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from nltk.stem import PorterStemmer
import pandas as pd

class ExtPorterStem:
    def __init__(self):
        self.porter_stemmer = PorterStemmer()

    def AdditionalRules(self, word):
        if word.endswith("li"):
            return word[:-2]

        elif word.endswith("ral"):
            return word[:-2]+"e "

        elif word.endswith("ges"):
            return word[:-2]+"e "

        elif word.endswith("ine"):
            return word+" "

        return word

    def stem(self, word):
        # Apply additional rules + porter stemmer
        updated = self.AdditionalRules(word)
        res = self.porter_stemmer.stem(updated)

        #only porter stemmer
        nltkStems = self.porter_stemmer.stem(word)

        return [nltkStems,res]

# Example usage:
obj = ExtPorterStem()
inputTxt =
open("/Users/sayakghorai/Desktop/Sem_Vi/NLP_TA/A_2_PorterStemmmmer/Input.txt",
"r").read()
wrds = inputTxt.split()

wrds = [w.strip(".,!?:;-'\\"() []{}\"") for w in wrds]
wrds = list(set(wrds))
originalPorter = []
extendedPorter = []

for word in wrds:

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    stem = obj.stem(word)
    originalPorter.append(stem[0].strip())
    extendedPorter.append(stem[1].strip())
dataframe = pd.DataFrame({
    "Original Words": wrds,
    "Original Porter Stemmer": originalPorter,
    "Extended Porter Stemmer": extendedPorter
})
pd.set_option('display.max_rows', None)
pd.set_option('display.max_columns', None)
print(dataframe)
with open('/Users/sayakghorai/Desktop/Sem_Vi/NLP_TA/A_2_PorterStemmmmer/output.txt',
'w') as file:
    file.write(dataframe.to_string(index=False))

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New Rules I have added:

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if word.endswith("li"):
    return word[:-2]
elif word.endswith("ral"):
    return word[:-2]+"e "
elif word.endswith("ges"):
    return word[:-2]+"e "
elif word.endswith("ine"):
    return word+" "

```

Validation: Few improved cases are given below. More can be found at **output.txt** submission.

Original Words	Original Porter Stemmer	Extended Porter Stemmer
Natural	natur	nature
challenges	challeng	challenge
machine	machin	machine
machines	machin	machine