```
!pip install spacy==2.1.0
```

Requirement already satisfied: spacy==2.1.0 in /usr/local/lib/python3.6/dist-packages (2.1.0)
Requirement already satisfied: numpy>=1.15.0 in /usr/local/lib/python3.6/dist-packages (from spacy==2.1.0) (1.18.2)
Requirement already satisfied: preshed<2.1.0,>=2.0.1 in /usr/local/lib/python3.6/dist-packages (from spacy==2.1.0) (2.0.1)
Requirement already satisfied: thinc<7.1.0,>=7.0.2 in /usr/local/lib/python3.6/dist-packages (from spacy==2.1.0) (7.0.8)
Requirement already satisfied: jsonschema<3.0.0,>=2.6.0 in /usr/local/lib/python3.6/dist-packages (from spacy==2.1.0) (2.6.0)
Requirement already satisfied: requests<3.0.0,>=2.13.0 in /usr/local/lib/python3.6/dist-packages (from spacy==2.1.0) (2.21.0)
Requirement already satisfied: srsly<1.1.0,>=0.0.5 in /usr/local/lib/python3.6/dist-packages (from spacy==2.1.0) (1.0.2)
Requirement already satisfied: murmurhash<1.1.0,>=0.28.0 in /usr/local/lib/python3.6/dist-packages (from spacy==2.1.0) (1.0.2)
Requirement already satisfied: wasabi<1.1.0,>=0.0.12 in /usr/local/lib/python3.6/dist-packages (from spacy==2.1.0) (0.6.0)
Requirement already satisfied: cymem<2.1.0,>=2.0.2 in /usr/local/lib/python3.6/dist-packages (from spacy==2.1.0) (2.0.3)
Requirement already satisfied: plac<1.0.0,>=0.9.6 in /usr/local/lib/python3.6/dist-packages (from spacy==2.1.0) (0.9.6)
Requirement already satisfied: blis<0.3.0,>=0.2.2 in /usr/local/lib/python3.6/dist-packages (from spacy==2.1.0) (0.2.4)
Requirement already satisfied: tqdm<5.0.0,>=4.10.0 in /usr/local/lib/python3.6/dist-packages (from thinc<7.1.0,>=7.0.2->spacy==2.1.0) (4.
Requirement already satisfied: urllib3<1.25,>=1.21.1 in /usr/local/lib/python3.6/dist-packages (from requests<3.0.0,>=2.13.0->spacy==2.1.
Requirement already satisfied: chardet<3.1.0,>=3.0.2 in /usr/local/lib/python3.6/dist-packages (from requests<3.0.0,>=2.13.0->spacy==2.1.
Requirement already satisfied: idna<2.9,>=2.5 in /usr/local/lib/python3.6/dist-packages (from requests<3.0.0,>=2.13.0->spacy==2.1.0) (2.8
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.6/dist-packages (from requests<3.0.0,>=2.13.0->spacy==2.1.0)

```
!pip install neuralcoref
```

```
Requirement already satisfied: neuralcoref in /usr/local/lib/python3.6/dist-packages (4.0)
Requirement already satisfied: boto3 in /usr/local/lib/python3.6/dist-packages (from neuralcoref) (1.12.40)
Requirement already satisfied: requests<3.0.0,>=2.13.0 in /usr/local/lib/python3.6/dist-packages (from neuralcoref) (2.21.0)
Requirement already satisfied: spacy>=2.1.0 in /usr/local/lib/python3.6/dist-packages (from neuralcoref) (2.1.0)
Requirement already satisfied: numpy>=1.15.0 in /usr/local/lib/python3.6/dist-packages (from neuralcoref) (1.18.2)
Requirement already satisfied: s3transfer<0.4.0,>=0.3.0 in /usr/local/lib/python3.6/dist-packages (from boto3->neuralcoref) (0.3.3)
Requirement already satisfied: botocore<1.16.0,>=1.15.40 in /usr/local/lib/python3.6/dist-packages (from boto3->neuralcoref) (1.15.40)
Requirement already satisfied: jmespath<1.0.0,>=0.7.1 in /usr/local/lib/python3.6/dist-packages (from boto3->neuralcoref) (0.9.5)
Requirement already satisfied: idna<2.9,>=2.5 in /usr/local/lib/python3.6/dist-packages (from requests<3.0.0,>=2.13.0->neuralcoref) (2.8)
Requirement already satisfied: urllib3<1.25,>=1.21.1 in /usr/local/lib/python3.6/dist-packages (from requests<3.0.0,>=2.13.0->neuralcoref
Requirement already satisfied: chardet<3.1.0,>=3.0.2 in /usr/local/lib/python3.6/dist-packages (from requests<3.0.0,>=2.13.0->neuralcoref
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.6/dist-packages (from requests<3.0.0,>=2.13.0->neuralcoref) (
Requirement already satisfied: preshed<2.1.0,>=2.0.1 in /usr/local/lib/python3.6/dist-packages (from spacy>=2.1.0->neuralcoref) (2.0.1)
Requirement already satisfied: murmurhash<1.1.0,>=0.28.0 in /usr/local/lib/python3.6/dist-packages (from spacy>=2.1.0->neuralcoref) (1.0.
Requirement already satisfied: jsonschema<3.0.0,>=2.6.0 in /usr/local/lib/python3.6/dist-packages (from spacy>=2.1.0->neuralcoref) (2.6.0
Requirement already satisfied: plac<1.0.0,>=0.9.6 in /usr/local/lib/python3.6/dist-packages (from spacy>=2.1.0->neuralcoref) (0.9.6)
Requirement already satisfied: thinc<7.1.0,>=7.0.2 in /usr/local/lib/python3.6/dist-packages (from spacy>=2.1.0->neuralcoref) (7.0.8)
Requirement already satisfied: wasabi<1.1.0,>=0.0.12 in /usr/local/lib/python3.6/dist-packages (from spacy>=2.1.0->neuralcoref) (0.6.0)
Requirement already satisfied: srsly<1.1.0,>=0.0.5 in /usr/local/lib/python3.6/dist-packages (from spacy>=2.1.0->neuralcoref) (1.0.2)
Requirement already satisfied: blis<0.3.0,>=0.2.2 in /usr/local/lib/python3.6/dist-packages (from spacy>=2.1.0->neuralcoref) (0.2.4)
Requirement already satisfied: cymem<2.1.0,>=2.0.2 in /usr/local/lib/python3.6/dist-packages (from spacy>=2.1.0->neuralcoref) (2.0.3)
Requirement already satisfied: python-dateutil<3.0.0,>=2.1 in /usr/local/lib/python3.6/dist-packages (from botocore<1.16.0,>=1.15.40->bot
Requirement already satisfied: docutils<0.16,>=0.10 in /usr/local/lib/python3.6/dist-packages (from botocore<1.16.0,>=1.15.40->boto3->neu
Requirement already satisfied: tqdm<5.0.0,>=4.10.0 in /usr/local/lib/python3.6/dist-packages (from thinc<7.1.0,>=7.0.2->spacy>=2.1.0->neu
Requirement already satisfied: six>=1.5 in /usr/local/lib/python3.6/dist-packages (from python-dateutil<3.0.0,>=2.1->botocore<1.16.0,>=1.
```

```
import spacy
```

```
!python -m spacy download en
```

```
Requirement already satisfied: en_core_web_sm==2.1.0 from https://github.com/explosion/spacy-models/releases/download/en_core_web_sm-2.1.
✓ Download and installation successful
You can now load the model via spacy.load('en_core_web_sm')
✓ Linking successful
/usr/local/lib/python3.6/dist-packages/en_core_web_sm -->
/usr/local/lib/python3.6/dist-packages/spacy/data/en
You can now load the model via spacy.load('en')
```

```
import spacy
```

```python
import en_core_web_sm
nlp = en_core_web_sm.load()

import neuralcoref
neuralcoref.add_to_pipe(nlp)
```

<spacy.lang.en.English at 0x7ffac73c47f0>

```python
doc = nlp(u'My sister has a dog. She loves him.')
```

```python
doc._.has_coref
```

True

```python
doc._.coref_clusters
```

[My sister: [My sister, She], a dog: [a dog, him]]

```python
doc._.coref_resolved
```

'My sister has a dog. My sister loves a dog.'

```python
with open("hp_ps1.txt", "rb") as f:
    text = f.read().decode('utf-8-sig')
```

```python
doc = nlp(text)
```

```python
doc._.has_coref
doc._.coref_clusters
```

],
them: [them, they],
It: [It, it],
a huge motorcycle: [a huge motorcycle, the motorcycle, it, it, that motorcycle, it, the
giant, the motorcycle, it, the motorcycle],
the man
: [the man
, He, He, his, he, his],
— long
tangles of bushy black hair and beard: [— long
tangles of bushy black hair and beard, their],
his: [his, he],
Young Sirius Black: [Young Sirius Black, him, him, He],
sir: [sir, sir, He, his, him, his],
sir — house: [sir — house, him
],
Hagrid: [Hagrid, Hagrid, Hagrid, Hagrid, it, it, Hagrid, Hagrid, Hagrid
],
the front door: [the front door, the front door],
a letter: [a letter, it, it
, the letter
],
the
other two: [the
other two, them],
We: [We, We],
Professor McGonagall —
Professor Dumbledore, sir."

: [Professor McGonagall —
Professor Dumbledore, sir.”

, his, his, himself],
the
engine: [the
engine, it],
the street: [the street, the street],
the corner: [the corner, the corner],
the silver Put-
Outer: [the silver Put-
Outer, it],
Harry Potter: [Harry Potter, Harry Potter, his, him, he, he, he, he, he, his, He, Harry Potter, Harry Potter, Harry Potter, His, Harry P
Mrs.

Dursley: [Mrs.

Dursley, she, Mr. Dursley, Dudley
Dursley],
people: [people, their],
Page |: [Page |, Page |, Page |, Page |],
the Dursleys: [the Dursleys, the Dursleys, The Dursleys, The Dursleys, the Dursleys, it, The Dursleys, the Dursleys, the Dursleys, the D
],
The sun: [The sun, it, it],

their living room, which was almost exactly the same
as it had been on the night when Mr. Dursley had
seen that fateful news report about the owls: [
their living room, which was almost exactly the same
as it had been on the night when Mr. Dursley had
seen that fateful news report about the owls, The room],
Only the
photographs on the mantelpiece: [Only the
photographs on the mantelpiece, the
photographs],
Dudley
: [Dudley
, Dudley
, his],
a large blond boy: [a large blond boy, his, his, his, his
, all that another boy
, the boy],
his
mother: [his
mother, his mother, his mother, she, her, his mother],
His Aunt Petunia: [His Aunt Petunia, it, her, His aunt, she, her, His aunt, she, his aunt, his
Aunt Petunia, she, Aunt Petunia

Aunt Petunia, she, Aunt Petunia
, Aunt Petunia, she, Aunt Petunia, Aunt Petunia
, Aunt Petunia, she, Aunt Petunia, Aunt Petunia, Aunt Petunia, she, she, Aunt Petunia, Aunt Petunia, Aunt
Petunia, He, his, he, he, Aunt Petunia, him, she, his, Aunt Petunia, his, Aunt
Petunia, Aunt Petunia, Aunt Petunia, Aunt Petunia, Aunt Petunia, his, Aunt Petunia, she, her, he, Aunt Petunia, Her, she,
, she, She, her, Aunt Petunia, Aunt Petunia, Aunt Petunia, Aunt Petunia, Aunt Petunia, her, Aunt Petunia, Even Aunt Petunia, Aunt
Petunia, Aunt
Petunia, Aunt Petunia, she, Aunt Petunia, She],
"Up: ["Up, "Up],
the door
: [the door
, the door, the
door],

the kitchen: [
the kitchen, the
kitchen, the kitchen],
the
bacon: [the
bacon, it],
"

Dudley's birthday: ["

Dudley's birthday, he],
a pair: [a pair, them, them, them],
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: [the Philosophers Stone - J.K. Rowling

, the Philosophers Stone - J.K. Rowling

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],

The table: [The table, It],
Dudley's: [Dudley's, Dudley, he, Dudley, Dudley, Dudley, Dudley's, he, him, Dudley, Dudley, Dudley, Dudley, He, his, Dudley, Dudley, Dud
, He, He, his, Dudley, Dudley's, his, Dudley
, Dudley, his, Dudley, his, His, him, Dudley, himself, he, his, he, his, Dudley's, Dudley, his, he, Dudley, Dudley, Dudley, Dudley, his,
, He, his, his, he, Dudley, Dudley, Dudley, Dudley, Dudley, Dudley, Dudley, his, Dudley, Dudley, he, his, his, Dudley
, Dudley
, Dudley, his, him, him, he, his, Dudley, his, his, his, he, his, Dudley, him, his, he, Dudley, Dudley, Dudley, Dudley, Dudley, his, him
, Dudley, Dudley, Dudley, Dudley, Dudley, Dudley, Dudley, his, Dudley
, Dudley, he, Dudley, Dudley, his, Dudley
, he, Dudley, He, he, he, his, he, his, his, he],
it: [it, it],
it: [it, it],
Uncle Vernon: [Uncle Vernon, he, Uncle Vernon, his,
Uncle Vernon, Uncle Vernon, Uncle Vernon, Vernon, Uncle Vernon, Vernon, she, Uncle Vernon, he, his, Uncle Vernon, him,
Uncle Vernon, Uncle Vernon, his, Uncle Vernon, He, his, Uncle Vernon, He, his, his, Uncle Vernon, Uncle Vernon
, Uncle Vernon, his, Uncle Vernon, Uncle Vernon, He, he, He, he, him, Vernon, Uncle Vernon, Uncle Vernon, Uncle Vernon, his, his, he, Un
Vernon, his, "Vernon, Vernon, Uncle Vernon, Uncle Vernon, he, "Vernon, Uncle Vernon, Vernon, Uncle
Vernon, Uncle
Vernon, Uncle Vernon, Uncle Vernon, Uncle Vernon, Uncle Vernon, Uncle Vernon, his, Uncle Vernon, him, Uncle Vernon, Uncle Vernon, Uncle

Uncle Vernon, Uncle Vernon, Uncle Vernon, his, He, his, Uncle Vernon, Uncle Vernon, Uncle Vernon
, his, Uncle Vernon, Uncle
Vernon, he, He, his, he, Uncle Vernon, he, his, his, him, Vernon, Uncle Vernon, he, He, he, he, Uncle Vernon, Uncle Vernon
, his, Uncle Vernon, Uncle Vernon, Uncle Vernon, Uncle Vernon
, He, his, he, he, Uncle Vernon, "

Uncle Vernon, Uncle Vernon, Uncle Vernon, he, Uncle Vernon, Uncle Vernon, Uncle Vernon, Uncle Vernon, Uncle Vernon, He, his, he, Uncle V
Vernon, Uncle Vernon, he, Uncle
Vernon, he, Uncle Vernon, Uncle Vernon],
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: [the Philosophers Stone - J.K. Rowling

, the Philosophers Stone - J.K. Rowling

, the Philosophers Stone - J.K. Rowling

, the Philosophers Stone - J.K. Rowling

, the Philosophers Stone - J.K. Rowling

, the Philosophers Stone - J.K. Rowling

, the Philosophers Stone - J.K. Rowling

, the Philosophers Stone - J.K. Rowling

, himself, He, his, he, he, the Philosophers Stone - J.K. Rowling

],
His
face: [His
face, the face],
we: [we, we],
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Dudley: [Page | 23 Harry Potter and the Philosophers Stone - J.K. Rowling

Dudley, he],
Little tyke: [Little tyke, his, his],
his money's: [his money's, Dudley's, Mrs. Figg's, her, She, She, her, Harry's, Harry's, Harry's, Harry's],
Atta boy, Dudley!": [Atta boy, Dudley!", He, He, him],
the telephone rang and Aunt Petunia
: [the telephone rang and Aunt Petunia
, it],
The whole house smelled of
cabbage: [The whole house smelled of
cabbage, the house, the house],
Mrs. Figg: [Mrs. Figg, Mrs. Figg, her, he, himself, he],
it: [it, it],
the car: [the car, the car],
a scrawny boy
: [a scrawny boy
, He],
their: [their, them],
the zoo: [the zoo, the zoo],
His aunt and uncle: [His aunt and uncle, they],
'm: ['m, 'm],
The problem: [The problem, it],
the
Dursleys: [the
Dursleys, them, the
Dursleys],
his hair
: [his hair
, his hair, it, it],
The: [The, it],
it: [it, it, it],
all he'd: [all he'd, he],
Dudley and Piers: [Dudley and Piers, Dudley and Piers, Dudley and Piers],
This morning: [This morning, it],
they: [they, they, they],
It: [It, it, its],
the animals: [the animals, their, They],
another one and Harry: [another one and Harry, they],
the reptile house: [the reptile house, It, the reptile house, the reptile house],
the glass: [the glass, the glass, the glass, the glass, the
glass, it, the glass],
the largest snake in the place: [the largest snake in the place, It, its, the snake, the snake
, the snake, it, The snake, its, it, its, its, It, the snake, The snake, its, its, It, the snake, The snake, The snake, its, the snake,
, The great snake, itself, the snake, the snake, it, it, it],
its body: [its body, it, it],
the
house: [the

house, the
house],
its beady eyes: [its beady eyes, its eyes, its eyes],
its head: [its head, its head],
anyone: [anyone, They],
its tail: [its tail, its tail],
a little sign: [a little sign, the sign],
Brazil: [Brazil, Brazil, "Brazil, Brazil],
The boa constrictor: [The boa constrictor, its],
a deafening shout
behind Harry: [a deafening shout
behind Harry, them],
the
concrete floor: [the
concrete floor, the floor],
Piers: [Piers, Piers, Piers, Piers],
Piers and
Dudley: [Piers and
Dudley, they, Piers and Dudley, their, they, them],
The zoo director himself: [The zoo director himself, he],
—
cupboard: [—
cupboard, his dark cupboard],
his parents: [his parents, his parents, his parents],
that car crash: [that car crash, the crash],
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aunt and uncle: [the Philosophers Stone - J.K. Rowling

aunt and uncle, them, them],
the house: [the house, the house, the house],
the street: [the street, the street],
A
tiny man in a violet top hat: [A
tiny man in a violet top hat, him, the man],
A bald man in a very long purple coat: [A bald man in a very long purple coat, his],
all these people: [all these people, they],
Page |: [Page |, Page |, Page |],
The escape of the Brazilian boa constrictor: [The escape of the Brazilian boa constrictor, his, he, his],
old Mrs. Figg: [old Mrs. Figg, she, her, Mrs. Figg, It, she, her, her, she, She, she],
Piers, Dennis, Malcolm, and Gordon: [Piers, Dennis, Malcolm, and Gordon, them]

Piers, Dennis, Malcolm, and Gordon: [Piers, Dennis, Malcolm, and Gordon, them],
Uncle Vernon's: [Uncle Vernon's, Uncle Vernon's, Uncle Vernon's, Uncle Vernon's],
's: ['s, 's, 's],
Mrs.
Figg's: [Mrs.
Figg's, Harry's, Marge's ill, Harry's],
her cats: [her cats, them],
'd: ['d, it],
Smeltings
boys: [Smeltings
boys, They],
he: [he, his, his],
the kitchen: [the kitchen, the kitchen],
a large metal tub in the sink: [a large metal tub in the sink, The tub],
this: [this, it],
the table: [the table, the table],
both with
wrinkled noses: [both with
wrinkled noses, They],
the doormat: [the doormat, the doormat],
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: [the Philosophers Stone - J.K. Rowling

, the Philosophers Stone - J.K. Rowling

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],
the mail: [the mail, the
mail],
your Smelting stick, Dudley: [your Smelting stick, Dudley, the Smelting stick],
a bill: [a bill, it, it],
a letter: [a letter, his
letter, that letter, it, it, its, my letter],

The envelope: [The envelope, the envelope, the yellow envelope],
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: [Page | 37 Harry Potter and the Philosophers Stone - J.K. Rowling

, his],
the Philosophers Stone - J.K. Rowling

: [the Philosophers Stone - J.K. Rowling

, the Philosophers Stone - J.K. Rowling

, the Philosophers Stone - J.K. Rowling

, the Philosophers Stone - J.K. Rowling

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