

# **TOPICS IN COMPUTER SCIENCE-II**

## **ASSIGNMENT**

**NAME:**

HUSSAIN ALI

**REGISTRATION NUMBER:**

FA21-BCS-066

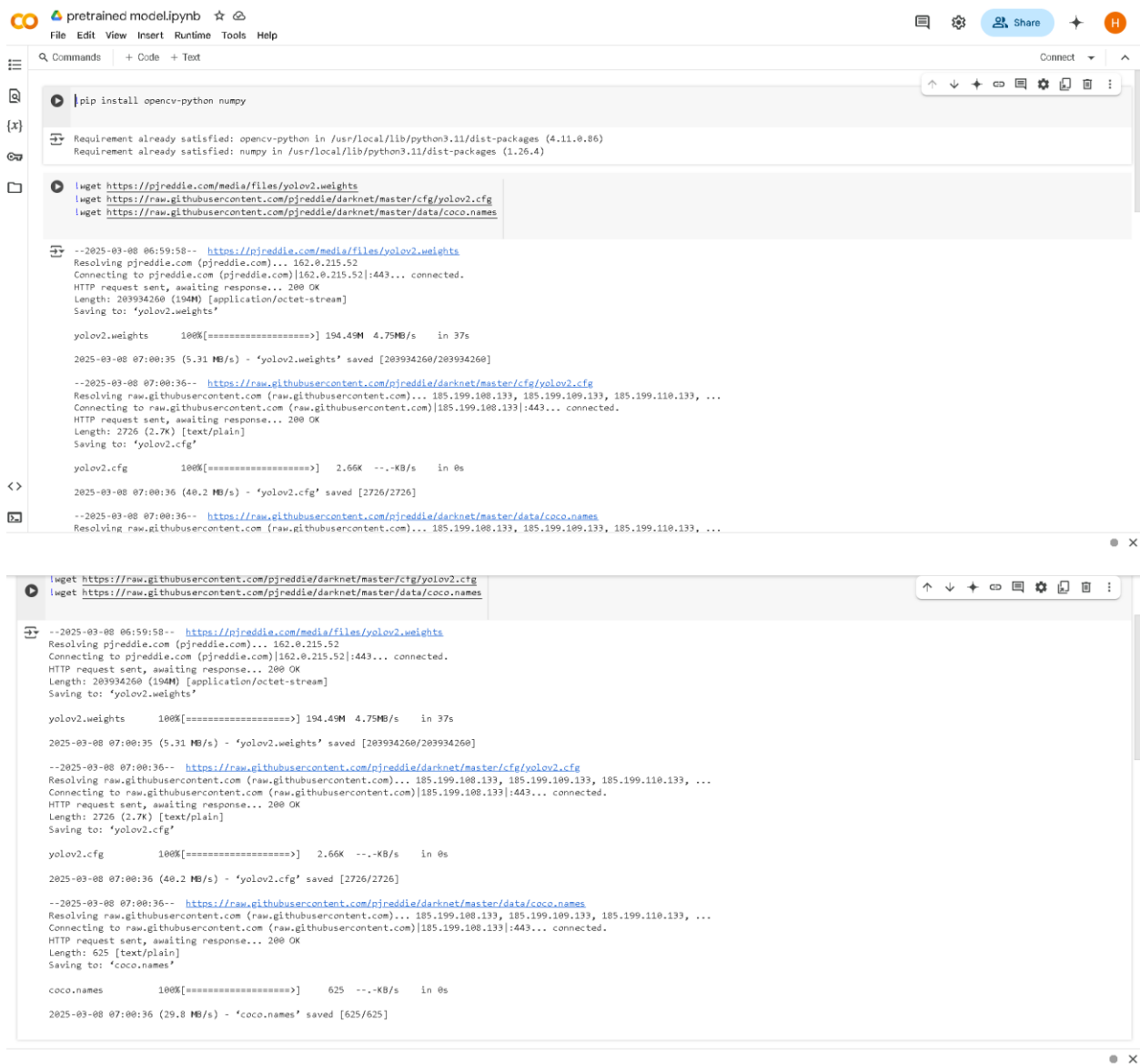
**SECTION:**

BCS-8A

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# QUESTION NO.1:

## SCREENSHOTS:



The first screenshot shows the JupyterLab interface with the terminal output for the command `pip install opencv-python numpy`. The output indicates that the requirements are already satisfied. Below this, the terminal shows the execution of `wget` commands to download `yolov2.weights`, `yolov2.cfg`, and `coco.names` from GitHub. The download progress for `yolov2.weights` is shown as 100% complete, with a size of 194.49M and a download speed of 4.75MB/s. The download for `yolov2.cfg` is also shown as 100% complete, with a size of 2.66K and a download speed of 2.66K/s. The download for `coco.names` is shown as 100% complete, with a size of 625 bytes and a download speed of 625 bytes/s.

```
pretrained model.ipynb
File Edit View Insert Runtime Tools Help

Commands + Code + Text

| pip install opencv-python numpy

Requirement already satisfied: opencv-python in /usr/local/lib/python3.11/dist-packages (4.11.0.86)
Requirement already satisfied: numpy in /usr/local/lib/python3.11/dist-packages (1.26.4)

wget https://pjreddie.com/media/files/yolov2.weights
wget https://raw.githubusercontent.com/pjreddie/darknet/master/cfg/yolov2.cfg
wget https://raw.githubusercontent.com/pjreddie/darknet/master/data/coco.names

--2025-03-08 06:59:58-- https://pjreddie.com/media/files/yolov2.weights
Resolving pjreddie.com (pjreddie.com)... 162.0.215.52
Connecting to pjreddie.com (pjreddie.com)[162.0.215.52]:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 203934260 (194M) [application/octet-stream]
Saving to: 'yolov2.weights'

yolov2.weights 100%[=====] 194.49M 4.75MB/s in 37s

2025-03-08 07:00:35 (5.31 MB/s) - 'yolov2.weights' saved [203934260/203934260]

--2025-03-08 07:00:36-- https://raw.githubusercontent.com/pjreddie/darknet/master/cfg/yolov2.cfg
Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 185.199.108.133, 185.199.109.133, 185.199.110.133, ...
Connecting to raw.githubusercontent.com (raw.githubusercontent.com)[185.199.108.133]:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 2726 (2.7K) [text/plain]
Saving to: 'yolov2.cfg'

yolov2.cfg 100%[=====] 2.66K --KB/s in 0s

2025-03-08 07:00:36 (40.2 MB/s) - 'yolov2.cfg' saved [2726/2726]

--2025-03-08 07:00:36-- https://raw.githubusercontent.com/pjreddie/darknet/master/data/coco.names
Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 185.199.108.133, 185.199.109.133, 185.199.110.133, ...

wget https://raw.githubusercontent.com/pjreddie/darknet/master/cfg/yolov2.cfg
wget https://raw.githubusercontent.com/pjreddie/darknet/master/data/coco.names

--2025-03-08 06:59:58-- https://pjreddie.com/media/files/yolov2.weights
Resolving pjreddie.com (pjreddie.com)... 162.0.215.52
Connecting to pjreddie.com (pjreddie.com)[162.0.215.52]:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 203934260 (194M) [application/octet-stream]
Saving to: 'yolov2.weights'

yolov2.weights 100%[=====] 194.49M 4.75MB/s in 37s

2025-03-08 07:00:35 (5.31 MB/s) - 'yolov2.weights' saved [203934260/203934260]

--2025-03-08 07:00:36-- https://raw.githubusercontent.com/pjreddie/darknet/master/cfg/yolov2.cfg
Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 185.199.108.133, 185.199.109.133, 185.199.110.133, ...
Connecting to raw.githubusercontent.com (raw.githubusercontent.com)[185.199.108.133]:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 2726 (2.7K) [text/plain]
Saving to: 'yolov2.cfg'

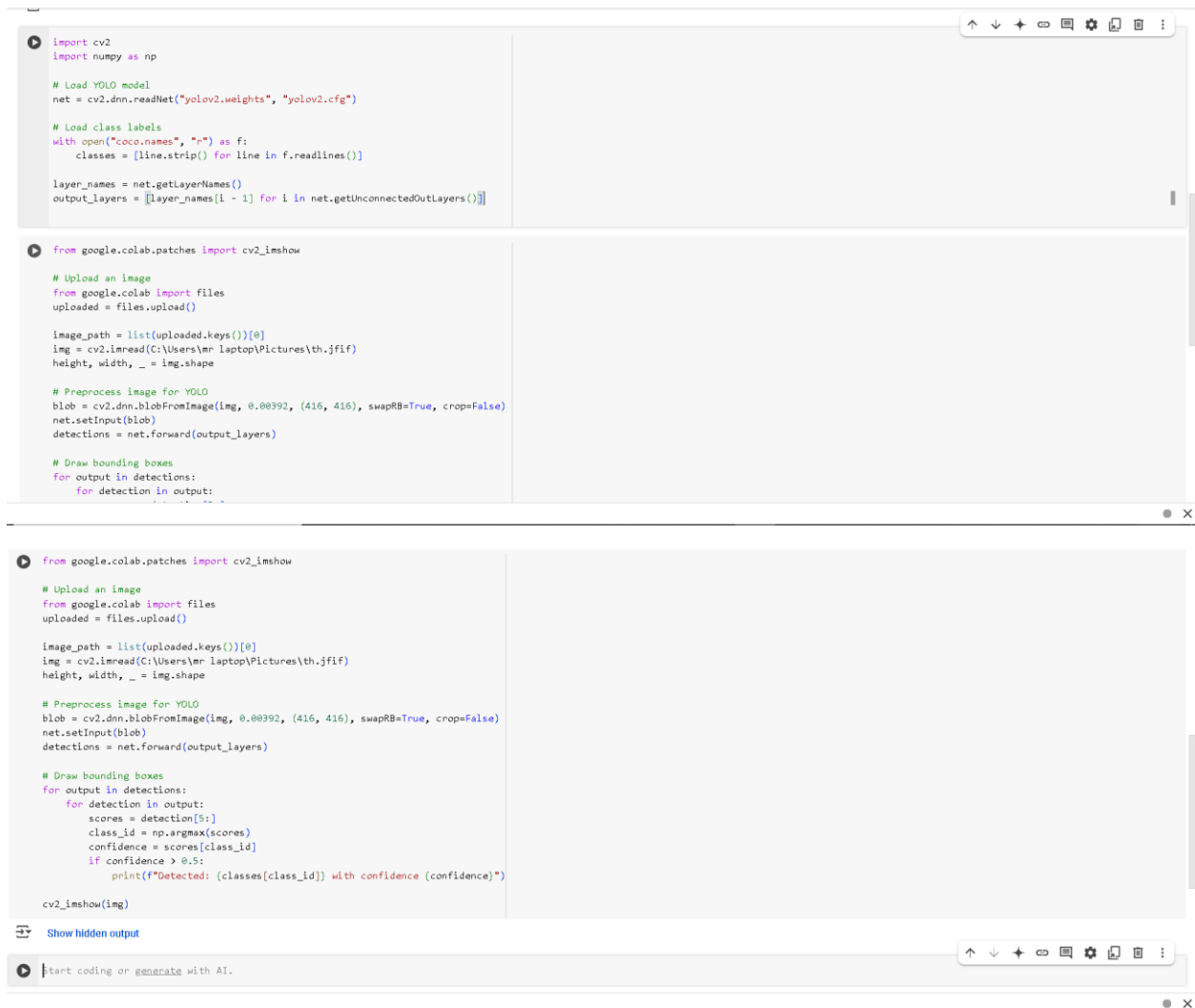
yolov2.cfg 100%[=====] 2.66K --KB/s in 0s

2025-03-08 07:00:36 (40.2 MB/s) - 'yolov2.cfg' saved [2726/2726]

--2025-03-08 07:00:36-- https://raw.githubusercontent.com/pjreddie/darknet/master/data/coco.names
Resolving raw.githubusercontent.com (raw.githubusercontent.com)... 185.199.108.133, 185.199.109.133, 185.199.110.133, ...
Connecting to raw.githubusercontent.com (raw.githubusercontent.com)[185.199.108.133]:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 625 [text/plain]
Saving to: 'coco.names'

coco.names 100%[=====] 625 --KB/s in 0s

2025-03-08 07:00:36 (29.8 MB/s) - 'coco.names' saved [625/625]
```



## QUESTION NO.2

### SCREENSHOTS:

newdatasetipyb

File Edit View Insert Runtime Tools Help

Commands + Code + Text

RAM Disk

pip install opencv-python numpy  
git clone https://github.com/AlexeyAB/darknet.git  
%cd darknet  
make

Requirement already satisfied: opencv-python in /usr/local/lib/python3.11/dist-packages (4.11.0.86)  
Requirement already satisfied: numpy in /usr/local/lib/python3.11/dist-packages (1.26.4)  
Cloning into 'darknet'...  
remote: Enumerating objects: 15873, done.  
remote: Counting objects: 100% (23/23), done.  
remote: Compressing objects: 100% (16/16), done.  
remote: Total 15873 (delta 12), reused 7 (delta 7), pack-reused 15850 (from 3)  
Receiving objects: 100% (15873/15873), 14.58 MiB | 14.75 MiB/s, done.  
Resolving deltas: 100% (10679/10679), done.  
./content/darknet  
mkdir -p ./obj/  
mkdir -p backup  
mkdir -p results  
chmod +x \*.sh  
g++ -std=c++11 -std=c++11 -Iinclude/ -I3rdparty/stb/include -Wall -Wfatal-errors -Wno-unused-result -Wno-unknown-pragmas -fPIC -rdynamic -Ofast -c ./src/image\_opencv.cpp -o obj/image\_opencv.o  
g++ -std=c++11 -std=c++11 -Iinclude/ -I3rdparty/stb/include -Wall -Wfatal-errors -Wno-unused-result -Wno-unknown-pragmas -fPIC -rdynamic -Ofast -c ./src/http\_stream.cpp -o obj/http\_stream.o  
./src/http\_stream.cpp: In member function 'bool JSON\_sender::write(const char\*)':  
./src/http\_stream.cpp:253:21: warning: unused variable 'n' [-Wunused-variable]  
253 | int n = \_write(client, outputbuf, outlen);  
 | ^  
./src/http\_stream.cpp: In function 'void set\_track\_id(detection\*, int, float, float, float, int, int, int)':  
./src/http\_stream.cpp:866:27: warning: comparison of integer expressions of different signedness: 'int' and 'std::vector<detection\_t>::size\_type' {aka 'long unsigned int'} [-Wsign-compare]  
866 | for (int i = 0; i < v.size(); ++i) {  
 | ~~~~~^~~~~~  
./src/http\_stream.cpp:874:33: warning: comparison of integer expressions of different signedness: 'int' and 'std::vector<detection\_t>::size\_type' {aka 'long unsigned int'} [-Wsign-compare]  
874 | for (int old\_id = 0; old\_id < old\_dets.size(); ++old\_id) {  
 | ~~~~~^~~~~~  
./src/http\_stream.cpp:893:31: warning: comparison of integer expressions of different signedness: 'int' and 'std::vector<detection\_t>::size\_type' {aka 'long unsigned int'} [-Wsign-compare]  
893 | for (int index = 0; index < new\_dets.num\*old\_dets.size(); ++index) {  
 | ~~~~~^~~~~~

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Receiving objects: 100% (15873/15873), 14.58 MiB | 14.75 MiB/s, done.  
Resolving deltas: 100% (10679/10679), done.  
./content/darknet  
mkdir -p ./obj/  
mkdir -p backup  
mkdir -p results  
chmod +x \*.sh  
g++ -std=c++11 -std=c++11 -Iinclude/ -I3rdparty/stb/include -Wall -Wfatal-errors -Wno-unused-result -Wno-unknown-pragmas -fPIC -rdynamic -Ofast -c ./src/image\_opencv.cpp -o obj/image\_opencv.o  
g++ -std=c++11 -std=c++11 -Iinclude/ -I3rdparty/stb/include -Wall -Wfatal-errors -Wno-unused-result -Wno-unknown-pragmas -fPIC -rdynamic -Ofast -c ./src/http\_stream.cpp -o obj/http\_stream.o  
./src/http\_stream.cpp: In member function 'bool JSON\_sender::write(const char\*)':  
./src/http\_stream.cpp:253:21: warning: unused variable 'n' [-Wunused-variable]  
253 | int n = \_write(client, outputbuf, outlen);  
 | ^  
./src/http\_stream.cpp: In function 'void set\_track\_id(detection\*, int, float, float, float, int, int, int)':  
./src/http\_stream.cpp:866:27: warning: comparison of integer expressions of different signedness: 'int' and 'std::vector<detection\_t>::size\_type' {aka 'long unsigned int'} [-Wsign-compare]  
866 | for (int i = 0; i < v.size(); ++i) {  
 | ~~~~~^~~~~~  
./src/http\_stream.cpp:874:33: warning: comparison of integer expressions of different signedness: 'int' and 'std::vector<detection\_t>::size\_type' {aka 'long unsigned int'} [-Wsign-compare]  
874 | for (int old\_id = 0; old\_id < old\_dets.size(); ++old\_id) {  
 | ~~~~~^~~~~~  
./src/http\_stream.cpp:893:31: warning: comparison of integer expressions of different signedness: 'int' and 'std::vector<detection\_t>::size\_type' {aka 'long unsigned int'} [-Wsign-compare]  
893 | for (int index = 0; index < new\_dets.num\*old\_dets.size(); ++index) {  
 | ~~~~~^~~~~~  
./src/http\_stream.cpp:929:28: warning: comparison of integer expressions of different signedness: 'std::deque<std::vector<detection\_t> >::size\_type' {aka 'long unsigned int'} and 'int' [-Wsign-compare]  
929 | if (old\_dets\_dq.size() > deque\_size) old\_dets\_dq.pop\_front();  
 | ~~~~~^~~~~~  
gcc -Iinclude/ -I3rdparty/stb/include -Wall -Wfatal-errors -Wno-unused-result -Wno-unknown-pragmas -fPIC -rdynamic -Ofast -c ./src/gemm.c -o obj/gemm.o  
./src/gemm.c: In function 'convolution\_2d':  
./src/gemm.c:2042:15: warning: unused variable 'out\_w' [-Wunused-variable]  
2042 | const int out\_w = (w + 2 \* pad - ksize) / stride + 1; // output\_width=input\_width for stride=1 and pad=1  
 | ~~~~~  
./src/gemm.c:2041:15: warning: unused variable 'out\_h' [-Wunused-variable]  
2041 | const int out\_h = (h + 2 \* pad - ksize) / stride + 1; // output\_height=input\_height for stride=1 and pad=1  
 | ~~~~~  
gcc -Iinclude/ -I3rdparty/stb/include -Wall -Wfatal-errors -Wno-unused-result -Wno-unknown-pragmas -fPIC -rdynamic -Ofast -c ./src/utils.c -o obj/utils.o  
./src/utils.c: In function 'custom\_hash':  
./src/utils.c:1093:12: warning: suggest parentheses around assignment used as truth value [-Wparentheses]  
1093 | while (c = \*str++)  
 | ^

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✓ 51s | ./src/blas.c: In function 'backward_shortcut_multilayer_cpu':
./src/blas.c:207:21: warning: unused variable 'out_index' [-Wunused-variable]
207 |         int out_index = id;
    |         ~~~~~^~~~~~
    |
gcc -linclue/ -I3rdparty/stb/include -Wall -Wfatal-errors -Wno-unused-result -Wno-unknown-pragmas -fPIC -rdynamic -Ofast -c ./src/crop_layer.c -o obj/crop_layer.o
gcc -linclue/ -I3rdparty/stb/include -Wall -Wfatal-errors -Wno-unused-result -Wno-unknown-pragmas -fPIC -rdynamic -Ofast -c ./src/dropout_layer.c -o obj/dropout_layer.o
gcc -linclue/ -I3rdparty/stb/include -Wall -Wfatal-errors -Wno-unused-result -Wno-unknown-pragmas -fPIC -rdynamic -Ofast -c ./src/maxpool_layer.c -o obj/maxpool_layer.o
gcc -linclue/ -I3rdparty/stb/include -Wall -Wfatal-errors -Wno-unused-result -Wno-unknown-pragmas -fPIC -rdynamic -Ofast -c ./src/softmax_layer.c -o obj/softmax_layer.o
./src/softmax_layer.c: In function 'forward_contrastive_layer':
./src/softmax_layer.c:242:27: warning: variable 'max_truth' set but not used [-Wunused-but-set-variable]
242 |         float max_truth = 0;
    |         ~~~~~^~~~~~
    |
gcc -linclue/ -I3rdparty/stb/include -Wall -Wfatal-errors -Wno-unused-result -Wno-unknown-pragmas -fPIC -rdynamic -Ofast -c ./src/data.c -o obj/data.o
./src/data.c: In function 'load_data_detection':
./src/data.c:1399:43: warning: variable 'r_scale' set but not used [-Wunused-but-set-variable]
1399 |         float r1 = 0, r2 = 0, r3 = 0, r4 = 0, r_scale;
    |         ~~~~~^~~~~~
    |
./src/data.c: In function 'fill_truth_detection':
./src/data.c:431:33: warning: '%s' directive writing up to 4095 bytes into a region of size 251 [-Wformat-overflow=]
431 |         sprintf(buff, "echo %s \"Wrong annotation: w = %f\" >> bad_label.list", labelpath, w);
    |         ~~~~~^~~~~~
    |
./src/data.c:431:27: note: assuming directive output of 8 bytes
431 |         sprintf(buff, "echo %s \"Wrong annotation: w = %f\" >> bad_label.list", labelpath, w);
    |         ~~~~~^~~~~~
    |
In file included from /usr/include/stdio.h:894,
from include/darknet.h:13,
from ./src/data.h:5,
from ./src/data.c:1:
./usr/include/x86_64-linux-gnu/bits/stdio2.h:38:10: note: '__builtin__sprintf_chk' output between 52 and 4461 bytes into a destination of size 256
38 |     return __builtin__sprintf_chk(__s, __USE_FORTIFY_LEVEL - 1,
    |            ~~~~~^~~~~~
    |
39 |         __glibc_objsize(__s), __fmt,
    |         ~~~~~^~~~~~
    |
40 |         __va_arg_pack ());
    |         ~~~~~^~~~~~
    |
./src/data.c:437:33: warning: '%s' directive writing up to 4095 bytes into a region of size 251 [-Wformat-overflow=]
437 |         sprintf(buff, "echo %s \"Wrong annotation: h = %f\" >> bad_label.list", labelpath, h);
    |         ~~~~~^~~~~~
    |
    ~~~~~^~~~~~

```

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```

pip install kaggle
mkdir ~/.kaggle

Requirement already satisfied: kaggle in /usr/local/lib/python3.11/dist-packages (1.6.17)
Requirement already satisfied: six>=1.10 in /usr/local/lib/python3.11/dist-packages (from kaggle) (1.17.0)
Requirement already satisfied: certifi>=2023.7.22 in /usr/local/lib/python3.11/dist-packages (from kaggle) (2025.1.31)
Requirement already satisfied: python-dateutil in /usr/local/lib/python3.11/dist-packages (from kaggle) (2.8.2)
Requirement already satisfied: requests in /usr/local/lib/python3.11/dist-packages (from kaggle) (2.32.3)
Requirement already satisfied: tqdm in /usr/local/lib/python3.11/dist-packages (from kaggle) (4.67.1)
Requirement already satisfied: python-slugify in /usr/local/lib/python3.11/dist-packages (from kaggle) (8.0.4)
Requirement already satisfied: urllib3 in /usr/local/lib/python3.11/dist-packages (from kaggle) (2.3.0)
Requirement already satisfied: bleach in /usr/local/lib/python3.11/dist-packages (from kaggle) (6.2.0)
Requirement already satisfied: webencodings in /usr/local/lib/python3.11/dist-packages (from bleach->kaggle) (0.5.1)
Requirement already satisfied: text-unidecode>=1.3 in /usr/local/lib/python3.11/dist-packages (from python-slugify->kaggle) (1.3)
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.11/dist-packages (from requests->kaggle) (3.4.1)
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.11/dist-packages (from requests->kaggle) (3.10)

from google.colab import files
files.upload()

Choose Files No file chosen Upload widget is only available when the cell has been executed in the current browser session. Please rerun this cell to enable.
Saving kaggle.json to kaggle.json
{'kaggle.json': b'{"username": "alihussainali", "key": "51efe94b83a06bb9a112d9e34178da74"}'}

[5] | mkdir -p ~/.kaggle
| mv kaggle.json ~/.kaggle/
| chmod 600 ~/.kaggle/kaggle.json

mv: cannot stat 'kaggle.json': No such file or directory

```

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```

from google.colab import files
files.upload()

Choose Files No file chosen Upload widget is only available when the cell has been executed in the current browser session. Please rerun this cell to enable.
Saving kaggle.json to kaggle.json
{'kaggle.json': b'{"username": "alihussainali", "key": "51efe94b83a06bb9a112d9e34178da74"}'}

[5] | mkdir -p ~/.kaggle
| mv kaggle.json ~/.kaggle/
| chmod 600 ~/.kaggle/kaggle.json

mv: cannot stat 'kaggle.json': No such file or directory

[6] | ls -l ~/.kaggle

total 4
-rw-r----- 1 root root 69 Mar  9 15:49 kaggle.json

[ ] Start coding or generate with AI.

[7] | kaggle datasets list

```

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kaggle datasets list

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ref	title	size	lastUpdated	downloadCount	voteCount	usabilityRating
abdulmalik1518/mobiles-dataset-2025	Mobiles Dataset (2025)	20KB	2025-02-18 06:50:24	8482	153	1.0
asinow/car-price-dataset	Car Price Dataset	135KB	2025-01-26 19:53:28	25666	402	1.0
nahmodelhemaly/students-grading-dataset	Student Performance & Behavior Dataset	588KB	2025-02-17 17:38:46	6437	110	1.0
willianoliveiragabin/odi-cricket-data	ODI Cricket Data	55KB	2025-02-23 22:17:09	1203	22	1.0
asinow/diabetes-dataset	Diabetes Dataset	224KB	2025-02-20 08:30:56	4564	72	1.0
meharshanali/walmart-stocks-data-2025	Walmart Stocks Data 2025	456KB	2025-02-23 12:19:53	1145	27	1.0
mhastansaboof/eBay-stocks-2025	eBay Stocks 2025	175KB	2025-03-06 09:07:15	659	21	1.0
anandhshw2001/video-game-sales	Video Game Sales	381KB	2025-02-23 05:16:04	712	30	1.0
vinothkannaace/sales-dataset	sales dataset	27KB	2025-02-18 05:13:42	5592	78	1.0
ignacioazua/world-gdp-population-and-co2-emissions-dataset	World GDP, Population & CO2 Emissions Dataset	2KB	2025-03-04 11:09:55	979	23	1.0
ammaree/student-performance-prediction	Student Performance Prediction	11KB	2025-03-03 15:46:10	1018	22	0.9411765
atharvasoundankar/futuristic-smart-city-citizen-activity-dataset	Futuristic Smart City Citizen Activity Dataset	23KB	2025-03-06 04:58:22	465	27	1.0
mahatratrusher/heart-disease-risk-prediction-dataset	Heart Disease Risk Prediction Dataset	1MB	2025-02-07 16:48:49	1472	29	0.9411765
vincent1937/irish-wildlife-statistics	Irish Wildlife Statistics	493B	2025-03-06 18:40:25	495	22	1.0
samkshadlvi/lungs-diseases-dataset	Lungs Diseases Dataset	40KB	2025-02-25 01:51:36	1671	35	1.0
himelsarder/cinema-hall-ticket-sales-and-customer-behavior	Cinema Hall Ticket Sales and Customer Behavior	15KB	2025-02-10 17:19:05	1284	24	1.0
adilsham8/student-performance-and-learning-style	Student Performance & Learning Style	148KB	2025-02-12 06:12:07	2962	49	1.0
ethicalstar/loan-prediction	Loan Prediction	5MB	2025-03-04 06:05:49	660	25	0.7058824
adeniranstephen/obesity-prediction-dataset	Obesity Prediction Dataset	33KB	2025-02-08 10:12:34	1793	28	1.0
adilsham8/education-and-career-success	Education & Career Success.	118KB	2025-02-03 05:24:20	6475	82	1.0

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Dataset URL: <https://www.kaggle.com/datasets/ultralitics/coco128>

License(s): GNU Affero General Public License 3.0

Downloading coco128.zip to /content/darknet

75% 5.00MB/6.66M [00:00:00:00, 51.1MB/s]

100% 6.66MB/6.66M [00:00:00:00, 64.5MB/s]

Archive: coco128.zip

inflating: dataset/coco128/LICENSE

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kaggle datasets download -d ultralytics/coco128

📄

unzip coco128.zip -d dataset

📄

Dataset URL: <https://www.kaggle.com/datasets/ultralitics/coco128>

License(s): GNU Affero General Public License 3.0

Downloading coco128.zip to /content/darknet

75% 5.00MB/6.66M [00:00:00:00, 51.1MB/s]

100% 6.66MB/6.66M [00:00:00:00, 64.5MB/s]

Archive: coco128.zip

inflating: dataset/coco128/LICENSE

inflating: dataset/coco128/README.txt

inflating: dataset/coco128/images/train2017/000000000009.jpg

inflating: dataset/coco128/images/train2017/000000000025.jpg

inflating: dataset/coco128/images/train2017/000000000030.jpg

inflating: dataset/coco128/images/train2017/000000000034.jpg

inflating: dataset/coco128/images/train2017/000000000036.jpg

inflating: dataset/coco128/images/train2017/000000000042.jpg

inflating: dataset/coco128/images/train2017/000000000049.jpg

inflating: dataset/coco128/images/train2017/000000000061.jpg

inflating: dataset/coco128/images/train2017/000000000064.jpg

inflating: dataset/coco128/images/train2017/000000000071.jpg

inflating: dataset/coco128/images/train2017/000000000072.jpg

inflating: dataset/coco128/images/train2017/000000000073.jpg

inflating: dataset/coco128/images/train2017/000000000074.jpg

inflating: dataset/coco128/images/train2017/000000000077.jpg

inflating: dataset/coco128/images/train2017/000000000078.jpg

inflating: dataset/coco128/images/train2017/000000000081.jpg

inflating: dataset/coco128/images/train2017/000000000086.jpg

inflating: dataset/coco128/images/train2017/000000000089.jpg

inflating: dataset/coco128/images/train2017/000000000092.jpg

inflating: dataset/coco128/images/train2017/000000000094.jpg

inflating: dataset/coco128/images/train2017/000000000099.jpg

inflating: dataset/coco128/images/train2017/000000000109.jpg

inflating: dataset/coco128/images/train2017/000000000110.jpg

inflating: dataset/coco128/images/train2017/000000000113.jpg

inflating: dataset/coco128/images/train2017/000000000127.jpg

inflating: dataset/coco128/images/train2017/000000000133.jpg

🔍

Connected to Python 3 Google Compute Engine backend