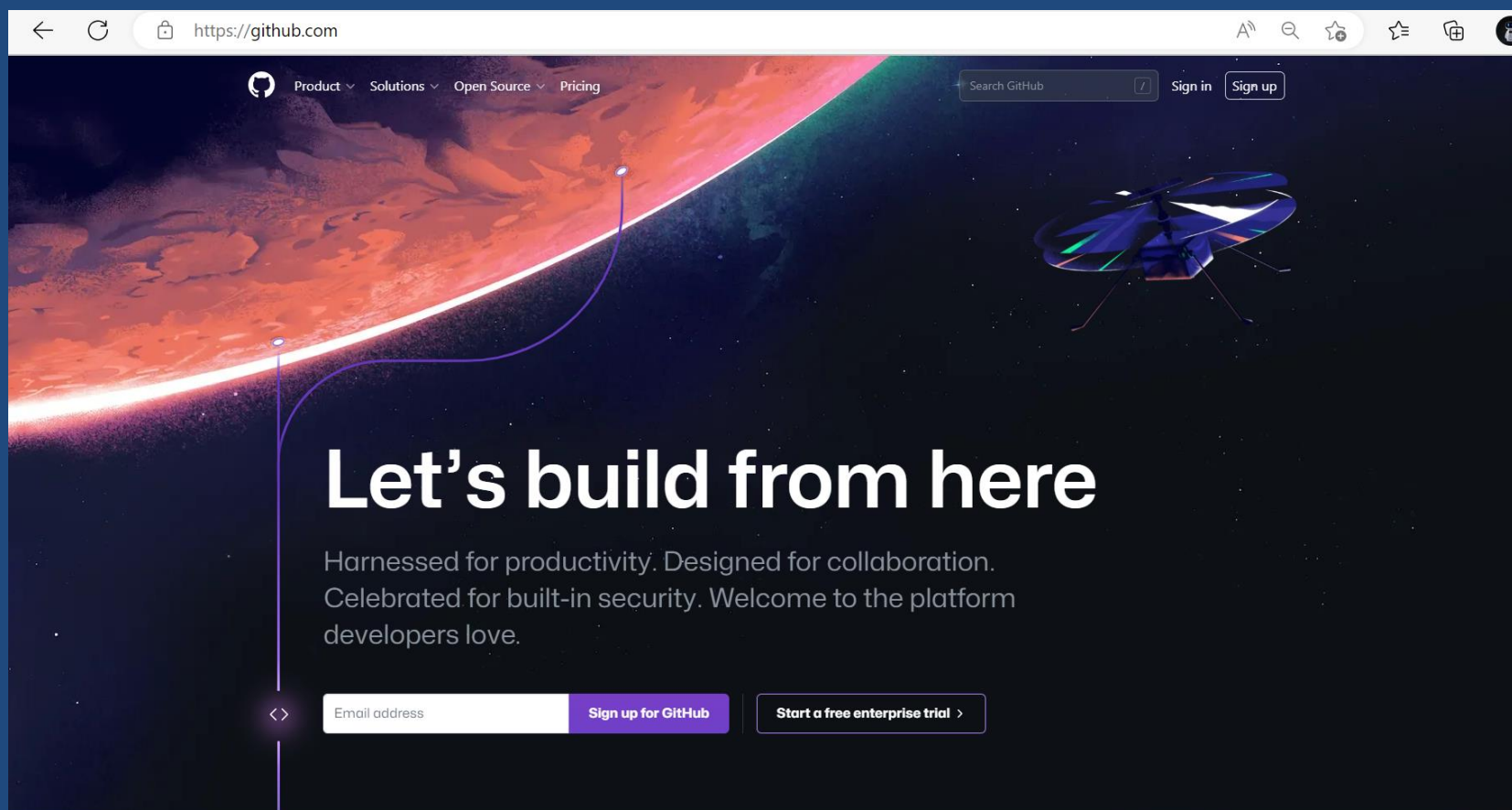
The main content area of the website has the heading "Code editing. Redefined." and the subtext "Free. Built on open source. Runs everywhere." Below this is a large blue button labeled "Download for Windows" with "Stable Build" underneath it. To the right of the button is a dropdown arrow. Below the button is a link: "Web, Insiders edition, or other platforms". At the bottom of the main content area, there is a small disclaimer: "By using VS Code, you agree to its license and privacy statement."

On the right side of the website, there is a preview of the Visual Studio Code IDE interface. The interface shows the "EXTENSIONS: MARKETPLACE" sidebar on the left, listing various extensions like Python, GitLens, C/C++, ESLint, and Debugger for Chrome. The main editor area displays a JavaScript file named `serviceWorker.js` with the following code:

```
src > JS serviceWorker.js > register > window.addEventListener("load") callback
39
40
41 checkValidServiceWorker(swUrl, config);
42 // Add some additional logging to localhost, p...
43 // service worker/PWA documentation.
44 navigator.serviceWorker.ready.then(() => {
45
46   product
47   productSub
48   removeSiteSpecificTrackingException
49   removeWebWideTrackingException
50   requestMediaKeySystemAccess
51   sendBeacon
52   serviceWorker (property) Navigator.serviceWorke...
53   storage
54   storeSiteSpecificTrackingException
55   storeWebWideTrackingException
56   userAgent
57   vendor
58
59 function registerValidSW(swUrl, config) {
60   navigator.serviceWorker
```

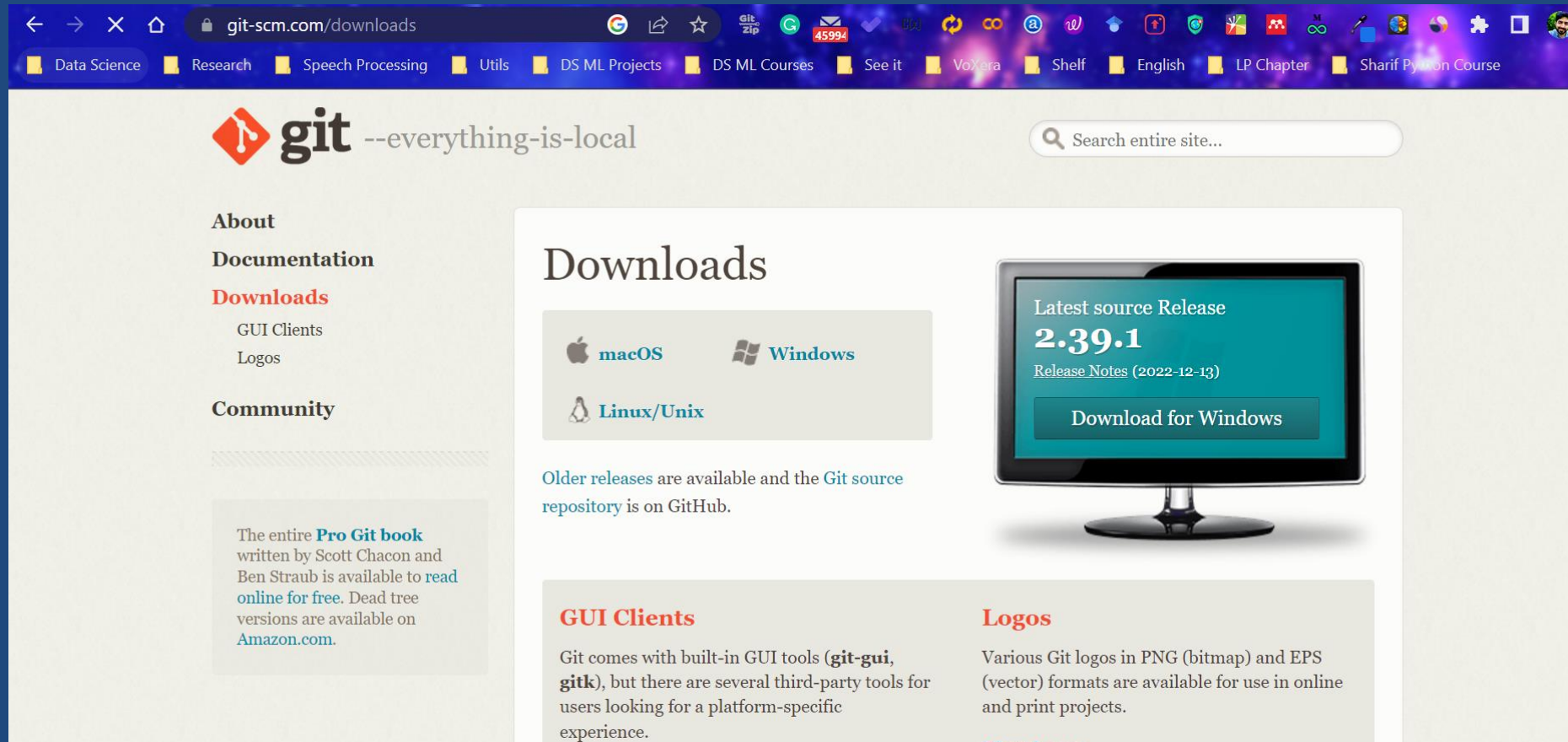


Third, register in GitHub





Fourth, install Git



The screenshot shows the Git website's download page. The browser's address bar displays `git-scm.com/downloads`. The page features the Git logo and the tagline `--everything-is-local`. A search bar is located in the top right corner. On the left sidebar, there are links for **About**, **Documentation**, **Downloads** (highlighted), **GUI Clients**, **Logos**, and **Community**. The main content area is titled **Downloads** and includes a section for the **Latest source Release 2.39.1** with a **Download for Windows** button. Below this, there are links for **macOS**, **Windows**, and **Linux/Unix**. A note mentions that older releases are available on GitHub. At the bottom, there are sections for **GUI Clients** and **Logos**. A sidebar note mentions the **Pro Git book** by Scott Chacon and Ben Straub.

git --everything-is-local

Search entire site...

About
Documentation
Downloads
GUI Clients
Logos
Community

Downloads

Latest source Release
2.39.1
Release Notes (2022-12-13)
Download for Windows

Older releases are available and the Git source repository is on GitHub.

GUI Clients
Git comes with built-in GUI tools (**git-gui**, **gitk**), but there are several third-party tools for users looking for a platform-specific experience.

Logos
Various Git logos in PNG (bitmap) and EPS (vector) formats are available for use in online and print projects.

The entire **Pro Git book** written by Scott Chacon and Ben Straub is available to [read online for free](#). Dead tree versions are available on [Amazon.com](#).



Lecture Resources

- *P. Wentworth, J. Elkner, A. B. Downey, C. Meyers. How to Think Like a Computer Scientist: Learning with Python. 3rd Edition, Open Book Project, 2011.*