

```
import sys
```

```
!{sys.executable} -m pip install nltk spacy transformers  
print("Essential NLP libraries installed successfully!")
```

```
Requirement already satisfied: nltk in /usr/local/lib/python3.12/dist-packages (3.9.1)  
Requirement already satisfied: spacy in /usr/local/lib/python3.12/dist-packages (3.8.11)  
Requirement already satisfied: transformers in /usr/local/lib/python3.12/dist-packages (4.57.3)  
Requirement already satisfied: click in /usr/local/lib/python3.12/dist-packages (from nltk) (8.3.1)  
Requirement already satisfied: joblib in /usr/local/lib/python3.12/dist-packages (from nltk) (1.5.3)  
Requirement already satisfied: regex<2021.8.3 in /usr/local/lib/python3.12/dist-packages (from nltk) (2025.11.3)  
Requirement already satisfied: tqdm in /usr/local/lib/python3.12/dist-packages (from nltk) (4.67.1)  
Requirement already satisfied: spacy-legacy<3.1.0,>=3.0.11 in /usr/local/lib/python3.12/dist-packages (from spacy) (3.0.12)  
Requirement already satisfied: spacy-loggers<2.0.0,>=1.0.0 in /usr/local/lib/python3.12/dist-packages (from spacy) (1.0.5)  
Requirement already satisfied: murmurhash<1.1.0,>=0.28.0 in /usr/local/lib/python3.12/dist-packages (from spacy) (1.0.15)  
Requirement already satisfied: cymem<2.1.0,>=2.0.2 in /usr/local/lib/python3.12/dist-packages (from spacy) (2.0.13)  
Requirement already satisfied: preshed<3.1.0,>=3.0.2 in /usr/local/lib/python3.12/dist-packages (from spacy) (3.0.12)  
Requirement already satisfied: thinc<8.4.0,>=8.3.4 in /usr/local/lib/python3.12/dist-packages (from spacy) (8.3.10)  
Requirement already satisfied: wasabi<1.2.0,>=0.9.1 in /usr/local/lib/python3.12/dist-packages (from spacy) (1.1.3)  
Requirement already satisfied: srsly<3.0.0,>=2.4.3 in /usr/local/lib/python3.12/dist-packages (from spacy) (2.5.2)  
Requirement already satisfied: catalogue<2.1.0,>=2.0.6 in /usr/local/lib/python3.12/dist-packages (from spacy) (2.0.10)  
Requirement already satisfied: weasel<0.5.0,>=0.4.2 in /usr/local/lib/python3.12/dist-packages (from spacy) (0.4.3)  
Requirement already satisfied: typer-slim<1.0.0,>=0.3.0 in /usr/local/lib/python3.12/dist-packages (from spacy) (0.20.0)  
Requirement already satisfied: numpy>=1.19.0 in /usr/local/lib/python3.12/dist-packages (from spacy) (2.0.2)  
Requirement already satisfied: requests<3.0.0,>=2.13.0 in /usr/local/lib/python3.12/dist-packages (from spacy) (2.32.4)  
Requirement already satisfied: pydantic!=1.8,!1.8.1,<3.0.0,>=1.7.4 in /usr/local/lib/python3.12/dist-packages (from spacy) (25.0)  
Requirement already satisfied: Jinja2 in /usr/local/lib/python3.12/dist-packages (from spacy) (3.1.6)  
Requirement already satisfied: setuptools in /usr/local/lib/python3.12/dist-packages (from spacy) (75.2.0)  
Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.12/dist-packages (from spacy) (25.0)  
Requirement already satisfied: filelock in /usr/local/lib/python3.12/dist-packages (from transformers) (3.20.0)  
Requirement already satisfied: huggingface-hub<1.0,>=0.34.0 in /usr/local/lib/python3.12/dist-packages (from transformers) (0.34.0)  
Requirement already satisfied: pyyaml>=5.1 in /usr/local/lib/python3.12/dist-packages (from transformers) (6.0.3)  
Requirement already satisfied: tokenizers<0.23.0,>=0.22.0 in /usr/local/lib/python3.12/dist-packages (from transformers) (0.22.0)  
Requirement already satisfied: safetensors>=0.4.3 in /usr/local/lib/python3.12/dist-packages (from transformers) (0.7.0)  
Requirement already satisfied: fsspec>=2023.5.0 in /usr/local/lib/python3.12/dist-packages (from huggingface-hub<1.0,>=0.34.0) (2025.10.0)  
Requirement already satisfied: typing-extensions>=3.7.4.3 in /usr/local/lib/python3.12/dist-packages (from huggingface-hub<1.0,>=0.34.0) (4.12.0)  
Requirement already satisfied: hf-xet<2.0.0,>=1.1.3 in /usr/local/lib/python3.12/dist-packages (from huggingface-hub<1.0,>=0.34.0) (1.1.3)  
Requirement already satisfied: annotated-types>=0.6.0 in /usr/local/lib/python3.12/dist-packages (from pydantic!=1.8,!1.8.1) (0.7.0)  
Requirement already satisfied: pydantic-core==2.41.4 in /usr/local/lib/python3.12/dist-packages (from pydantic!=1.8,!1.8.1) (2.41.4)  
Requirement already satisfied: typing-inspection>=0.4.2 in /usr/local/lib/python3.12/dist-packages (from pydantic!=1.8,!1.8.1) (0.4.0)  
Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.12/dist-packages (from requests<3.0.0,>=2.13.0->spacy) (3.4.0)  
Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.12/dist-packages (from requests<3.0.0,>=2.13.0->spacy) (3.10.1)  
Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.12/dist-packages (from requests<3.0.0,>=2.13.0->spacy) (2.3.0)  
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.12/dist-packages (from requests<3.0.0,>=2.13.0->spacy) (2025.11.12)  
Requirement already satisfied: blis<1.4.0,>=1.3.0 in /usr/local/lib/python3.12/dist-packages (from thinc<8.4.0,>=8.3.4->spacy) (1.3.0)  
Requirement already satisfied: confection<1.0.0,>=0.0.1 in /usr/local/lib/python3.12/dist-packages (from thinc<8.4.0,>=8.3.4->spacy) (0.0.4)  
Requirement already satisfied: cloudpathlib<1.0.0,>=0.7.0 in /usr/local/lib/python3.12/dist-packages (from weasel<0.5.0,>=0.4.3) (0.19.0)  
Requirement already satisfied: smart-open<8.0.0,>=5.2.1 in /usr/local/lib/python3.12/dist-packages (from weasel<0.5.0,>=0.4.3) (7.0.5)  
Requirement already satisfied: MarkupSafe>=2.0 in /usr/local/lib/python3.12/dist-packages (from Jinja2->spacy) (3.0.3)  
Requirement already satisfied: wrapt in /usr/local/lib/python3.12/dist-packages (from smart-open<8.0.0,>=5.2.1->weasel<0.5.0,>=0.4.3) (1.17.0)  
Essential NLP libraries installed successfully!
```

```
!{sys.executable} -m spacy download en_core_web_sm  
print("spaCy English language model downloaded successfully!")
```

```
Collecting en-core-web-sm==3.8.0  
  Downloading https://github.com/explosion/spacy-models/releases/download/en\_core\_web\_sm-3.8.0/en\_core\_web\_sm-3.8.0-py3-none-any.whl (12.8/12.8 MB 97.9 MB/s eta 0:00:00)  
✓ Download and installation successful  
You can now load the package via spacy.load('en_core_web_sm')  
⚠ Restart to reload dependencies  
If you are in a Jupyter or Colab notebook, you may need to restart Python in order to load all the package's dependencies. You can do this by selecting the 'Restart kernel' or 'Restart runtime' option.  
spaCy English language model downloaded successfully!
```

```
text_input = input("Please enter some text: ")  
print("You entered:", text_input)
```

```
Please enter some text: helloooo  
You entered: helloooo
```

```
text_input = input("Please enter some text: ")  
print("You entered:", text_input)
```

```
Please enter some text: Rukmini is good girl  
You entered: Rukmini is good girl
```

```
import spacy
```

```
# Load the English language model if not already loaded  
# This assumes 'en_core_web_sm' was downloaded earlier.  
nlp = spacy.load("en_core_web_sm")
```

```
map = spacy.load('en_core_web_sm')
```

```
# Process the new text_input variable  
doc = nlp(text_input)
```

```
# Extract and print tokens  
tokens = [token.text for token in doc]  
print("Tokens:", tokens)
```

```
Tokens: ['Rukmini', 'is', 'good', 'girl']
```

```
#Perform Part-of-Speech tagging  
pos_tags = [(token.text, token.pos_) for token in doc]  
print("Part-of-Speech Tags:", pos_tags)
```

```
Part-of-Speech Tags: [('Rukmini', 'PROPN'), ('is', 'AUX'), ('good', 'ADJ'), ('girl', 'NOUN')]
```

```
print("Please enter a paragraph (press Enter twice to finish):")  
paragraph_input = []  
while True:  
    line = input()  
    if not line:  
        break  
    paragraph_input.append(line)  
text_input = "\n".join(paragraph_input)  
print("\nYou entered:")  
print(text_input)
```

```
Please enter a paragraph (press Enter twice to finish):
```