```
In [1]:  import nltk
         nltk.download('words')
```
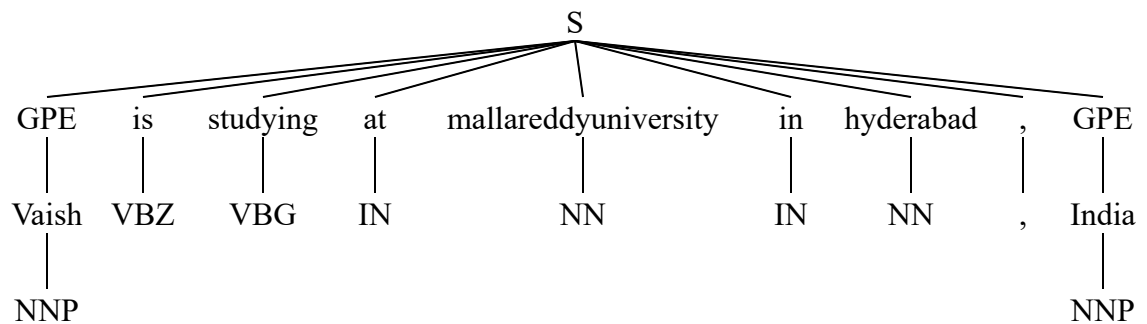
Out[1]: True

```
In [3]:  sent = "Vaish is studying at mallareddyuniversity in hyderabad, India"
```

```
In [11]:  import nltk
          from nltk import ne_chunk
          from nltk import word_tokenize
          ne_chunk(nltk.pos_tag(word_tokenize(sent)),binary = False)
```

Out[11]:


```
In [9]:  !pip install svgling
```

```
Collecting svgling
  Downloading svgling-0.5.0-py3-none-any.whl.metadata (7.4 kB)
Collecting svgwrite (from svgling)
  Downloading svgwrite-1.4.3-py3-none-any.whl.metadata (8.8 kB)
Downloading svgling-0.5.0-py3-none-any.whl (31 kB)
Downloading svgwrite-1.4.3-py3-none-any.whl (67 kB)
   ------------------------------------- 0.0/67.1 kB ? eta -:--:--
   ------------------------------------- 0.0/67.1 kB ? eta -:--:--
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   ------ ------------------------------- 10.2/67.1 kB ? eta -:--:--
   ------ ------------------------------- 10.2/67.1 kB ? eta -:--:--
   ------ ------------------------------- 10.2/67.1 kB ? eta -:--:--
   ------ ------------------------------- 10.2/67.1 kB ? eta -:--:--
   ------ ------------------------------- 10.2/67.1 kB ? eta -:--:--
   ------ ------------------------------- 10.2/67.1 kB ? eta -:--:--
   ----------------- ------------------- 30.7/67.1 kB 69.0 kB/s eta 0:00:01
   ----------------- ------------------- 30.7/67.1 kB 69.0 kB/s eta 0:00:01
   ---------------------- -------------- 41.0/67.1 kB 78.6 kB/s eta 0:00:01
   ---------------------- -------------- 41.0/67.1 kB 78.6 kB/s eta 0:00:01
   ---------------------- -------------- 41.0/67.1 kB 78.6 kB/s eta 0:00:01
   -------------------------------- --- 61.4/67.1 kB 96.4 kB/s eta 0:00:01
   -------------------------------- --- 61.4/67.1 kB 96.4 kB/s eta 0:00:01
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   -------------------------------- --- 61.4/67.1 kB 96.4 kB/s eta 0:00:01
   -------------------------------- --- 61.4/67.1 kB 96.4 kB/s eta 0:00:01
   -------------------------------- --- 61.4/67.1 kB 96.4 kB/s eta 0:00:01
   ------------------------------------- 67.1/67.1 kB 67.4 kB/s eta 0:00:00
Installing collected packages: svgwrite, svgling
Successfully installed svgling-0.5.0 svgwrite-1.4.3
```

In [13]: `!pip install spacy`

```
Requirement already satisfied: spacy in c:\users\vaish\anaconda3\lib\site-packages
(3.8.4)
Requirement already satisfied: spacy-legacy<3.1.0,>=3.0.11 in c:\users\vaish\anacond
a3\lib\site-packages (from spacy) (3.0.12)
Requirement already satisfied: spacy-loggers<2.0.0,>=1.0.0 in c:\users\vaish\anacond
a3\lib\site-packages (from spacy) (1.0.5)
Requirement already satisfied: murmurhash<1.1.0,>=0.28.0 in c:\users\vaish\anaconda3
\lib\site-packages (from spacy) (1.0.11)
Requirement already satisfied: cymem<2.1.0,>=2.0.2 in c:\users\vaish\anaconda3\lib\s
ite-packages (from spacy) (2.0.10)
Requirement already satisfied: preshed<3.1.0,>=3.0.2 in c:\users\vaish\anaconda3\lib
\site-packages (from spacy) (3.0.9)
Requirement already satisfied: thinc<8.4.0,>=8.3.4 in c:\users\vaish\anaconda3\lib\s
ite-packages (from spacy) (8.3.4)
Requirement already satisfied: wasabi<1.2.0,>=0.9.1 in c:\users\vaish\anaconda3\lib
\site-packages (from spacy) (1.1.3)
Requirement already satisfied: srsly<3.0.0,>=2.4.3 in c:\users\vaish\anaconda3\lib\s
ite-packages (from spacy) (2.5.0)
Requirement already satisfied: catalogue<2.1.0,>=2.0.6 in c:\users\vaish\anaconda3\l
ib\site-packages (from spacy) (2.0.10)
Requirement already satisfied: weasel<0.5.0,>=0.1.0 in c:\users\vaish\anaconda3\lib
\site-packages (from spacy) (0.4.1)
Requirement already satisfied: typer<1.0.0,>=0.3.0 in c:\users\vaish\anaconda3\lib\s
ite-packages (from spacy) (0.15.1)
Requirement already satisfied: tqdm<5.0.0,>=4.38.0 in c:\users\vaish\anaconda3\lib\s
ite-packages (from spacy) (4.66.4)
Requirement already satisfied: numpy>=1.19.0 in c:\users\vaish\anaconda3\lib\site-pa
ckages (from spacy) (1.26.4)
Requirement already satisfied: requests<3.0.0,>=2.13.0 in c:\users\vaish\anaconda3\l
ib\site-packages (from spacy) (2.32.2)
Requirement already satisfied: pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4 in c:\users\vais
h\anaconda3\lib\site-packages (from spacy) (1.10.12)
Requirement already satisfied: jinja2 in c:\users\vaish\anaconda3\lib\site-packages
(from spacy) (3.1.4)
Requirement already satisfied: setuptools in c:\users\vaish\anaconda3\lib\site-packa
ges (from spacy) (75.1.0)
Requirement already satisfied: packaging>=20.0 in c:\users\vaish\anaconda3\lib\site-
packages (from spacy) (23.2)
Requirement already satisfied: langcodes<4.0.0,>=3.2.0 in c:\users\vaish\anaconda3\l
ib\site-packages (from spacy) (3.5.0)
Requirement already satisfied: language-data>=1.2 in c:\users\vaish\anaconda3\lib\si
te-packages (from langcodes<4.0.0,>=3.2.0->spacy) (1.3.0)
Requirement already satisfied: typing-extensions>=4.2.0 in c:\users\vaish\anaconda3
\lib\site-packages (from pydantic!=1.8,!=1.8.1,<3.0.0,>=1.7.4->spacy) (4.11.0)
Requirement already satisfied: charset-normalizer<4,>=2 in c:\users\vaish\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\vaish\anaconda3\lib\site-pac
kages (from requests<3.0.0,>=2.13.0->spacy) (3.7)
Requirement already satisfied: urllib3<3,>=1.21.1 in c:\users\vaish\anaconda3\lib\si
te-packages (from requests<3.0.0,>=2.13.0->spacy) (2.2.2)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\vaish\anaconda3\lib\si
te-packages (from requests<3.0.0,>=2.13.0->spacy) (2024.8.30)
Requirement already satisfied: blis<1.3.0,>=1.2.0 in c:\users\vaish\anaconda3\lib\si
te-packages (from thinc<8.4.0,>=8.3.4->spacy) (1.2.0)
Requirement already satisfied: confection<1.0.0,>=0.0.1 in c:\users\vaish\anaconda3
\lib\site-packages (from thinc<8.4.0,>=8.3.4->spacy) (0.1.5)
```

```
Requirement already satisfied: colorama in c:\users\vaish\anaconda3\lib\site-package
s (from tqdm<5.0.0,>=4.38.0->spacy) (0.4.6)
Requirement already satisfied: click>=8.0.0 in c:\users\vaish\anaconda3\lib\site-pac
kages (from typer<1.0.0,>=0.3.0->spacy) (8.1.7)
Requirement already satisfied: shellingham>=1.3.0 in c:\users\vaish\anaconda3\lib\si
te-packages (from typer<1.0.0,>=0.3.0->spacy) (1.5.4)
Requirement already satisfied: rich>=10.11.0 in c:\users\vaish\anaconda3\lib\site-pa
ckages (from typer<1.0.0,>=0.3.0->spacy) (13.3.5)
Requirement already satisfied: cloudpathlib<1.0.0,>=0.7.0 in c:\users\vaish\anaconda
3\lib\site-packages (from weasel<0.5.0,>=0.1.0->spacy) (0.20.0)
Requirement already satisfied: smart-open<8.0.0,>=5.2.1 in c:\users\vaish\anaconda3
\lib\site-packages (from weasel<0.5.0,>=0.1.0->spacy) (5.2.1)
Requirement already satisfied: MarkupSafe>=2.0 in c:\users\vaish\anaconda3\lib\site-
packages (from jinja2->spacy) (2.1.3)
Requirement already satisfied: marisa-trie>=1.1.0 in c:\users\vaish\anaconda3\lib\si
te-packages (from language-data>=1.2->langcodes<4.0.0,>=3.2.0->spacy) (1.2.1)
Requirement already satisfied: markdown-it-py<3.0.0,>=2.2.0 in c:\users\vaish\anacon
da3\lib\site-packages (from rich>=10.11.0->typer<1.0.0,>=0.3.0->spacy) (2.2.0)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in c:\users\vaish\anaconda3\l
ib\site-packages (from rich>=10.11.0->typer<1.0.0,>=0.3.0->spacy) (2.15.1)
Requirement already satisfied: mdurl~=0.1 in c:\users\vaish\anaconda3\lib\site-packa
ges (from markdown-it-py<3.0.0,>=2.2.0->rich>=10.11.0->typer<1.0.0,>=0.3.0->spacy)
(0.1.0)
```

In [15]: `!python -m spacy download en_core_web_sm`

```
Traceback (most recent call last):
  File "<frozen runpy>", line 189, in _run_module_as_main
  File "<frozen runpy>", line 148, in _get_module_details
  File "<frozen runpy>", line 112, in _get_module_details
  File "C:\Users\Vaish\anaconda3\Lib\site-packages\spacy\__init__.py", line 13, in <
module>
    from . import pipeline  # noqa: F401
    ^^^^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\Vaish\anaconda3\Lib\site-packages\spacy\pipeline\__init__.py", line
1, in <module>
    from .attributeruler import AttributeRuler
  File "C:\Users\Vaish\anaconda3\Lib\site-packages\spacy\pipeline\attributeruler.p
y", line 8, in <module>
    from ..language import Language
  File "C:\Users\Vaish\anaconda3\Lib\site-packages\spacy\language.py", line 46, in <
module>
    from .pipe_analysis import analyze_pipes, print_pipe_analysis, validate_attrs
  File "C:\Users\Vaish\anaconda3\Lib\site-packages\spacy\pipe_analysis.py", line 6,
in <module>
    from .tokens import Doc, Span, Token
  File "C:\Users\Vaish\anaconda3\Lib\site-packages\spacy\tokens\__init__.py", line
1, in <module>
    from ._serialize import DocBin
  File "C:\Users\Vaish\anaconda3\Lib\site-packages\spacy\tokens\_serialize.py", line
14, in <module>
    from ..vocab import Vocab
  File "spacy\vocab.pyx", line 1, in init spacy.vocab
  File "spacy\tokens\doc.pyx", line 49, in init spacy.tokens.doc
  File "C:\Users\Vaish\anaconda3\Lib\site-packages\spacy\schemas.py", line 195, in <
module>
    class TokenPatternString(BaseModel):
  File "C:\Users\Vaish\anaconda3\Lib\site-packages\pydantic\main.py", line 286, in _
_new__
    cls.__try_update_forward_refs__()
  File "C:\Users\Vaish\anaconda3\Lib\site-packages\pydantic\main.py", line 808, in _
_try_update_forward_refs__
    update_model_forward_refs(cls, cls.__fields__.values(), cls.__config__.json_enco
ders, localns, (NameError,))
  File "C:\Users\Vaish\anaconda3\Lib\site-packages\pydantic\typing.py", line 554, in
update_model_forward_refs
    update_field_forward_refs(f, globalns=globalns, localns=localns)
  File "C:\Users\Vaish\anaconda3\Lib\site-packages\pydantic\typing.py", line 529, in
update_field_forward_refs
    update_field_forward_refs(sub_f, globalns=globalns, localns=localns)
  File "C:\Users\Vaish\anaconda3\Lib\site-packages\pydantic\typing.py", line 520, in
update_field_forward_refs
    field.type_ = evaluate_forwardref(field.type_, globalns, localns or None)
                  ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "C:\Users\Vaish\anaconda3\Lib\site-packages\pydantic\typing.py", line 66, in
evaluate_forwardref
    return cast(Any, type_)._evaluate(globalns, localns, set())
           ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
TypeError: ForwardRef._evaluate() missing 1 required keyword-only argument: 'recursi
ve_guard'
```

```
In [17]: pip install --upgrade spacy pydantic
```

```
Requirement already satisfied: spacy in c:\users\vaish\anaconda3\lib\site-packages
(3.8.4)
Requirement already satisfied: pydantic in c:\users\vaish\anaconda3\lib\site-package
s (1.10.12)
Collecting pydantic
  Downloading pydantic-2.10.6-py3-none-any.whl.metadata (30 kB)
Requirement already satisfied: spacy-legacy<3.1.0,>=3.0.11 in c:\users\vaish\anacond
a3\lib\site-packages (from spacy) (3.0.12)
Requirement already satisfied: spacy-loggers<2.0.0,>=1.0.0 in c:\users\vaish\anacond
a3\lib\site-packages (from spacy) (1.0.5)
Requirement already satisfied: murmurhash<1.1.0,>=0.28.0 in c:\users\vaish\anaconda3
\lib\site-packages (from spacy) (1.0.11)
Requirement already satisfied: cymem<2.1.0,>=2.0.2 in c:\users\vaish\anaconda3\lib\s
ite-packages (from spacy) (2.0.10)
Requirement already satisfied: preshed<3.1.0,>=3.0.2 in c:\users\vaish\anaconda3\lib
\site-packages (from spacy) (3.0.9)
Requirement already satisfied: thinc<8.4.0,>=8.3.4 in c:\users\vaish\anaconda3\lib\s
ite-packages (from spacy) (8.3.4)
Requirement already satisfied: wasabi<1.2.0,>=0.9.1 in c:\users\vaish\anaconda3\lib
\site-packages (from spacy) (1.1.3)
Requirement already satisfied: srsly<3.0.0,>=2.4.3 in c:\users\vaish\anaconda3\lib\s
ite-packages (from spacy) (2.5.0)
Requirement already satisfied: catalogue<2.1.0,>=2.0.6 in c:\users\vaish\anaconda3\l
ib\site-packages (from spacy) (2.0.10)
Requirement already satisfied: weasel<0.5.0,>=0.1.0 in c:\users\vaish\anaconda3\lib
\site-packages (from spacy) (0.4.1)
Requirement already satisfied: typer<1.0.0,>=0.3.0 in c:\users\vaish\anaconda3\lib\s
ite-packages (from spacy) (0.15.1)
Requirement already satisfied: tqdm<5.0.0,>=4.38.0 in c:\users\vaish\anaconda3\lib\s
ite-packages (from spacy) (4.66.4)
Requirement already satisfied: numpy>=1.19.0 in c:\users\vaish\anaconda3\lib\site-pa
ckages (from spacy) (1.26.4)
Requirement already satisfied: requests<3.0.0,>=2.13.0 in c:\users\vaish\anaconda3\l
ib\site-packages (from spacy) (2.32.2)
Requirement already satisfied: jinja2 in c:\users\vaish\anaconda3\lib\site-packages
(from spacy) (3.1.4)
Requirement already satisfied: setuptools in c:\users\vaish\anaconda3\lib\site-packa
ges (from spacy) (75.1.0)
Requirement already satisfied: packaging>=20.0 in c:\users\vaish\anaconda3\lib\site-
packages (from spacy) (23.2)
Requirement already satisfied: langcodes<4.0.0,>=3.2.0 in c:\users\vaish\anaconda3\l
ib\site-packages (from spacy) (3.5.0)
Requirement already satisfied: annotated-types>=0.6.0 in c:\users\vaish\anaconda3\li
b\site-packages (from pydantic) (0.6.0)
Collecting pydantic-core==2.27.2 (from pydantic)
  Downloading pydantic_core-2.27.2-cp312-cp312-win_amd64.whl.metadata (6.7 kB)
Collecting typing-extensions>=4.12.2 (from pydantic)
  Using cached typing_extensions-4.12.2-py3-none-any.whl.metadata (3.0 kB)
Requirement already satisfied: language-data>=1.2 in c:\users\vaish\anaconda3\lib\si
te-packages (from langcodes<4.0.0,>=3.2.0->spacy) (1.3.0)
Requirement already satisfied: charset-normalizer<4,>=2 in c:\users\vaish\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\vaish\anaconda3\lib\site-pac
kages (from requests<3.0.0,>=2.13.0->spacy) (3.7)
Requirement already satisfied: urllib3<3,>=1.21.1 in c:\users\vaish\anaconda3\lib\si
te-packages (from requests<3.0.0,>=2.13.0->spacy) (2.2.2)
```

```
Requirement already satisfied: certifi>=2017.4.17 in c:\users\vaish\anaconda3\lib\si
te-packages (from requests<3.0.0,>=2.13.0->spacy) (2024.8.30)
Requirement already satisfied: blis<1.3.0,>=1.2.0 in c:\users\vaish\anaconda3\lib\si
te-packages (from thinc<8.4.0,>=8.3.4->spacy) (1.2.0)
Requirement already satisfied: confection<1.0.0,>=0.0.1 in c:\users\vaish\anaconda3
\lib\site-packages (from thinc<8.4.0,>=8.3.4->spacy) (0.1.5)
Requirement already satisfied: colorama in c:\users\vaish\anaconda3\lib\site-package
s (from tqdm<5.0.0,>=4.38.0->spacy) (0.4.6)
Requirement already satisfied: click>=8.0.0 in c:\users\vaish\anaconda3\lib\site-pac
kages (from typer<1.0.0,>=0.3.0->spacy) (8.1.7)
Requirement already satisfied: shellingham>=1.3.0 in c:\users\vaish\anaconda3\lib\si
te-packages (from typer<1.0.0,>=0.3.0->spacy) (1.5.4)
Requirement already satisfied: rich>=10.11.0 in c:\users\vaish\anaconda3\lib\site-pa
ckages (from typer<1.0.0,>=0.3.0->spacy) (13.3.5)
Requirement already satisfied: cloudpathlib<1.0.0,>=0.7.0 in c:\users\vaish\anaconda
3\lib\site-packages (from weasel<0.5.0,>=0.1.0->spacy) (0.20.0)
Requirement already satisfied: smart-open<8.0.0,>=5.2.1 in c:\users\vaish\anaconda3
\lib\site-packages (from weasel<0.5.0,>=0.1.0->spacy) (5.2.1)
Requirement already satisfied: MarkupSafe>=2.0 in c:\users\vaish\anaconda3\lib\site-
packages (from jinja2->spacy) (2.1.3)
Requirement already satisfied: marisa-trie>=1.1.0 in c:\users\vaish\anaconda3\lib\si
te-packages (from language-data>=1.2->langcodes<4.0.0,>=3.2.0->spacy) (1.2.1)
Requirement already satisfied: markdown-it-py<3.0.0,>=2.2.0 in c:\users\vaish\anacon
da3\lib\site-packages (from rich>=10.11.0->typer<1.0.0,>=0.3.0->spacy) (2.2.0)
Requirement already satisfied: pygments<3.0.0,>=2.13.0 in c:\users\vaish\anaconda3\l
ib\site-packages (from rich>=10.11.0->typer<1.0.0,>=0.3.0->spacy) (2.15.1)
Requirement already satisfied: mdurl~=0.1 in c:\users\vaish\anaconda3\lib\site-packa
ges (from markdown-it-py<3.0.0,>=2.2.0->rich>=10.11.0->typer<1.0.0,>=0.3.0->spacy)
(0.1.0)
Downloading pydantic-2.10.6-py3-none-any.whl (431 kB)
   ---------------------------------------- 0.0/431.7 kB ? eta -:--:--
   ------- ------------------------------- 81.9/431.7 kB 4.5 MB/s eta 0:00:01
   ---------------------------------------- 431.7/431.7 kB 6.7 MB/s eta 0:00:00
Downloading pydantic_core-2.27.2-cp312-cp312-win_amd64.whl (2.0 MB)
   ---------------------------------------- 0.0/2.0 MB ? eta -:--:--
   ------------ --------------------------- 0.6/2.0 MB 13.3 MB/s eta 0:00:01
   --------------------------- ----------- 1.4/2.0 MB 15.1 MB/s eta 0:00:01
   ------------------------------------- 2.0/2.0 MB 14.0 MB/s eta 0:00:01
   ---------------------------------------- 2.0/2.0 MB 11.5 MB/s eta 0:00:00
Using cached typing_extensions-4.12.2-py3-none-any.whl (37 kB)
Installing collected packages: typing-extensions, pydantic-core, pydantic
  Attempting uninstall: typing-extensions
    Found existing installation: typing_extensions 4.11.0
    Uninstalling typing_extensions-4.11.0:
      Successfully uninstalled typing_extensions-4.11.0
  Attempting uninstall: pydantic-core
    Found existing installation: pydantic_core 2.14.6
    Uninstalling pydantic_core-2.14.6:
      Successfully uninstalled pydantic_core-2.14.6
  Attempting uninstall: pydantic
    Found existing installation: pydantic 1.10.12
    Uninstalling pydantic-1.10.12:
      Successfully uninstalled pydantic-1.10.12
Successfully installed pydantic-2.10.6 pydantic-core-2.27.2 typing-extensions-4.12.2
Note: you may need to restart the kernel to use updated packages.
```

```
In [21]:  !python -m spacy download en_core_web_sm
```

```
Collecting en-core-web-sm==3.8.0
  Downloading https://github.com/explosion/spacy-models/releases/download/en_core_we
b_sm-3.8.0/en_core_web_sm-3.8.0-py3-none-any.whl (12.8 MB)
     ---------------------------------------- 0.0/12.8 MB ? eta -:--:--
     ---------------------------------------- 0.0/12.8 MB ? eta -:--:--
     ---------------------------------------- 0.0/12.8 MB ? eta -:--:--
     ---------------------------------------- 0.0/12.8 MB 217.9 kB/s eta 0:00:59
     ---------------------------------------- 0.0/12.8 MB 245.8 kB/s eta 0:00:52
     ---------------------------------------- 0.1/12.8 MB 353.1 kB/s eta 0:00:37
      --------------------------------------- 0.2/12.8 MB 778.2 kB/s eta 0:00:17
     - -------------------------------------- 0.5/12.8 MB 1.5 MB/s eta 0:00:09
     - -------------------------------------- 0.5/12.8 MB 1.5 MB/s eta 0:00:08
     -- ------------------------------------- 0.9/12.8 MB 2.2 MB/s eta 0:00:06
     --- ------------------------------------ 1.1/12.8 MB 2.6 MB/s eta 0:00:05
     ----- ---------------------------------- 1.9/12.8 MB 3.9 MB/s eta 0:00:03
     -------- ------------------------------- 2.8/12.8 MB 5.3 MB/s eta 0:00:02
     ---------- ----------------------------- 3.8/12.8 MB 6.5 MB/s eta 0:00:02
     ------------- -------------------------- 4.6/12.8 MB 7.4 MB/s eta 0:00:02
     ---------------- ----------------------- 5.7/12.8 MB 8.4 MB/s eta 0:00:01
     ------------------ --------------------- 6.6/12.8 MB 9.2 MB/s eta 0:00:01
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     ------------------------ --------------- 8.7/12.8 MB 10.7 MB/s eta 0:00:01
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     ---------------------------------------  12.8/12.8 MB 21.1 MB/s eta 0:00:01
     ---------------------------------------- 12.8/12.8 MB 18.7 MB/s eta 0:00:00
Installing collected packages: en-core-web-sm
Successfully installed en-core-web-sm-3.8.0
[+] Download and installation successful
You can now load the package via spacy.load('en_core_web_sm')
```

```
In [23]:  import spacy

          nlp = spacy.load('en_core_web_sm')

          # Read/create a sentence

          doc = nlp(u'Apple is ready to launch new phone worth $10000 in New york time square

          for ent in doc.ents:

              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 [29]:  import spacy
          nlp = spacy.load("en_core_web_sm")
```

```
In [31]:  text = """
```

```
    Elon Musk, the CEO of SpaceX and Tesla, announced that SpaceX's Starship will be la

    The mission, which will involve astronauts from NASA, will be the first of its kind

    Musk emphasized that the project would push the boundaries of space exploration.

    """
```

In [33]:
```python
# Process the text with the nlp pipeline

doc = nlp(text)



# Extract named entities

for ent in doc.ents:

    print(f"Entity: {ent.text}, Label: {ent.label_}")
```

```
Entity: Tesla, Label: ORG
Entity: SpaceX, Label: PERSON
Entity: Starship, Label: PRODUCT
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 [35]:
```python
from spacy import displacy
displacy.render(doc,style="ent")
```

Elon Musk, the CEO of SpaceX and Tesla **ORG** , announced that SpaceX **PERSON** 's

 Starship **PRODUCT** 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.

```
import pandas as pd

entities = [(ent.text, ent.label_, ent.lemma_) for ent in doc.ents]

df = pd.DataFrame(entities, columns=['text', 'type', 'lemma'])

print(df)
```

```
                      text      type                    lemma
0                    Tesla       ORG                    Tesla
1                   SpaceX    PERSON                   SpaceX
2                 Starship   PRODUCT                 Starship
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 [ ]: