

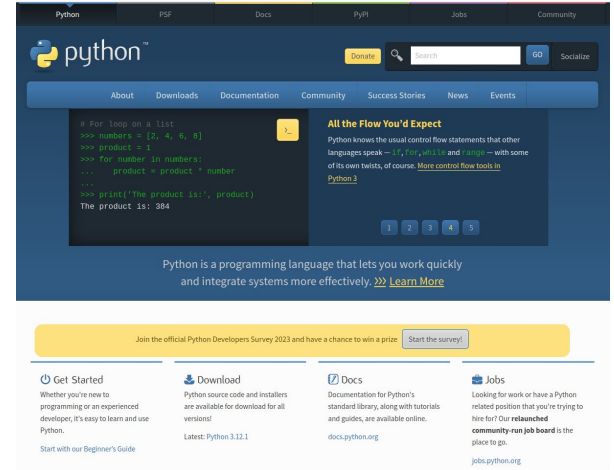
# Installing Python

Dr. Dong-Chul Kim

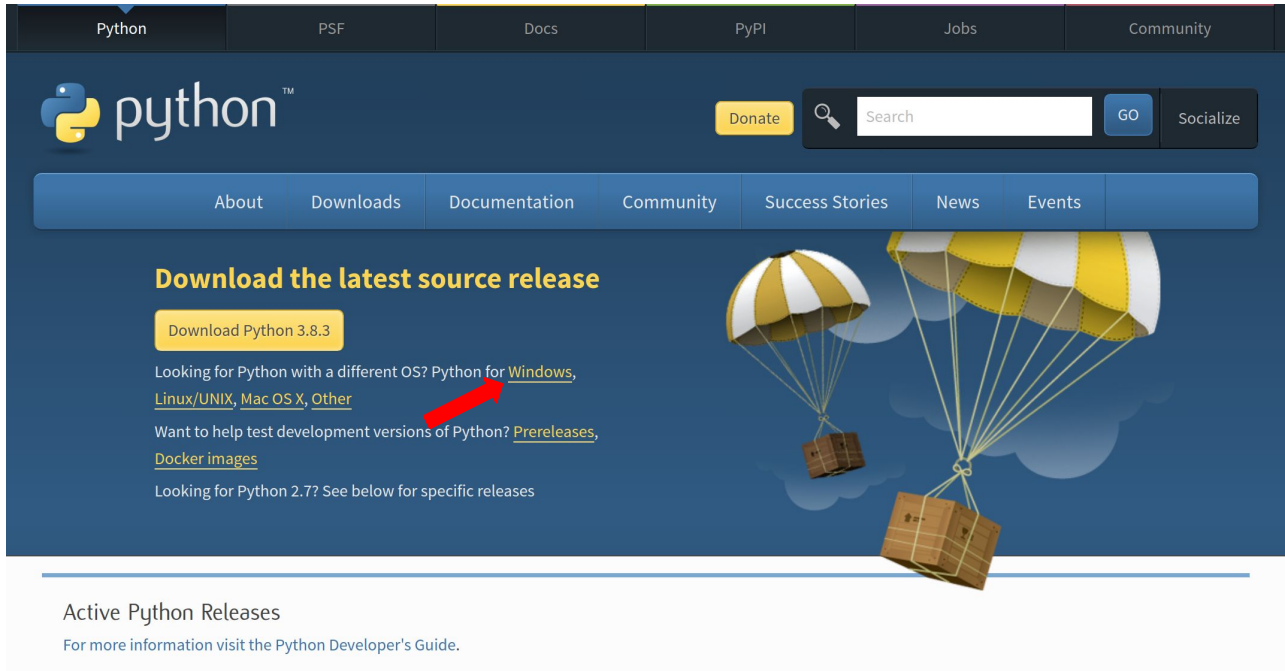
# Windows

# Install Python (for Windows users)

- Python Version: We will be using Python 3 in this class. Ensure you download the correct version.
- Downloading Python:
  - Visit the Python official website: <https://www.python.org/>
  - Navigate to the 'Downloads' section in the menu.
- Installation Steps:
  - Click on the download link for Python 3.x for Windows.
  - Run the downloaded installer. Remember to check the option 'Add Python 3.x to PATH' before installation.
- Verification:
  - After installation, verify Python installation by opening Command Prompt and typing `python --version`.

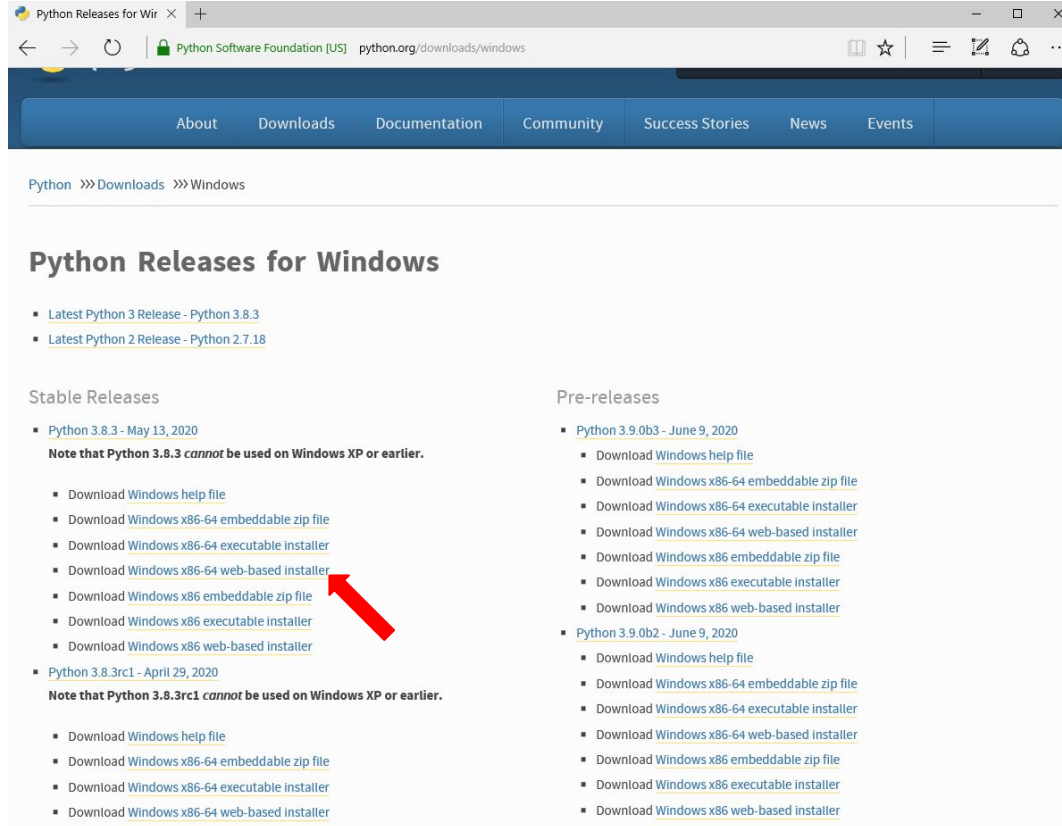


Please select the link indicated by the red arrow on the screen



The screenshot shows the Python website homepage. At the top, there is a navigation bar with links for Python, PSF, Docs, PyPI, Jobs, and Community. Below this is the Python logo and a search bar with a 'GO' button and a 'Socialize' button. A secondary navigation bar contains links for About, Downloads, Documentation, Community, Success Stories, News, and Events. The main content area features a section titled 'Download the latest source release' with a yellow button for 'Download Python 3.8.3'. Below this button, there is text that reads: 'Looking for Python with a different OS? Python for [Windows](#), [Linux/UNIX](#), [Mac OS X](#), [Other](#)'. A red arrow points to the 'Windows' link. Further down, there is text about testing development versions and a link to 'Prereleases, Docker images'. At the bottom, there is a section for 'Active Python Releases' with a link to the 'Python Developer's Guide'. The background of the main content area features an illustration of two parachutes with cargo boxes.

Please select the link indicated by the red arrow on the screen



The screenshot shows a web browser window with the URL `python.org/downloads/windows`. The page title is "Python Releases for Windows". The navigation menu includes "About", "Downloads", "Documentation", "Community", "Success Stories", "News", and "Events". The breadcrumb trail is "Python >>> Downloads >>> Windows".

## Python Releases for Windows

- [Latest Python 3 Release - Python 3.8.3](#)
- [Latest Python 2 Release - Python 2.7.18](#)

### Stable Releases

- [Python 3.8.3 - May 13, 2020](#)
  - **Note that Python 3.8.3 cannot be used on Windows XP or earlier.**
  - [Download Windows help file](#)
  - [Download Windows x86-64 embeddable zip file](#)
  - [Download Windows x86-64 executable installer](#)
  - [Download Windows x86-64 web-based installer](#)
  - [Download Windows x86 embeddable zip file](#)
  - [Download Windows x86 executable installer](#)
  - [Download Windows x86 web-based installer](#)
- [Python 3.8.3rc1 - April 29, 2020](#)
  - **Note that Python 3.8.3rc1 cannot be used on Windows XP or earlier.**
  - [Download Windows help file](#)
  - [Download Windows x86-64 embeddable zip file](#)
  - [Download Windows x86-64 executable installer](#)
  - [Download Windows x86-64 web-based installer](#)

### Pre-releases

- [Python 3.9.0b3 - June 9, 2020](#)
  - [Download Windows help file](#)
  - [Download Windows x86-64 embeddable zip file](#)
  - [Download Windows x86-64 executable installer](#)
  - [Download Windows x86-64 web-based installer](#)
  - [Download Windows x86 embeddable zip file](#)
  - [Download Windows x86 executable installer](#)
  - [Download Windows x86 web-based installer](#)
- [Python 3.9.0b2 - June 9, 2020](#)
  - [Download Windows help file](#)
  - [Download Windows x86-64 embeddable zip file](#)
  - [Download Windows x86-64 executable installer](#)
  - [Download Windows x86-64 web-based installer](#)
  - [Download Windows x86 embeddable zip file](#)
  - [Download Windows x86 executable installer](#)
  - [Download Windows x86 web-based installer](#)

# Run `Python-3.8.3-amd64-webinstall.exe`

Python Releases for Windows

- Latest Python 3 Release - Python 3.8.3
- Latest Python 2 Release - Python 2.7.18

Stable Releases

- Python 3.8.3 - May 13, 2020
  - Note that Python 3.8.3 cannot be used on Windows XP or earlier.**
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Pre-releases

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  - Download Windows x86 embeddable zip file
  - Download Windows x86 executable installer
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  - Download Windows x86-64 embeddable zip file
  - Download Windows x86-64 executable installer
  - Download Windows x86-64 web-based installer
  - Download Windows x86 embeddable zip file
  - Download Windows x86 executable installer
  - Download Windows x86 web-based installer

python-3.8.3-amd64-webinstall.exe finished downloading.

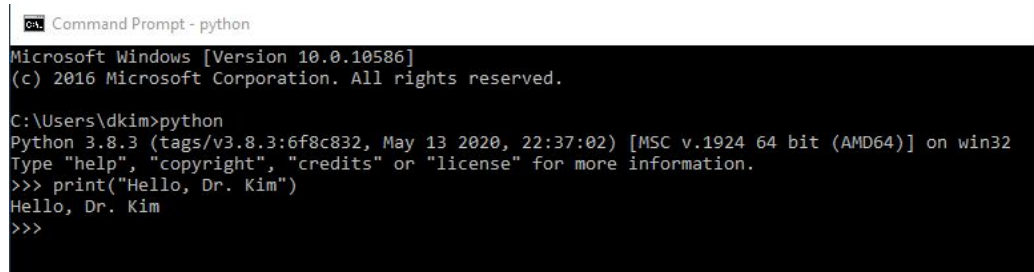
Run Open folder View downloads

After checking the checkbox that the purple arrow points, click “Install Now”



# Lab 3-1: Installing and Running Python 3 in Command Prompt

1. Installation Confirmation:
  - Verify that Python 3 is installed by typing `python --version` in the Command Prompt.
2. Running Python:
  - Open Command Prompt and type `python` to start the Python interpreter.
3. Execute Simple Code:
  - Enter the following Python code to print a greeting:
  - `print("Hello, first_name last_name")`
  - Replace `first_name` and `last_name` with your actual first and last names.
4. Capture your screen and upload it (image file) on Blackboard.
5. For example,



```
cmd Command Prompt - python
Microsoft Windows [Version 10.0.10586]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\dkim>python
Python 3.8.3 (tags/v3.8.3:6f8c832, May 13 2020, 22:37:02) [MSC v.1924 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> print("Hello, Dr. Kim")
Hello, Dr. Kim
>>>
```



# Lab 3-1

Installation Confirmation (20 Points):

Successfully verifying Python 3 installation (20 Points)

No verification or incorrect version (0 Points)

Running Python (20 Points):

Correctly opening Command Prompt and starting Python interpreter (20 Points)

Unable to demonstrate (0 Points)

Execute Simple Code (40 Points):

Accurately entering and executing the provided Python code (40 Points)

Incorrect code or execution failure (0 Points)

Screenshot Submission (20 Points):

Clear screenshot showing correct execution and output (20 Points)

Unclear, incorrect, or no screenshot (0 Points)

Total Points: 100

# Running Python Code via Notepad

## 1. Writing Code in Notepad:

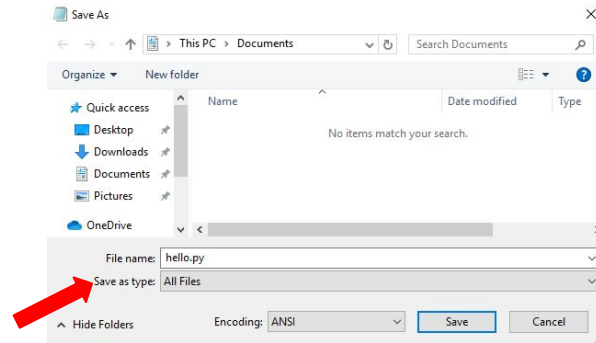
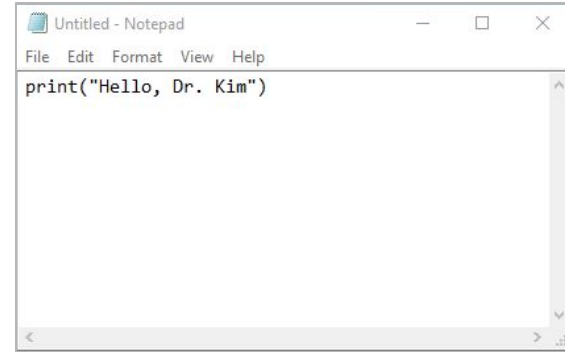
- Open Notepad and write your Python code.
- Example code: `print("Hello, World!")`

## 2. Saving the File:

- Save your file with the `.py` extension, such as `hello.py`.
- Important: In the 'Save as type' dropdown, select 'All Files' to ensure correct file format.

## 3. Executing the Script:

- Open Command Prompt.
- Navigate to the directory where your file is saved.
- Run the script by typing `python hello.py`.



# Running Python Code via Notepad

```
CA Select Command Prompt
Microsoft Windows [Version 10.0.10586]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\dkim>cd Documents

C:\Users\dkim\Documents>dir
Volume in drive C has no label.
Volume Serial Number is C289-705C

Directory of C:\Users\dkim\Documents

06/16/2020  03:02 AM    <DIR>          .
06/16/2020  03:02 AM    <DIR>          ..
06/16/2020  03:02 AM                23 hello.py
               1 File(s)                23 bytes
               2 Dir(s)  35,689,865,216 bytes free

C:\Users\dkim\Documents>python hello.py
Hello, Dr. Kim

C:\Users\dkim\Documents>
```

# Lab 3-2: Creating and Running Your Python Program

1. Program Creation (hello.py):
  - Write a Python program named `hello.py` that prints a personalized greeting.
  - For example, the code should print: "hello, first\_name last\_name".
2. Running the Program:
  - Open your terminal or Command Prompt.
  - Navigate to the directory containing `hello.py`.
  - Run the program by typing `python hello.py`.
3. Submitting Your Work:
  - Capture a screenshot of the Command Prompt window showing your program's output.
  - Submit both the screenshot (as an image file) and the `hello.py` file on Blackboard.

# Lab 3-2

Program Creation (hello.py) (40 Points):

Writing a Python program named hello.py that prints a personalized greeting (40 Points)

Incomplete or incorrect program (0 Points)

Running the Program (30 Points):

Successfully navigating to the correct directory and running the program (30 Points)

Failure to run the program correctly (0 Points)

Submission of Work (30 Points):

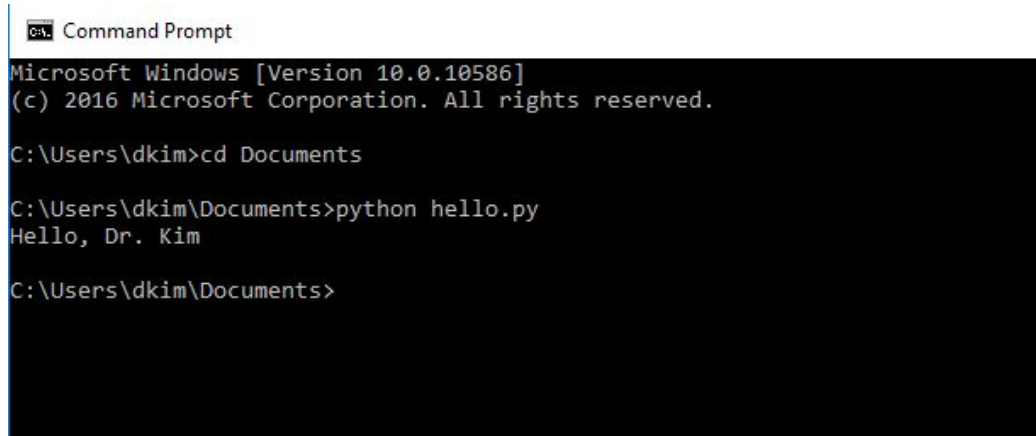
Submitting a clear screenshot of the Command Prompt with program output and the hello.py file (30 Points)

Incomplete or incorrect submission (0 Points)

Total Points: 100

# Lab 3-2: Creating and Running Your Python Program

For example,



```
CA: Command Prompt
Microsoft Windows [Version 10.0.10586]
(c) 2016 Microsoft Corporation. All rights reserved.

C:\Users\dkim>cd Documents

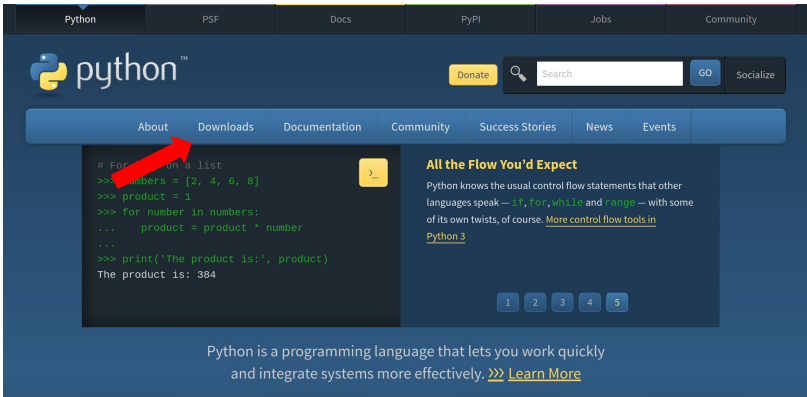
C:\Users\dkim\Documents>python hello.py
Hello, Dr. Kim

C:\Users\dkim\Documents>
```

Mac OS

# Install Python (for MacOS users)

- In this class, **Python3** will be used.
- Go to Python homepage and click Downloads on the menu.
  - <https://www.python.org/>



The screenshot shows the Python.org homepage. At the top, there is a navigation bar with links for Python, PSF, Docs, PyPI, Jobs, and Community. Below this is a search bar and a 'Socialize' button. A secondary navigation bar contains links for About, Downloads, Documentation, Community, Success Stories, News, and Events. A red arrow points to the 'Downloads' link. The main content area features a code snippet on the left and an article titled 'All the Flow You'd Expect' on the right. At the bottom, there are four columns: 'Get Started', 'Download', 'Docs', and 'Jobs', each with a brief description and a link to further resources.

```
# For loop on a list
>>> numbers = [2, 4, 6, 8]
>>> product = 1
>>> for number in numbers:
...     product = product * number
...
>>> print("The product is:", product)
The product is: 384
```

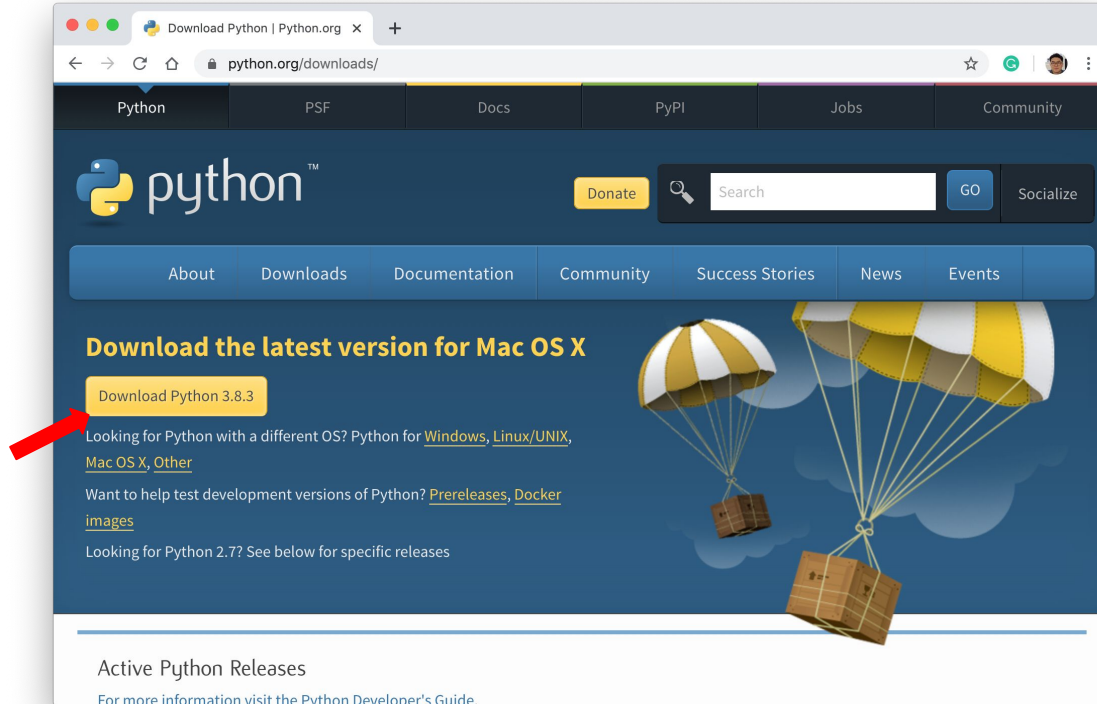
**All the Flow You'd Expect**  
Python knows the usual control flow statements that other languages speak — `if`, `for`, `while` and `range` — with some of its own twists, of course. [More control flow tools in Python 3](#)

Python is a programming language that lets you work quickly and integrate systems more effectively. [»» Learn More](#)

|                                                                                                                                                                            |                                                                                                                           |                                                                                                                                                                             |                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Get Started</b><br>Whether you're new to programming or an experienced developer, it's easy to learn and use Python.<br><a href="#">Start with our Beginner's Guide</a> | <b>Download</b><br>Python source code and installers are available for download for all versions!<br>Latest: Python 3.8.3 | <b>Docs</b><br>Documentation for Python's standard library, along with tutorials and guides, are available online.<br><a href="https://docs.python.org">docs.python.org</a> | <b>Jobs</b><br>Looking for work or have a Python related position that you're trying to hire for? Our <b>relaunched community-run job board</b> is the place to go.<br><a href="https://jobs.python.org">jobs.python.org</a> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



Click the link that the red arrow points



The screenshot shows the Python.org website's download page. The browser's address bar displays 'python.org/downloads/'. The page features a dark blue header with the Python logo, a search bar, and navigation links. Below the header, there is a secondary navigation bar with links for 'About', 'Downloads', 'Documentation', 'Community', 'Success Stories', 'News', and 'Events'. The main content area is titled 'Download the latest version for Mac OS X' and contains a yellow button labeled 'Download Python 3.8.3'. A red arrow points to this button. Below the button, there is text providing links for other operating systems and information about development versions. The background of the main content area features an illustration of two parachutes with cargo boxes.

Download Python 3.8.3

Looking for Python with a different OS? Python for [Windows](#), [Linux/UNIX](#), [Mac OS X](#), [Other](#)

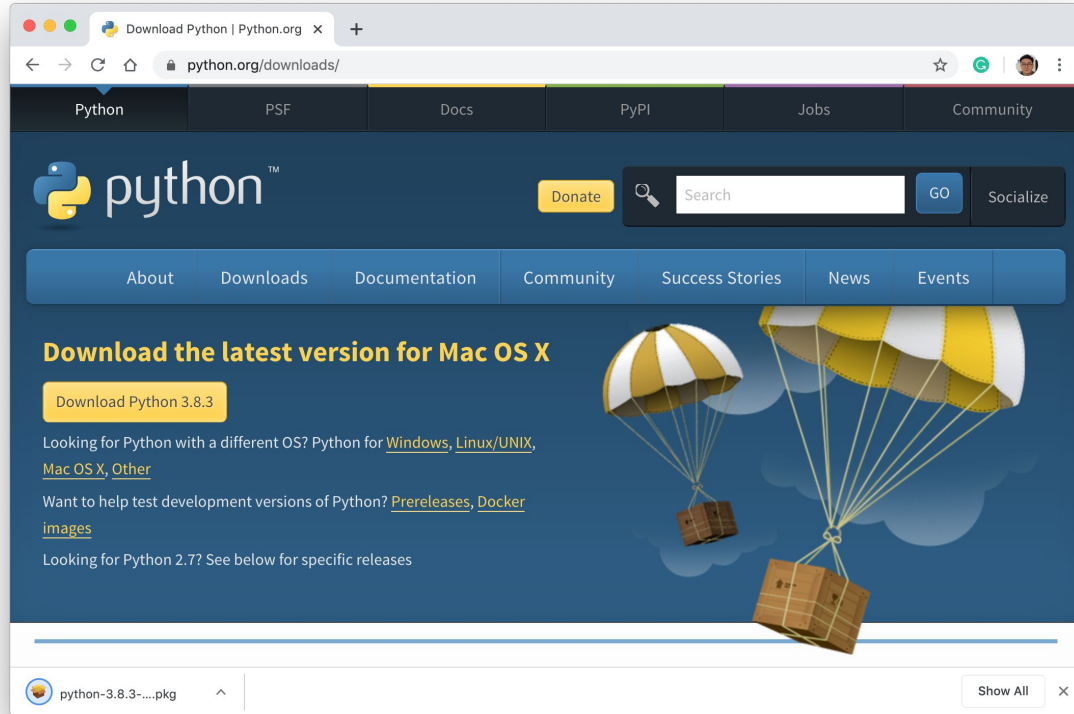
Want to help test development versions of Python? [Prereleases](#), [Docker images](#)

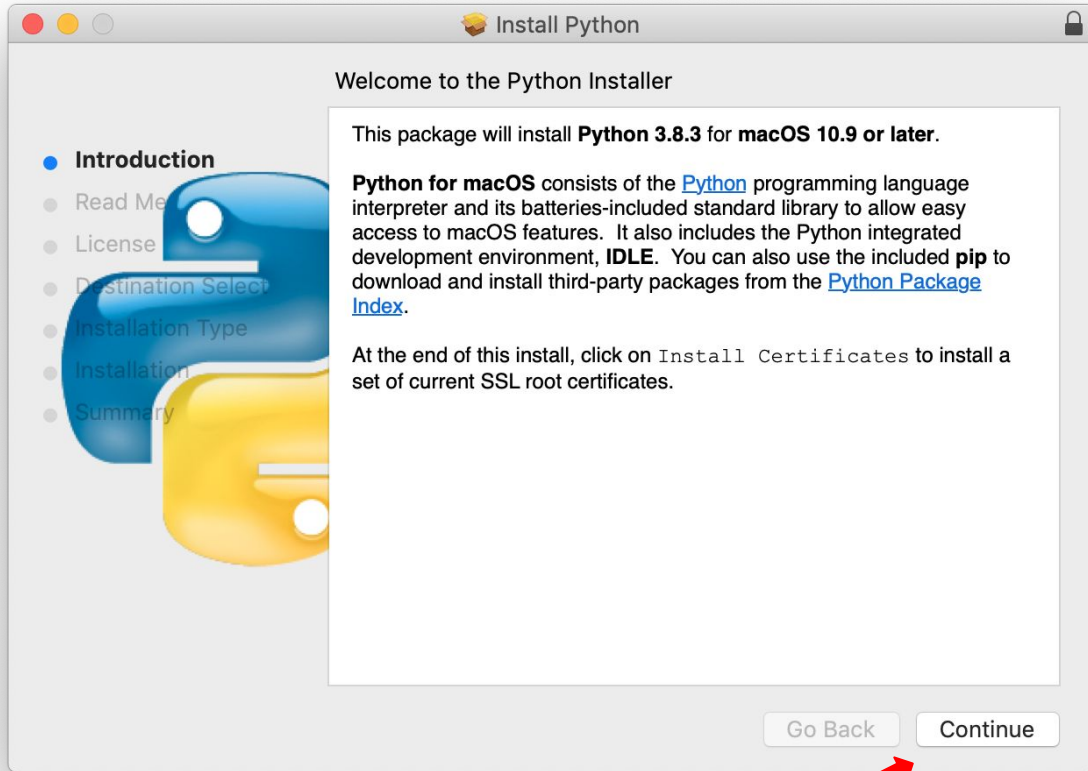
Looking for Python 2.7? See below for specific releases

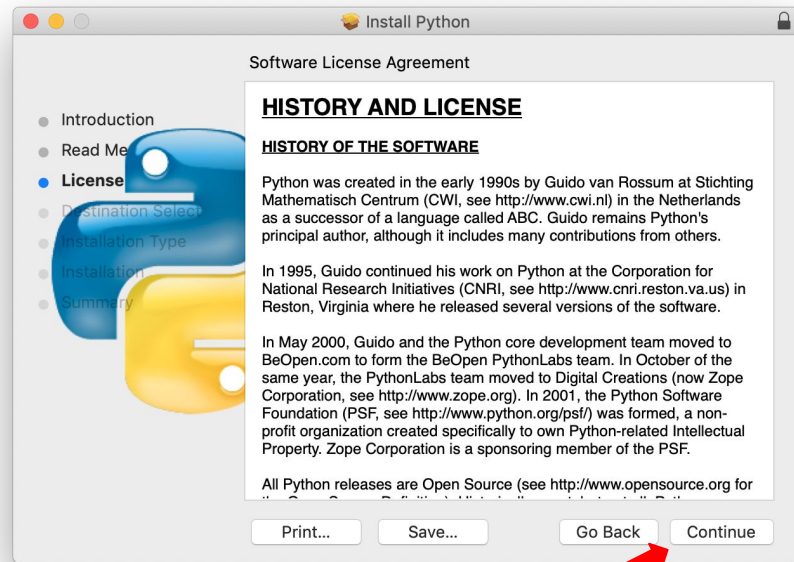
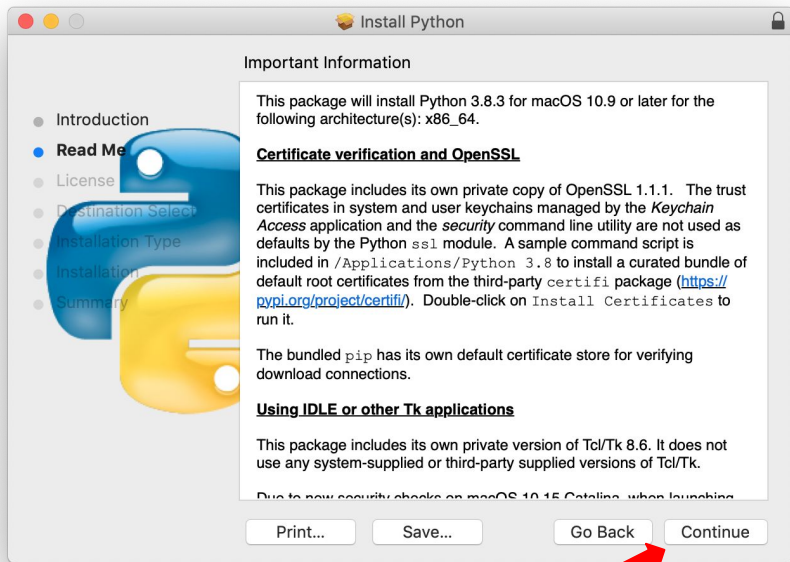
Active Python Releases

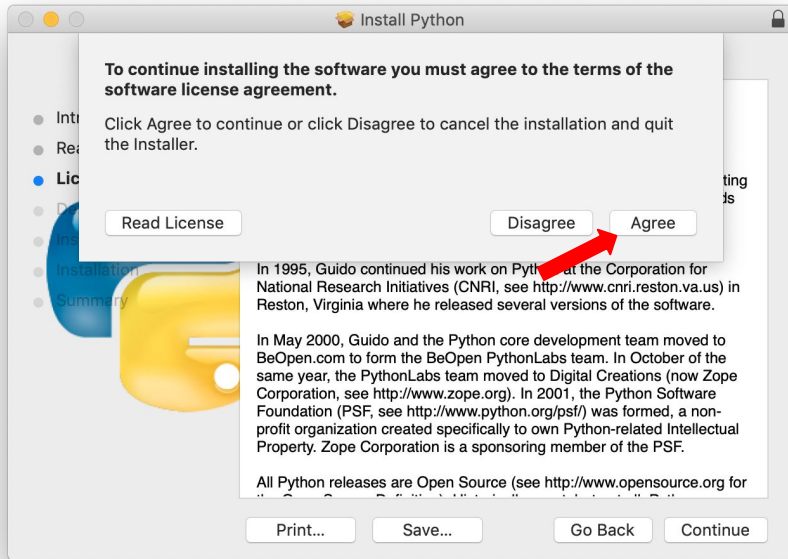
For more information visit the [Python Developer's Guide](#).

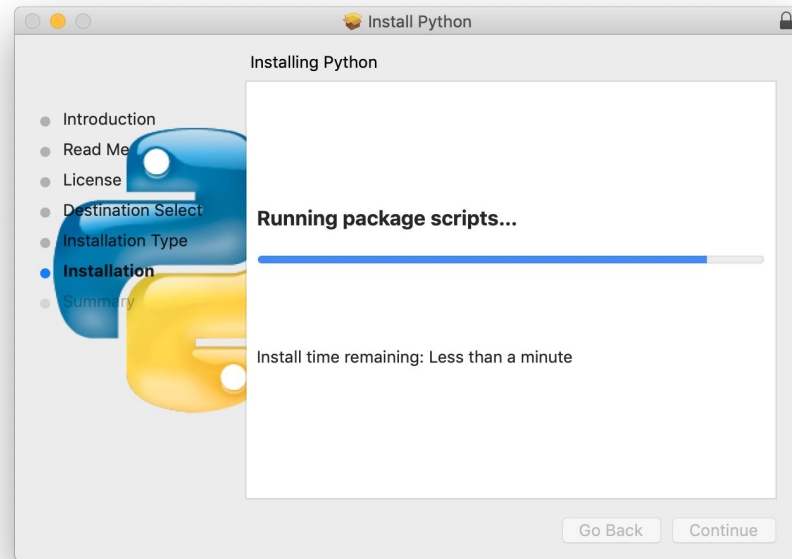
Download and run `python-3.8.3-macosx10.9.pkg`

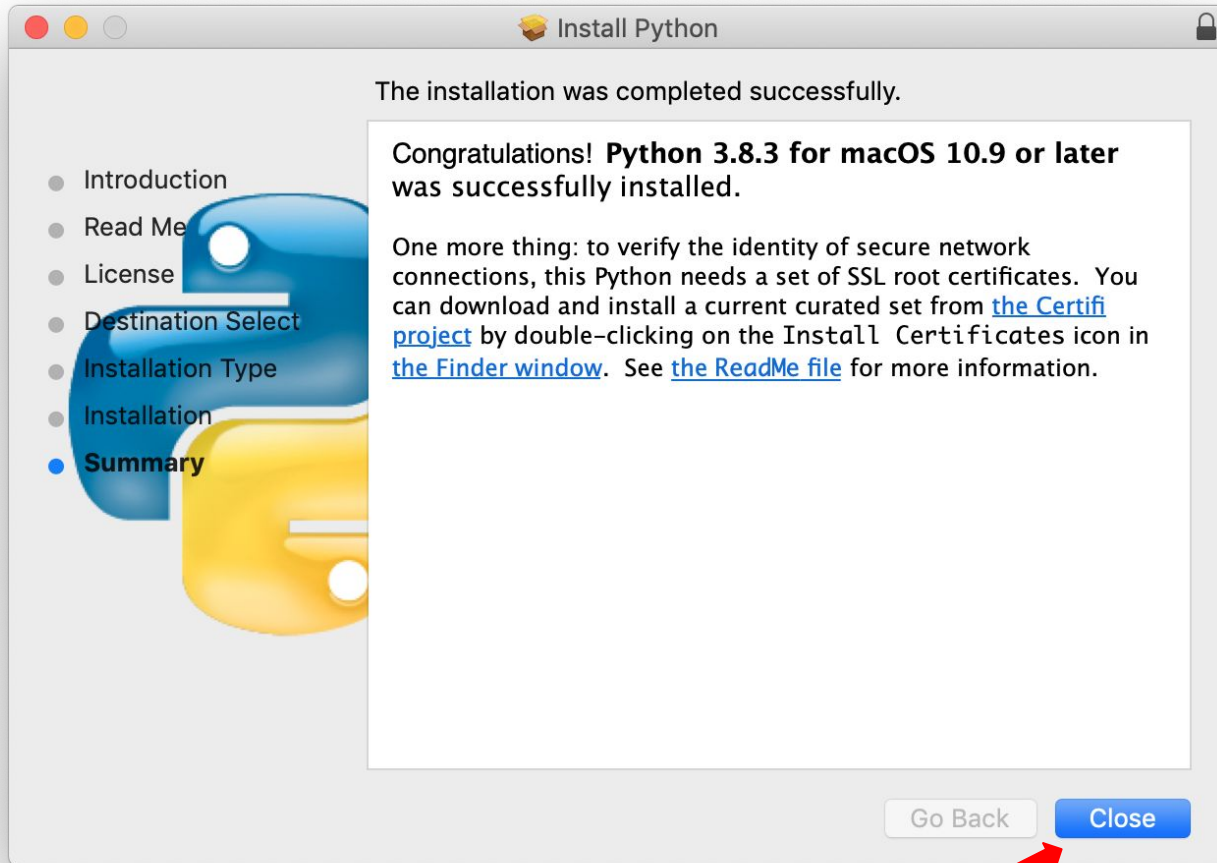






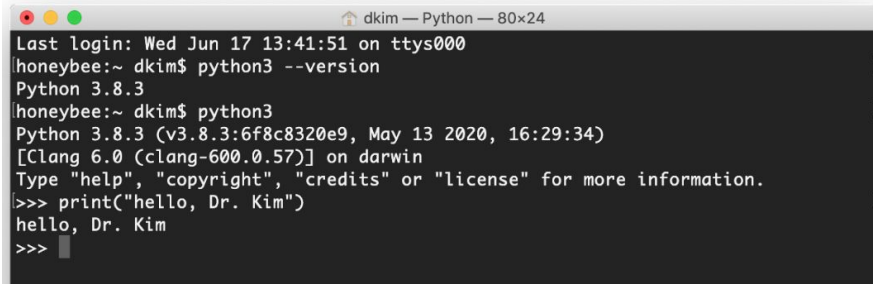






# Lab 3-1: Installing and Running Python 3 in Command Prompt

1. Installation Confirmation:
  - Verify that Python 3 is installed by typing `python --version` in the Command Prompt.
2. Running Python:
  - Open Command Prompt and type `python` to start the Python interpreter.
3. Execute Simple Code:
  - Enter the following Python code to print a greeting:
  - `print("Hello, first_name last_name")`
  - Replace `first_name` and `last_name` with your actual first and last names.
4. Capture your screen and upload it (image file) on Blackboard.
5. For example,

A screenshot of a terminal window titled "dkim — Python — 80x24". The terminal shows the following text:

```
Last login: Wed Jun 17 13:41:51 on ttys000
[honeybee:~ dkim]$ python3 --version
Python 3.8.3
[honeybee:~ dkim]$ python3
Python 3.8.3 (v3.8.3:6f8c8320e9, May 13 2020, 16:29:34)
[Clang 6.0 (clang-600.0.57)] on darwin
Type "help", "copyright", "credits" or "license" for more information.
>>> print("hello, Dr. Kim")
hello, Dr. Kim
>>> █
```



# Writing and Running Python Code in Nano Editor

## 1. Open Nano Editor:

In your terminal, open the nano editor by typing `nano hello.py`.

Write a single line of Python code in the editor.

## 2. Saving the File:

To save your file in nano, press Ctrl-O.

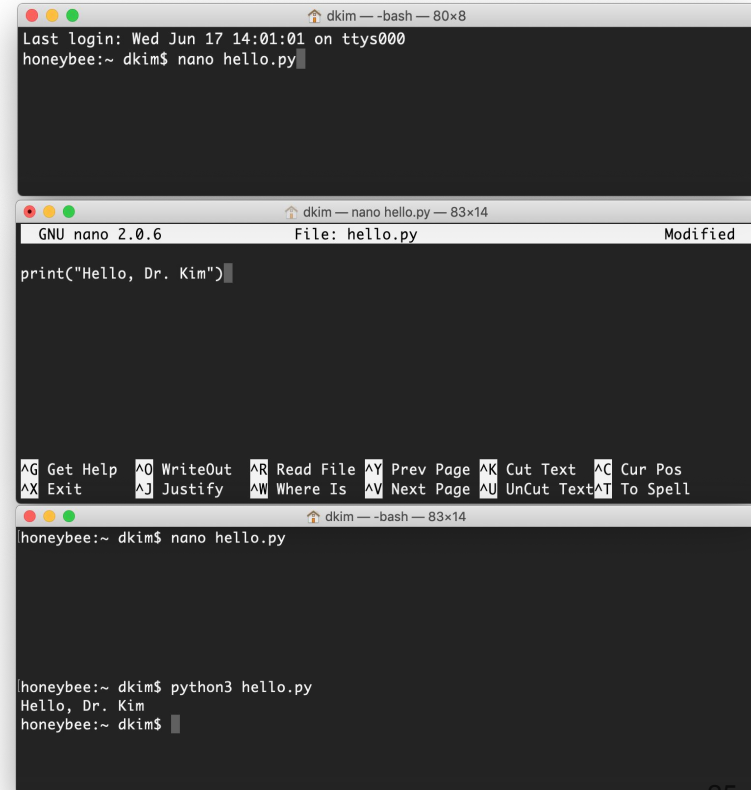
Confirm the file name (`hello.py`), then press Y for Yes.

Exit nano by pressing Ctrl-X.

## 3. Running the Script:

In the terminal, run your Python script by typing `python hello.py`.

Observe the output of your program in the terminal.



The image displays three sequential terminal windows illustrating the workflow:

- Terminal 1:** Shows the user logging in and running `nano hello.py` to open the nano editor.
- Terminal 2:** Shows the nano editor interface with the file `hello.py` open. The code `print("Hello, Dr. Kim")` is entered. The bottom status bar shows various nano editor shortcuts.
- Terminal 3:** Shows the user running `python3 hello.py` in the terminal, which outputs `Hello, Dr. Kim`.

# Lab 3-2: Building and Executing Your Python Program

## 1. Creating the Program (`hello.py`):

- Use a text editor (e.g., nano) to write your Python program.
- The program should print: `"hello, first_name last_name"`.
- Replace `first_name` and `last_name` with your own name.

## 2. Running the Program:

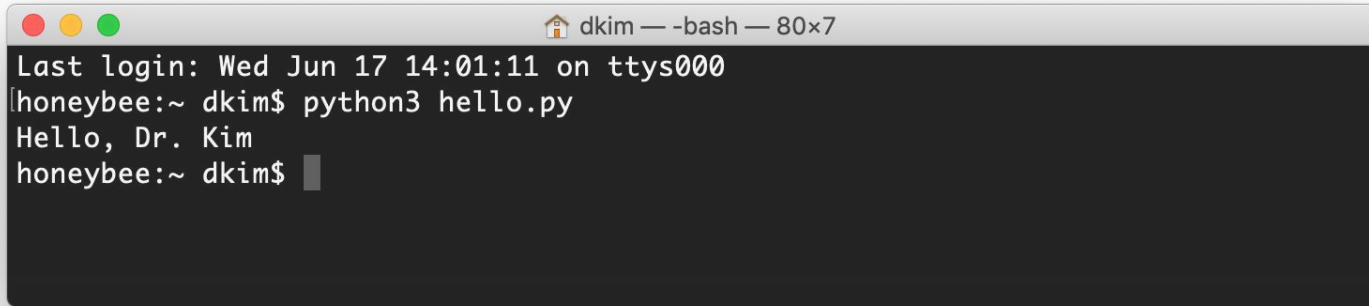
- Open the terminal and navigate to the directory containing `hello.py`.
- Execute the program by typing `python hello.py`.
- Observe the greeting printed on the console.

## 3. Submission Instructions:

- Take a screenshot of the terminal window showing the output of your program.
- Submit the screenshot (as an image file) and the `hello.py` file on Blackboard.

# Lab 3-2: Building and Executing Your Python Program

For example,

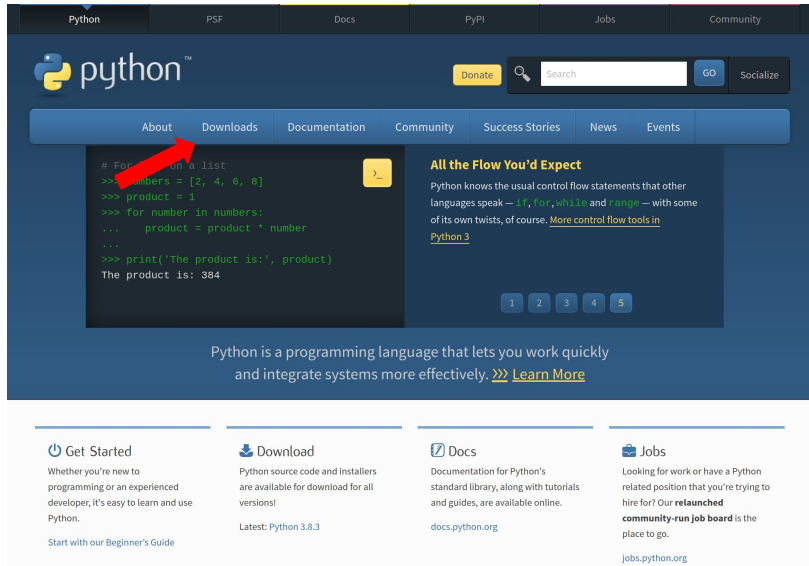
A terminal window with a dark background and light text. The window title bar shows a home icon, the user 'dkim', the shell '-bash', and the window size '80x7'. The terminal content shows a login message, a command to run 'python3 hello.py', the output 'Hello, Dr. Kim', and the prompt returning to 'dkim\$'.

```
dkim — -bash — 80x7
Last login: Wed Jun 17 14:01:11 on ttys000
honeybee:~ dkim$ python3 hello.py
Hello, Dr. Kim
honeybee:~ dkim$
```

# Ubuntu (Linux)

# Install Python (for Ubuntu 20.04LTS users)

- In this class, **Python3** will be used.
- Go to Python homepage and click Downloads on the menu.
  - <https://www.python.org/>



The screenshot shows the Python.org homepage. At the top, there is a navigation bar with links for Python, PSF, Docs, PyPI, Jobs, and Community. Below this is a search bar with a 'GO' button and a 'Socialize' button. A secondary navigation bar contains links for About, Downloads, Documentation, Community, Success Stories, News, and Events. A red arrow points to the 'Downloads' link. The main content area features a code snippet on the left and an article titled 'All the Flow You'd Expect' on the right. At the bottom, there are four columns: 'Get Started', 'Download', 'Docs', and 'Jobs', each with a brief description and a link to further resources.

```
# For loop on a list
>>> numbers = [2, 4, 6, 8]
>>> product = 1
>>> for number in numbers:
...     product = product * number
...
>>> print('The product is:', product)
The product is: 384
```

**All the Flow You'd Expect**  
Python knows the usual control flow statements that other languages speak – `if`, `for`, `while` and `range` – with some of its own twists, of course. [More control flow tools in Python 3](#)

Python is a programming language that lets you work quickly and integrate systems more effectively. >>> [Learn More](#)

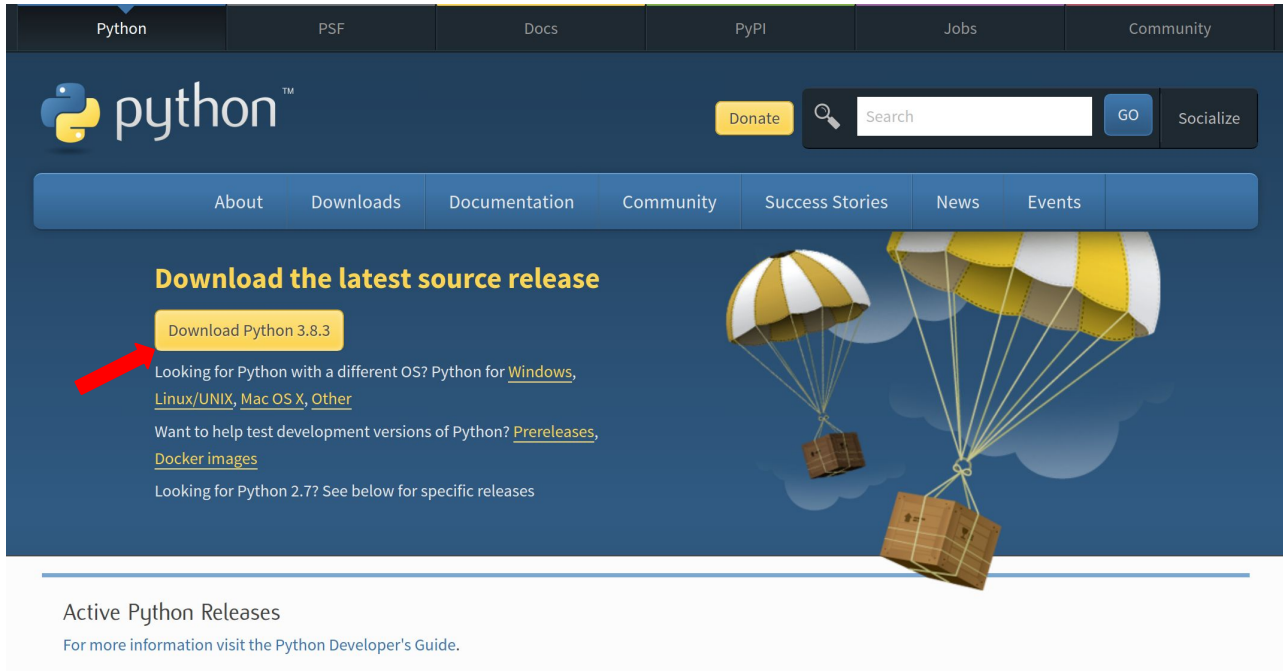
- Get Started**  
Whether you're new to programming or an experienced developer, it's easy to learn and use Python.  
[Start with our Beginner's Guide](#)
- Download**  
Python source code and installers are available for download for all versions!  
Latest: Python 3.8.3
- Docs**  
Documentation for Python's standard library, along with tutorials and guides, are available online.  
[docs.python.org](https://docs.python.org)
- Jobs**  
Looking for work or have a Python related position that you're trying to hire for? Our **relaunched community-run job board** is the place to go.  
[jobs.python.org](https://jobs.python.org)

# Python 3.6.8

If you want Python 3.6.8, please use this link to download the installation file.

<https://www.python.org/downloads/release/python-368/>

# Download `Python-3.8.3.tgz.xz`



The screenshot shows the Python.org website with a dark blue header and navigation menu. The main content area features a yellow button labeled "Download Python 3.8.3" with a red arrow pointing to it. Below the button, there are links for "Looking for Python with a different OS?" and "Want to help test development versions of Python?".

Python

PSF

Docs

PyPI

Jobs

Community

python™

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Looking for Python 2.7? See below for specific releases

Active Python Releases

For more information visit the [Python Developer's Guide](#).

## Installing Python 3.8 on Ubuntu from Source

1. Update the packages list and install the packages necessary to build Python:

```
$ sudo apt update  
  
$ sudo apt install build-essential zlib1g-dev libncurses5-dev libgdbm-dev  
libnss3-dev libssl-dev libreadline-dev libffi-dev libsqlite3-dev wget  
libbz2-dev
```

2. Unzip the file you downloaded from <https://python.org/downloads/>:

```
$ tar -xf Python-3.8.3.tgz.xz
```

3. Change directory (`cd`) to the Python source directory and execute the `configure` script which performs a number of checks to make sure all of the dependencies on your system are present:

```
$ cd Python-3.8.3  
  
$ ./configure --enable-optimizations
```

4. The `--enable-optimizations` option optimizes the Python binary by running multiple tests. This makes the build process slower.

5. Start the Python 3.8 build process:

```
$ make -j 8
```

6. For faster build time, modify the `-j` to correspond to the number of cores in your processor. You can find the number by typing `nproc`.

7. When the build process is complete, install the Python binaries by typing:

```
$ sudo make install
```

8. That's it. Python 3.8.3 has been installed and ready to be used. Verify it by typing:

```
$ python3 --version
```



`print()` is a function to display its argument on the console as a string.

For example, if your python code is `print("something")`, something will be displayed on the console.

# Lab 3-1: Installing and Running Python 3 in Command Prompt

1. Installation Confirmation:
  - Verify that Python 3 is installed by typing `python --version` in the Command Prompt.
2. Running Python:
  - Open Command Prompt and type `python` to start the Python interpreter.
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    - `print("Hello, first_name last_name")`
  - Replace `first_name` and `last_name` with your actual first and last names.
4. Capture your screen and upload it (image file) on Blackboard.
5. For example, see next slide

File Edit View Search Terminal Help

```
dkim@mission:~$ python3 --version
```

```
Python 3.8.3
```

```
dkim@mission:~$ python3
```

```
Python 3.8.3 (default, Jun 15 2020, 14:45:15)
```

```
[GCC 7.5.0] on linux
```

```
Type "help", "copyright", "credits" or "license" for more information.
```

```
>>> print("Hello, Dr. Kim")
```

```
Hello, Dr. Kim
```

```
>>> █
```

# Installing Nano Editor on Ubuntu

## 1. Opening the Terminal:

Access your terminal by pressing Ctrl + Alt + T or searching for 'Terminal' in your applications.

## 2. Install Nano:

In the terminal, enter the command: `sudo apt-get install nano`

Enter your password if prompted to begin the installation.

## 3. Verifying Installation:

Once installation is complete, type `nano --version` to verify that Nano is installed correctly.

# Writing and Running Python Code in Nano Editor

## 1. Open Nano Editor:

In your terminal, open the nano editor by typing `nano hello.py`.

Write a single line of Python code in the editor.

## 2. Saving the File:

To save your file in nano, press Ctrl-O.

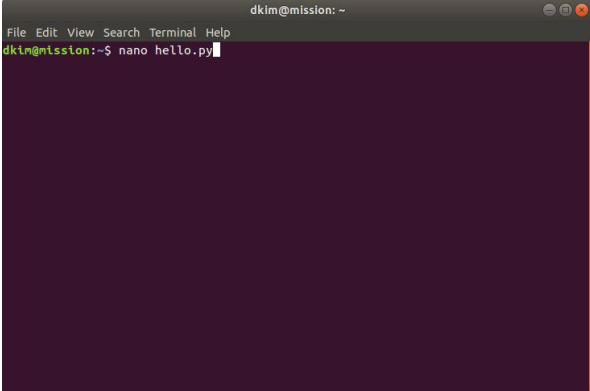
Confirm the file name (`hello.py`), then press Y for Yes.

Exit nano by pressing Ctrl-X.

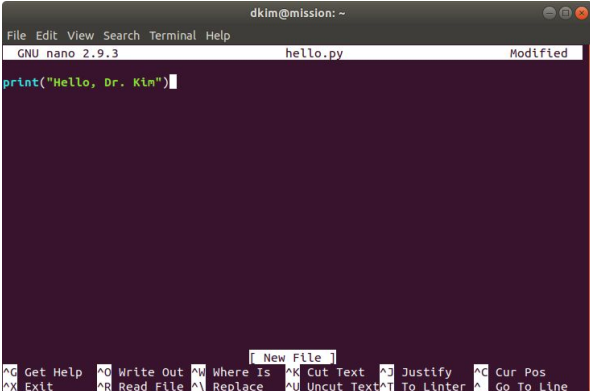
## 3. Running the Script:

In the terminal, run your Python script by typing `python hello.py`.

Observe the output of your program in the terminal.



```
dkim@mission: ~  
File Edit View Search Terminal Help  
dkim@mission:~$ nano hello.py
```



```
dkim@mission: ~  
File Edit View Search Terminal Help  
GNU nano 2.9.3 hello.py Modified  
print("Hello, Dr. Kim")  
New File  
^G Get Help ^O Write Out ^W Where Is ^X Cut Text ^J Justify ^C Cur Pos  
^X Exit ^R Read File ^A Replace ^U Uncut Text ^T To Linter ^_ Go To Line
```

# Lab 3-2: Building and Executing Your Python Program

## 1. Creating the Program (`hello.py`):

- Use a text editor (e.g., nano) to write your Python program.
- The program should print: `"hello, first_name last_name"`.
- Replace `first_name` and `last_name` with your own name.

## 2. Running the Program:

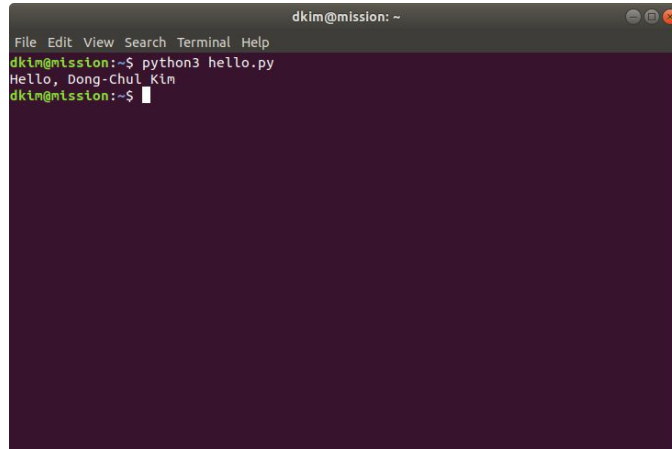
- Open the terminal and navigate to the directory containing `hello.py`.
- Execute the program by typing `python hello.py`.
- Observe the greeting printed on the console.

## 3. Submission Instructions:

- Take a screenshot of the terminal window showing the output of your program.
- Submit the screenshot (as an image file) and the `hello.py` file on Blackboard.

# Lab 3-2: Building and Executing Your Python Program

For example,

A terminal window titled "dkim@mission: ~" with a menu bar containing "File Edit View Search Terminal Help". The terminal shows the command "python3 hello.py" being executed, which outputs "Hello, Dong-Chul Kim". The prompt "dkim@mission:~\$" is visible at the end of the line.

```
dkim@mission: ~  
File Edit View Search Terminal Help  
dkim@mission:~$ python3 hello.py  
Hello, Dong-Chul Kim  
dkim@mission:~$
```