

NAMED ENTITY RECOGNITION

```
In [13]: 1 sent = "Ram is sstudying at mallareddy university in hyderabad,India"
```

```
In [14]: 1 import nltk
2 nltk.download('maxent_ne_chunker_tab')
```

```
[nltk_data] Downloading package maxent_ne_chunker_tab to
[nltk_data] C:\Users\nihar\AppData\Roaming\nltk_data...
[nltk_data] Package maxent_ne_chunker_tab is already up-to-date!
```

Out[14]: True

```
In [19]: 1 import nltk
2 nltk.download('punkt_tab')
```

```
[nltk_data] Downloading package punkt_tab to
[nltk_data] C:\Users\nihar\AppData\Roaming\nltk_data...
[nltk_data] Unzipping tokenizers\punkt_tab.zip.
```

Out[19]: True

```
In [20]: 1 import nltk
2 nltk.download('words')
```

```
[nltk_data] Downloading package words to
[nltk_data] C:\Users\nihar\AppData\Roaming\nltk_data...
[nltk_data] Package words is already up-to-date!
```

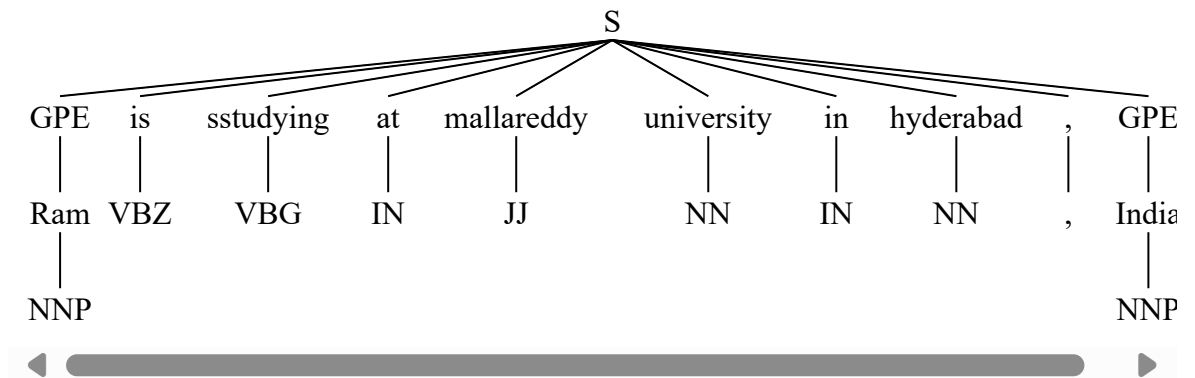
Out[20]: True

```
In [21]: 1 !pip install svgling
```

```
Requirement already satisfied: svgling in c:\users\nihar\anaconda3\lib\site-packages (0.5.0)
Requirement already satisfied: svgwrite in c:\users\nihar\anaconda3\lib\site-packages (from svgling) (1.4.3)
```

```
In [22]: 1 #import libraries
2 import nltk
3 from nltk import ne_chunk
4 from nltk import word_tokenize
5 #NER
6 ne_chunk(nltk.pos_tag(word_tokenize(sent)),binary=False)
```

Out[22]:



In [23]:

| | |
|---|--------------------|
| 1 | !pip install spacy |
|---|--------------------|

Requirement already satisfied: spacy in c:\users\nihar\anaconda3\lib\site-packages (3.7.2)

Requirement already satisfied: weasel<0.4.0,>=0.1.0 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (0.3.4)

Requirement already satisfied: pydantic!=1.8,!1.8.1,<3.0.0,>=1.7.4 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (2.5.2)

Requirement already satisfied: requests<3.0.0,>=2.13.0 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (2.28.1)

Requirement already satisfied: murmurhash<1.1.0,>=0.28.0 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (1.0.10)

Requirement already satisfied: setuptools in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (63.4.1)

Requirement already satisfied: packaging>=20.0 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (21.3)

Requirement already satisfied: spacy-legacy<3.1.0,>=3.0.11 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (3.0.12)

Requirement already satisfied: srsly<3.0.0,>=2.4.3 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (2.4.8)

Requirement already satisfied: Jinja2 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (2.11.3)

Requirement already satisfied: preshed<3.1.0,>=3.0.2 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (3.0.9)

Requirement already satisfied: thinc<8.3.0,>=8.1.8 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (8.2.1)

Requirement already satisfied: typer<0.10.0,>=0.3.0 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (0.9.0)

Requirement already satisfied: langcodes<4.0.0,>=3.2.0 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (3.3.0)

Requirement already satisfied: catalogue<2.1.0,>=2.0.6 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (2.0.10)

Requirement already satisfied: cymem<2.1.0,>=2.0.2 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (2.0.8)

Requirement already satisfied: wasabi<1.2.0,>=0.9.1 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (1.1.2)

Requirement already satisfied: numpy>=1.19.0 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (1.24.4)

Requirement already satisfied: spacy-loggers<2.0.0,>=1.0.0 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (1.0.5)

Requirement already satisfied: smart-open<7.0.0,>=5.2.1 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (5.2.1)

Requirement already satisfied: tqdm<5.0.0,>=4.38.0 in c:\users\nihar\anaconda3\lib\site-packages (from spacy) (4.64.1)

Requirement already satisfied: pyparsing!=3.0.5,>=2.0.2 in c:\users\nihar\anaconda3\lib\site-packages (from packaging>=20.0->spacy) (3.0.9)

Requirement already satisfied: pydantic-core==2.14.5 in c:\users\nihar\anaconda3\lib\site-packages (from pydantic!=1.8,!1.8.1,<3.0.0,>=1.7.4->spacy) (2.14.5)

Requirement already satisfied: typing-extensions>=4.6.1 in c:\users\nihar\anaconda3\lib\site-packages (from pydantic!=1.8,!1.8.1,<3.0.0,>=1.7.4->spacy) (4.8.0)

Requirement already satisfied: annotated-types>=0.4.0 in c:\users\nihar\anaconda3\lib\site-packages (from pydantic!=1.8,!1.8.1,<3.0.0,>=1.7.4->spacy) (0.6.0)

Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\users\nihar\anaconda3\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy) (1.26.11)

Requirement already satisfied: certifi>=2017.4.17 in c:\users\nihar\anaconda3\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy) (2022.9.14)

Requirement already satisfied: charset-normalizer<3,>=2 in c:\users\nihar\anaconda3\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy) (2.0.4)

Requirement already satisfied: idna<4,>=2.5 in c:\users\nihar\anaconda3\lib\site-packages (from requests<3.0.0,>=2.13.0->spacy) (3.3)

Requirement already satisfied: confection<1.0.0,>=0.0.1 in c:\users\nihar\anaconda3\lib\site-packages (from thinc<8.3.0,>=8.1.8->spacy) (0.1.4)
 Requirement already satisfied: blis<0.8.0,>=0.7.8 in c:\users\nihar\anaconda3\lib\site-packages (from thinc<8.3.0,>=8.1.8->spacy) (0.7.11)
 Requirement already satisfied: colorama in c:\users\nihar\anaconda3\lib\site-packages (from tqdm<5.0.0,>=4.38.0->spacy) (0.4.6)
 Requirement already satisfied: click<9.0.0,>=7.1.1 in c:\users\nihar\anaconda3\lib\site-packages (from typer<0.10.0,>=0.3.0->spacy) (8.0.4)
 Requirement already satisfied: cloudpathlib<0.17.0,>=0.7.0 in c:\users\nihar\anaconda3\lib\site-packages (from weasel<0.4.0,>=0.1.0->spacy) (0.16.0)
 Requirement already satisfied: MarkupSafe>=0.23 in c:\users\nihar\anaconda3\lib\site-packages (from jinja2->spacy) (2.0.1)

In [24]: 1 !python -m spacy download en_core_web_sm

Collecting en-core-web-sm==3.7.1
 Downloading https://github.com/explosion/spacy-models/releases/download/en_core_web_sm-3.7.1/en_core_web_sm-3.7.1-py3-none-any.whl (https://github.com/explosion/spacy-models/releases/download/en_core_web_sm-3.7.1/en_core_web_sm-3.7.1-py3-none-any.whl) (12.8 MB)
 ----- 12.8/12.8 MB 447.2 kB/s eta 0:00:00
 Requirement already satisfied: spacy<3.8.0,>=3.7.2 in c:\users\nihar\anaconda3\lib\site-packages (from en-core-web-sm==3.7.1) (3.7.2)
 Requirement already satisfied: setuptools in c:\users\nihar\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (63.4.1)
 Requirement already satisfied: preshed<3.1.0,>=3.0.2 in c:\users\nihar\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (3.0.9)
 Requirement already satisfied: murmurhash<1.1.0,>=0.28.0 in c:\users\nihar\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1) (1.0.10)
 Requirement already satisfied: packaging>=20.0 in c:\users\nihar\anaconda3\lib\site-packages (from spacy<3.8.0,>=3.7.2->en-core-web-sm==3.7.1)

In [25]: 1 import spacy
 2 nlp = spacy.load('en_core_web_sm')
 3 doc = nlp(u'Apple is ready to launch new phone worth \$10000 in new york')
 4 for ent in doc.ents:
 5 print(ent.text, ent.start_char, ent.end_char, ent.label_)

Apple 0 5 ORG
 10000 42 47 MONEY
 new york 51 59 GPE

In [26]: 1 import spacy
 2 nlp = spacy.load("en_core_web_sm")

In [27]: 1 text = ""
 2 Elon Musk, the CEO of SpaceX and Tesla, announced that SpaceX's Starship
 3 The mission, which will involve astronauts from NASA, will be the first
 4 Musk emphasized that the project would push the boundaries of space exploration
 5 ""

```
In [28]: 1 doc = nlp(text)
2         for ent in doc.ents:
3             print(f"Entity: {ent.text},Label:{ent.label_}")
```

```
Entity: Elon Musk,Label:PERSON
Entity: SpaceX,Label:NORP
Entity: Tesla,Label:ORG
Entity: first,Label:ORDINAL
Entity: Mars,Label:LOC
Entity: 2027,Label:DATE
Entity: NASA,Label:ORG
Entity: first,Label:ORDINAL
Entity: the Kennedy Space Center,Label:FAC
Entity: Florida,Label:GPE
```

```
In [29]: 1 from spacy import displacy
2         displacy.render(doc, style="ent")
```

Elon Musk **PERSON** , the CEO of SpaceX **NORP** and Tesla **ORG** , announced that SpaceX's Starship will be launching its first **ORDINAL** crewed mission to Mars **LOC** in 2027 **DATE** .

The mission, which will involve astronauts from NASA **ORG** , will be the first **ORDINAL** of its kind, and it will take place at the Kennedy Space Center **FAC** in Florida **GPE** . Musk emphasized that the project would push the boundaries of space exploration.

```
In [30]: 1 import pandas as pd
2         entities = [(ent.text,ent.label_,ent.lemma_) for ent in doc.ents]
3         df = pd.DataFrame(entities,columns=['text','type','lemma'])
4         print(df)
```

| | text | type | lemma |
|---|--------------------------|---------|--------------------------|
| 0 | Elon Musk | PERSON | Elon Musk |
| 1 | SpaceX | NORP | SpaceX |
| 2 | Tesla | ORG | Tesla |
| 3 | first | ORDINAL | first |
| 4 | Mars | LOC | Mars |
| 5 | 2027 | DATE | 2027 |
| 6 | NASA | ORG | NASA |
| 7 | first | ORDINAL | first |
| 8 | the Kennedy Space Center | FAC | the Kennedy Space Center |
| 9 | Florida | GPE | Florida |

```
In [ ]: 1
```

