Create a Chatbot in Python

Phase 3: Development Part 1

Vishnu A
953621104060

```
pip install pandas scikit-learn numpy
```

```
Requirement already satisfied: pandas in /usr/local/lib/python3.10/dist-packages (1.5.3)
Requirement already satisfied: scikit-learn in /usr/local/lib/python3.10/dist-packages (1.2.2)
Requirement already satisfied: numpy in /usr/local/lib/python3.10/dist-packages (1.23.5)
Requirement already satisfied: python-dateutil>=2.8.1 in /usr/local/lib/python3.10/dist-packages (from pandas) (2.8.2)
Requirement already satisfied: pytz>=2020.I in /usr/local/lib/python3.10/dist-packages (from pandas) (2023.3.post1)
Requirement already satisfied: scipy>=1.3.2 in /usr/local/lib/python3.10/dist-packages (from scikit-learn) (1.11.3)
Requirement already satisfied: joblib>=1.1.1 in /usr/local/lib/python3.10/dist-packages (from scikit-learn) (1.3.2)
Requirement already satisfied: threadpoolctl>=2.0.0 in /usr/local/lib/python3.10/dist-packages (from scikit-learn) (3.2.0)
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.10/dist-packages (from python-dateutil>=2.8.1->pandas) (
```

```python
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.feature_extraction.text import CountVectorizer
from sklearn.naive_bayes import MultinomialNB
from sklearn.pipeline import make_pipeline
from sklearn import metrics
```

```python
dataset_link = "https://www.kaggle.com/datasets/grafstor/simple-dialogs-for-chatbot"
```

```python
file_path = "dialogs.txt"
```

```python
columns = ['user', 'bot']
df = pd.read_csv(file_path, sep='\t', header=None, names=columns)
```

```python
print(df.head())
```

```
                                 user  \
0              hi, how are you doing?
1          i'm fine. how about yourself?
2     i'm pretty good. thanks for asking.
3       no problem. so how have you been?
4         i've been great. what about you?

                                  bot
0              i'm fine. how about yourself7
1       i'm pretty good. thanks for asking.
2          no problem. so how have you been7
3             i've been great. what about you?
4     i've been good. i'm in school right now.
```

```python
print(df.tail())
```

```
                                                     user  \
3720       that's a good question. maybe it's not old age.
3721                             are you right-handed7
3722                                 yes. all my life.
3723      you're wearing out your right hand. stop using...
3724          but i do all my writing with my right hand.

                                                      bot
3720                             are you right-handed?
3721                                 yes. all my life.
3722      you're wearing out your right hand. stop using...
3723          but i do all my writing with my right hand.
3724      start typing instead. that way your left hand ...
```

```python
pnint(df.info())
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 3725 entries, 0 to 3724
Data columns (total 2 columns):
 #   Column  Non-Null Count  Dtype

 0   user    3725 non-null   object
 1   bot     3725 non-null   object
dtypes: object(2)
memory usage: 58.3+ KB
None
```

```python
print(df.describe())
```

```
                 user              bot
count            3725             3725
un1que           3510             3512
top     what do you mean?  what do you mean?
freq               22               22
```

```
print(type(df))
```

```
<class  'pandas.core.frame.DataFrame'›
```

```
print(type(file_path))
```

```
<class 'str'>
```

```
print(df.shape)
```

```
(3725, 2)
```

```
pnint(df.size)
```

```
7450
```

```
df["user"].value_counts()
```

```
what do you mean?                              22
why not?                                       16
what happened?                                 10
why is that?                                    9
me too.                                         7

you can yell at them.                           1
and they will yell back at you.                 1
yelling doesn't do any good.                    1
will you look at this form?                     1
but i do all my writing with my right hand.     1
Name: user, Length: 3510, dtype: int64
```

```
df["bot"].value_counts()
```

```
what do you mean?                                                  22
why not7                                                           16
what happened?                                                     10
why is that?                                                        9
of course.                                                          8

i don't understand some things.                                     1
let me help you.                                                    1
what does "mi" mean?                                               1
mi stands for middle initial.                                      1
start typing instead. that way your left hand will do half the work.   1
Name: bot, Length: 3512, dtype: int64
```

```
df.index
```

```
Rangelndex(start=0, stop=3725, step=1)
```

```
df.values
```

```
array([['hi, how are you doing?', "i'm fine. how about yourself?"],
        ["i'm fine. how about yourself?",
         "i'm pretty good. thanks for asking."],
        ["i'm pretty good. thanks for asking.",
        'no problem. so how have you been7'],

       ['yes. all my life.',
         "you're wearing out your right hand. stop using it so much."],
       ["you're wearing out your right hand. stop using it so much.",
        'but i do all my writing with my right hand.'],
       ['but i do all my writing with my right hand.',
         'start typing instead. that way your left hand will do half the work.']],
      dtype=object)
```

```
df.axes
```

```
    [RangeIndex(start=0, stop=3725, step=1),
     Index(['user', 'bot'], dtype='object')]
```

df.axes[0]

```
    RangeIndex(start=0, stop=3725, step=1)
```

df.axes[1]

```
    Index(['user', 'bot'], dtype='object')
```

df.keys()

```
    Index(['user', 'bot'], dtype='object')
```

df.sum()

```
    user    hi, how are you doing?i'm fine. how about your...
    bot     i'm fine. how about yourself?i'm pretty good.
    dtype: object
```

df.max()

```
    user
    and you know you should be glad!
    bot
    there will be an answer, let it be!
    dtype: object
```

df.min()

```
    user                                          $1,000.
    bot     it doesn't matter. here he comes now with the...
    dtype: object
```

df.count()

```
    user    3725
    bot     3725
    dtype: 1nt64
```

list(df.items())

```
    [('user',
     0                                hi, how are you doing7
     1                         i'm fine. how about yourself?
     2                    i'm pretty good. thanks for asking.
     3                      no problem. so how have you been7
     4                       i've been great. what about you?

     3720  that's a good question. maybe it's not old age.
     3721                               are you right-handed?
     3722                               yes. all my life.
     3723  you're wearing out your right hand. stop using...
     3724    but i do all my writing with my right hand.
     Name: user, Length: 3725, dtype: object),
     ('bot',
     0                         i'm fine. how about yourself?
     1                    i'm pretty good. thanks for asking.
     2                       no problem. so how have you been?
     3                         i've been great. what about you?
     4                 i've been good. i'm in school right now.

     3720                               are you right-handed?
     3721                               yes. all my life.
     3722  you're wearing out your right hand. stop using...
     3723    but i do all my writing with my right hand.
     3724  start typing instead. that way your left hand ...
     Name: bot, Length: 3725, dtype: object)]
```
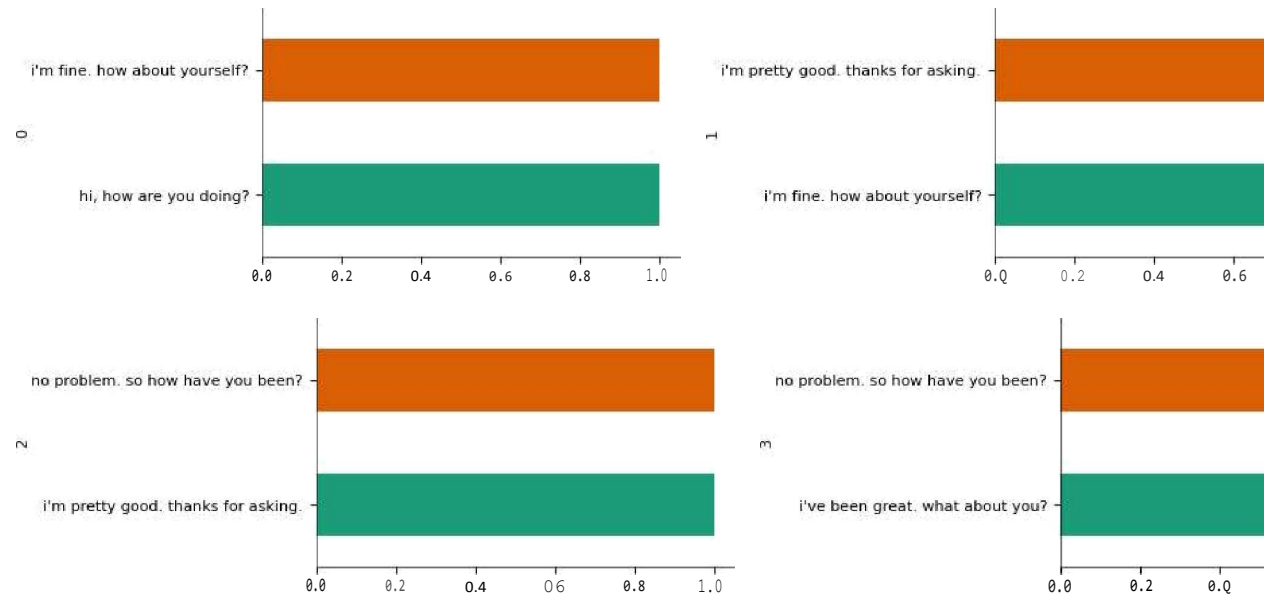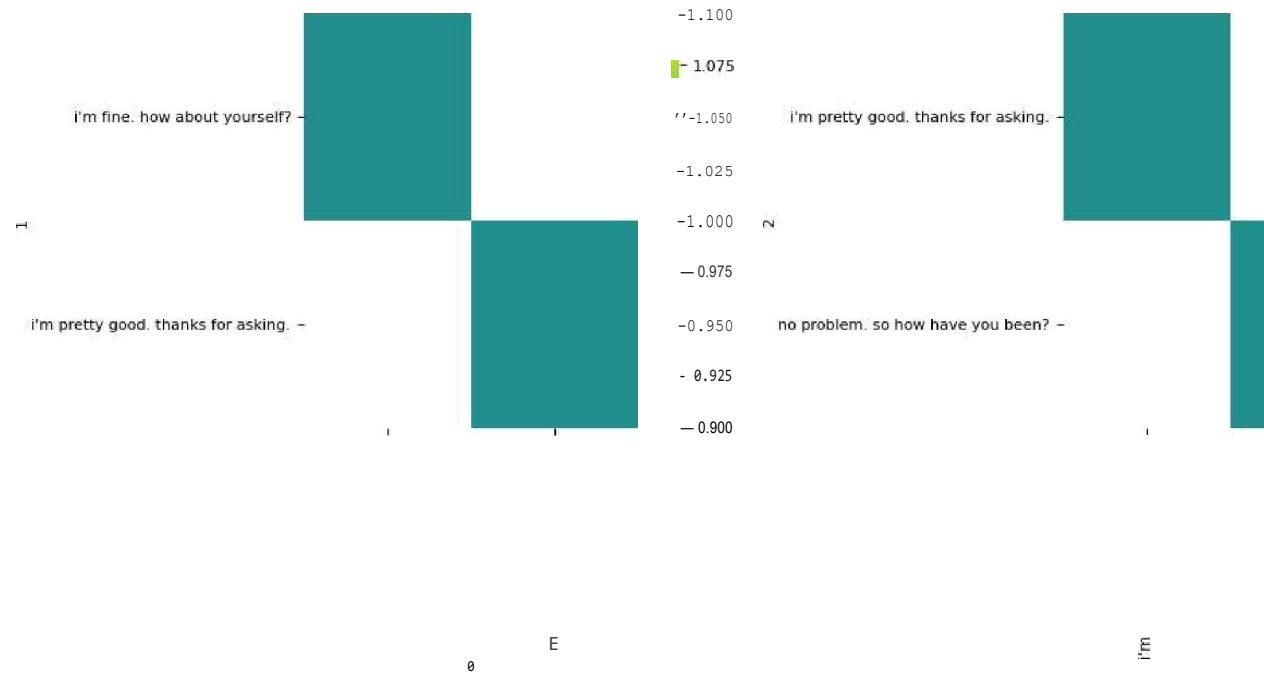
df.T
```

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 3715 | 3716 | 3717 | 3718 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| user | hi, how are you doing? | ' fine. how about yourself? | i'm pretty good. thanks for asking. | no problem. so how have you been? | i've been great. what about you? | i've been good. i'm in school right now. | what school do you go to? | i go to pcc. | do you like it there? | it's okay. it's a really big campus. | what's wrong with it? | it aches most of the time. | what do you think it is? | ' don't know. i think it's old age. if ag ha |
| bot | i'm fine. how about yourself? | i,,, pretty good. thanks for asking. | no problem. so how have you been? | i've been great. what about you? | i've been good. i'm in school right now. | what school do you go to? | i go to p CC | do you like it there? | it's okay. it's a really big campus. | good luck with school. | it aches most of the time. | what do you think it is? | i don't know. i think it's old age. | if it's old age, why don't both of your hands quo i ol |

2 rows > 3725 columns

## Categorical distributions



## 2-d categorical distributions

```python
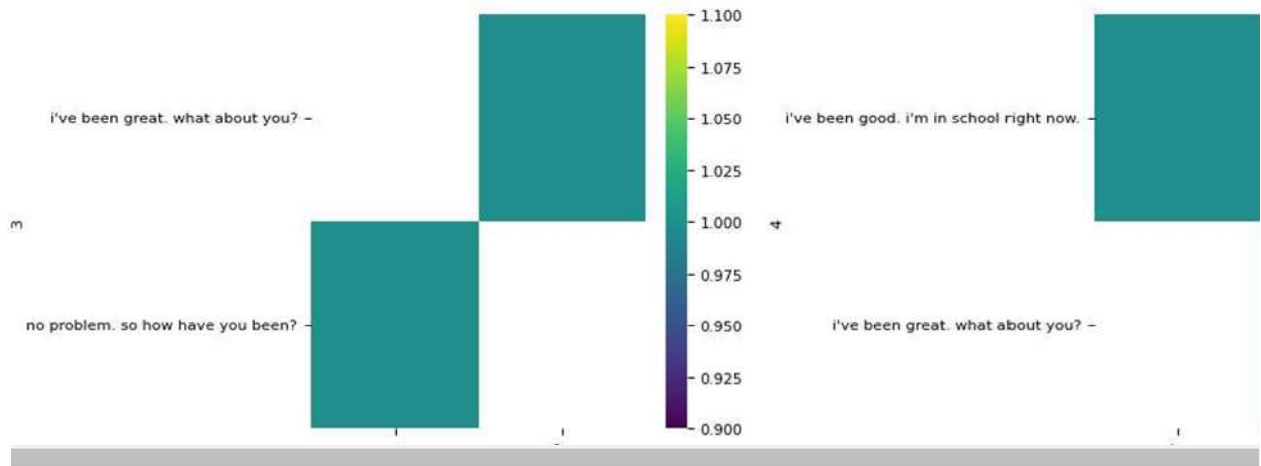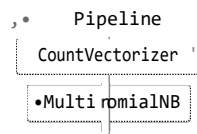df['user'] = df['user'].str.lower()
df['bot'] = df['bot'].str.lower()
```

```python
X_train, X_test, y_train, y_test = train_test_split(df['user'], df['bot'], test_size=0.2, random_state=42)
```

```python
model = make_pipeline(CountVectorizer(), MultinomialNB())
```

```python
model.fit(X_train, y_train)
```

```
    ,•      Pipeline
    ┌─────────────────┐
    │  CountVectorizer │
    └─────────────────┘
      ┌───────────────┐
      │•Multi nomialNB │
      └───────────────┘
```

```python
y_pred - model.predict(X test)
```

```python
accuracy = metrics.accuracy_score(y_test, y_pred)
print(f"Accuracy: {accuracy}")
```

```
    Accuracy: 0.006711409395973154
```

```python
accuracy = metrics.accuracy_score(y_test, y_pred)
accuracy_percentage = accuracy * 100

print(f"Accuracy: {accuracy_percentage:.2f}%")
```

```
    Accuracy: 0.67%
```

```python
precision = metrics.precision_score(y_test, y_pred, average='weighted')
recall = metrics.recall_score(y_test, y_pred, average='weighted')
f1 = metrics.f1_score(y_test, y_pred, average='weighted')

print(f"Precision: {precision}")
print(f"Recall: {recall}")
print(f"F1 Score: {f1}")
```

```
    Precision: 0.00014766274113733603
    Recall: 0.006711409395973154
    F1 Score: 0.0002863846471638254
    /usr/local/lib/python3.10/dist-packages/sklearn/metrics/_classification.py:1344: UndefinedMetricWarning: Precision is ill-
      _warn_prf(average, modifier, msg_start, len(result))
```

```
/usr/local/lib/python3.10/dist-packages/sklearn/metrics/_classification.py:1344: UndefinedMetricWarning: Recall is ill-def
  _warn_prf(average, modifier, msg_start, len(result))
```

```
class_report = metrics.classification_report(y_test, y_pred)
print("Classification Report:")
print(class_report)
```

```
/usr/local/lib/python3.10/dist -packages/sklearn/metrics/_classification.py:1344: UndefinedMetricWarning: Precision and F'
' _warn_prf(average, modifier, msg_start, len(result))
/usr/local/lib/python3.10/dist-packages/sklearn/metrics/_classification.py:1344: UndefinedMetricWarning: Recall and F-sc
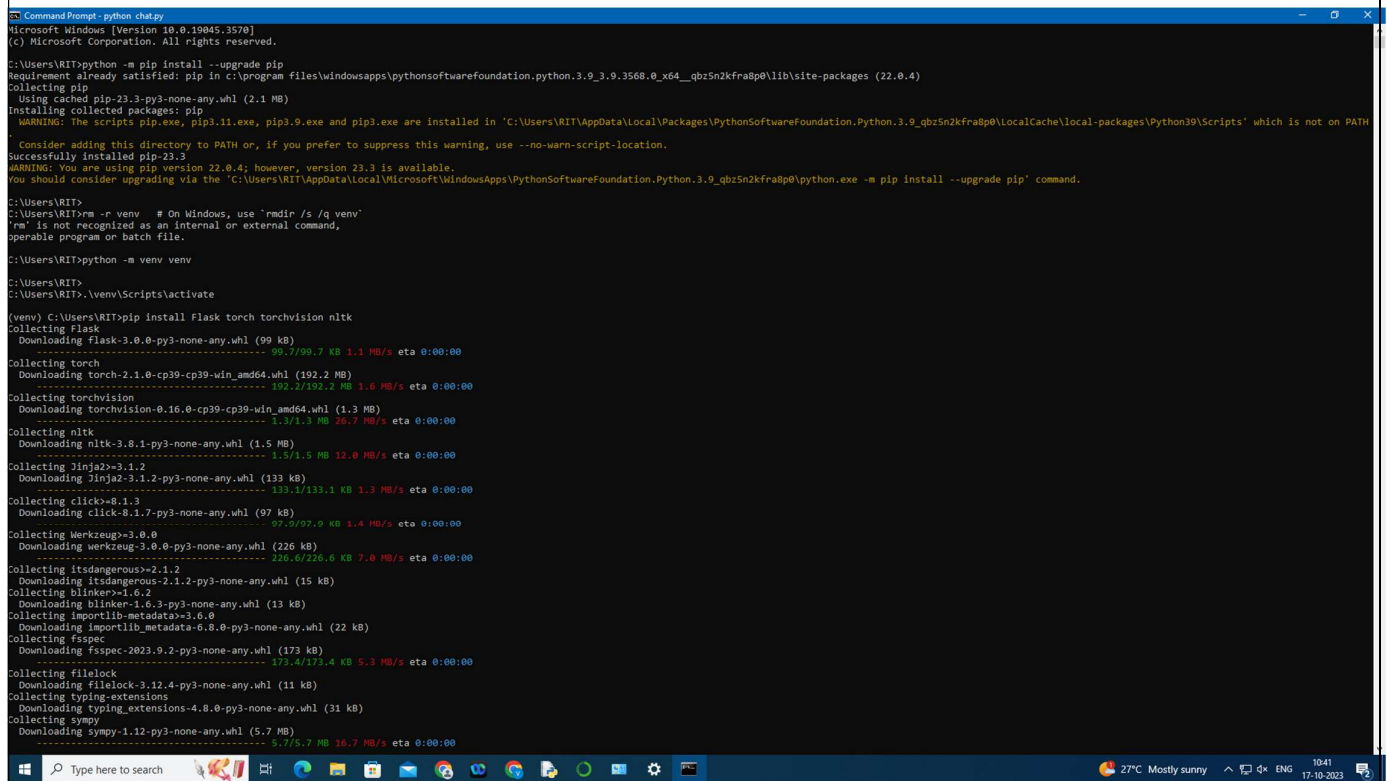  _warn_prf(average, modifier, msg_start, len(result))
Classification Report:
```

	precision	recall	f1-score	suppo
a blind date doesn't mean that she is blind!	0.00	0.00	0.00	
a girl i met at the market.	0.00	0.00	0.00	
a lot, like the party i'm having on friday.	0.00	0.00	0.00	
a team of doctors gave her a whole new face.	0.00	0.00	0.00	
a third guy punched one of the two guys.	0.00	0.00	0.00	
about 50 percent of the time he's traveling.	0.00	0.00	0.00	
after that, we can dry it with a towel.	0.00	0.00	0.00	
all right, see you.	0.00	0.00	0.00	
all right. i'll see you next time.	0.00	0.00	0.00	
also, i bought a can of cheap coffee and a bag of good coffee.	0.00	0.00	0.00	
and 4,000 people showed up.	0.00	0.00	0.00	
and i don't have either.	0.00	0.00	0.00	
and it's just as easy to prepare.	0.00	0.00	0.00	
and it's not too small.	0.00	0.00	0.00	
and now i'm glad that i didn't.	0.00	0.00	0.00	
and then we can tunn right at the light.	0.00	0.00	0.00	
and then you chase it.	0.00	0.00	0.00	
and we can afford it!	0.00	0.00	0.00	
and you're mine forever.	0.00	0.00	0.00	
any rain right now would be pointless.	0.00	0.00	0.00	
anything else?	0.00	0.00	0.00	
are you going to be buried next to each other?	0.00	0.00	0.00	
are you going to buy a desktop or laptop?	0.00	0.00	0.00	
are you going to go and visit her and the baby?	0.00	0.00	0.00	
are you going to start a family?	0.00	0.00	0.00	
are you going to wash it yourself?	0.00	0.00	0.00	
artists see things differently.	0.00	0.00	0.00	
because i want to make a lot of money.	.	.	.	
because i was watching you.	0.00	0.00	0.00	
because of all the security?	0.00	0.00	0.00	
because parents don't teach their kids right from wrong.	0.00	0.00	0.00	
because tax cuts will save them money.	0.00	0.00	0.00	
because you get to meet a lot of people.	0.00	0.00	0.00	
because you helped make it dirty.	0.00	0.00	0.00	
because you're thinking too much.	0.00	0.00	0.00	
but a house is so expensive.	0.00	0.00	0.00	
but big earthquakes happen only once in a while.	0.00	0.00	0.00	
but bush visited some of them in the hospital once.	0.00	0.00	0.00	
but i'm listening to it.	0.00	0.00	0.00	
but now work is hard, too.	0.00	0.00	0.00	
but someone's going to break it, so what good is it?	0.00	0.00	0.00	
but the same thing day after day gets old.	0.00	0.00	0.00	
but the smell is different.	0.00	0.00	0.00	
but there are a lot of police.	0.00	0.00	0.00	
but you can't win if you don't play.	0.00	0.00	0.00	
but you eat fruits.	0.00	0.00	0.00	
but you know that california weather is really unpredictable.	0.00	0.00	0.00	
but you're right. there are a lot of fires.	0.00	0.00	0.00	
buy a new one.	0.00	0.00	0.00	
can i have all those cans of tomato sauce you bought for your pasta?	0.00	0.00	0.00	*

PROJECT SETUP

To build a chatbot and start with the development phase. Here are the steps we can follow:

Step1: Create a Virtual Environment

```
cd chatbot
python3 -m venv venv
.\venv\Scripts\activate
```


Step2: Install Required Libraries

```
pip install transformers
pip install flask
```

```
Command Prompt                                                                    —  □  ✕

Microsoft Windows [Version 10.0.19045.3208]
(c) Microsoft Corporation. All rights reserved.

C:\Users\RIT>pip install transformers
Defaulting to user installation because normal site-packages is not writeable
Collecting transformers
  Downloading transformers-4.34.0-py3-none-any.whl (7.7 MB)
     ------------------------------------- 7.7/7.7 MB 14.1 MB/s eta 0:00:00
Collecting filelock (from transformers)
  Downloading filelock-3.12.4-py3-none-any.whl (11 kB)
Collecting huggingface-hub<1.0,>=0.16.4 (from transformers)
  Downloading huggingface_hub-0.18.0-py3-none-any.whl (301 kB)
     ------------------------------------- 302.0/302.0 kB 6.2 MB/s eta 0:00:00
Requirement already satisfied: numpy>=1.17 in c:\users\rit\appdata\roaming\python\python311\site-packages (from transformers) (1.25.0)
Requirement already satisfied: packaging>=20.0 in c:\users\rit\appdata\roaming\python\python311\site-packages (from transformers) (23.1)
Requirement already satisfied: pyyaml>=5.1 in c:\users\rit\appdata\roaming\python\python311\site-packages (from transformers) (6.0)
Collecting regex!=2019.12.17 (from transformers)
  Downloading regex-2023.10.3-cp311-cp311-win_amd64.whl (269 kB)
     ------------------------------------- 269.6/269.6 kB 5.5 MB/s eta 0:00:00
Collecting requests (from transformers)
  Downloading requests-2.31.0-py3-none-any.whl (62 kB)
     ------------------------------------- 62.6/62.6 kB 1.1 MB/s eta 0:00:00
Collecting tokenizers<0.15,>=0.14 (from transformers)
  Downloading tokenizers-0.14.1-cp311-none-win_amd64.whl (2.2 MB)
     ------------------------------------- 2.2/2.2 MB 12.7 MB/s eta 0:00:00
Collecting safetensors>=0.3.1 (from transformers)
  Downloading safetensors-0.4.0-cp311-none-win_amd64.whl (277 kB)
     ------------------------------------- 277.4/277.4 kB 2.5 MB/s eta 0:00:00
Collecting tqdm>=4.27 (from transformers)
  Downloading tqdm-4.66.1-py3-none-any.whl (78 kB)
     ------------------------------------- 78.3/78.3 kB 1.4 MB/s eta 0:00:00
Collecting fsspec>=2023.5.0 (from huggingface-hub<1.0,>=0.16.4->transformers)
  Downloading fsspec-2023.9.2-py3-none-any.whl (173 kB)
     ------------------------------------- 173.4/173.4 kB 5.3 MB/s eta 0:00:00
Collecting typing-extensions>=3.7.4.3 (from huggingface-hub<1.0,>=0.16.4->transformers)
  Downloading typing_extensions-4.8.0-py3-none-any.whl (31 kB)
Collecting huggingface-hub<1.0,>=0.16.4 (from transformers)
  Downloading huggingface_hub-0.17.3-py3-none-any.whl (295 kB)
     ------------------------------------- 295.0/295.0 kB 9.2 MB/s eta 0:00:00
```

```
Command Prompt                                                                    —  □  ✕

     ------------------------------------- 173.4/173.4 kB 5.3 MB/s eta 0:00:00
Collecting typing-extensions>=3.7.4.3 (from huggingface-hub<1.0,>=0.16.4->transformers)
  Downloading typing_extensions-4.8.0-py3-none-any.whl (31 kB)
Collecting huggingface-hub<1.0,>=0.16.4 (from transformers)
  Downloading huggingface_hub-0.17.3-py3-none-any.whl (295 kB)
     ------------------------------------- 295.0/295.0 kB 9.2 MB/s eta 0:00:00
Collecting colorama (from tqdm>=4.27->transformers)
  Downloading colorama-0.4.6-py2.py3-none-any.whl (25 kB)
Collecting charset-normalizer<4,>=2 (from requests->transformers)
  Downloading charset_normalizer-3.3.0-cp311-cp311-win_amd64.whl (97 kB)
     ------------------------------------- 97.8/97.8 kB 5.5 MB/s eta 0:00:00
Collecting idna<4,>=2.5 (from requests->transformers)
  Downloading idna-3.4-py3-none-any.whl (61 kB)
     ------------------------------------- 61.5/61.5 kB 1.7 MB/s eta 0:00:00
Collecting urllib3<3,>=1.21.1 (from requests->transformers)
  Downloading urllib3-2.0.6-py3-none-any.whl (123 kB)
     ------------------------------------- 123.8/123.8 kB 1.8 MB/s eta 0:00:00
Collecting certifi>=2017.4.17 (from requests->transformers)
  Downloading certifi-2023.7.22-py3-none-any.whl (158 kB)
     ------------------------------------- 158.3/158.3 kB 4.6 MB/s eta 0:00:00
Installing collected packages: urllib3, typing-extensions, safetensors, regex, idna, fsspec, filelock, colorama, charset-normalizer, certifi, tqdm, requests, huggingfac
e-hub, tokenizers, transformers
  WARNING: The script normalizer.exe is installed in 'C:\Users\RIT\AppData\Roaming\Python\Python311\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
  WARNING: The script tqdm.exe is installed in 'C:\Users\RIT\AppData\Roaming\Python\Python311\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
  WARNING: The script huggingface-cli.exe is installed in 'C:\Users\RIT\AppData\Roaming\Python\Python311\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
  WARNING: The script transformers-cli.exe is installed in 'C:\Users\RIT\AppData\Roaming\Python\Python311\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
Successfully installed certifi-2023.7.22 charset-normalizer-3.3.0 colorama-0.4.6 filelock-3.12.4 fsspec-2023.9.2 huggingface-hub-0.17.3 idna-3.4 regex-2023.10.3 request
s-2.31.0 safetensors-0.4.0 tokenizers-0.14.1 tqdm-4.66.1 transformers-4.34.0 typing-extensions-4.8.0 urllib3-2.0.6

[notice] A new release of pip is available: 23.1.2 -> 23.3
[notice] To update, run: python.exe -m pip install --upgrade pip

C:\Users\RIT>
```

Command Prompt

```
Microsoft Windows [Version 10.0.19045.3208]
(c) Microsoft Corporation. All rights reserved.

C:\Users\RIT>pip install flask
Defaulting to user installation because normal site-packages is not writeable
Collecting flask
  Downloading flask-3.0.0-py3-none-any.whl (99 kB)
     ---------------------------------------- 99.7/99.7 kB 715.9 kB/s eta 0:00:00
Collecting Werkzeug>=3.0.0 (from flask)
  Downloading werkzeug-3.0.0-py3-none-any.whl (226 kB)
     ---------------------------------------- 226.6/226.6 kB 2.8 MB/s eta 0:00:00
Requirement already satisfied: Jinja2>=3.1.2 in c:\users\rit\appdata\roaming\python\python311\site-packages (from flask) (3.1.2)
Collecting itsdangerous>=2.1.2 (from flask)
  Downloading itsdangerous-2.1.2-py3-none-any.whl (15 kB)
Collecting click>=8.1.3 (from flask)
  Downloading click-8.1.7-py3-none-any.whl (97 kB)
     ---------------------------------------- 97.9/97.9 kB 1.4 MB/s eta 0:00:00
Collecting blinker>=1.6.2 (from flask)
  Downloading blinker-1.6.3-py3-none-any.whl (13 kB)
Requirement already satisfied: colorama in c:\users\rit\appdata\roaming\python\python311\site-packages (from click>=8.1.3->flask) (0.4.6)
Requirement already satisfied: MarkupSafe>=2.0 in c:\users\rit\appdata\roaming\python\python311\site-packages (from Jinja2>=3.1.2->flask) (2.1.3)
Installing collected packages: Werkzeug, itsdangerous, click, blinker, flask
  WARNING: The script flask.exe is installed in 'C:\Users\RIT\AppData\Roaming\Python\Python311\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
Successfully installed Werkzeug-3.0.0 blinker-1.6.3 click-8.1.7 flask-3.0.0 itsdangerous-2.1.2

[notice] A new release of pip is available: 23.1.2 -> 23.3
[notice] To update, run: python.exe -m pip install --upgrade pip

C:\Users\RIT>
```

Command Prompt

```
Microsoft Windows [Version 10.0.19045.3208]
(c) Microsoft Corporation. All rights reserved.

C:\Users\RIT>python.exe -m pip install --upgrade pip
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: pip in c:\users\rit\appdata\roaming\python\python311\site-packages (23.1.2)
Collecting pip
  Downloading pip-23.3-py3-none-any.whl (2.1 MB)
     ---------------------------------------- 2.1/2.1 MB 4.8 MB/s eta 0:00:00
Installing collected packages: pip
  Attempting uninstall: pip
    Found existing installation: pip 23.1.2
    Uninstalling pip-23.1.2:
      Successfully uninstalled pip-23.1.2
  WARNING: The scripts pip.exe, pip3.11.exe and pip3.exe are installed in 'C:\Users\RIT\AppData\Roaming\Python\Python311\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
Successfully installed pip-23.3

C:\Users\RIT>
```

```
Usage: python -m flask run [OPTIONS]
Try 'python -m flask run --help' for help.

Error: While importing 'app', an ImportError was raised:

Traceback (most recent call last):
  File "c:\Users\RIT\chatbot-deployment\.venv\lib\site-packages\flask\cli.py", line 219, in locate_app
    __import__(module_name)
  File "C:\Users\RIT\chatbot-deployment\app.py", line 3, in <module>
    from chat import get_response
  File "C:\Users\RIT\chatbot-deployment\chat.py", line 4, in <module>
    import torch
ModuleNotFoundError: No module named 'torch'


(.venv) C:\Users\RIT\chatbot-deployment>pip install Flask torch torchvision nltk
Requirement already satisfied: Flask in c:\users\rit\chatbot-deployment\.venv\lib\site-packages (3.0.0)
Collecting torch
  Downloading torch-2.1.0-cp39-cp39-win_amd64.whl.metadata (24 kB)
Collecting torchvision
  Downloading torchvision-0.16.0-cp39-cp39-win_amd64.whl.metadata (6.6 kB)
Collecting nltk
  Downloading nltk-3.8.1-py3-none-any.whl (1.5 MB)
                                         1.5/1.5 MB 6.9 MB/s eta 0:00:00
Requirement already satisfied: Werkzeug>=3.0.0 in c:\users\rit\chatbot-deployment\.venv\lib\site-packages (from Flask) (3.0.0)
Requirement already satisfied: Jinja2>=3.1.2 in c:\users\rit\chatbot-deployment\.venv\lib\site-packages (from Flask) (3.1.2)
Requirement already satisfied: itsdangerous>=2.1.2 in c:\users\rit\chatbot-deployment\.venv\lib\site-packages (from Flask) (2.1.2)
Requirement already satisfied: click>=8.1.3 in c:\users\rit\chatbot-deployment\.venv\lib\site-packages (from Flask) (8.1.7)
Requirement already satisfied: blinker>=1.6.2 in c:\users\rit\chatbot-deployment\.venv\lib\site-packages (from Flask) (1.6.3)
Requirement already satisfied: importlib-metadata>=3.6.0 in c:\users\rit\chatbot-deployment\.venv\lib\site-packages (from Flask) (6.8.0)
Collecting filelock (from torch)
  Downloading filelock-3.12.4-py3-none-any.whl.metadata (2.8 kB)
Collecting typing-extensions (from torch)
  Downloading typing_extensions-4.8.0-py3-none-any.whl.metadata (3.0 kB)
Collecting sympy (from torch)
  Downloading sympy-1.12-py3-none-any.whl (5.7 MB)
                                         5.7/5.7 MB 19.4 MB/s eta 0:00:00
Collecting networkx (from torch)
  Downloading networkx-3.1-py3-none-any.whl (2.1 MB)
                                         2.1/2.1 MB 16.5 MB/s eta 0:00:00
Collecting fsspec (from torch)
  Downloading fsspec-2023.9.2-py3-none-any.whl.metadata (6.7 kB)
Collecting numpy (from torchvision)
  Downloading numpy-1.26.1-cp39-cp39-win_amd64.whl.metadata (61 kB)
                                         61.2/61.2 kB 808.8 kB/s eta 0:00:00
Collecting requests (from torchvision)
  Using cached requests-2.31.0-py3-none-any.whl.metadata (4.6 kB)
Collecting pillow!=8.3.*,>=5.3.0 (from torchvision)
  Downloading Pillow-10.1.0-cp39-cp39-win_amd64.whl.metadata (9.6 kB)
Collecting joblib (from nltk)
  Using cached joblib-1.3.2-py3-none-any.whl.metadata (5.4 kB)
Collecting regex>=2021.8.3 (from nltk)
  Downloading regex-2023.10.3-cp39-cp39-win_amd64.whl.metadata (41 kB)
                                         42.0/42.0 kB 675.1 kB/s eta 0:00:00
Collecting tqdm (from nltk)
```

```
Collecting pillow!=8.3.*,>=5.3.0 (from torchvision)
  Downloading Pillow-10.1.0-cp39-cp39-win_amd64.whl.metadata (9.6 kB)
Collecting joblib (from nltk)
  Using cached joblib-1.3.2-py3-none-any.whl.metadata (5.4 kB)
Collecting regex>=2021.8.3 (from nltk)
  Downloading regex-2023.10.3-cp39-cp39-win_amd64.whl.metadata (41 kB)
                                         42.0/42.0 kB 675.1 kB/s eta 0:00:00
Collecting tqdm (from nltk)
  Downloading tqdm-4.66.1-py3-none-any.whl.metadata (57 kB)
                                         57.6/57.6 kB 1.0 MB/s eta 0:00:00
Requirement already satisfied: colorama in c:\users\rit\chatbot-deployment\.venv\lib\site-packages (from click>=8.1.3->Flask) (0.4.6)
Requirement already satisfied: zipp>=0.5 in c:\users\rit\chatbot-deployment\.venv\lib\site-packages (from importlib-metadata>=3.6.0->Flask) (3.17.0)
Requirement already satisfied: MarkupSafe>=2.0 in c:\users\rit\chatbot-deployment\.venv\lib\site-packages (from Jinja2>=3.1.2->Flask) (2.1.3)
Collecting charset-normalizer<4,>=2 (from requests->torchvision)
  Downloading charset_normalizer-3.3.0-cp39-cp39-win_amd64.whl.metadata (33 kB)
Collecting idna<4,>=2.5 (from requests->torchvision)
  Using cached idna-3.4-py3-none-any.whl (61 kB)
Collecting urllib3<3,>=1.21.1 (from requests->torchvision)
  Using cached urllib3-2.0.6-py3-none-any.whl.metadata (6.6 kB)
Collecting certifi>=2017.4.17 (from requests->torchvision)
  Using cached certifi-2023.7.22-py3-none-any.whl.metadata (2.2 kB)
Collecting mpmath>=0.19 (from sympy->torch)
  Downloading mpmath-1.3.0-py3-none-any.whl (536 kB)
                                         536.2/536.2 kB 11.2 MB/s eta 0:00:00
Downloading torch-2.1.0-cp39-cp39-win_amd64.whl (192.2 MB)
                                         192.2/192.2 MB 5.5 MB/s eta 0:00:00
Downloading torchvision-0.16.0-cp39-cp39-win_amd64.whl (1.3 MB)
                                         1.3/1.3 MB 13.3 MB/s eta 0:00:00
Downloading Pillow-10.1.0-cp39-cp39-win_amd64.whl (2.6 MB)
                                         2.6/2.6 MB 23.8 MB/s eta 0:00:00
Downloading regex-2023.10.3-cp39-cp39-win_amd64.whl (269 kB)
                                         269.6/269.6 kB 4.1 MB/s eta 0:00:00
Downloading filelock-3.12.4-py3-none-any.whl (11 kB)
Downloading fsspec-2023.9.2-py3-none-any.whl (173 kB)
                                         173.4/173.4 kB 360.2 kB/s eta 0:00:00
Using cached joblib-1.3.2-py3-none-any.whl (302 kB)
Downloading numpy-1.26.1-cp39-cp39-win_amd64.whl (15.8 MB)
                                         15.8/15.8 MB 13.1 MB/s eta 0:00:00
Using cached requests-2.31.0-py3-none-any.whl (62 kB)
Downloading tqdm-4.66.1-py3-none-any.whl (78 kB)
                                         78.3/78.3 kB 624.0 kB/s eta 0:00:00
Downloading typing_extensions-4.8.0-py3-none-any.whl (31 kB)
Using cached certifi-2023.7.22-py3-none-any.whl (158 kB)
Downloading charset_normalizer-3.3.0-cp39-cp39-win_amd64.whl (98 kB)
                                         98.2/98.2 kB 1.1 MB/s eta 0:00:00
Using cached urllib3-2.0.6-py3-none-any.whl (123 kB)
Installing collected packages: mpmath, urllib3, typing-extensions, tqdm, sympy, regex, pillow, numpy, networkx, joblib, idna, fsspec, filelock, charset-normalizer, certifi, torch, requests, nltk, torchvision
Successfully installed certifi-2023.7.22 charset-normalizer-3.3.0 filelock-3.12.4 fsspec-2023.9.2 idna-3.4 joblib-1.3.2 mpmath-1.3.0 networkx-3.1 nltk-3.8.1 numpy-1.26.1 pillow-10.1.0 regex-2023.10.3 requests
-2.31.0 sympy-1.12 torch-2.1.0 torchvision-0.16.0 tqdm-4.66.1 typing-extensions-4.8.0 urllib3-2.0.6
WARNING: There was an error checking the latest version of pip.

(.venv) C:\Users\RIT\chatbot-deployment>python -m flask run
 * Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on http://127.0.0.1:5000
```

```
Successfully installed certifi-2023.7.22 charset-normalizer-3.3.0 filelock-3.12.4 fsspec-2023.9.2 idna-3.4 joblib-1.3.2 mpmath-1.3.0 networkx-3.1 nltk-3.8.1 num
-2.31.0 sympy-1.12 torch-2.1.0 torchvision-0.16.0 tqdm-4.66.1 typing-extensions-4.8.0 urllib3-2.0.6
WARNING: There was an error checking the latest version of pip.

(.venv) C:\Users\RIT\chatbot-deployment>python -m flask run
 * Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on http://127.0.0.1:5000
Press CTRL+C to quit
127.0.0.1 - - [17/Oct/2023 11:47:26] "GET / HTTP/1.1" 200 -
127.0.0.1 - - [17/Oct/2023 11:47:26] "GET /static/app.js HTTP/1.1" 200 -
127.0.0.1 - - [17/Oct/2023 11:47:26] "GET /static/images/chatbox-icon.svg HTTP/1.1" 200 -
127.0.0.1 - - [17/Oct/2023 11:47:26] "GET /static/style.css HTTP/1.1" 200 -
127.0.0.1 - - [17/Oct/2023 11:47:27] "GET /favicon.ico HTTP/1.1" 404 -
```