Aim- Implement Named Entity Recognizer for the given text input

Objective:

To study and write program for named entity recognition

Theory:

Named entity recognition is a natural language processing technique that can automatically scan entire articles and pull out some fundamental entities in a text and classify them into predefined categories. Entities may be,

1. Organization
2. Quantities
3. Monetary values
4. Percentages and more
5. Peoples names
6. Company names
7. Geographical locations
8. Product names
9. Dates and times
10. Amounts of money
11. Names of events

In simple words, Named Entity Recognition is the process of detecting the named entities such as person names, location names, company names etc. from the text. It is also known as entity identification or entity extraction or entity chunking.

Program:

```
import spacy

 import pandas as pd

 nlp = spacy.load('en_core_web_sm')

 doc = nlp(u"Tesla Inc. Chief Executive Officer Elon Musk said he's considering taking the electric-car maker private, a surprise move that would end the company's eight-year history as a publicly traded firm.")

for ent in doc.ents:

        print(ent.text, "-", ent.label_, "-", spacy.explain(ent.label_))
```

Output:

Tesla Inc. - ORG - Companies, agencies, institutions, etc.

Elon Musk - PERSON - People, including fictional

eight-year - DATE - Absolute or relative dates or periods

Conclusion: Named Entity Recognition (NER) is crucial in various real-world scenarios. It helps identify and categorize entities like people's names, organizations, locations, and dates in text, making it essential for tasks like news summarization, content recommendation, and search engines. In fields like finance and healthcare, NER extracts vital information from unstructured documents, improving decision-making and compliance. NER also enhances sentiment analysis by identifying entities related to opinions, refining sentiment analysis results. In summary, NER is foundational for extracting valuable insights from diverse textual data in multiple industries.