

Disusun oleh :  
Team Coach

Kode Materi :  
**SN-04-01,**  
**SN-04 -02,**  
**SN-04 -03**

# Python

## Introduction



## Sesi I

Brief History of Python



## “Python

*is an experiment in how much freedom programmers need. Too much freedom and nobody can read another's code; too little and expressiveness is endangered”*

-Guido van Rossum -

Image source: <https://gvanrossum.github.io/>

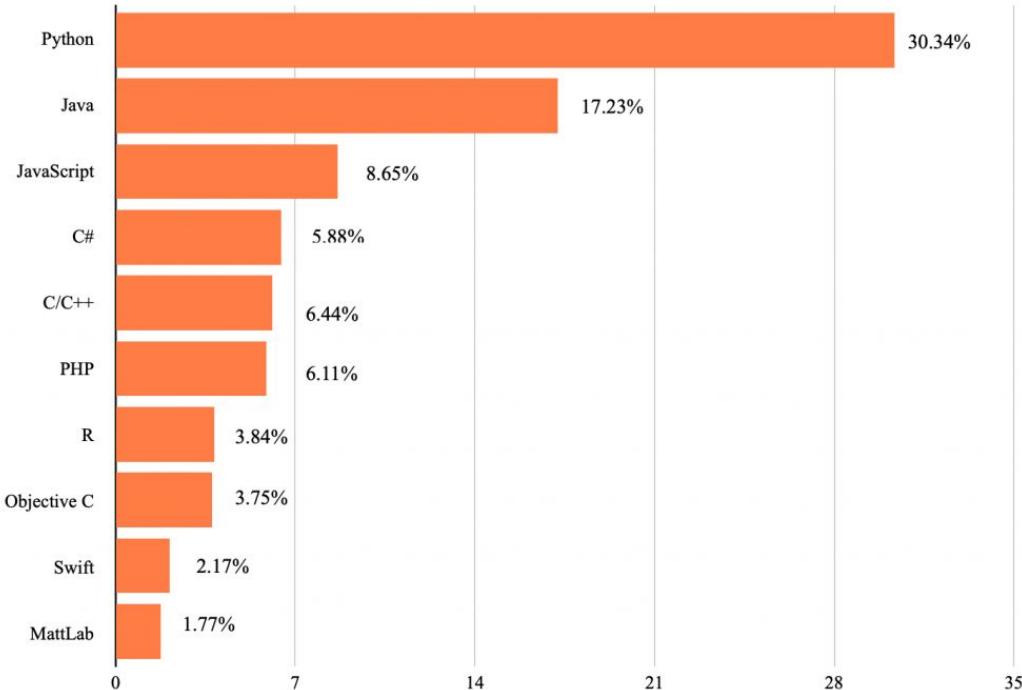
# Monty Python's FLESH CHEWING CIRCUS



Image source: <https://www.imdb.com/title/tt0063929/>

# The Popularity of Programming Language (PYPL)

## Ranking 2020



Python adalah bahasa pemrograman yang mudah dipelajari. Python memiliki **syntax** yang sederhana, perpustakaan (**library**) yang besar, dan dapat **diintegrasikan** dengan bahasa pemrograman lainnya.

Source: <https://darly.solutions/the-most-popular-programming-languages-in-2021/>

# Kesederhanaan Syntax Python



## Java

```
public class CobaCetak {  
    public static void main(String[] args) {  
  
        System.out.println("Hello Dunia");  
  
    }  
}
```

## C++

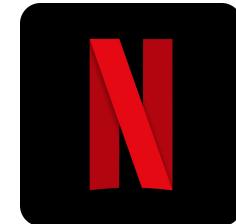
```
#include <iostream>  
using namespace std;  
main(){  
    cout<<"Hello Dunia";  
}
```

## C

```
#include <stdio.h>  
main(){  
    printf("Hello Dunia");  
}
```

## Python

```
print("Hello Dunia")
```



Images Source: Google Image

# High and Low Level Language

## High Level Language

```
1 def convert(s):
2     q = list(s)
3
4     ret = []
5     for x in q:
6         if x.islower() and q.count(x)>1:
7             ret.append(")")
8
9         elif x.isupper():
10            ret.append(")")
11
12     else:
13         ret.append("(")
14
15     print"".join(ret))
16
17 #s = " "
18 #convert(s)
```

Source: <https://dev.to/saswat01/comment/10e4i>



## Low Level Language

A screenshot of a Microsoft Notepad window titled "C:\HELLO.ASM". The window contains assembly language code:

```
File Edit Search View Options Help
C:\HELLO.ASM

.model tiny
.stack 200h
.data
    Bula db "Bula FIT", 0AH, 0DH, "$"
.code

start:
    mov ax, @data
    mov ds, ax

    mov dx, offset Bula
    mov ah, 09H
    int 21H

    mov ax, 4C00H
    int 21H
end start
```

Source: <https://sites.google.com/site/liangweiqiang/Home/cd4tasm>



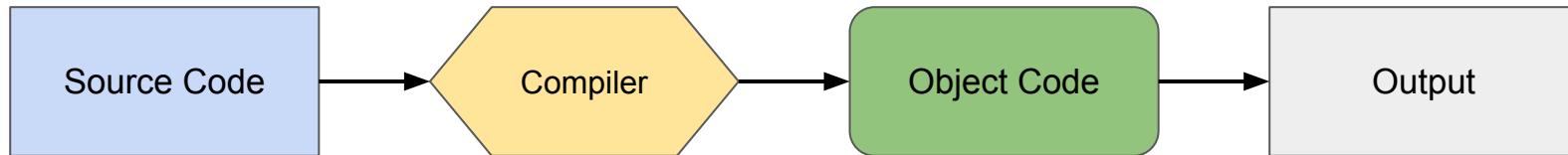
# Apa itu Interpreter?

Image Source: <https://fastwork.id/blog/kemampuan-penerjemahan/>

## Cara Kerja Interpreter:



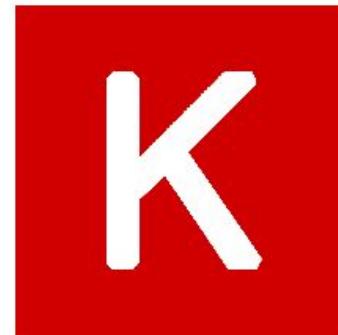
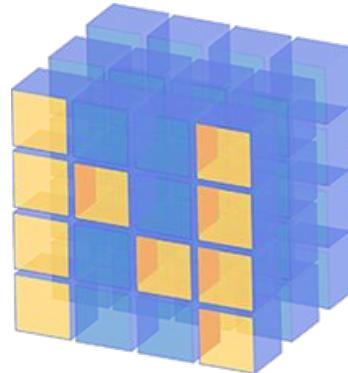
## Cara Kerja Compiler:



Source: <https://www.guru99.com/difference-compiler-vs-interpreter.html>

# Package Populer Python

Pandas



Sources: <https://towardsdatascience.com/best-python-libraries-for-every-python-developer-77daab4fa40e>

# Pertumbuhan Bahasa Pemrograman Python

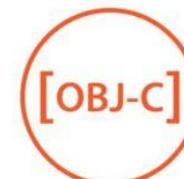




css



HTML



Swift





# Why Python?

## COMPANIES USING PYTHON

Quora

edX

UBER

Pinterest Google



YAHOO!



yelp

IBM

Spotify



YouTube

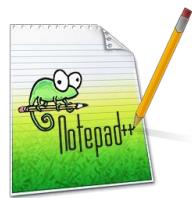
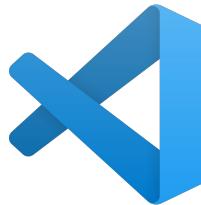
Eventbrite

DISQUS



## Sesi II

Jupyter Notebook



Images Source: Google Image

# Why use



Source: <https://jupyter.org/>



Jupyter is a loose acronym meaning **Julia**, **Python**, and **R**



The Jupyter logo consists of the word "jupyter" in a lowercase, sans-serif font. Above the letter "j", there is a thick orange arc. To the left of the "j", there are two small dark gray circles. To the right of the "j", there are two larger, curved orange arcs.

# jupyter Installation

# Referensi Video: Penambahan Environment



Tutorial **Install Jupyter Notebook**  
dan **Menambahkan Environment**  
Menggunakan Anaconda Python  
versi 3.8

Source: <https://www.youtube.com/watch?v=1hw7W7HrrOI>

# Referensi Artikel: Instalasi TensorFlow

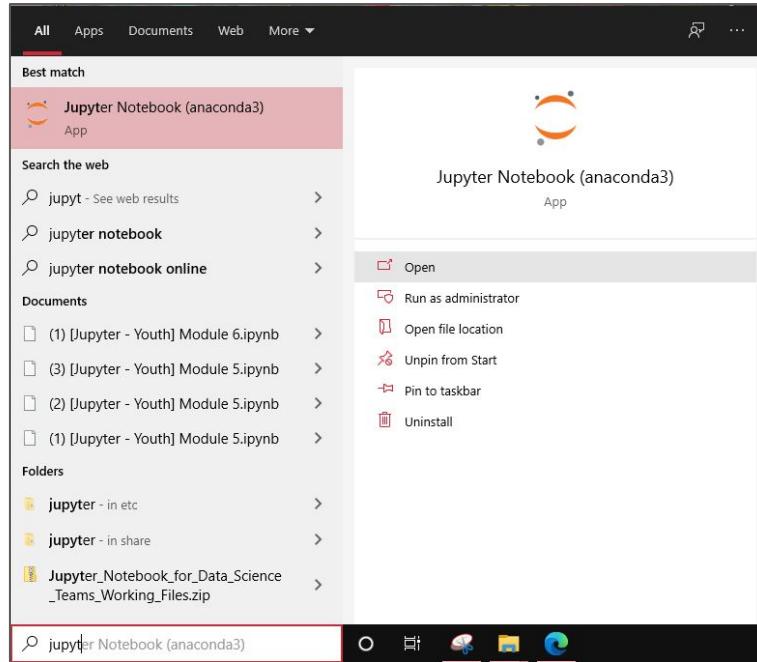


Tutorial Install **TensorFlow** GPU 2.x  
Menggunakan Anaconda Windows  
8/10

Source: <https://warstek.com/tensorflowgpu/>



# jupyter *User Interface*

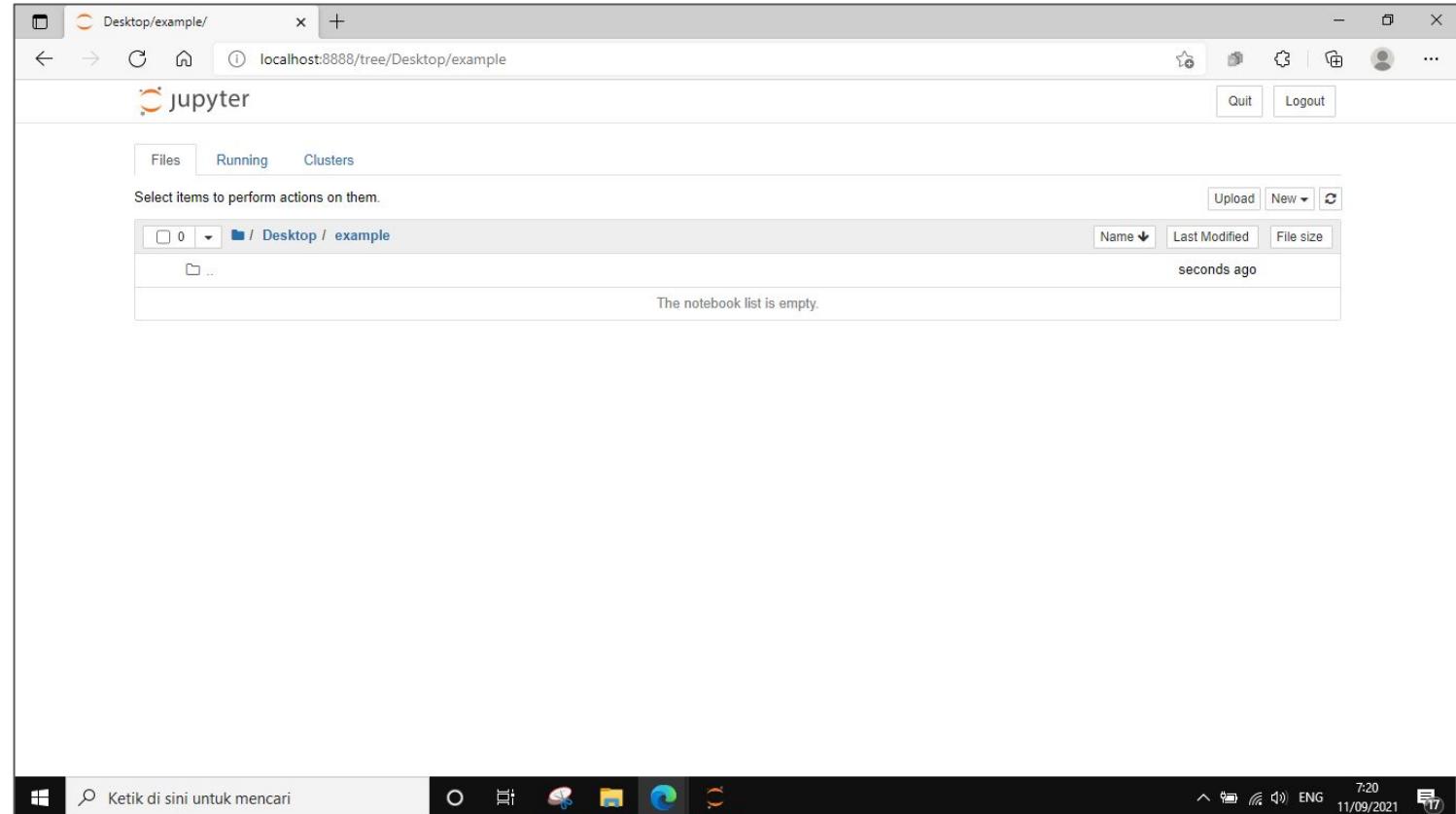


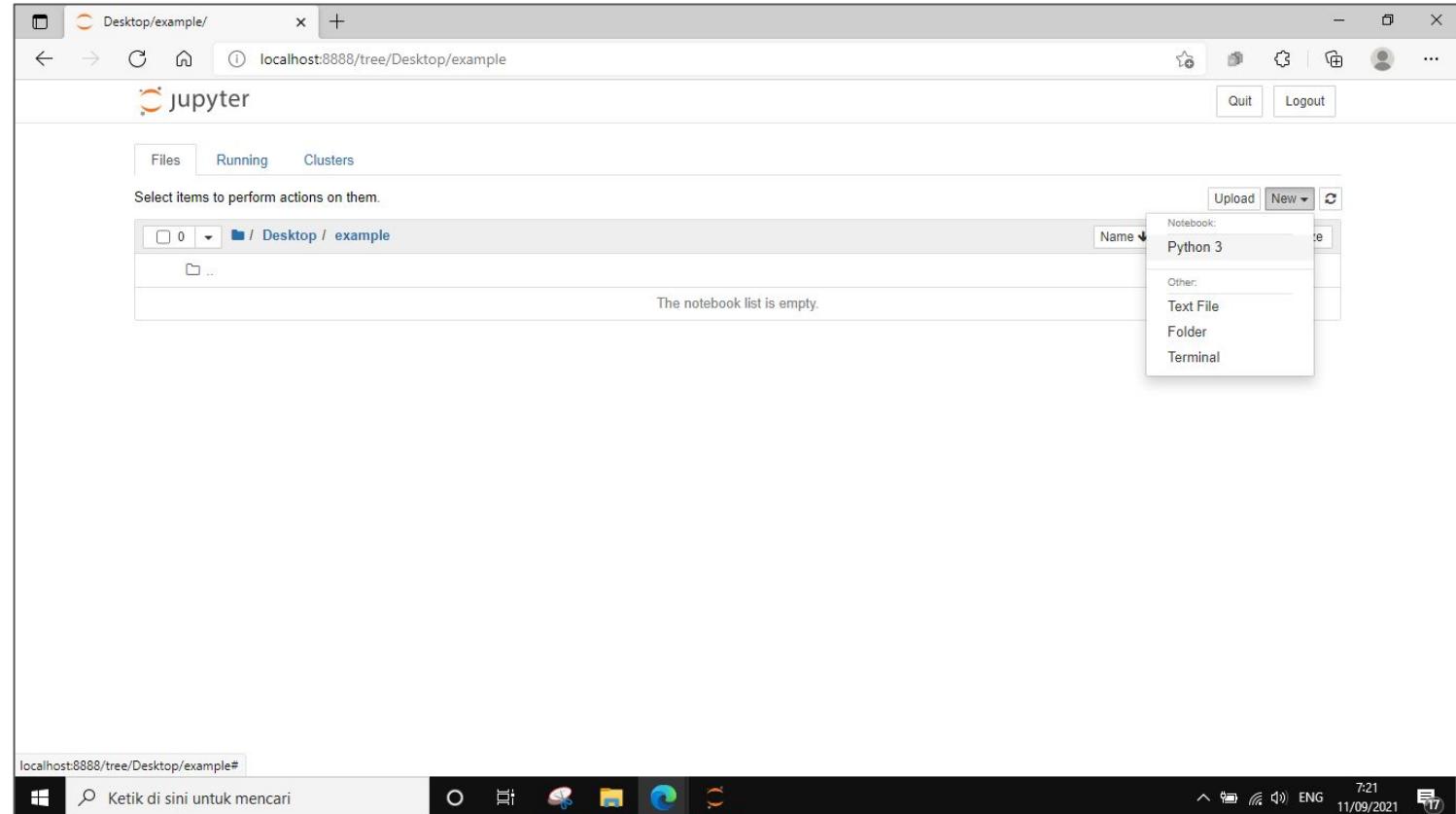
```

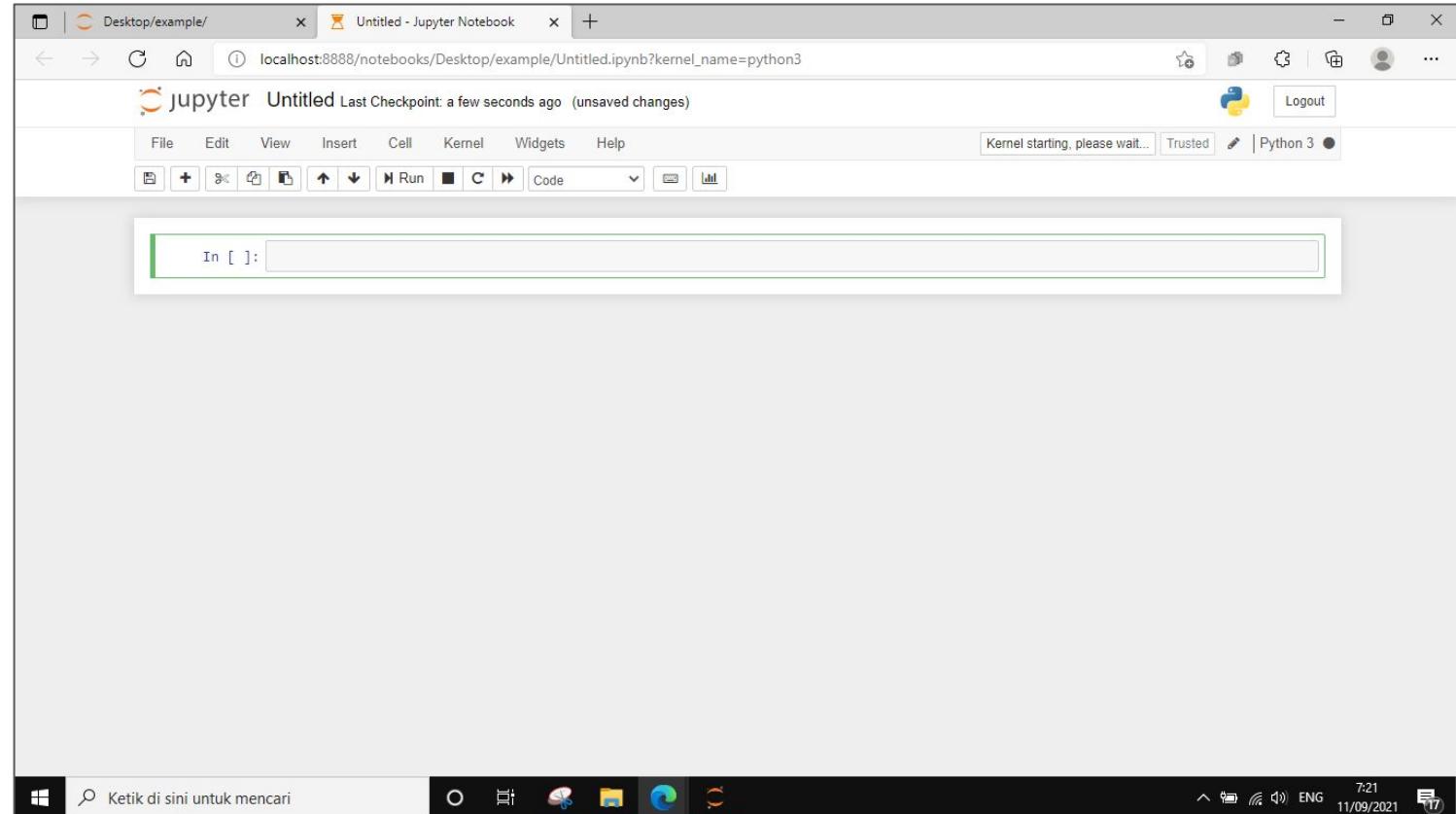
Jupyter Notebook (anaconda3)
I 07:20:17.468 NotebookApp] JupyterLab extension loaded from C:\Users\Winata\anaconda3\lib\site-packages\jupyterlab
I 07:20:17.468 NotebookApp] JupyterLab application directory is C:\Users\Winata\anaconda3\share\jupyter\lab
I 07:20:17.473 NotebookApp] Serving notebooks from local directory: C:\Users\Winata
I 07:20:17.473 NotebookApp] The Jupyter Notebook is running at:
I 07:20:17.474 NotebookApp] http://localhost:8888/?token=45129800146c12bb7115e3b1a7e83e28c9abac87d06ed93b
I 07:20:17.474 NotebookApp] or http://127.0.0.1:8888/?token=45129800146c12bb7115e3b1a7e83e28c9abac87d06ed93b
I 07:20:17.474 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[07:20:17.590 NotebookApp]

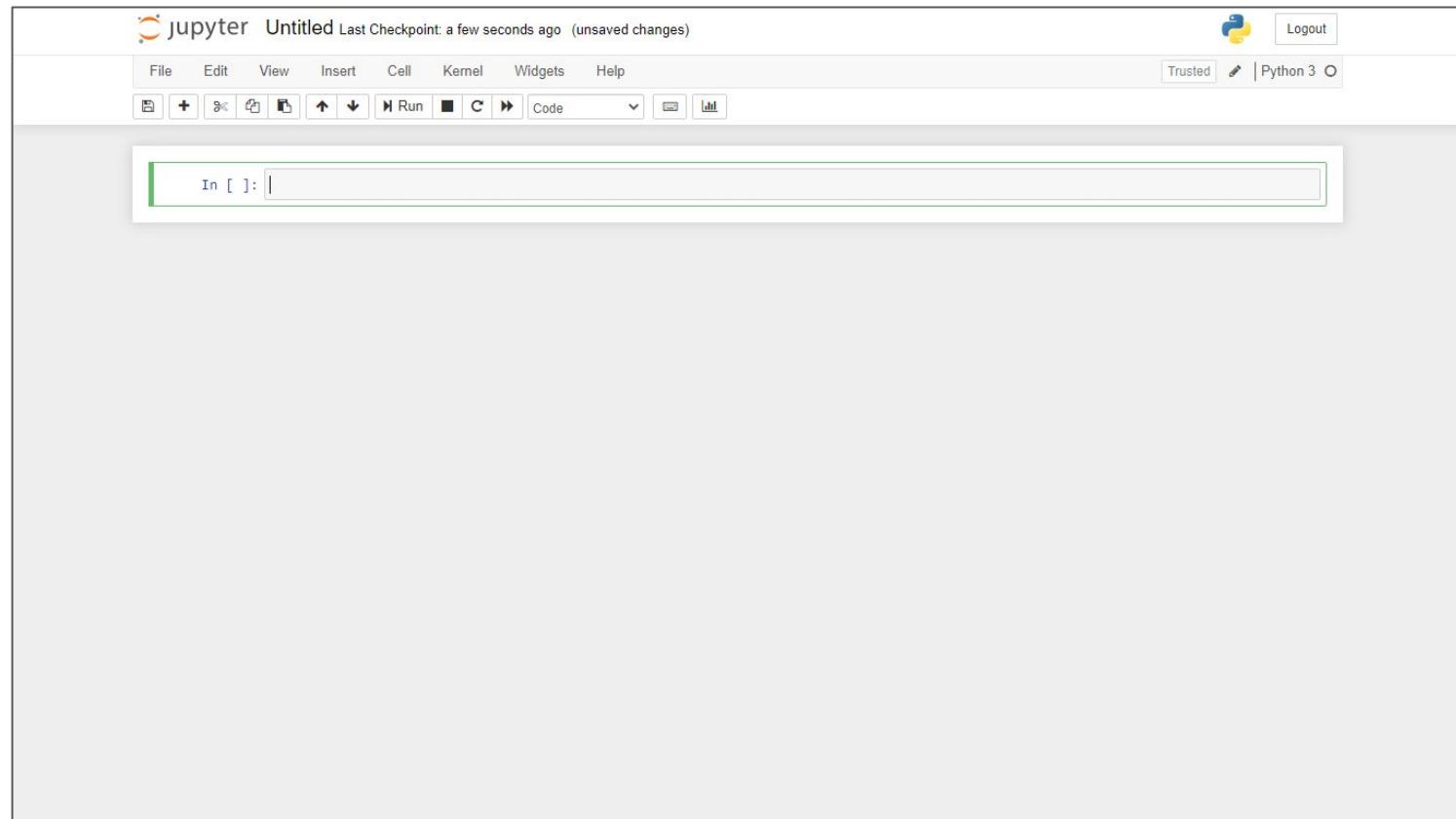
To access the notebook, open this file in a browser:
file:///C:/Users/Winata/AppData/Roaming/jupyter/runtime/nbserver-4852-open.html
Or copy and paste one of these URLs:
http://localhost:8888/?token=45129800146c12bb7115e3b1a7e83e28c9abac87d06ed93b
or http://127.0.0.1:8888/?token=45129800146c12bb7115e3b1a7e83e28c9abac87d06ed93b

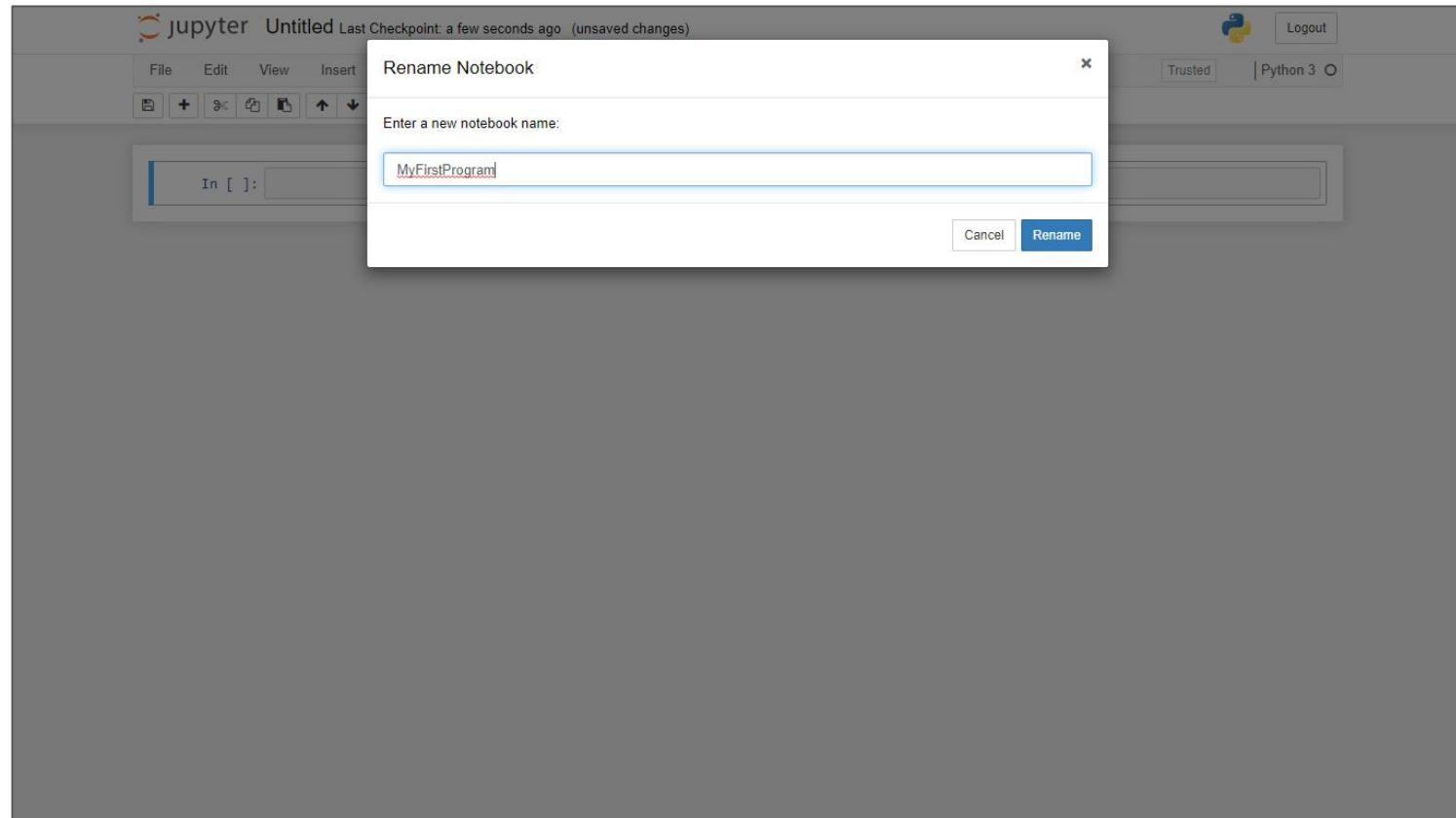
```











The screenshot shows the Jupyter Notebook interface. At the top, there is a navigation bar with tabs for "Files", "Running", and "Clusters". On the right side of the bar are "Quit" and "Logout" buttons. Below the navigation bar, there is a message "Select items to perform actions on them." followed by a toolbar with "Upload", "New", and a refresh icon. The main area displays a file list. The list includes a folder named "Desktop / example" which contains an item named "MyFirstProgram.ipynb". The file list has columns for "Name", "Last Modified", and "File size". The "Last Modified" column shows "seconds ago" for the folder and "6 minutes ago" for the file. The "File size" column shows "699 B" for both. There are checkboxes next to each item and a "..." button.

Name	Last Modified	File size
Desktop / example	seconds ago	
MyFirstProgram.ipynb	6 minutes ago	699 B

Organise ▾   Include selected folder in library ▾   Give access to ▾   Burn   New folder

Name	Date modified	Type	Size
.ipynb_checkpoints	11/09/2021 6:59	File folder	
MyFirstProgram.ipynb	11/09/2021 7:08	IPYNB File	1 KB

Quick access

- Desktop
- Downloads
- Documents
- Pictures
- 1. SN-03
- 2. SL-03
- 3. RB-03
- Screenshots

This PC

- 3D Objects
- Desktop
- Documents
- Downloads
- Music
- Pictures
- Videos
- Local Disk (C:)
- Local Disk (D:)

Network

2 items

The screenshot shows a Jupyter Notebook interface. At the top, there's a header bar with the title "jupyter MyFirstProgram Last Checkpoint: a few seconds ago (unsaved changes)", a Python logo icon, and a "Logout" button. Below the header is a toolbar with various icons for file operations like "File", "Edit", "View", "Insert", "Cell", "Kernel", "Widgets", and "Help". To the right of the toolbar are buttons for "Trusted", "Python 3", and a "Code" dropdown menu. The main workspace contains a single code cell with the following content:

```
In [ ]: print('Halo Dunia')
```

The screenshot shows a Jupyter Notebook interface. At the top, there's a header bar with the title "jupyter MyFirstProgram Last Checkpoint: a few seconds ago (unsaved changes)", a Python logo icon, and a "Logout" button. Below the header is a toolbar with various icons for file operations like "File", "Edit", "View", "Insert", "Cell", "Kernel", "Widgets", and "Help". To the right of the toolbar are buttons for "Trusted", "Python 3", and a "Code" dropdown menu. The main workspace contains a single code cell with the following content:

```
In [ ]: print('Halo Dunia')
```

The screenshot shows a Jupyter Notebook interface. At the top, there's a header bar with the title "jupyter MyFirstProgram Last Checkpoint: a few seconds ago (unsaved changes)", a Python logo icon, and a "Logout" button. Below the header is a toolbar with various icons for file operations like "File", "Edit", "View", "Insert", "Cell", "Kernel", "Widgets", and "Help". To the right of the toolbar are buttons for "Trusted", "Python 3", and a dropdown menu. The main workspace contains a single code cell with the following content:

```
In [1]: print('Halo Dunia')  
Halo Dunia
```

The output "Halo Dunia" is displayed in a monospaced font, indicating the result of the executed code.

The screenshot shows a Jupyter Notebook interface titled "MyFirstProgram". The top bar includes the title, a "Logout" button, and a "Python 3" kernel selection. Below the toolbar is a menu bar with File, Edit, View, Insert, Cell, Kernel, Widgets, and Help. A toolbar below the menu bar contains various icons for file operations like new, open, save, and run. The main workspace displays a single code cell with the following content:

```
In [1]: print('Halo Dunia')
Halo Dunia
```

The output "Halo Dunia" is displayed in a monospaced font, indicating the result of the executed code.

The screenshot shows a Jupyter Notebook interface titled "MyFirstProgram". The top bar includes the title, a "Logout" button, and a "Python 3" kernel selection. Below the toolbar, a menu dropdown is open over a code cell, showing options: "Code", "Markdown", "Raw NBConvert", and "Heading". The code cell contains the Python command `print('Halo Dunia')`, which has been executed and displayed as the output "Halo Dunia". A new cell input field is visible below the output.

The screenshot shows a Jupyter Notebook interface. At the top, there's a toolbar with various icons for file operations like Open, Save, and Run, along with tabs for Cell, Kernel, Widgets, and Help. To the right of the toolbar are buttons for Trusted, Logout, and Python 3. The main workspace consists of two cells. The first cell, labeled 'In [1]', contains the Python code `print('Halo Dunia')`. The output of this cell is 'Halo Dunia'. Below these, there's a larger text area containing the placeholder text 'Ini teks untuk dokumentasi program'.

```
In [1]: print('Halo Dunia')
Halo Dunia
Ini teks untuk dokumentasi program|
```

The screenshot shows a Jupyter Notebook interface with the title "jupyter MyFirstProgram Last Checkpoint: 2 minutes ago (unsaved changes)". The top menu bar includes File, Edit, View, Insert, Cell, Kernel, Widgets, and Help. On the right, there are buttons for Trusted, Logout, and Python 3. The toolbar below the menu contains icons for file operations like Open, Save, and Run, along with other controls.

In [1]: `print('Halo Dunia')`

Halo Dunia

Ini teks untuk dokumentasi program

In [ ]:

The screenshot shows a Jupyter Notebook interface. At the top, there's a toolbar with various icons for file operations like opening, saving, and running cells. Below the toolbar, the menu bar includes File, Edit, View, Insert, Cell, Kernel, Widgets, and Help. To the right of the menu bar are buttons for Trusted and Python 3, along with a Logout link. The main workspace contains a single code cell labeled In [1]. The cell contains the Python code `print('Halo Dunia')`. When the cell is run, the output "Halo Dunia" is displayed below it. Below the cell, there's a text input field containing the placeholder text "Ini teks untuk dokumentasi program".

The screenshot shows a Jupyter Notebook interface titled "MyFirstProgram". The top bar includes the logo, file navigation, and a Python 3 kernel selection. The main area displays a cell containing documentation text and a code cell with the output "Halo Dunia".

Jupyter MyFirstProgram Last Checkpoint: 3 minutes ago (unsaved changes)

File Edit View Insert Cell Kernel Widgets Help

Logout Trusted Python 3

INI TEKS UNTUK DOKUMENTASI PROGRAM

In [1]: `print('Halo Dunia')`

Halo Dunia

The screenshot shows a Jupyter Notebook interface titled "MyFirstProgram". The top bar includes "File", "Edit", "View", "Insert", "Cell", "Kernel", "Widgets", and "Help" menus, along with a "Logout" button. The "Cell" menu is open, showing options: "Markdown" (selected), "Code", "Markdown", "Raw NBConvert", and "Heading". Below the menu, a code cell contains the Python command `print('Halo Dunia')`. The output of the cell is "Halo Dunia", displayed in a monospaced font.

The screenshot shows a Jupyter Notebook interface with the title "MyFirstProgram". The toolbar includes File, Edit, View, Insert, Cell, Kernel, Widgets, Help, Trusted, Python 3, Logout, and various cell type icons.

In [1]: `print('Halo Dunia')`

Halo Dunia

A code cell containing the following multi-level heading structure is highlighted with a green border:

```
# Ini adalah heading 1
## Ini adalah heading 2
### Ini adalah heading 3
#### Ini adalah heading 4
##### Ini adalah heading 5
##### Ini adalah heading 6
```

The screenshot shows a Jupyter Notebook interface with the title "MyFirstProgram". The toolbar includes File, Edit, View, Insert, Cell, Kernel, Widgets, Help, and various cell type and execution icons. The status bar indicates "Last Checkpoint: 4 minutes ago (unsaved changes)" and "Trusted | Python 3".

In [1]: `print('Halo Dunia')`

Halo Dunia

Ini adalah heading 1

Ini adalah heading 2

Ini adalah heading 3

Ini adalah heading 4

*Ini adalah heading 5*

*Ini adalah heading 6*

In [ ]:

The screenshot shows a Jupyter Notebook interface. At the top, there's a toolbar with various icons for file operations like Open, Save, and Run, along with tabs for Cell, Kernel, Widgets, and Help. To the right of the toolbar are buttons for Trusted and Python 3. The main workspace contains a section titled "My First Program" with the subtitle "Program ini digunakan untuk mencetak kalimat". Below this, a code cell displays the Python command `print('Halo Dunia')`. The output of the cell is "Halo Dunia", which is displayed in a monospaced font.

jupyter MyFirstProgram Last Checkpoint: 5 minutes ago (unsaved changes) Logout Trusted Python 3

New Notebook Open... Make a Copy... Save as... Rename... Save and Checkpoint Revert to Checkpoint Print Preview Download as Trusted Notebook Close and Halt

↑ ↓ ⏪ Run ⏴ C ⏵ Code ⏷ ⏸ ⏹

## First Program

am ini digunakan untuk mencetak kalimat

```
('Halo Dunia')
```

Dunia

localhost:8888/notebooks/Desktop/example/MyFirstProgram.ipynb#

Jupyter MyFirstProgram Last Checkpoint: 6 minutes ago (unsaved changes) Logout Trusted Python 3

New Notebook Open... Make a Copy... Save as... Rename... Save and Checkpoint Revert to Checkpoint Print Preview Download as Trusted Notebook Close and Halt

↑ ↓ Run Cell Widgets Help

Code

## First Program

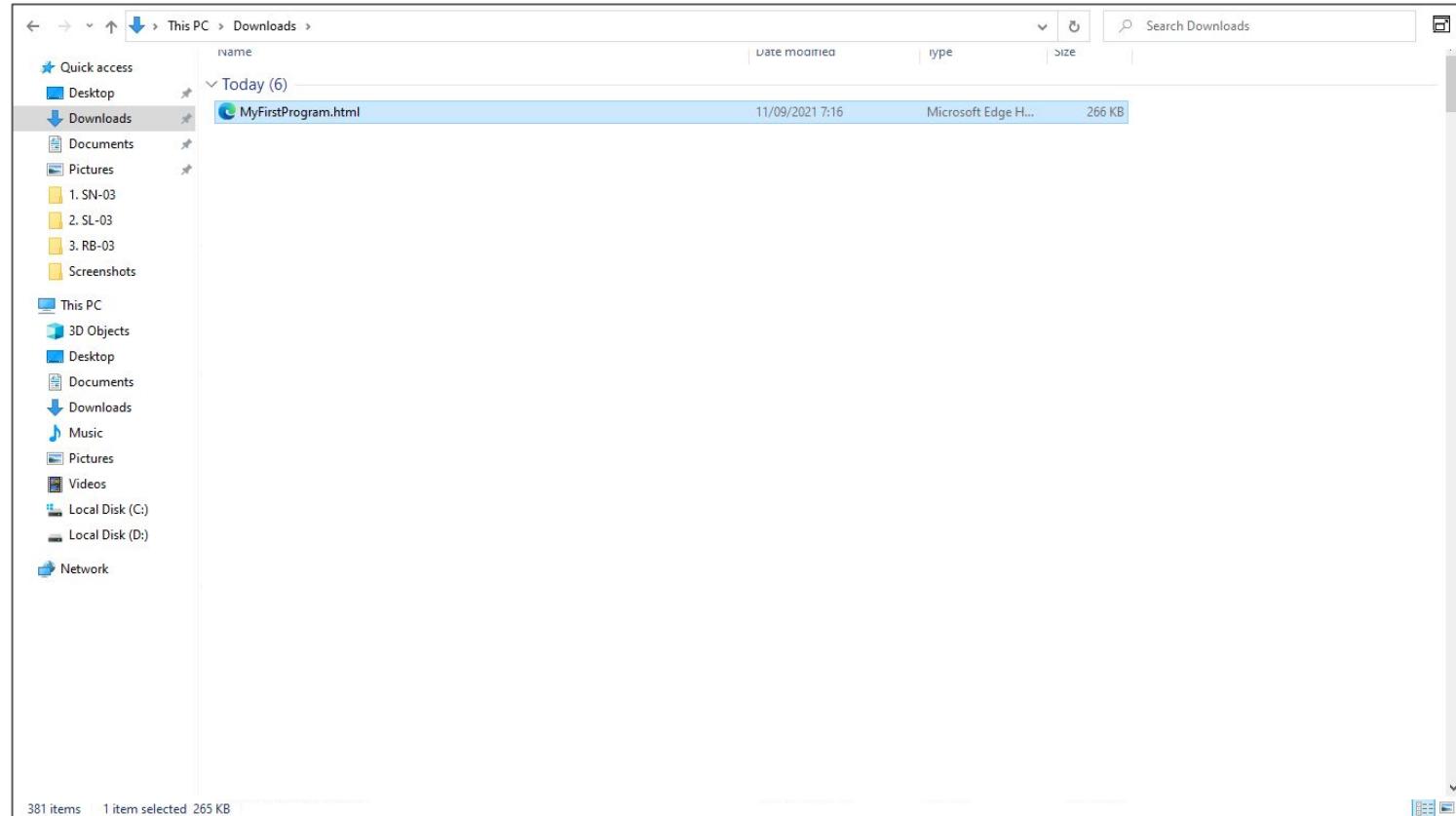
ini digunakan untuk mencetak kalimat

```
('Halo Dunia')
```

Dunia

AsciIDoc (.asciidoc)  
HTML (.html)  
LaTeX (.tex)  
Markdown (.md)  
Notebook (.ipynb)  
PDF via LaTeX (.pdf)  
reST (.rst)  
Python (.py)  
Reveal.js slides (.slides.html)

localhost:8888/notebooks/Desktop/example/MyFirstProgram.ipynb#



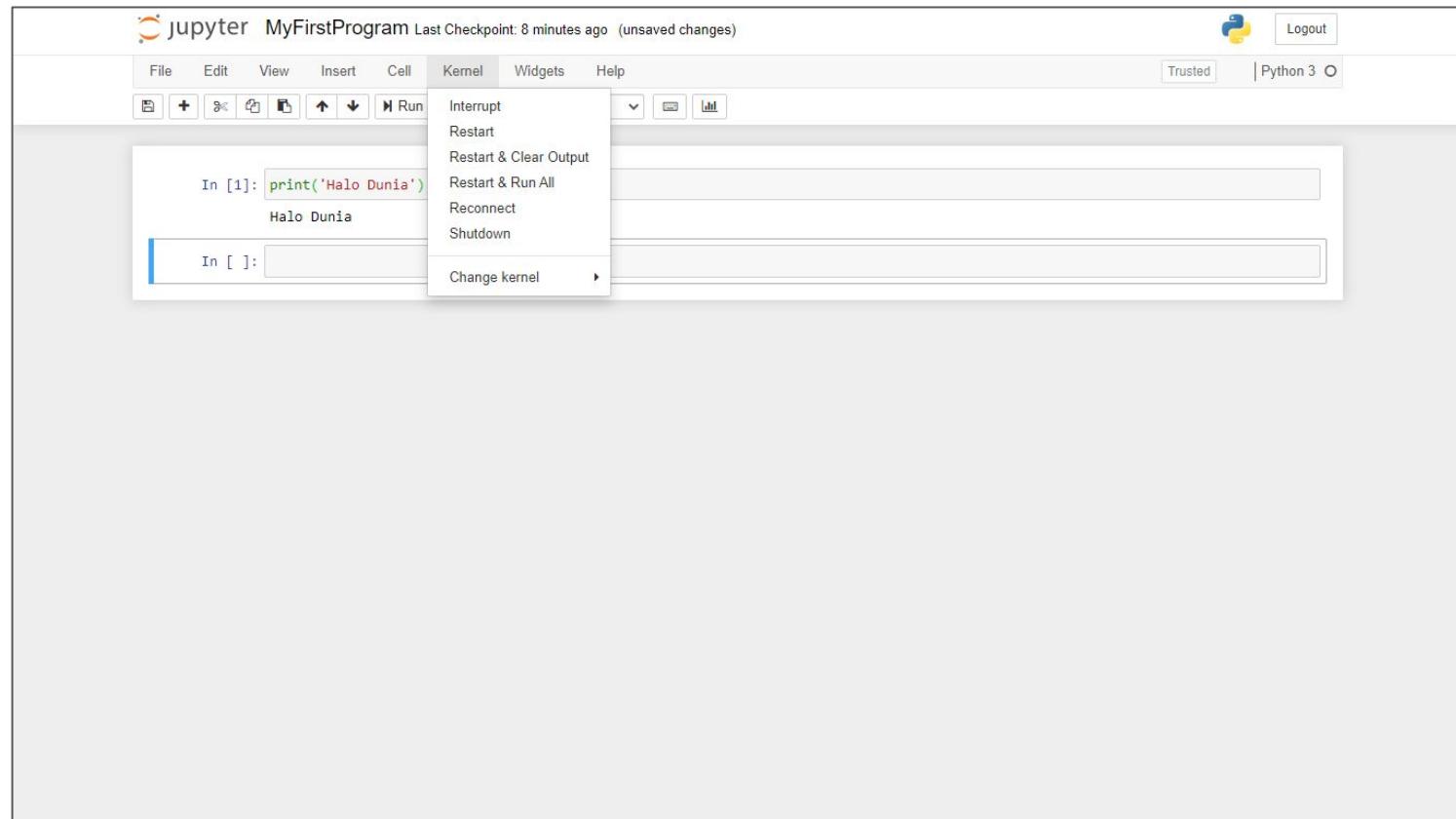
jupyter MyFirstProgram Last Checkpoint: 7 minutes ago (unsaved changes) Logout Trusted Python 3

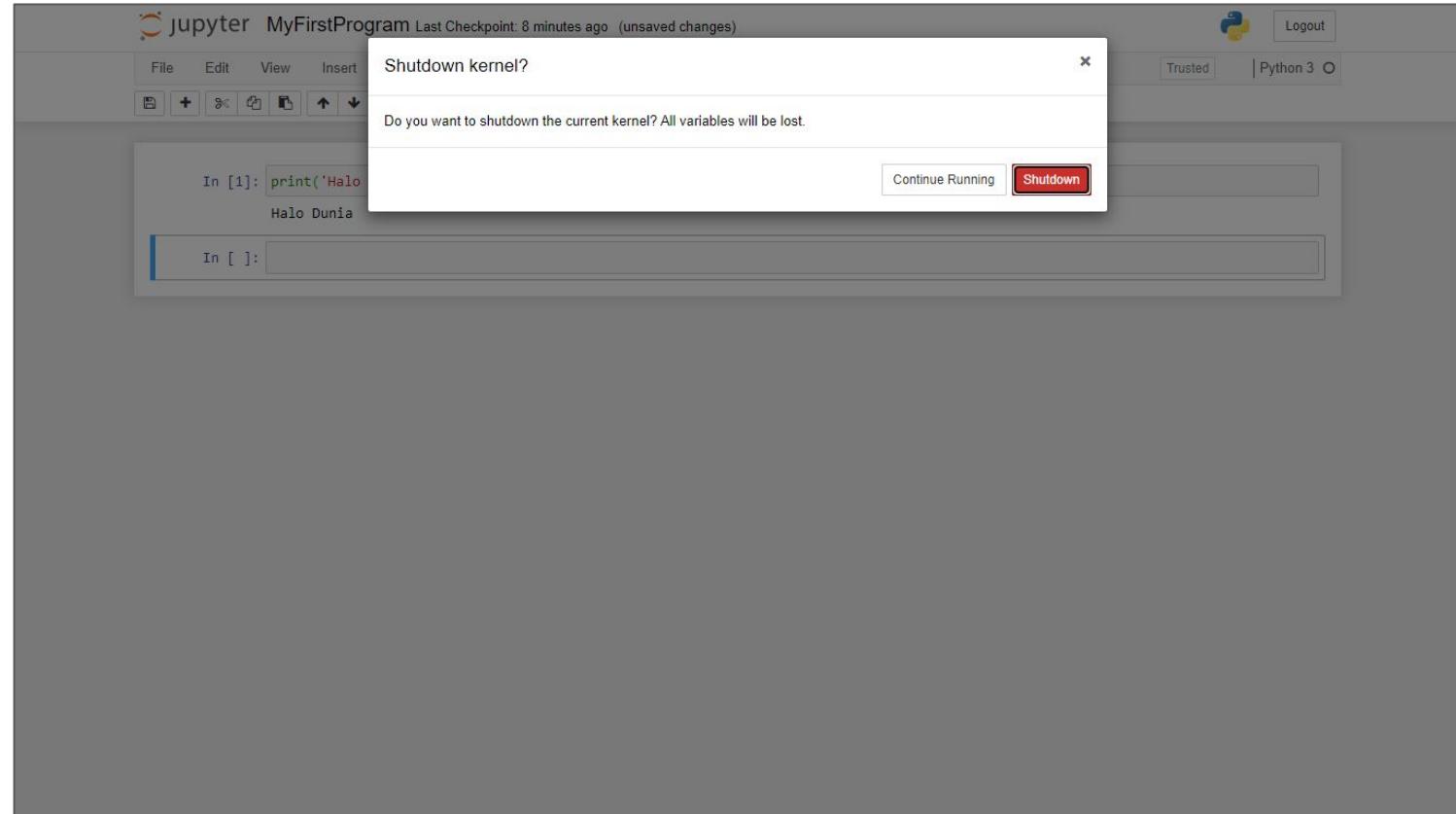
File Edit View Insert Cell Kernel Widgets Help

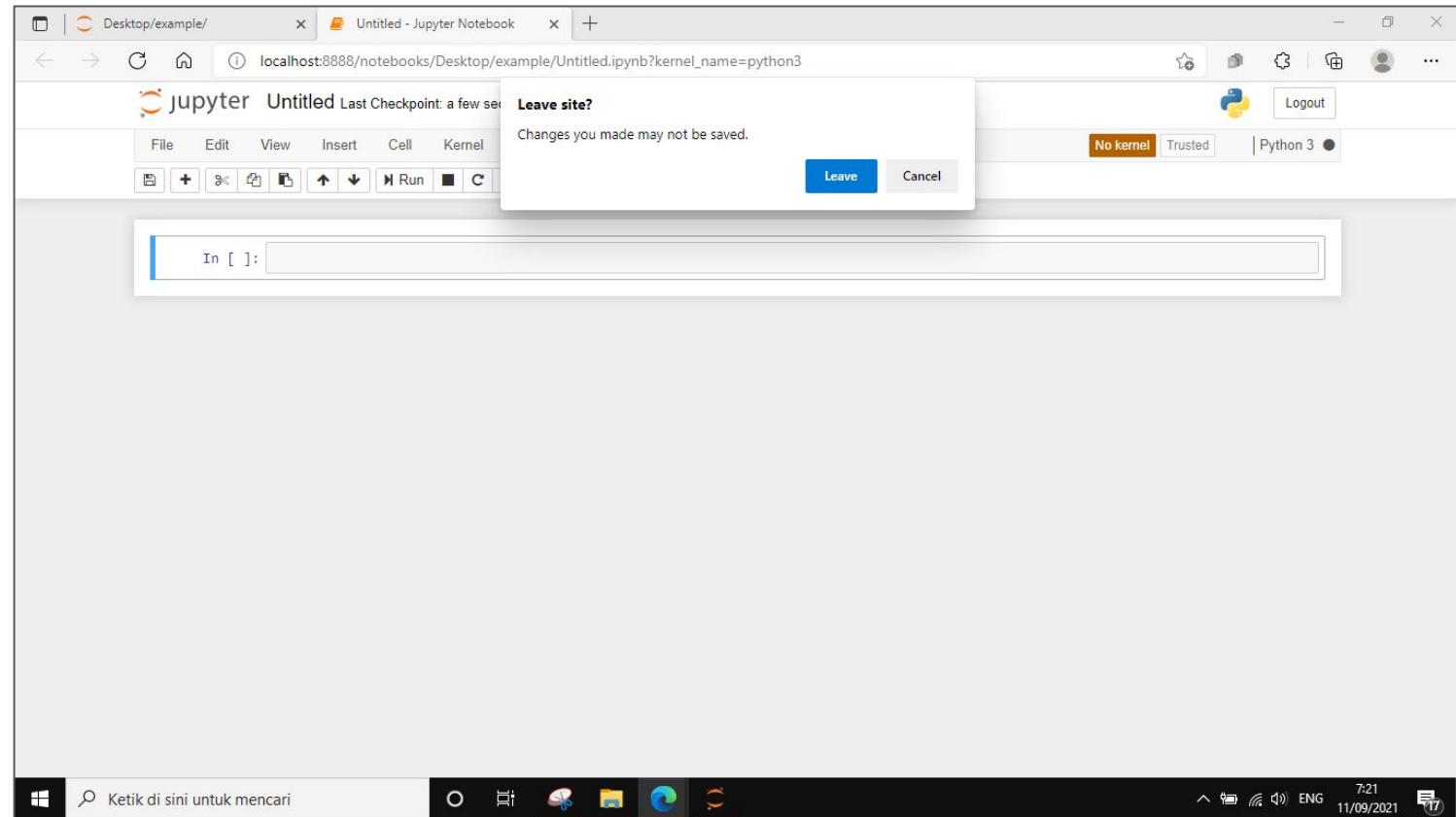
Run Cell Code Cell Kernel Widgets Help

Cut Cells Copy Cells Paste Cells Above Paste Cells Below Paste Cells & Replace Delete Cells Undo Delete Cells Split Cell Merge Cell Above Merge Cell Below Move Cell Up Move Cell Down Edit Notebook Metadata Find and Replace Cut Cell Attachments Copy Cell Attachments Paste Cell Attachments Insert Image

localhost:8888/notebooks/Desktop/example/MyFirstProgram.ipynb#





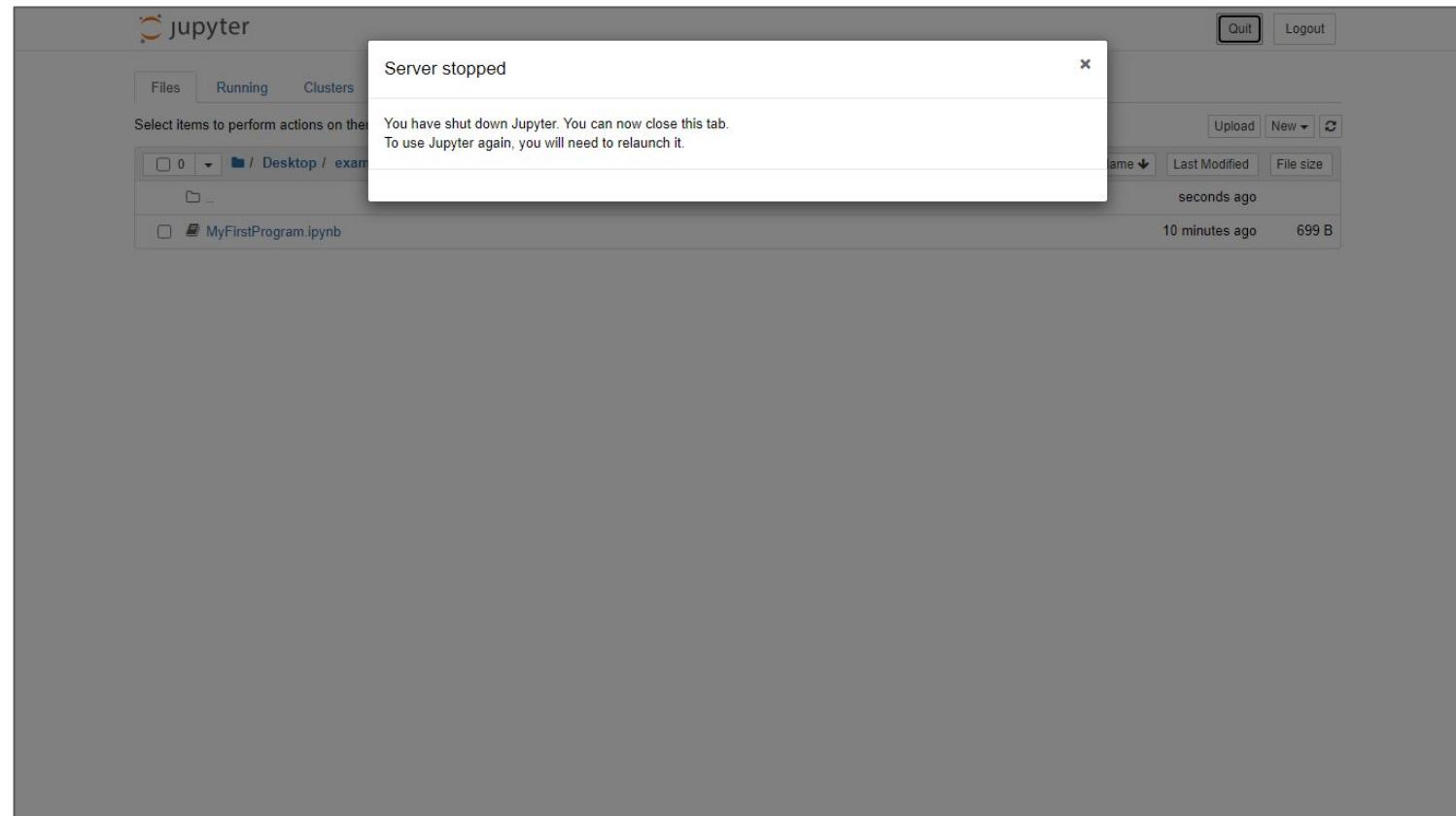


The screenshot shows the Jupyter Notebook interface. At the top, there is a navigation bar with tabs for "Files", "Running", and "Clusters". On the right side of the bar are "Quit" and "Logout" buttons. Below the navigation bar, there is a message "Select items to perform actions on them." followed by a file list. The file list includes a dropdown menu with "0" items selected, a folder icon for the root directory, and a file icon for "MyFirstProgram.ipynb". To the right of the file list are buttons for "Upload", "New", and a refresh symbol. Below these buttons are filters for "Name", "Last Modified", and "File size". The file "MyFirstProgram.ipynb" is listed with its details: it was modified "seconds ago" and has a size of "699 B".

Name	Last Modified	File size
MyFirstProgram.ipynb	seconds ago	699 B

The screenshot shows the Jupyter Notebook interface. At the top, there is a navigation bar with tabs for "Files", "Running", and "Clusters". On the right side of the bar are "Quit" and "Logout" buttons. Below the navigation bar, there is a message "Select items to perform actions on them." followed by a toolbar with "Upload", "New", and a refresh icon. The main area displays a file list. The list includes a folder named "example" at the root level, which contains a file named "MyFirstProgram.ipynb". The file "MyFirstProgram.ipynb" was uploaded "seconds ago" and has a size of "699 B". There are also buttons for selecting multiple files and a ".." button to go up one directory level.

Name	Last Modified	File size
example	seconds ago	
MyFirstProgram.ipynb	10 minutes ago	699 B





## Sesi III

Google Colaboratory

# What is



# Google colab

# Why use



- Menyediakan **library/package** yang siap digunakan (*pre-installed package*)
- Menyediakan akses **GPU** dan **TPU** secara gratis
- Program tersimpan dalam **Cloud**



*User Interface*

Google search results for "google colab".

Sekitar 8.240.000 hasil (0,46 detik)

<https://colab.research.google.com> ▾ Terjemahkan halaman ini

**Google Colab**

Colab notebooks allow you to combine executable code and rich text in a single document, along with images, HTML, LaTeX and more. When you create your own Colab ...  
Anda mengunjungi halaman ini pada 10/09/21.

**Colaboratory**

Colab notebooks allow you to combine executable code and ...

**Google Colab & Python**

Colab is a Python development environment that runs in the ...

**Google Colab Notebook**

Enter a search string to filter the list of notebooks shown below.

Telusuran lainnya dari google.com »

<https://research.google.com> > ... ▾ Terjemahkan halaman ini

**Google Colab - Google Research**

Colaboratory, or "Colab" for short, is a product from Google Research. Colab allows anybody to write and execute arbitrary python code through the browser, and ...  
Anda mengunjungi halaman ini pada 10/09/21.

<https://research.google.com> > I... ▾ Terjemahkan halaman ini

**connecting to a local runtime - Google Research**

<https://colab.research.google.com> pyter notebook \ --NotebookApp.allow\_origin='https://colab.research.google.com' \ --

Welcome To Colaboratory

File Edit View Insert Runtime Tools Help

Share Connect Editing

Table of contents

- Getting started
- Data science
- Machine learning
- More Resources
- Machine Learning Examples
- + Section

Recent

Google Drive GitHub Upload

Filter notebooks

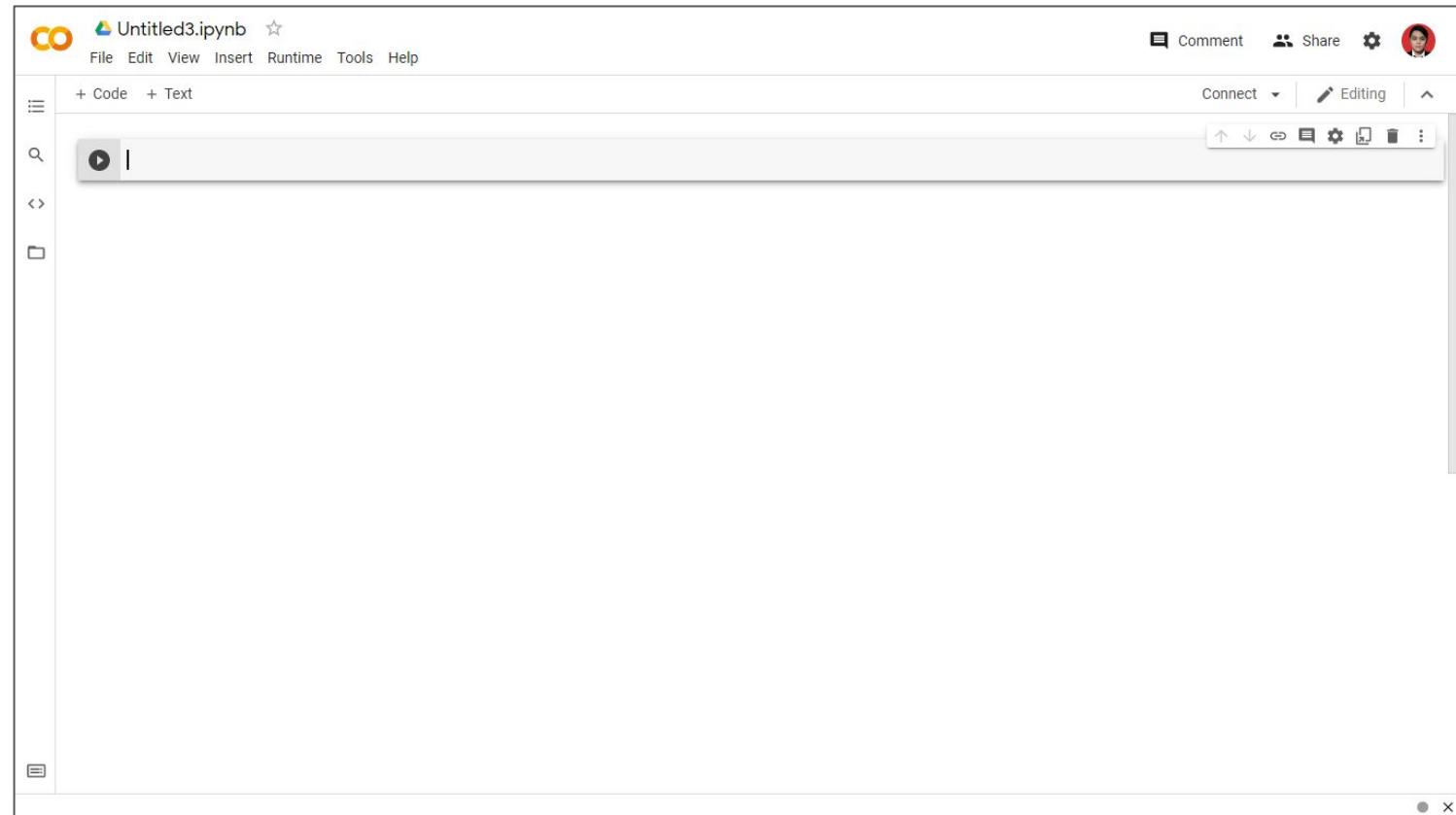
Title	Last opened	First opened	⋮
Welcome To Colaboratory	7:36 AM	May 18	
intro_to_pandas.ipynb	September 10	September 10	
Overview of Colaboratory Features	September 10	September 10	
Python_Project Fisika	September 1	September 1	
DatPro.ipynb	August 28	August 15	

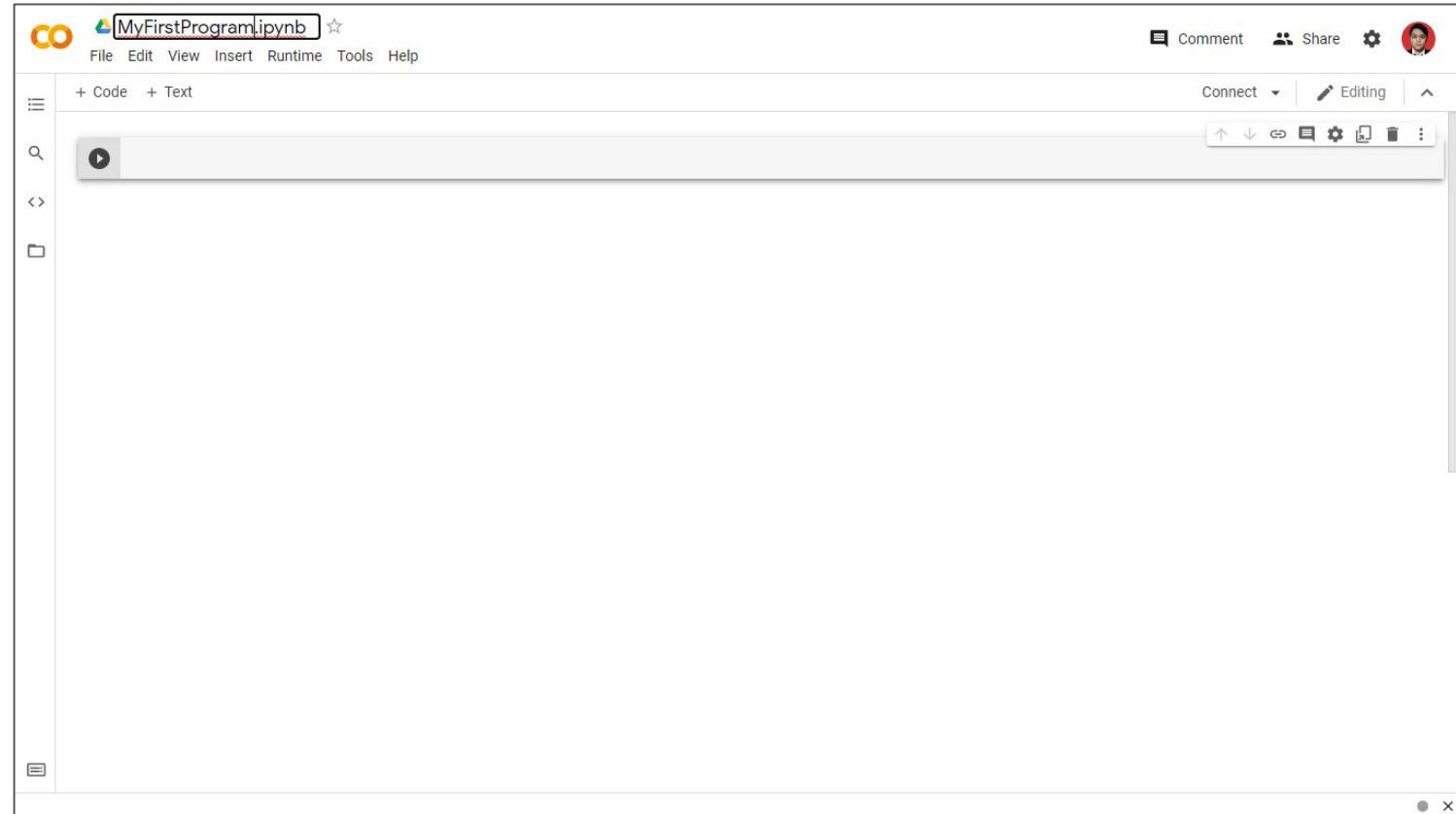
New notebook Cancel

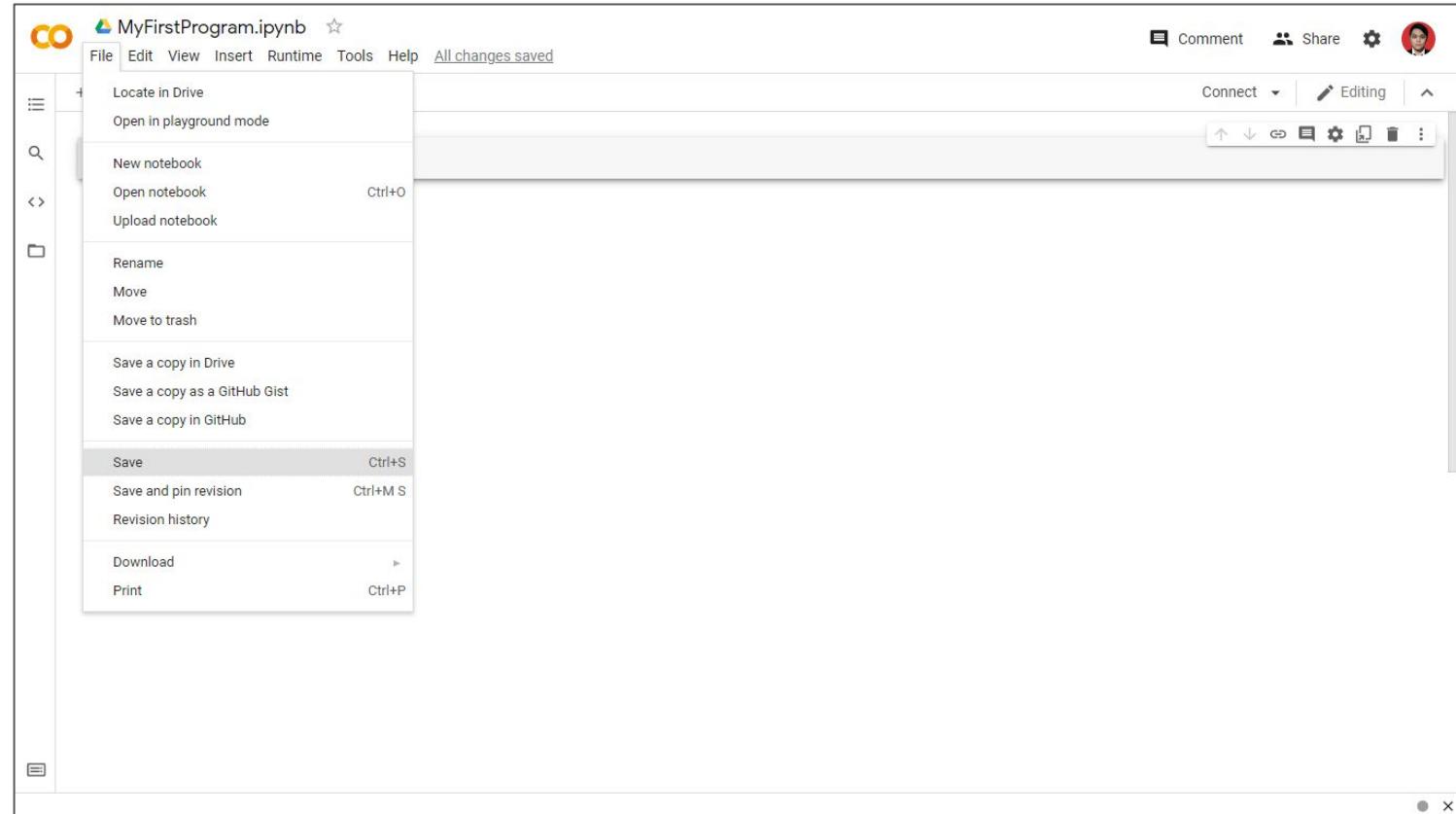
shortcut "Command/Ctrl+Enter". To edit the code, just click the cell and start editing.

Variables that you define in one cell can later be used in other cells:

<https://colab.research.google.com/#create=true>







The screenshot shows a Google Drive interface. On the left, there's a sidebar with navigation links like 'Baru', 'Drive Saya', 'Komputer', 'Dibagikan kepada saya', 'Terbaru', 'Berbintang', and 'Sampah'. Below that is a 'Penyimpanan' section showing usage of 9,87 GB from 15 GB. A 'Beli penyimpanan' button is also present. The main area displays a file list titled 'Drive Saya > Colab Notebooks'. The file 'MyFirstProgram.ipynb' is listed, showing details: Name (MyFirstProgram.ipynb), Owner (saya), Last modified (07.49 saya), and File size (960 byte). The file is highlighted with a blue border.

The screenshot shows a Jupyter Notebook interface titled "MyFirstProgram.ipynb". The notebook has two cells: one selected cell containing the Python code "print('Halo Dunia')", and an unselected cell below it. The interface includes a toolbar with file operations like File, Edit, View, Insert, Runtime, Tools, Help; a sidebar with search, code/text selection, and copy/paste icons; and a top bar with user profile, comment, share, settings, and a play button icon.

```
print('Halo Dunia')
```

The screenshot shows a Jupyter Notebook interface titled "MyFirstProgram.ipynb". The notebook has two tabs: "+ Code" and "+ Text". The "+ Code" tab is selected, displaying a single code cell containing the Python command `print('Halo Dunia')`. The output of this cell is "Halo Dunia", which is displayed below the code. The top right corner of the interface includes a "Comment" button, a "Share" button, a user profile icon, and a gear icon for settings. On the far right, there are buttons for RAM and Disk management, along with other standard notebook controls like up, down, left, right, and delete. The bottom status bar indicates the execution time as "0s" and the completion time as "completed at 7:38 AM".

The screenshot shows a Jupyter Notebook interface titled "MyFirstProgram.ipynb". The notebook has a single code cell containing the Python code `print('Halo Dunia')`. The output of this cell, "Halo Dunia", is displayed below the code. A context menu is open over the code cell, with the option "Insert code cell below" highlighted. The top right corner of the interface shows various status indicators and user profile information.

The screenshot shows a Jupyter Notebook interface titled "MyFirstProgram.ipynb". The notebook has two tabs: "+ Code" (selected) and "+ Text". A sidebar on the left contains icons for file operations like new, open, save, and delete. The main workspace displays a single code cell with the following content:

```
[2]: print('Halo Dunia')  
Halo Dunia
```

The output "Halo Dunia" is displayed below the code. The top right corner of the interface includes a user profile icon, a "Comment" button, a "Share" button, and a settings gear icon. Below these are buttons for "RAM" and "Disk" management, and an "Editing" mode switch. The bottom status bar indicates the execution time as "0s" and the completion time as "completed at 7:38 AM".

The screenshot shows a Jupyter Notebook interface titled "MyFirstProgram.ipynb". The notebook has two cells: a code cell and a rich text cell.

**Code Cell:**  
The code cell contains the following Python code:  

```
[2]: print('Halo Dunia')
```

When run, it outputs:  
Halo Dunia

**Rich Text Cell:**  
The rich text cell contains the text "Ini dokumentasi" repeated twice, once on each side of a vertical dashed line.  
Ini dokumentasi | Ini dokumentasi

At the bottom of the notebook, there is a status bar indicating "0s completed at 7:38 AM".

The screenshot shows a Jupyter Notebook interface with the following details:

- Title Bar:** MyFirstProgram.ipynb
- Menu Bar:** File, Edit, View, Insert, Runtime, Tools, Help, All changes saved
- Toolbar:** Comment, Share, Settings, User icon
- Code Cell:** [2] print('Halo Dunia')  
Output: Halo Dunia
- Sidebar:** + Code, + Text, Search, Document, Help
- Bottom Status Bar:** 0s completed at 7:38 AM

The screenshot shows a Jupyter Notebook interface titled "MyFirstProgram.ipynb". The notebook has two tabs: "+ Code" and "+ Text". The "+ Code" tab contains a single cell with the following Python code:

```
[2]: print('Halo Dunia')
0s
Halo Dunia
```

The "+ Text" tab contains a rich text editor with the following content:

Ini dokumentasi

# Ini heading 1  
## Ini heading 2  
### Ini heading 3

Ini teks biasa

Ini heading 1

Ini heading 2

Ini heading 3

Ini teks biasa

At the bottom of the notebook, there is a status bar showing "0s completed at 7:38 AM". The top right corner of the window has a user profile icon.

The screenshot shows a Jupyter Notebook interface titled "MyFirstProgram.ipynb". The notebook has two cells: one containing Python code and another containing plain text.

**Code Cell Output:**

```
[2]: print('Halo Dunia')
Halo Dunia
```

**Text Cell Content:**

Ini dokumentasi

Ini heading 1

Ini heading 2

Ini heading 3

Ini teks biasa

At the bottom of the interface, there is a status bar showing "0s completed at 7:38 AM".

The screenshot shows a Jupyter Notebook interface with the following details:

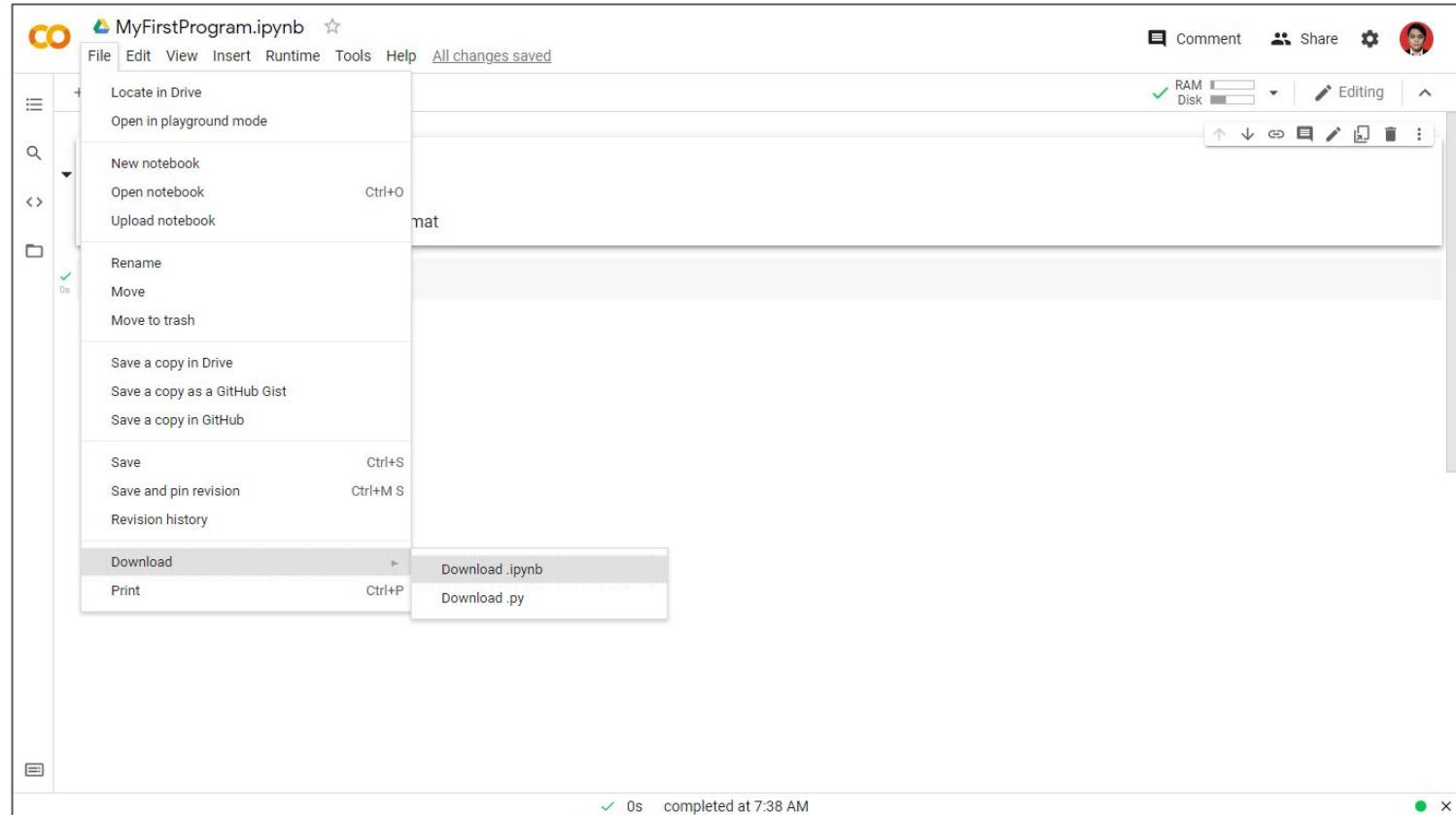
- Title Bar:** MyFirstProgram.ipynb
- File Menu:** File, Edit, View, Insert, Runtime, Tools, Help
- User Area:** Shows a hierarchical tree structure:
  - Ini heading 1
    - Ini heading 2
    - Ini heading 3
    - Ini teks biasa
- Code Cell:** [2] 

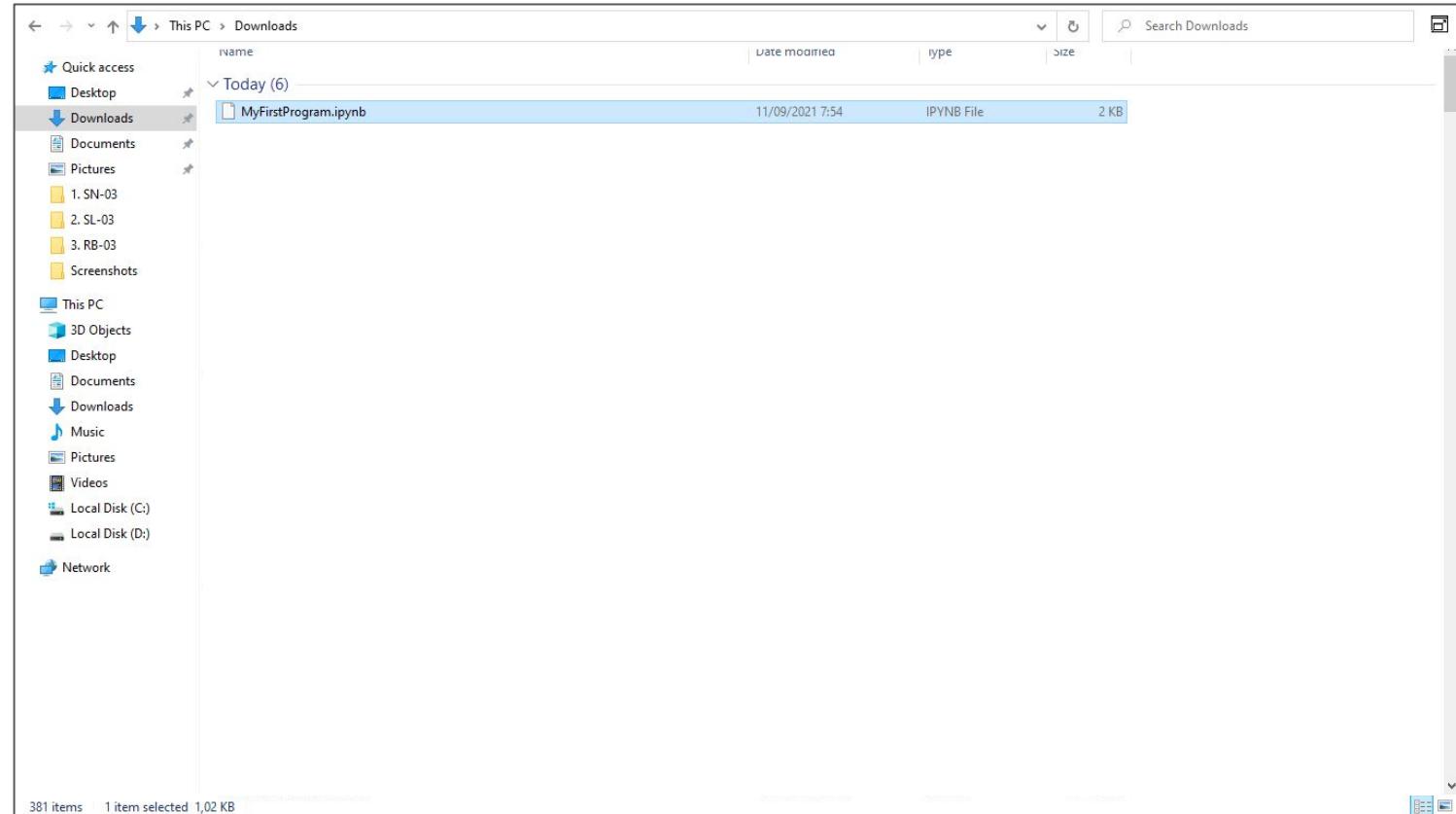
```
print('Halo Dunia')
```

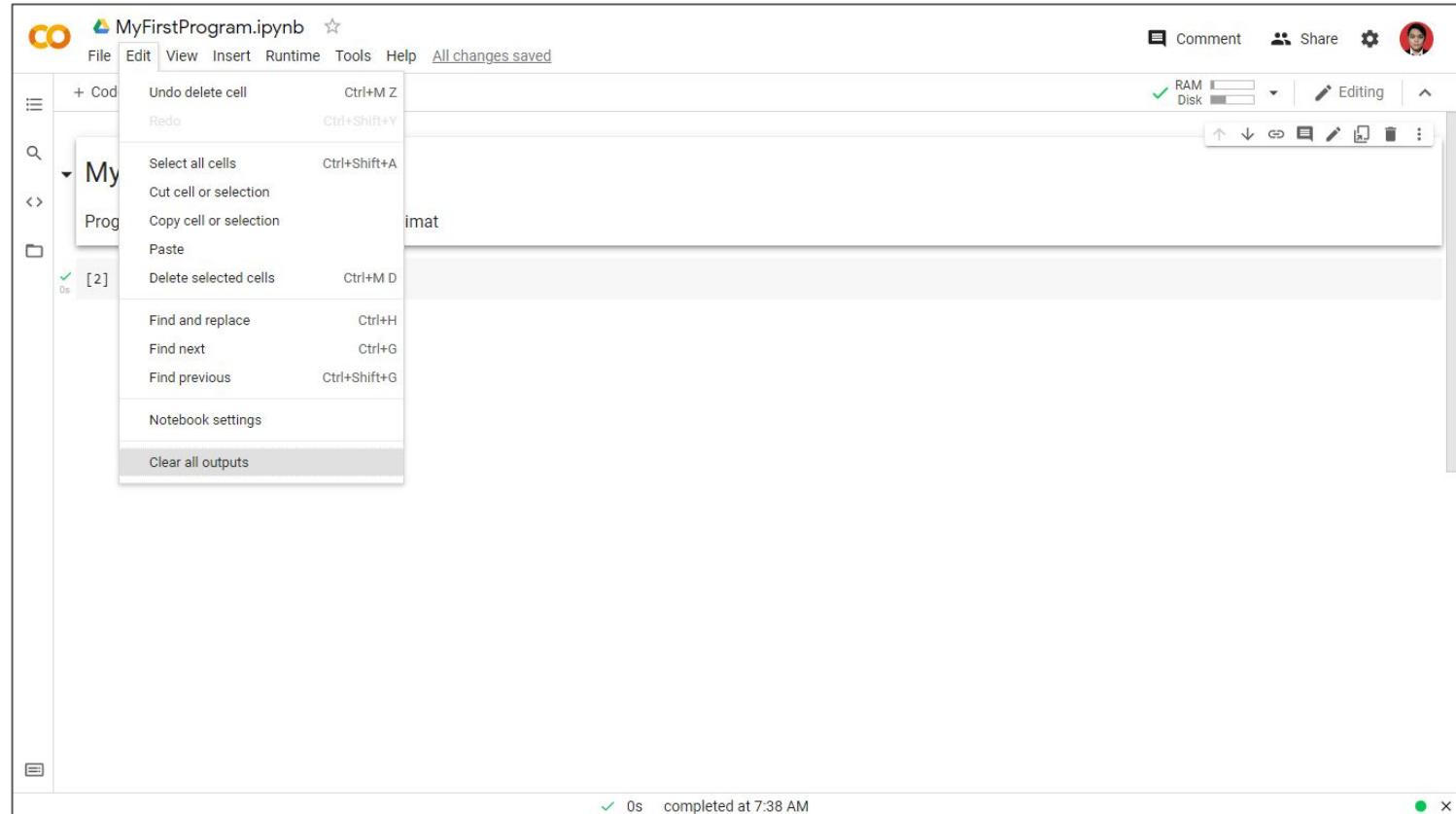
Halo Dunia
- Text Cell:** Ini dokumentasi
- Toolbar:** Comment, Share, Settings, User Profile, RAM/Disk, Editing, and a toolbar with icons for search, code/text, and file operations.
- Status Bar:** 0s completed at 7:38 AM

The screenshot shows a Jupyter Notebook interface with the following details:

- Title:** MyFirstProgram.ipynb
- Toolbar:** File, Edit, View, Insert, Runtime, Tools, Help
- Header Buttons:** Comment, Share, Settings, User Profile
- Code Cell:** [2] print('Halo Dunia')  
Output: Halo Dunia
- Runtime Status:** 0s completed at 7:38 AM







The screenshot shows a Jupyter Notebook interface titled "MyFirstProgram.ipynb". The notebook contains a single cell with the code "print('Halo Dunia')". The output of the cell is "Halo Dunia". The "Runtime" menu is open, displaying various options for managing the notebook's execution environment. The menu includes:

- Run all (Ctrl+F9)
- Run before (Ctrl+F8)
- Run the focused cell (Ctrl+Enter)
- Run selection (Ctrl+Shift+Enter)
- Run after (Ctrl+F10)
- Interrupt execution (Ctrl+M I)
- Restart runtime (Ctrl+M .)
- Restart and run all
- Factory reset runtime
- Change runtime type
- Manage sessions
- View runtime logs

The status bar at the bottom indicates "0s completed at 7:38 AM".

MyFirstProgram.ipynb

File Edit View Insert Runtime Tools Help All changes saved

+ Code + Text

Comment Share ⚙️ 📸

Open comments pane DISK

Editing

My First Program

Program ini digunakan untuk mencetak kalimat

0s

```
print('Halo Dunia')
```

Halo Dunia

0s completed at 7:38 AM

MyFirstProgram.ipynb

File Edit View Insert Runtime Tools Help All changes saved

+ Code + Text

RAM Disk Editing

Comment Share

Yusup Hidayat 7:45 AM Today Resolve

SN-04-01-04

My First Program

Program ini digunakan untuk mencetak kalimat

[2] print('Halo Dunia')

Halo Dunia

0s completed at 7:38 AM

The screenshot shows a Google Colab notebook titled "MyFirstProgram.ipynb". The notebook contains a single cell with the code `print('Halo Dunia')`, which has been run and displays the output "Halo Dunia". A sharing dialog box is open, titled "Share with people and groups", with the message "No one has been added yet". Below it, a link generation dialog box is open, titled "Get link", showing the URL <https://colab.research.google.com/drive/1bGBHZUoBwPESzfstPrYCPu2F0...> and a "Copy link" button. The sharing settings show "Anyone with the link" and "Viewer". A note below states "Viewers of this file can see comments and suggestions". At the bottom of the screen, a status bar indicates "0s completed at 7:38 AM".

MyFirstProgram.ipynb

File Edit View Insert Runtime Tools Help All changes saved

+ Code + Text

My First Program

Program ini digunakan untuk mencetak kalimat

[2] print('Halo Dunia')

Halo Dunia

Comment Share Editing

RAM Disk

Resources X

Python 3 Google Compute Engine backend  
Showing resources since 7:49 AM

RAM Disk

Manage Sessions Change Runtime Type

0s completed at 7:38 AM

The screenshot shows a Jupyter Notebook interface titled "MyFirstProgram.ipynb". The notebook contains a single code cell:

```
[2]: print('Halo Dunia')  
Halo Dunia
```

The output cell shows the text "Halo Dunia". To the right of the notebook, there is a "Resources" panel showing "Python 3 Google Compute Engine backend" with resource usage for RAM and Disk.

A modal dialog box titled "Notebook settings" is open, displaying the "Hardware accelerator" dropdown menu. The options are "None", "GPU", and "TPU". The "GPU" option is selected. A tooltip indicates that GPU will be used when saving this notebook. The dialog has "Cancel" and "Save" buttons at the bottom.

At the bottom of the screen, there are status indicators: "0s completed at 7:38 AM", "Manage Sessions", and "Change Runtime Type".

The screenshot shows a Jupyter Notebook interface with a dark theme. The title bar reads "MyFirstProgram.ipynb". The menu bar includes File, Edit, View, Insert, Runtime, Tools, Help, and a status message "All changes saved". The toolbar on the right includes Comment, Share, and settings, along with RAM and Disk monitors.

A sidebar on the left shows a tree view with "My First Program" expanded, and a search bar below it. The main code editor area contains a single cell with the code "print('Halo Dunia')". The output of this cell, "Halo Dunia", is displayed below the code.

A modal dialog titled "Active sessions" is open in the center. It lists one session:

Title	Last execution	RAM used	Action
MyFirstProgram.ipynb Current session	0 minutes ago	0.77 GB	<a href="#">TERMINATE</a>

A "CLOSE" button is at the bottom right of the modal.

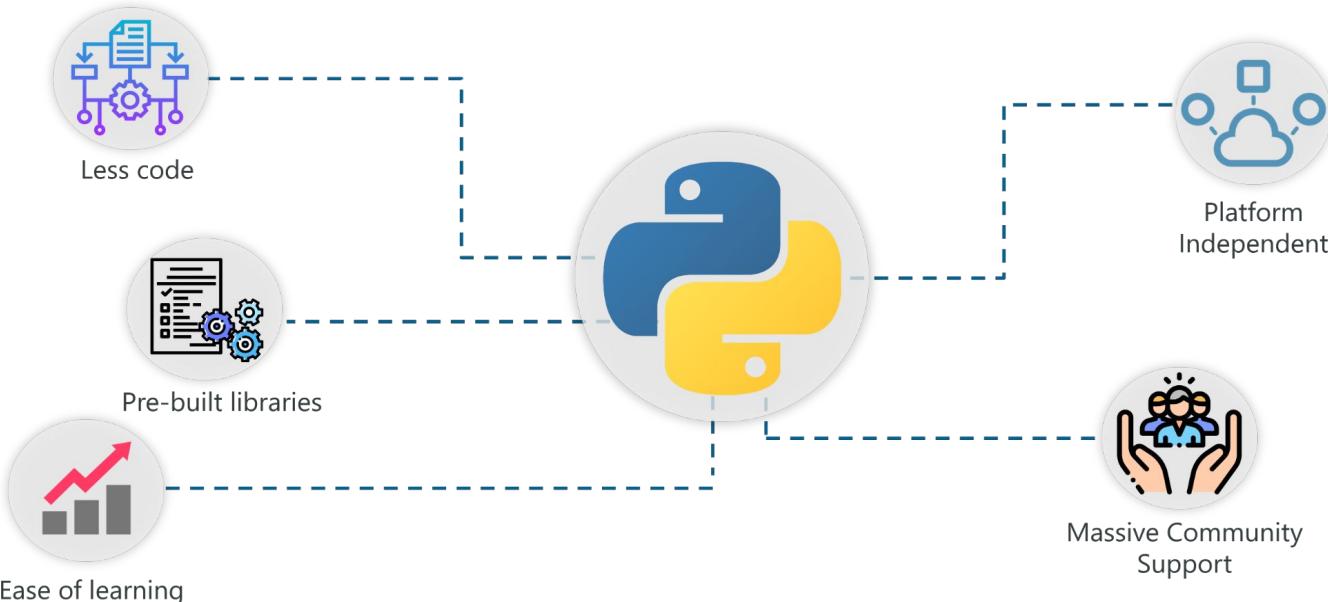
The status bar at the bottom shows "0s completed at 7:38 AM".

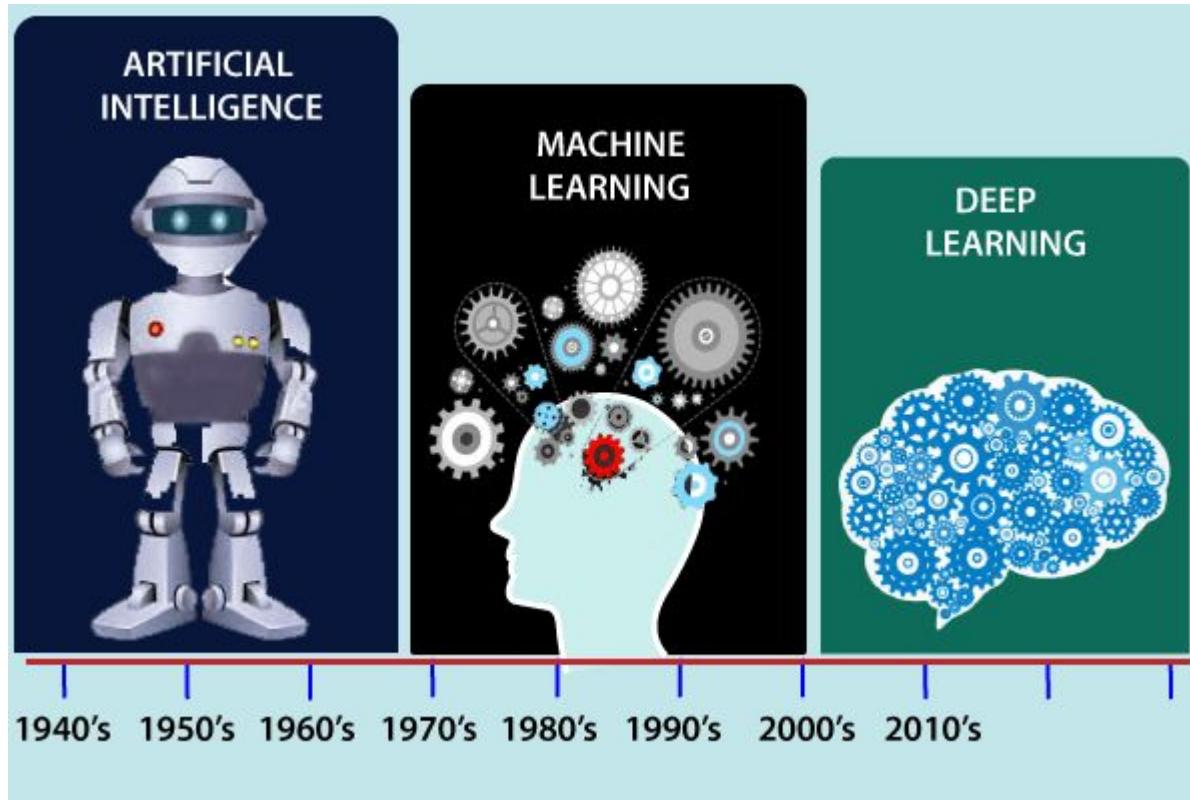


## Sesi Ekstra

Contoh Proyek AI

# Artificial Intelligence with Python







Project Pelajar Indonesia

Project AI berbasis sosial yang dilakukan oleh pelajar SMP & SMA di Indonesia dalam program Intel AI for Youth



AI Domain : Data Science

**PREDIKTOR KELAS**  
(SMPN 4 Tangerang Selatan)

Alat yang dapat memprediksi nilai siswa

AI Domain : NLP

**BERITA PALSU**  
(SMAN 28 Jakarta)

Alat yang memiliki kemampuan untuk memisahkan apakah suatu berita valid atau palsu dengan cara membandingkan berita tersebut dengan informasi atau berita / sumber aslinya

AI Domain : Computer Vision

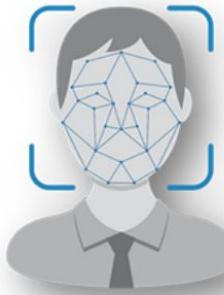
**DETEKSI MASKER WAJAH**  
(SMKN 1 Cimahi)

Kamera pengintai yang dapat mendeteksi saat seseorang tidak memakai masker wajah

AI Domain : Computer Vision

**DRONE CERDAS**  
(SMPN 2 Kota Bengkulu)

Drone pengintai berbasis AI yang terbang di area tertentu untuk memindai dan melacak gerakan orang



AI Domain : NLP

**SEJARAH**  
(SMKN 1 Cimahi)

Alat yang bisa mengumpulkan sejarah Indonesia

AI Domain : CV & NLP

**ASISTEN TUNANETRA**  
(SMAN 28 Jakarta)

Deteksi objek berdasarkan computer vision untuk membantu penyandang tunanetra. Model AI mendetectsi objek di depan dan mengeluarkannya dengan suara

AI Domain : Computer Vision

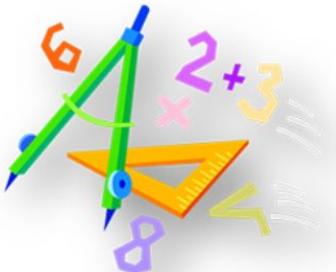
**ABSEN OTOMATIS**  
(SMKN 1 Cimahi)

Pengenalan wajah AI untuk mendetectsi wajah orang untuk kehadiran, tanpa perlu scan ibu jari yang sekarang berbahaya karena pandemi

AI Domain : NLP & Data

**AUTO MUTE**  
(SMKN 1 Padang)

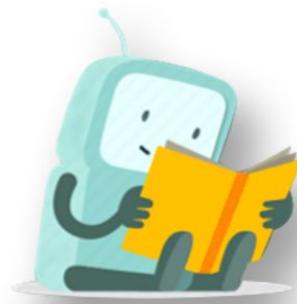
Model AI yang menonaktifkan suara peserta secara otomatis selama konferensi video



**AI Domain : NLP, CV, & DS**

**PEMERIKSA MATEMATIKA  
(SMAN 28 Jakarta)**

Sebuah aplikasi dimana AI dapat mengoreksi esai matematika dengan penjelasan mendetail yang dapat dipelajari siswa.



**AI Domain : CV**

**PUSTAKAWAN  
(SMKN 1 Cimahi)**

Kamera yang secara otomatis mengenali wajah siswa dan buku yang mereka pinjam, lalu menyimpan datanya.



**AI Domain : NLP**

**MUSIC VIBE  
(SMAN 1 Banyumas)**

Model AI yang merekomendasikan genre lagu tertentu bergantung pada mood pengguna, yang ditentukan dari percakapan dengan AI



**AI Domain : Computer Vision**

**PENDETEKSI MASKER  
(SMAN 1 Banyumas)**

Kamera dapat mendeteksi jika seseorang tanpa masker

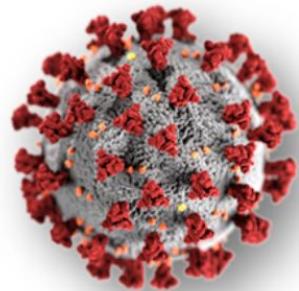


AI Domain : NLP, Data

### CHATBOT 'LAKUKAN MATEMATIKA'

(SMP Muhammadiyah PK Surakarta)

Chatbot berdasarkan NLP dan Data yang menyelesaikan semua persamaan matematika untuk Anda.



AI Domain : Computer Vision

### APLIKASI PELACAKAN COVID (SMKN 1 Kota Bengkulu)

Sebuah aplikasi yang melacak orang-orang yang terkena COVID dan orang-orang yang pernah mereka temui sebelumnya



AI Domain : NLP

### APLIKASI TATA KRAMA (SMAN 1 Banyumas)

Aplikasi yang melibatkan game menggunakan AI untuk mengajarkan tata krama dan nilai dasar kepada anak-anak kecil



AI Domain : NLP & Data

### COVID DOC (SMAN 8 Denpasar)

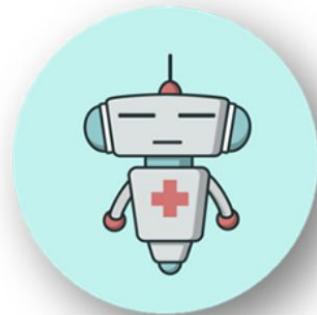
Chatbot untuk Gejala COVID yang akan berinteraksi dengan orang dan menganalisis apakah mereka memiliki gejala ringan / gejala parah dan menyarankan solusi yang sesuai.



AI Domain: Computer Vision

**KONVERSI TULISAN TANGAN**  
(SMP Muhammadiyah PK Surakarta)

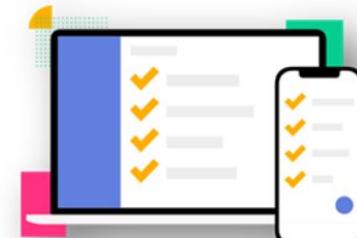
Aplikasi / alat berdasarkan CV yang akan membantu dalam mengenali tulisan tangan dan mengubahnya menjadi teks



AI Domain : NLP

**BOT KESEHATAN MENTAL**  
(SMP Muhammadiyah PK Surakarta)

Chatbot yang akan membantu orang-orang dengan masalah kesehatan mental dengan berbicara kepada mereka dan memberi mereka solusi yang lebih cepat seperti yang dilakukan terapis



AI Domain : Data Science

**PELACA TUGAS**  
(SMPN 4 Tangsel)

Sebuah aplikasi yang menggunakan ilmu data untuk membantu guru melacak tugas siswa di sekolah dan memantau kemajuan mereka



AI Domain : NLP & DS

**REKOMENDASI BUKU**  
(SMP Pancasila Krian)

Aplikasi AI yang merekomendasikan buku sesuai dengan kurikulum siswa



AI Domain : CV & Data

**PELACAK DIET  
(SMAN 28 Jakarta)**

Sebuah aplikasi berdasarkan CV dan Data yang dapat membantu Anda memantau dan menentukan apakah Anda telah makan sehat.



AI Domain : CV & Data

**DETEKTOR UANG PALSU  
(SMPN 2 Kota Bengkulu)**

Aplikasi berdasarkan CV dan Data yang dapat mendeteksi apakah uang itu palsu atau asli



AI Domain : Computer Vision

**KEHADIRAN OTOMATIS  
(SMKN 3 Jayapura)**

Aplikasi berbasis CV untuk mendeteksi wajah orang untuk kehadiran, menggantikan sistem sidik jari yang berbahaya pada saat pandemi



AI Domain : CV & Data

**PENGENALAN GERAKAN  
TANGAN  
(SMPN 2 Kota Bengkulu)**

Aplikasi berbasis AI CV yang mengenali gerakan tangan

# Refleksi

# Terima Kasih