

Information Retrieval

Practical 1

The screenshot shows a Windows desktop environment with two code editors and their corresponding outputs in separate windows.

Code Editor 1: The file is titled "Information Retrieval Practical-1.py". It contains a function `operators()` that prints various bitwise operations. The output window shows the execution of the script and the results of the bitwise operations.

```
def operators():
    print("Neeraj Appari T073")
    val1=int(input('Enter value of val1: '))
    val2=int(input('Enter value of val2: '))
    print("Bitwise AND operator on val1 and val2 :",val1 & val2)
    print("Bitwise OR operator on val1 and val2 :",val1 | val2)
    print("Bitwise Exclusive OR operator on val1 and val2 :",val1 ^ val2)
    print("Bitwise NOT operator on val1 :",-val1)
    print("Bitwise LEFT SHIFT operator on val1 :",val1 << 1)
    print("Bitwise RIGHT SHIFT operator on val2 :",val2 >> 1)

operators()
```

Code Editor 2: The file is titled "Information Retrieval Practical-1(B).py". It contains a function `VofStr(t,x)` that calculates the vector of words for three strings. The output window shows the execution of the script and the resulting vector.

```
def VofStr(t,x):
    print("Neeraj Appari T073")
    for i in range (0,len(x)):
        if t in x:
            return 1
        else:
            return 0

s1=[item for item in input ('Enter 1st String: ').split()]
s2=[item for item in input ('Enter 2nd String: ').split()]
s3=[item for item in input ('Enter 3rd String: ').split()]
t=str(input('Enter a word: '))
print('Vector : ',VofStr(t,s1),VofStr(t,s2),VofStr(t,s3))
```

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```
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    val1=int(input('Enter value of val1: '))
    val2=int(input('Enter value of val2: '))
    print("Bitwise AND operator on val1 and val2 :",val1 & val2)
    print("Bitwise OR operator on val1 and val2 :",val1 | val2)
    print("Bitwise Exclusive OR operator on val1 and val2 :",val1 ^ val2)
    print("Bitwise NOT operator on val1 :",-val1)
    print("Bitwise LEFT SHIFT operator on val1 :",val1 << 1)
    print("Bitwise RIGHT SHIFT operator on val2 :",val2 >> 1)

operators()
```

Code Editor 2: The file is titled "Information Retrieval Practical-1(B).py". It contains a function `VofStr(t,x)` that calculates the vector of words for three strings. The output window shows the execution of the script and the resulting vector.

```
def VofStr(t,x):
    print("Neeraj Appari T073")
    for i in range (0,len(x)):
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s1=[item for item in input ('Enter 1st String: ').split()]
s2=[item for item in input ('Enter 2nd String: ').split()]
s3=[item for item in input ('Enter 3rd String: ').split()]
t=str(input('Enter a word: '))
print('Vector : ',VofStr(t,s1),VofStr(t,s2),VofStr(t,s3))
```

Information Retrieval

Practical 2

```
EDITDISTANCE( $s_1, s_2$ )
1 int  $m[i, j]$  = 0
2 for  $i \leftarrow 1$  to  $|s_1|$ 
3 do  $m[i, 0] = i$ 
4 for  $j \leftarrow 1$  to  $|s_2|$ 
5 do  $m[0, j] = j$ 
6 for  $i \leftarrow 1$  to  $|s_1|$ 
7 do for  $j \leftarrow 1$  to  $|s_2|$ 
8   do  $m[i, j] = \min\{m[i - 1, j - 1] + \text{if } (s_1[i] = s_2[j]) \text{ then } 0 \text{ else } 1, m[i - 1, j] + 1, m[i, j - 1] + 1\}$ 
9
10
11 return  $m[|s_1|, |s_2|]$ 
```

	m	e	i	l	e	n	s	t	e	i	n
l	0	1	2	3	4	5	6	7	8	9	10
1	1	2	3	3	4	5	6	7	8	9	10
e	2	2	1	2	3	3	4	5	6	7	8
v	3	3	2	2	3	4	4	5	6	7	8
e	4	4	3	3	3	3	4	5	6	6	7
n	5	5	4	4	4	3	4	5	6	7	7
s	6	6	5	5	5	5	4	3	4	5	6
h	7	7	6	6	6	6	5	4	4	5	6
t	8	8	7	7	7	7	6	5	4	5	6
e	9	9	8	8	8	7	7	6	5	4	5
i	10	10	9	8	9	8	8	7	6	5	4
n	11	11	10	9	9	9	8	8	7	6	5

l	e	v		e	n	s	h	t	e	i	n
o	=	o	=	=	=	-	=	=	=	=	=
m	e	i	l	e	n	s		t	e	i	n

l	e	v		e	n	s	h	t	e	i	n
o	=	+	o	=	=	-	=	=	=	=	=
m	e	i	l	e	n	s		t	e	i	n

The image shows a Windows desktop environment. On the left is a code editor window titled "Information Retrieval Pratical-2.py - E:/fffiles/college pracs and projects/IR/Information Retrieval Pratical-2.py...". It contains Python code for calculating Levenshtein distance. On the right is an "IDLE Shell 3.9.6" window, which is a Python shell. It shows the Python interpreter running, prompting for strings "copyright" and "credits", and then calculating the Levenshtein distance between them, which is 7.

```
print('Neeraj Appari T073')
a=input("Enter a String: ")
b=input("Enter a String: ")
A=[[0 for i in range(len(b)+1)] for j in range(len(a)+1)]
for i in range(len(a)+1):
    A[i][0]=i
for j in range(len(b)+1):
    A[0][j]=j
for i in range(1,len(a)+1):
    for j in range(1,len(b)+1):
        if a[i-1]==b[j-1]:
            A[i][j]=A[i-1][j-1]
        else:
            delete=1+A[i-1][j]
            replace=1+A[i-1][j-1]
            insert=1+A[i][j-1]
            A[i][j]=min(insert,delete,replace)
print("Levenshtein Distance",A[len(a)][len(b)])
```

```
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: E:/fffiles/college pracs and projects/IR/Information Retrieval Pratical-2.py
Neeraj Appari T073
Enter a String: copyright
Enter a String: credits
Levenshtein Distance 7
>>> |
```

Information Retrieval

Practical 3

```
Command Prompt - python
Microsoft Windows [Version 10.0.17763.1577]
(c) 2018 Microsoft Corporation. All rights reserved.

C:\Users\LAXMINARAYANRO\pip install nltk
Collecting nltk
  Downloading nltk-3.6.7-py3-none-any.whl (1.5 MB)
    1.5 MB 1.3 MB/s
Requirement already satisfied: joblib in c:\users\laxminarayanro\appdata\local\programs\python\python39\lib\site-packages (from nltk) (1.1.0)
Collecting tdm
  Downloading tdm-4.62.3-py2.py3-none-any.whl (76 kB)
    76 kB 596 kB/s
Collecting regex>=2021.8.3
  Downloading regex-2021.11.10-cp39-cp39-win_amd64.whl (273 kB)
    273 kB 3.2 MB/s
Collecting click
  Downloading click-8.0.3-py3-none-any.whl (97 kB)
    97 kB 963 kB/s
Collecting colorama
  Downloading colorama-0.4.4-py2.py3-none-any.whl (16 kB)
Successfully installed click-8.0.3 colorama-0.4.4 nltk-3.6.7 regex-2021.11.10 tdm-4.62.3

C:\Users\LAXMINARAYANRO\python
Python 3.9.6 (tags/v3.9.6:db3f76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> import nltk
>>> nltk.download()
showing info https://raw.githubusercontent.com/nltk/nltk_data/gh-pages/index.xml
root@root:~#
>>> from nltk.tokenize import word_tokenize
>>> word_tokenize("Hello_World")
['Hello', 'World']
>>> word_tokenize("This is a Sample Sentence")
['This', 'is', 'a', 'Sample', 'Sentence']
>>> from nltk.corpus import stopwords
>>> stopwords.words('english')
['I', 'me', 'my', 'myself', 'we', 'our', 'ours', 'ourselves', 'you', 'your', 'yours', 'you\'ll', 'you\'d', 'your', 'yours', 'yourself', 'yourselves', 'he', 'him', 'his', 'himself', 'she', 'her', 'hers', 'herself', 'it', 'its', 'itself', 'they', 'them', 'their', 'theirs', 'themselves', 'what', 'which', 'who', 'whom', 'this', 'that', 'that'll', 'these', 'those', 'am', 'is', 'are', 'was', 'were', 'be', 'been', 'being', 'have', 'has', 'had', 'having', 'do', 'does', 'did', 'doing', 'a', 'an', 'the', 'and', 'but', 'if', 'or', 'because', 'as', 'until', 'while', 'of', 'at', 'by', 'for', 'with', 'about', 'against', 'between', 'into', 'through', 'during', 'before', 'after', 'above', 'below', 'to', 'from', 'up', 'down', 'in', 'out', 'on', 'off', 'over', 'under', 'again', 'further', 'then', 'once', 'here', 'there', 'when', 'where', 'why', 'how', 'all', 'any', 'both', 'each', 'few', 'more', 'most', 'other', 'some', 'such', 'no', 'nor', 'not', 'only', 'own', 'same', 'so', 'than', 'too', 'very', 'is', 't', 'can', 'will', 'just', 'don', 'don\'t', 'should', 'shouldn\'t', 'now', 'd', 'll', 'm', 'o', 're', 've', 'y', 'ain', 'aren', 'aren\'t', 'couldn', 'couldn\'t', 'didn', 'didn\'t', 'does', 'doesn\'t', 'hadn', 'hadn\'t', 'hasn', 'hasn\'t', 'haven', 'haven\'t', 'isn', 'isn\'t', 'ma', 'mighth', 'mighthn', 'mustn', 'mustn\'t', 'needn', 'needn\'t', 'shan', 'shan\'t', 'shouldn', 'shouldn\'t', 'wasn', 'wasn\'t', 'weren', 'weren\'t', 'won', 'won\'t', 'wouldn', 'wouldn\'t']

>>> python -- version
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
NameError: name 'python' is not defined
>>>

Windows PowerShell
Type here to search
File View Sort Help
NLTK Downloader
File View Sort Help
Collections Corpora Models All Packages
Identifier Name Size Status
all All packages n/a installed
all-corpora All the corpora n/a installed
all-nltk All packages available on nltk_data_gh-pages bran n/a installed
book Everything used in the NLTK Book n/a installed
popular Popular packages n/a installed
tests Packages for running tests n/a installed
third-party Third-party data packages n/a installed
Download Refresh
Server Index: https://raw.githubusercontent.com/nltk/nltk_data/gh-pages/index.xml
Download Directory: C:\Users\LAXMINARAYANRO\AppData\Roaming\nltk_data
Finished downloading collection 'all'.
```

Information Retrieval

The image shows a Windows desktop environment with three main windows:

- Code Editor Window:** A Notepad-like window titled "Information Retrieval Pratical-3.py - E:\fffiles\college pracs and projects\IR\Information Retrieval Pratical-3.py (3.9.6)". It contains Python code for tokenizing a sample text and removing stop words. The code includes imports for nltk, NLTK.corpus, and NLTK.tokenize, and uses NLTK.download('stopwords') to download the stopword list. It prints the original text, the tokens without stop words, and writes them to a file named "Sample.txt".
- Terminal Window:** An IDLE Shell 3.9.6 window titled "IDLE Shell 3.9.6". It shows the Python interpreter running the script. The output includes the Python version, copyright information, and the command to download the stopwords package. It then checks if the package is up-to-date and prints the list of stop words. The stop words listed are very long and include common English words like "the", "and", "is", etc.
- Taskbar:** A standard Windows taskbar at the bottom of the screen, showing icons for various applications like File Explorer, Task View, and Control Panel.

Information Retrieval

Practical 4

```
Information Retrieval Pratical-4.py - E:\fffiiles\college pracs and projects\IR\Information Retreival Pratical-4.py (3.9.6)
File Edit Format Run Options Window Help
from sklearn.feature_extraction.text import CountVectorizer
from sklearn.metrics.pairwise import cosine_similarity
import pandas as pd

print("Neeraj Appari T073")

Dewbauchee_Vagner = '''Most of the Wagner's bodywork is painted with the primary colour, while the separation on the roof is painted with the secondary one. A trim colour is also available for the interior, being applied on the dashboard and part of the doors'''

Grotti_Turismo_R='''The primary colour of the Turismo R is applied on the bodywork, while the secondary colour is applied on the portions around the cabin, the mirror wings, the side panels of the rear intakes and the interior stitching. '''

Overflod_Autarch=''' The primary colour of the Autarch is applied on the body and the interior stitching of the dashboard and seats, while the secondary colour is applied in the form of a rear stripe reaching to the roof scoop, as well as part of the rear body panels '''

GTA5_Supercars = [Dewbauchee_Vagner, Grotti_Turismo_R, Overflod_Autarch]

count_vectorizer = CountVectorizer(stop_words='english') # Create the Document Term Matrix
count_vectorizer = CountVectorizer()
sparse_matrix = count_vectorizer.fit_transform(GTA5_Supercars)

doc_term_matrix = sparse_matrix.todense()# OPTIONAL: Convert Sparse Matrix to Pandas Dataframe if you want to see the
df = pd.DataFrame(doc_term_matrix,
                   columns=count_vectorizer.get_feature_names(),
                   index=['Dewbauchee_Vagner', 'Grotti_Turismo_R', 'Overflod_Autarch'])
print(df)

print(cosine_similarity(df, df))
```

Ln: 6 Col: 0

```
IDLE Shell 3.9.6
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: E:/fffiiles\college pracs and projects\IR\Information Retreival Pratical-4.py
Neeraj Appari T073

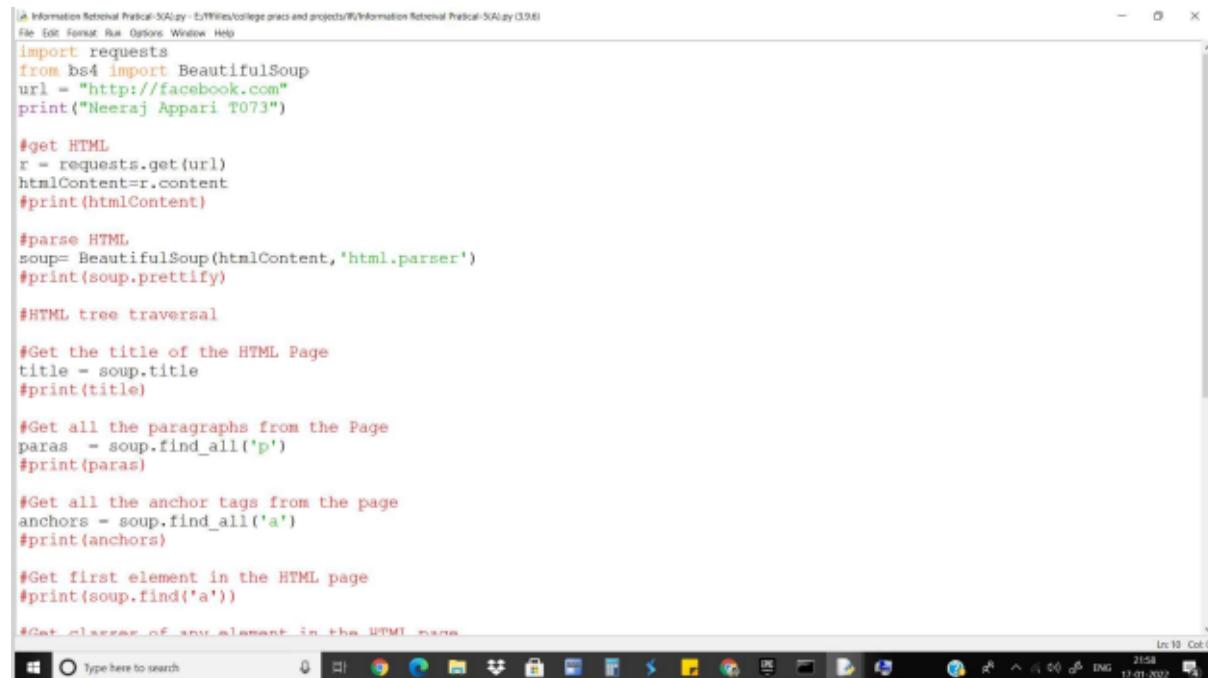
Warning (from warnings module):
  File "C:\Users\LAXMINARAYANRO\AppData\Local\Programs\Python\Python39\lib\site-packages\sklearn\utils\deprecation.py",
    line 87
      warnings.warn(msg, category=FutureWarning)
FutureWarning: Function get_feature_names is deprecated; get_feature_names is deprecated in 1.0 and will be removed in 1.2. Please use get_feature_names_out instead.
      also and applied around ... well while wings with
Dewbauchee_Vagner   1   1     1   0 ...   0   1   0   2
Grotti_Turismo_R    0   1     2   1 ...   0   1   1   0
Overflod_Autarch    0   2     2   0 ...   1   1   0   0

[3 rows x 49 columns]
[[1.        0.8519348  0.80745208]
 [0.8519348  1.        0.86859695]
 [0.80745208 0.86859695 1.        ]]
>>>
```

Ln: 20 Col: 4

Information Retrieval

Practical 5



```
# Information Retrieval Practical-5A.ipynb - E:\9th sem\college projects\IR\Information Retrieval Practical-5A.ipynb (3.9.8)
File Edit Format Run Options Window Help
import requests
from bs4 import BeautifulSoup
url = "http://facebook.com"
print("Neeraj Appari T073")

#get HTML
r = requests.get(url)
htmlContent=r.content
#print(htmlContent)

#parse HTML
soup= BeautifulSoup(htmlContent,"html.parser")
#print(soup.prettify)

#HTML tree traversal

#Get the title of the HTML Page
title = soup.title
#print(title)

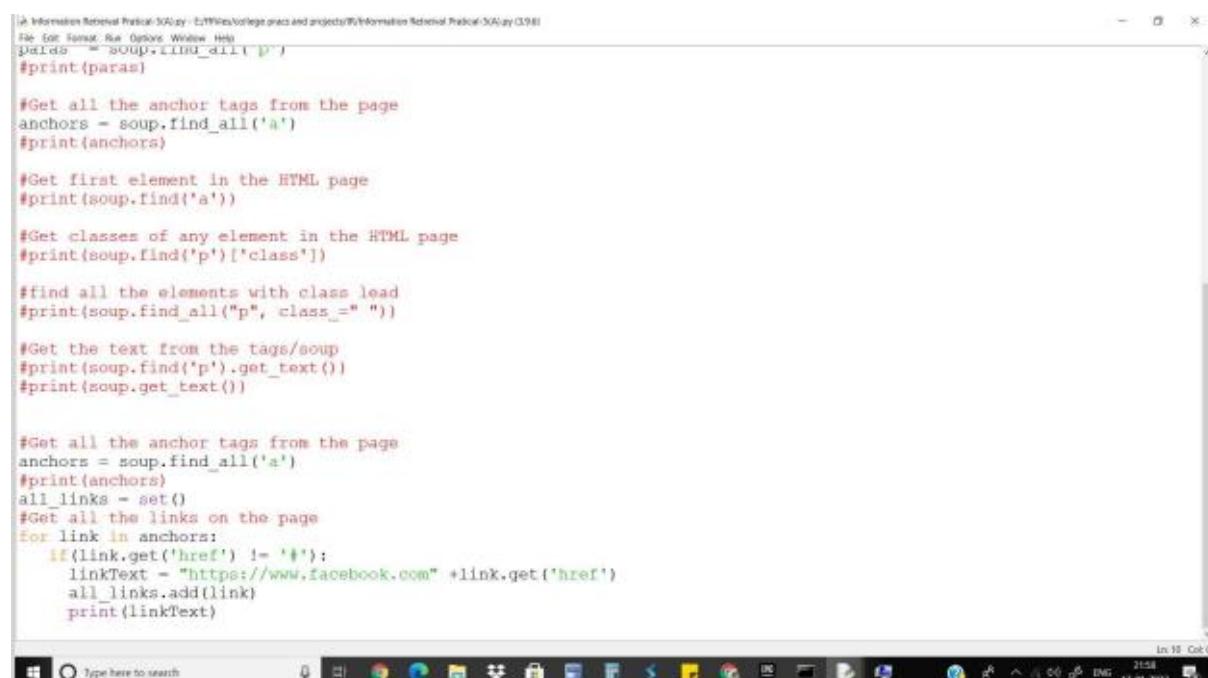
#Get all the paragraphs from the Page
paras = soup.find_all('p')
#print(paras)

#Get all the anchor tags from the page
anchors = soup.find_all('a')
#print(anchors)

#Get first element in the HTML page
#print(soup.find('a'))

#Get classes of any element in the HTML page

```



```
Type here to search 0 ||| C 21:58 13-01-2022
File for Seminar Run Options Window Help
paras = soup.find_all('p')
#print(paras)

#Get all the anchor tags from the page
anchors = soup.find_all('a')
#print(anchors)

#Get first element in the HTML page
#print(soup.find('a'))

#Get classes of any element in the HTML page
#print(soup.find('p')['class'])

#find all the elements with class lead
#print(soup.find_all("p", class_=""))

#Get the text from the tags/soup
#print(soup.find('p').get_text())
#print(soup.get_text())

#Get all the anchor tags from the page
anchors = soup.find_all('a')
#print(anchors)
all_links = set()
#Get all the links on the page
for link in anchors:
    if(link.get('href') != '#'):
        linkText = "https://www.facebook.com" +link.get('href')
        all_links.add(link)
        print(linkText)
```

Information Retrieval

```
[idle] IDLE Shell 3.9.6
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: E:/ffffiles/college pracs and projects/IR/Information Retrieval Pratical-5(A).py
Neeraj Appari T073
https://www.facebook.comhttps://www.facebook.com/recover/initiate/?privacy_mutation_token=eyJ0eXAiOijowLCJjcmVhdGlvbiI9
OamilljoxNjQyNIM20Dg0LCJjYWxsc2l0ZV9pZC16MzgxMj15MDc5NTc1OTQ2fQ%3D%3D&ars=facebook_login
https://www.facebook.com/pages/create/?ref_type=registration_form
https://www.facebook.comhttps://hi-in.facebook.com/
https://www.facebook.comhttps://ur-pk.facebook.com/
https://www.facebook.comhttps://gu-in.facebook.com/
https://www.facebook.comhttps://kn-in.facebook.com/
https://www.facebook.comhttps://pa-in.facebook.com/
https://www.facebook.comhttps://ta-in.facebook.com/
https://www.facebook.comhttps://bn-in.facebook.com/
https://www.facebook.comhttps://te-in.facebook.com/
https://www.facebook.comhttps://ml-in.facebook.com/
https://www.facebook.comhttps://en-gb.facebook.com/
https://www.facebook.com/reg/
https://www.facebook.com/login/
https://www.facebook.comhttps://messenger.com/
https://www.facebook.com/lite/
https://www.facebook.comhttps://www.facebook.com/watch/
https://www.facebook.com/places/
https://www.facebook.com/games/
https://www.facebook.com/marketplace/
https://www.facebook.comhttps://pay.facebook.com/
https://www.facebook.comhttps://www.oculus.com/
https://www.facebook.comhttps://portal.facebook.com/
https://www.facebook.comhttps://l.facebook.com/l.php?u=https%3A%2F%2Fwww.instagram.com%2F6h=AT0HF96G_xtMwKh3QngAPSrTG
4_Rn4ptPiS8zlpriJ2ND7XLPJRiRJu0Ti4KHF4RhmlIy7BLioNHoG0pt-BqRl-Jnf_iRTu4CTIzvZcuGYJ9k1KsllwqWpetdCjjS0sCIPVPnsGR3ZBjB-D
h9Qc}NYW15FW9EW
[idle] IDLE Shell 3.9.6
File Edit Shell Debug Options Window Help
https://www.facebook.comhttps://messenger.com/
https://www.facebook.com/lite/
https://www.facebook.comhttps://www.facebook.com/watch/
https://www.facebook.com/places/
https://www.facebook.com/games/
https://www.facebook.com/marketplace/
https://www.facebook.comhttps://pay.facebook.com/
https://www.facebook.comhttps://www.oculus.com/
https://www.facebook.comhttps://portal.facebook.com/
https://www.facebook.comhttps://l.facebook.com/l.php?u=https%3A%2F%2Fwww.instagram.com%2F6h=AT0HF96G_xtMwKh3QngAPSrTG
4_Rn4ptPiS8zlpriJ2ND7XLPJRiRJu0Ti4KHF4RhmlIy7BLioNHoG0pt-BqRl-Jnf_iRTu4CTIzvZcuGYJ9k1KsllwqWpetdCjjS0sCIPVPnsGR3ZBjB-D
h9Qc}NYW15FW9EW
https://www.facebook.comhttps://www.bulletin.com/
https://www.facebook.com/local/lists/245019872666104/
https://www.facebook.com/fundraisers/
https://www.facebook.com/biz/directory/
https://www.facebook.com/votinginformationcenter/?entry_point=c210ZQ%3D%3D
https://www.facebook.com/groups/explore/
https://www.facebook.comhttps://about.facebook.com/
https://www.facebook.com/ad_campaign/landing.php?placement=pflo&campaign_id=402047449186&nav_source=unknown&extra_1=a
uto
https://www.facebook.com/pages/create/?ref_type=site_footer
https://www.facebook.comhttps://developers.facebook.com/?ref=pf
https://www.facebook.com/careers/?ref=pf
https://www.facebook.com/privacy/explanation/
https://www.facebook.com/policies/cookies/
https://www.facebook.comhttps://www.facebook.com/help/568137493302217
https://www.facebook.com/policies?ref=pf
https://www.facebook.com/help/?ref=pf
https://www.facebook.com/settings
https://www.facebook.com/allactivity?privacy_source=activity_log_top_menu
>>>
```

Information Retrieval

Practical 6

```
"""  
if len(G) == 0:  
    return {}  
  
if not G.is_directed():  
    D = G.to_directed()  
else:  
    D = G  
  
# Create a copy in (right) stochastic form  
W = nx.stochastic_graph(D, weight=weight)  
N = W.number_of_nodes()  
  
# Choose fixed starting vector if not given  
if nstart is None:  
    x = dict.fromkeys(W, 1.0 / N)  
else:  
    # Normalized nstart vector  
    s = float(sum(nstart.values()))  
    x = dict((k, v / s) for k, v in nstart.items())  
  
if personalization is None:  
    # Assign uniform personalization vector if not given  
    p = dict.fromkeys(W, 1.0 / N)  
else:  
    missing = set(G) - set(personalization)  
    if missing:  
        raise NetworkXError('Personalization dictionary '  
            'must have a value for every node. '  
            'Missing nodes %s' % missing)  
    p = dict([(n, personalization[n]) for n in personalization])  
r = float(nx.pagerank(W, x, alpha=alpha, tol=tol, nstart=p, weight=weight,  
                      dangling=dangling))  
return r
```



```
def pagerank(G, alpha=0.85, personalization=None,  
            max_iter=100, tol=1.0e-6, nstart=None, weight='weight',  
            dangling=None):  
    """Return the PageRank of the nodes in the graph.  
  
    PageRank computes a ranking of the nodes in the graph G based on  
    the structure of the incoming links. It was originally designed as  
    an algorithm to rank web pages.  
  
    Parameters  
    _____  
    G : graph  
        A NetworkX graph. Undirected graphs will be converted to a directed  
        graph with two directed edges for each undirected edge.  
  
    alpha : float, optional  
        Damping parameter for PageRank, default=0.85.  
  
    personalization: dict, optional  
        The "personalization vector" consisting of a dictionary with a  
        key for every graph node and nonzero personalization value for each node.  
        By default, a uniform distribution is used.  
  
    max_iter : integer, optional  
        Maximum number of iterations in power method eigenvalue solver.  
  
    tol : float, optional  
        Error tolerance used to check convergence in power method solver.  
  
    nstart : dictionary, optional  
        Starting value of PageRank iteration for each node.
```



```
Windows Taskbar icons: File Explorer, Edge browser, File Manager, Task View, Taskbar search, Taskbar clock, Taskbar date, Taskbar volume, Taskbar battery, Taskbar network, Taskbar system tray.
```

Information Retrieval

```
# use personalization vector if dangling vector not specified
dangling_weights = p
else:
    missing = set(G) - set(dangling)
    if missing:
        raise NetworkXError('Dangling node dictionary '
                           'must have a value for every node. '
                           'Missing nodes %s' % missing)
    s = float(sum(dangling.values()))
    dangling_weights = dict((k, v/s) for k, v in dangling.items())
dangling_nodes = [n for n in W if W.out_degree(n, weight=weight) == 0.0]

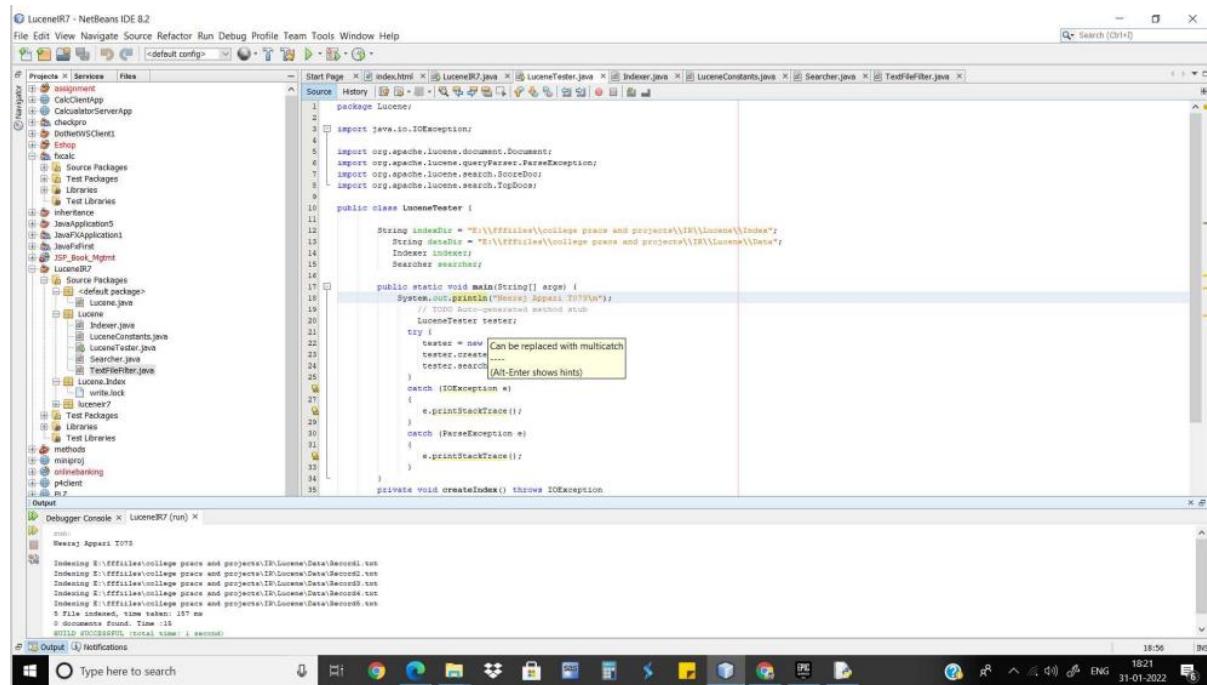
# power iteration: make up to max_iter iterations
for _ in range(max_iter):
    xlast = x
    x = dict.fromkeys(xlast.keys(), 0)
    danglesum = alpha * sum(xlast[n] for n in dangling_nodes)
    for n in x:
        # this matrix multiply looks odd because it is
        # doing a left multiply x*T*xlast^T*W
        for nbr in W[n]:
            x[nbr] += alpha * xlast[n] * W[n][nbr][weight]
        x[n] += danglesum * dangling_weights[n] + (1.0 - alpha) * p[n]

    # check convergence, l1 norm
    err = sum([abs(x[n] - xlast[n]) for n in x])
    if err < N*tol:
        return x
raise NetworkXError('pagerank: power iteration failed to converge '
                    'in %d iterations.' % max_iter)
```

```
[1] IDE Sheet 398
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: E:/ffffiles/college pracs and projects/IR/Information Retrieval Practical-6.py
>>> import networkx as nx
Traceback (most recent call last):
  File "<pyshell#0>", line 1, in <module>
    import networkx as nx
ModuleNotFoundError: No module named 'networkx'
>>> import networkx as nx
>>> G=nx.barabasi_albert_graph(60,41)
>>> pr=nx.pagerank(G,0.4)
>>> pr
{0: 0.028610501946263196, 1: 0.012574206003328516, 2: 0.013370792636413435, 3: 0.012963666308028966, 4: 0.01235994624
0072382, 5: 0.012559376632008425, 6: 0.012160840687233505, 7: 0.012351489727922084, 8: 0.012562114554829269, 9: 0.013
16046015135538, 10: 0.013167273569798521, 11: 0.013160356756333561, 12: 0.013365425394756042, 13: 0.0133640582719143
85, 14: 0.013376110987936727, 15: 0.01278761253233485, 16: 0.012765290681910214, 17: 0.012355389581602, 18: 0.0129684
32724922813, 19: 0.013169384506337119, 20: 0.012358480664166867, 21: 0.013150217028142088, 22: 0.013774664484054233,
23: 0.013774664484054233, 24: 0.01337518313965308, 25: 0.013358033781030613, 26: 0.013357178585773833, 27: 0.0133841
47640023828, 28: 0.013563784104625578, 29: 0.013367202751561183, 30: 0.012754978445360433, 31: 0.013172973882856386,
32: 0.01255871600628585, 33: 0.0131687262853915533, 34: 0.012349493695928056, 35: 0.010807672320235006, 36: 0.0123689
26743061892, 37: 0.013166094705048818, 38: 0.012971039125468842, 39: 0.012760876957117853, 40: 0.012966995213541234,
41: 0.01356579533893536, 42: 0.02753382649151867, 43: 0.027217801613498238, 44: 0.02667900981666993, 45: 0.0262911288
8866561, 46: 0.02608724874352708, 47: 0.026068871902038493, 48: 0.025349470558176754, 49: 0.025789542033407123, 50: 0
.0246327801881077, 51: 0.024326830296622224, 52: 0.023761255398667643, 53: 0.023467105828842753, 54: 0.02294268628430
6388, 55: 0.022578554583372937, 56: 0.0231962108568846, 57: 0.021693047216502538, 58: 0.021730489375088518, 59: 0.021
4085906451724761
>>>
```

Information Retrieval

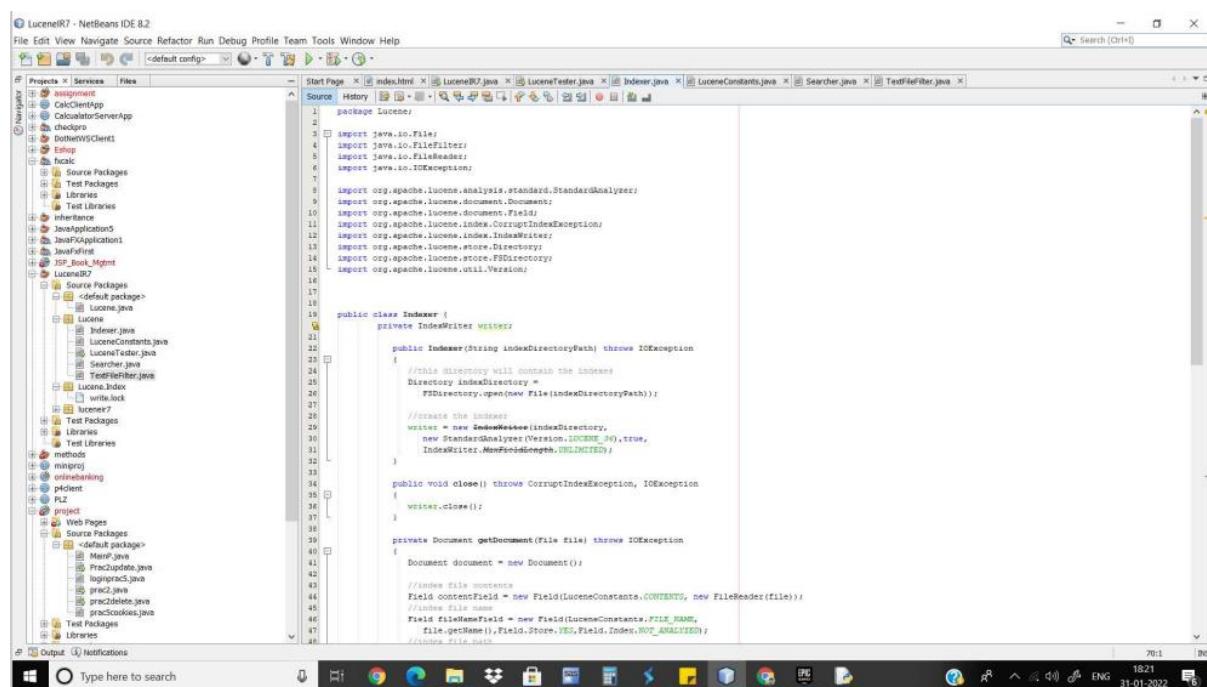
Practical 7



```
LuceneR7 - NetBeans IDE 8.2
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Projects Services Files <default config> Search (Ctrl+F)
Start Page index.html LuceneR7.java LuceneTester.java Indexer.java LuceneConstants.java Searcher.java TestFileFilter.java
Source History <default config> <default config> <default config> <default config> <default config> <default config>
1 package Lucene;
2
3 import java.io.IOException;
4
5 import org.apache.lucene.document.Document;
6 import org.apache.lucene.queryParser.ParseException;
7 import org.apache.lucene.search.ScoreDoc;
8 import org.apache.lucene.search.TopDocs;
9
10 public class LuceneTester {
11
12     String indexPath = "E:\\fffile\\college pracs and projects\\IR\\Lucene\\index";
13     String dataset = "E:\\fffile\\college pracs and projects\\IR\\Lucene\\Data\\Record.txt";
14     Indexer indexer;
15     Searcher searcher;
16
17     public static void main(String[] args) {
18         System.out.println("Apache Lucene Test");
19         // TODO: add your code here
20         LuceneTester tester;
21         try {
22             tester = new LuceneTester();
23             tester.create();
24             tester.search();
25         } catch (IOException e) {
26             e.printStackTrace();
27         } catch (ParseException e) {
28             e.printStackTrace();
29         }
30     }
31
32     private void createIndex() throws IOException {
33
34     }
35 }
```

```
Debugger Console X LuceneR7 (run) ×
main:
Swraj Appari T073
Indexing E:\\fffile\\college pracs and projects\\IR\\Lucene\\Data\\Record.txt
Indexing E:\\fffile\\college pracs and projects\\IR\\Lucene\\Data\\Record2.txt
Indexing E:\\fffile\\college pracs and projects\\IR\\Lucene\\Data\\Record3.txt
Indexing E:\\fffile\\college pracs and projects\\IR\\Lucene\\Data\\Record4.txt
5 file indexed, time taken: 157 ms
0 documents found, Time: 11
TOTAL 157 ms, total time: 1 second
18:56 31-01-2022
```

Type here to search



```
LuceneR7 - NetBeans IDE 8.2
File Edit View Navigate Source Refactor Run Debug Profile Team Tools Window Help
Projects Services Files <default config> Search (Ctrl+F)
Start Page index.html LuceneR7.java LuceneTester.java Indexer.java LuceneConstants.java Searcher.java TestFileFilter.java
Source History <default config> <default config> <default config> <default config> <default config> <default config>
1 package Lucene;
2
3 import java.io.File;
4 import java.io.FileReader;
5 import java.io.IOException;
6 import java.io.RandomAccessFile;
7
8 import org.apache.lucene.analysis.standard.StandardAnalyzer;
9 import org.apache.lucene.document.Document;
10 import org.apache.lucene.document.Field;
11 import org.apache.lucene.index.CorruptIndexException;
12 import org.apache.lucene.index.IndexWriter;
13 import org.apache.lucene.store.FSDirectory;
14 import org.apache.lucene.util.Version;
15
16 public class Indexer {
17     private IndexWriter writer;
18
19     public Indexer(String indexDirectoryPath) throws IOException {
20         //this directory will contain the indexes
21         Directory indexDirectory =
22             FSDirectory.open(new File(indexDirectoryPath));
23
24         //create the writer
25         writer = new IndexWriter(indexDirectory,
26             new StandardAnalyzer(Version.LUCENE_30),true,
27             IndexWriter.MaxFieldLength.UNLIMITED);
28
29         public void close() throws CorruptIndexException, IOException {
30             writer.close();
31         }
32
33         private Document getDocument(File file) throws IOException {
34             Document document = new Document();
35
36             //index file contents
37             Field contentField = new Field(LuceneConstants.CONTENT,new FileReader(file));
38             contentField.setTermVector(Field.TermVector.YES);
39             document.add(contentField);
40
41             Field fileNameField = new Field(LuceneConstants.FILE_NAME,
42                 file.getName(),Field.Store.YES,Field.Index.NOT_ANALYZED);
43             document.add(fileNameField);
44
45             return document;
46         }
47     }
48 }
```

```
Output Notifications
Type here to search
```

Information Retrieval

The screenshot shows the NetBeans IDE interface with the title "LuceneR7 - NetBeans IDE 8.2". The left pane displays the project structure under "Projects > Services > Files". The "Searcher.java" file is open in the center editor pane, showing Java code for a search engine. The code imports various Apache Lucene packages and defines a `Searcher` class that implements `IndexSearcher` and `FileFilter`. It uses `FSDirectory` to open an index directory and `IndexSearcher` to search it. The `search` method takes a query string and returns a `TopDocs` object. The `getDocument` method retrieves a document by its score. The `close` method closes the index searcher.

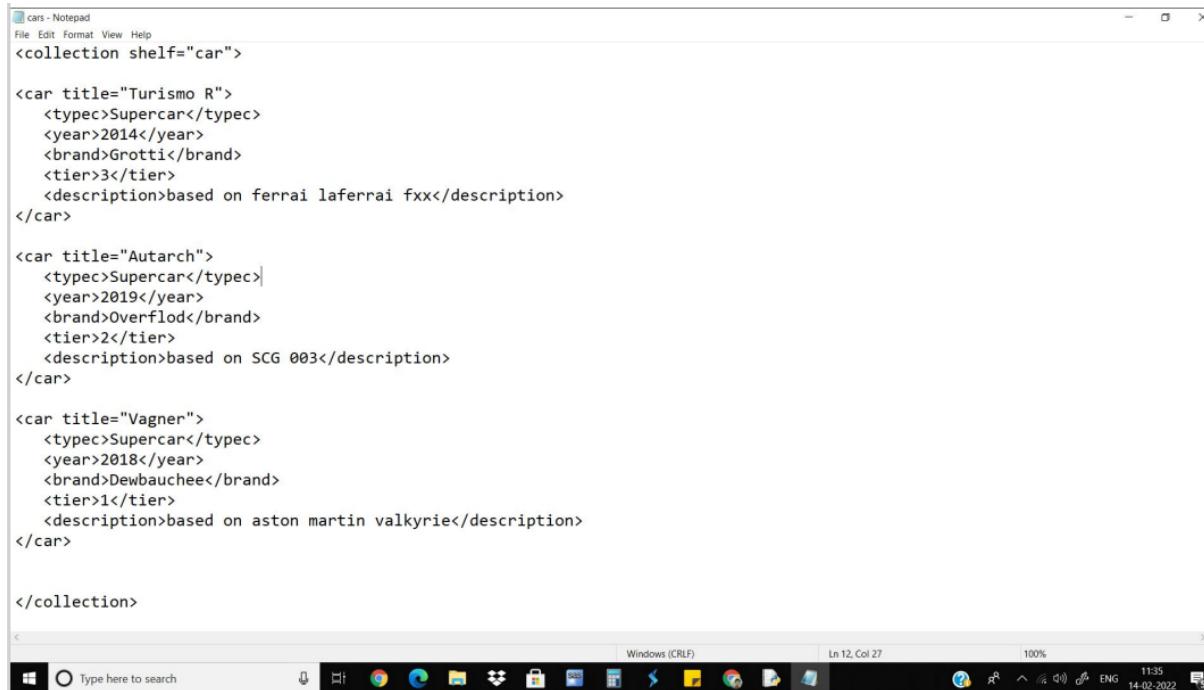
```
package Lucene;
import org.apache.lucene.analysis.standard.StandardAnalyzer;
import org.apache.lucene.document.Document;
import org.apache.lucene.index.CorruptIndexException;
import org.apache.lucene.queryParser.ParseException;
import org.apache.lucene.queryParser.QueryParser;
import org.apache.lucene.search.IndexSearcher;
import org.apache.lucene.search.Query;
import org.apache.lucene.search.ScoreDocs;
import org.apache.lucene.search.TopDocs;
import org.apache.lucene.store.Directory;
import org.apache.lucene.util.Version;
public class Searcher {
    IndexSearcher indexSearcher;
    QueryParser queryParser;
    Query query;
    public Searcher(String indexDirectoryPath) throws IOException {
        Directory indexDirectory = FSDirectory.open(new File(indexDirectoryPath));
        indexSearcher = new IndexSearcher(indexDirectory);
        queryParser = new QueryParser(Version.LUCENE_36, LuceneConstants.CONTEXT,
            new StandardAnalyzer(Version.LUCENE_36));
    }
    public TopDocs search(String searchQuery) throws IOException {
        query = queryParser.parse(searchQuery);
        return indexSearcher.search(query, LuceneConstants.MAX_SEARCH);
    }
    public Document getDocument(ScoreDocs sourceDoc) throws CorruptIndexException, IOException {
        return indexSearcher.doc(sourceDoc.doc);
    }
    public void close() throws IOException {
        indexSearcher.close();
    }
}
```

This screenshot shows the same NetBeans IDE session with the "TextFileFilter.java" file open. The code defines a `TextFileFilter` class that implements `FileFilter`. It checks if a file's name ends with ".txt" and returns true if it does, indicating it should be included in the search results.

```
public class TextFileFilter implements FileFilter {
    public boolean accept(File pathname) {
        return pathname.getName().toLowerCase().endsWith(".txt");
    }
}
```

Information Retrieval

Practical 8



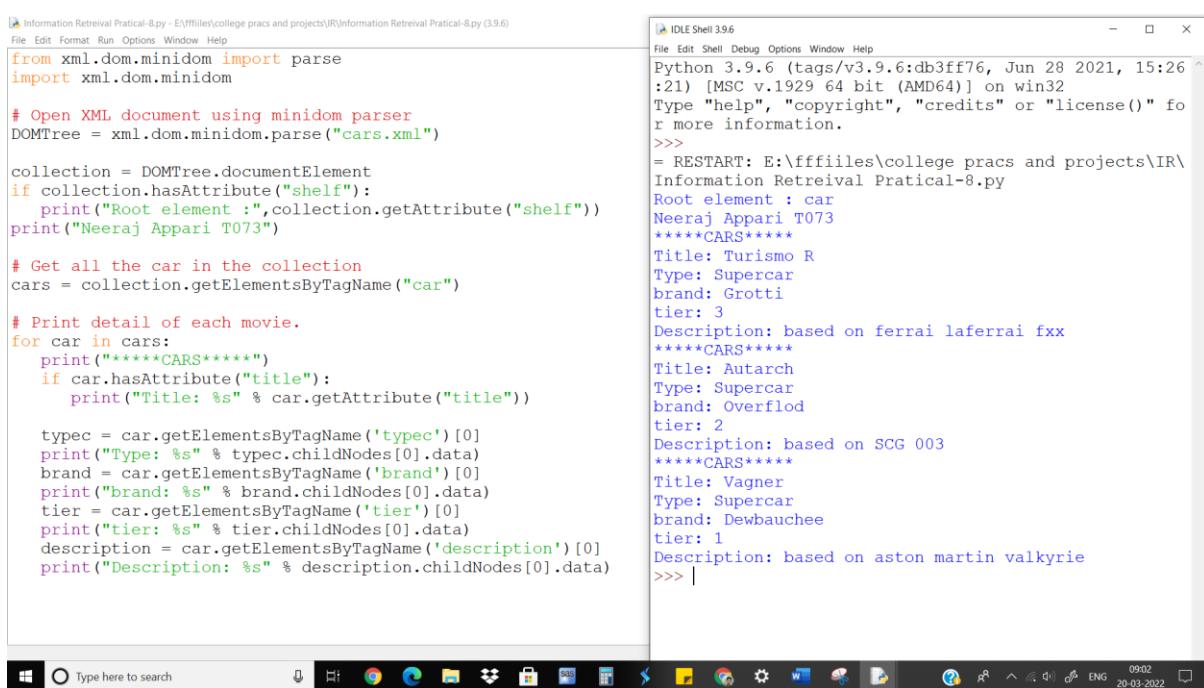
```
<?xml version="1.0" encoding="UTF-8"?>
<collection shelf="car">

<car title="Turismo R">
    <type>Supercar</type>
    <year>2014</year>
    <brand>Grotti</brand>
    <tier>3</tier>
    <description>based on ferrai laferrai fxx</description>
</car>

<car title="Autarch">
    <type>Supercar</type>
    <year>2019</year>
    <brand>Overflod</brand>
    <tier>2</tier>
    <description>based on SCG 003</description>
</car>

<car title="Vagner">
    <type>Supercar</type>
    <year>2018</year>
    <brand>Dewbauchee</brand>
    <tier>1</tier>
    <description>based on aston martin valkyrie</description>
</car>

</collection>
```



```
Information Retrieval Pratical-8.py - E:\fffiles\college pracs and projects\IR\Information Retrieval Pratical-8.py (3.9.6)
File Edit Format Run Options Window Help
from xml.dom.minidom import parse
import xml.dom.minidom

# Open XML document using minidom parser
DOMTree = xml.dom.minidom.parse("cars.xml")

collection = DOMTree.documentElement
if collection.hasAttribute("shelf"):
    print("Root element : ", collection.getAttribute("shelf"))
print("Neeraj Appari T073")

# Get all the car in the collection
cars = collection.getElementsByTagName("car")

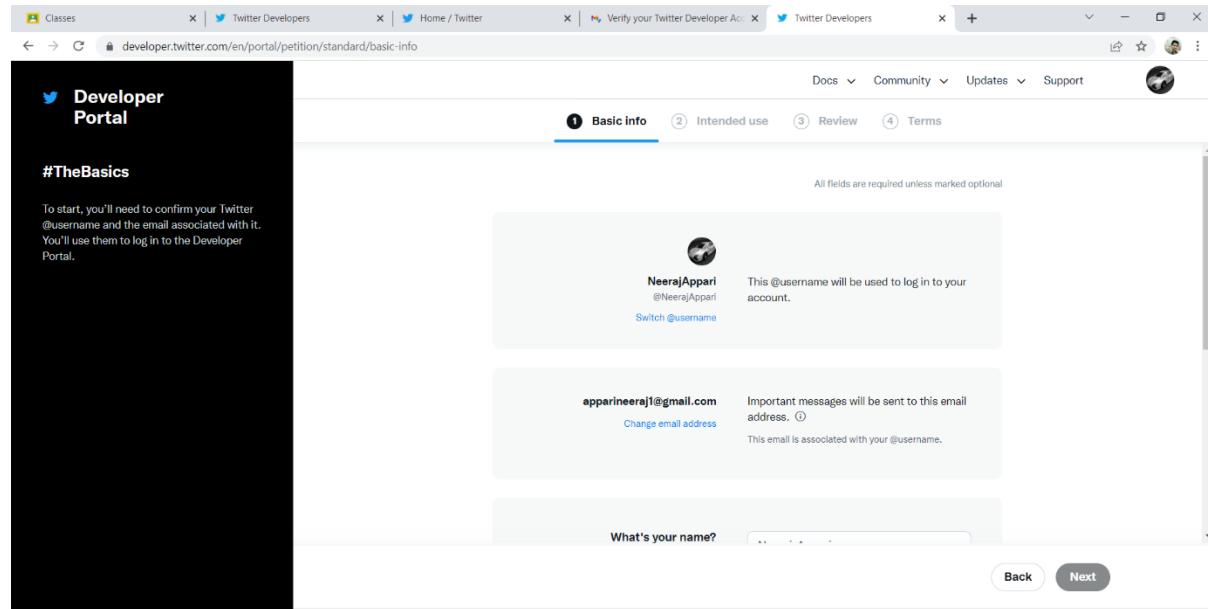
# Print detail of each movie.
for car in cars:
    print("*****CARS*****")
    if car.hasAttribute("title"):
        print("Title: %s" % car.getAttribute("title"))

    typec = car.getElementsByTagName('typec')[0]
    print("Type: %s" % typec.childNodes[0].data)
    brand = car.getElementsByTagName('brand')[0]
    print("brand: %s" % brand.childNodes[0].data)
    tier = car.getElementsByTagName('tier')[0]
    print("tier: %s" % tier.childNodes[0].data)
    description = car.getElementsByTagName('description')[0]
    print("Description: %s" % description.childNodes[0].data)

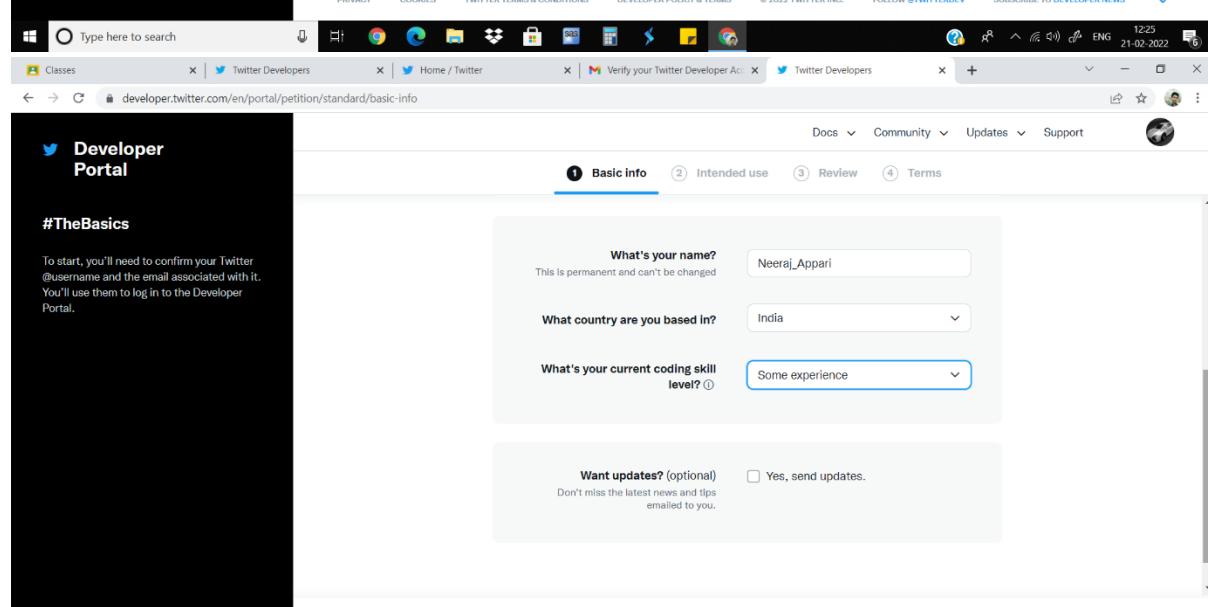
File Edit Shell Debug Options Window Help
Python 3.9.6 (tags/v3.9.6:db3ff76, Jun 28 2021, 15:26:21) [MSC v.1929 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: E:\fffiles\college pracs and projects\IR\Information Retrieval Pratical-8.py
Root element : car
Neeraj Appari T073
*****CARS*****
Title: Turismo R
Type: Supercar
brand: Grotti
tier: 3
Description: based on ferrai laferrai fxx
*****CARS*****
Title: Autarch
Type: Supercar
brand: Overflod
tier: 2
Description: based on SCG 003
*****CARS*****
Title: Vagner
Type: Supercar
brand: Dewbauchee
tier: 1
Description: based on aston martin valkyrie
>>> |
```

Information Retrieval

Practical 9



The screenshot shows the 'Basic info' step of the Twitter Developer Portal petition process. It displays the user's profile picture, name ('NeerajAppari'), and email ('apparineera1@gmail.com'). A note states that the email will be used for login. Below this, there is a field for the user's name ('What's your name?') which has been filled with 'Neeraj_Appari'. The interface includes 'Back' and 'Next' buttons at the bottom.



The screenshot shows the continuation of the 'Basic info' step. It includes fields for 'What country are you based in?' (set to 'India') and 'What's your current coding skill level?' (set to 'Some experience'). There is also a section for 'Want updates? (optional)' with a checkbox for 'Yes, send updates.' The interface includes 'Back' and 'Next' buttons at the bottom.

Information Retrieval

The image shows two screenshots of the Twitter Developer Portal application petition process.

Screenshot 1: Intended use

This screenshot shows the 'Intended use' step of the petition process. It includes:

- A sidebar with sections like '#ImportantStuff', 'What's not allowed', and 'Automation guidelines'.
- A main form field asking to "Please list all government entities you intend to provide Twitter content or derived information to under this use case." with the input: "I will be accessing these data just for practical purposes. This is my demo project application> I request you to give elevated access as its required for practical output purpose. This is just demo."
- A note below the form: "We require this information in order to review and approve your application. It is important that you name any government entity that you may provide Twitter content or analysis to. If you fail to name an entity, you may see a delay in the review process, a rejected application, or suspension of access to Twitter's developer products."
- Navigation buttons: 'Back' and 'Next'.

Screenshot 2: Review

This screenshot shows the 'Review' step of the petition process. It includes:

- A sidebar with sections like '#Review'.
- A summary of basic information:

USE CASE	Student
ACCOUNT NAME	Neeraj_Appari
ACCOUNT TYPE	Individual developer account
TWITTER HANDLE	@NeerajAppari
EMAIL ADDRESS	apparineeraj1@gmail.com
WHAT COUNTRY DO YOU LIVE IN?	India
- Navigation buttons: 'Back' and 'Next'.

Information Retrieval

The screenshot shows a Microsoft Edge browser window with multiple tabs open. The active tab displays the 'Developer agreement & policy' page on the Twitter Developer Portal. The page includes a sidebar with developer terms, a main content area with a title 'Developer agreement & policy', a bullet point list, and a checkbox for accepting terms. Below the checkbox is a note about developer agreements and policies. At the bottom are 'Back' and 'Submit' buttons.

#Read&Accept

We've carefully crafted our developer terms to make it readable and accessible. Our aim is to have a healthy and open platform for all.

Once you've read it and agreed, check the box below the agreement and then hit the submit application button on the bottom right.

Developer agreement & policy

- You may not provide tools in your service to allow people to circumvent technological protection measures

By clicking on the box, you indicate that you have read and agree to this [Developer Agreement](#) and the [Twitter Developer Policy](#), additionally as its relates to your display of any of the Content, the [Display Requirements](#); as it relates to your use and display of the Twitter Marks, the [Twitter Brand Assets](#) and [Guidelines](#); and as it relates to taking automated actions on your account, the [Automation Rules](#). These documents are available in hardcopy upon request to Twitter.

[Back](#) [Submit](#)

PRIVACY COOKIES TWITTER TERMS & CONDITIONS DEVELOPER POLICY & TERMS © 2022 TWITTER INC. FOLLOW @TWITTERDEV SUBSCRIBE TO DEVELOPER NEWS

The screenshot shows a Microsoft Edge browser window with multiple tabs open. The active tab displays the 'Application Received' page on the Twitter Developer Portal. The page features a magnifying glass icon over a clipboard, the title '#ApplicationReceived', a message confirming email verification, and instructions for staying updated. It also includes a note about learning the Twitter API and support forums. At the bottom are 'Back' and 'Submit' buttons.

#ApplicationReceived

Your email apparineeraj1@gmail.com has been verified and your application is officially under review!

We'll let you know when it's done, or if we need any additional information from you by sending an email to apparineeraj1@gmail.com.

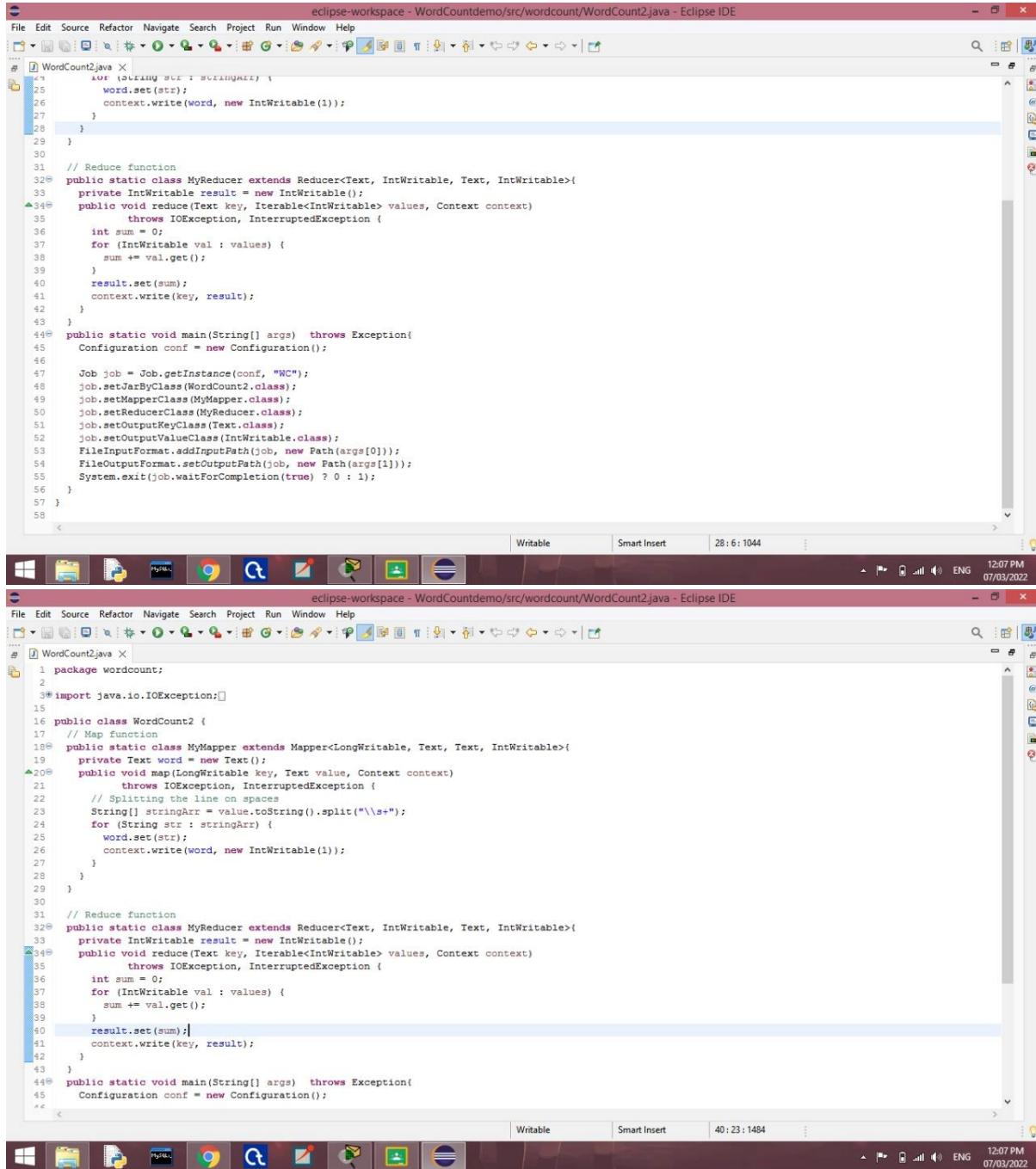
In the meantime, you can get a head start by learning about the Twitter API by browsing our [docs](#), [tutorials](#), and [community forums](#). For support on your developer application, please check your email and review information in the [support center](#).

[Back](#) [Submit](#)

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Information Retrieval

Practical 10



The image shows two side-by-side instances of the Eclipse IDE interface, both displaying the same Java code for a Word Count application. The code is written in Java and uses the MapReduce framework.

```
File Edit Source Refactor Navigate Search Project Run Window Help
File Edit Source Refactor Navigate Search Project Run Window Help
WordCount2.java X
1 package wordcount;
2
3 import java.io.IOException;
4
5 public class WordCount2 {
6     // Map function
7     public static class MyMapper extends Mapper<LongWritable, Text, Text, IntWritable>{
8         private Text word = new Text();
9         public void map(LongWritable key, Text value, Context context)
10            throws IOException, InterruptedException {
11             // Splitting the line on spaces
12             String[] stringArr = value.toString().split("\s+");
13             for (String str : stringArr) {
14                 word.set(str);
15                 context.write(word, new IntWritable(1));
16             }
17         }
18     }
19     // Reduce function
20     public static class MyReducer extends Reducer<Text, IntWritable, Text, IntWritable>{
21         private IntWritable result = new IntWritable();
22         public void reduce(Text key, Iterable<IntWritable> values, Context context)
23            throws IOException, InterruptedException {
24             int sum = 0;
25             for (IntWritable val : values) {
26                 sum += val.get();
27             }
28             result.set(sum);
29             context.write(key, result);
30         }
31     }
32     public static void main(String[] args) throws Exception{
33         Configuration conf = new Configuration();
34         Job job = Job.getInstance(conf, "WC");
35         job.setJarByClass(WordCount2.class);
36         job.setMapperClass(MyMapper.class);
37         job.setReducerClass(MyReducer.class);
38         job.setOutputKeyClass(Text.class);
39         job.setOutputValueClass(IntWritable.class);
40         FileInputFormat.addInputPath(job, new Path(args[0]));
41         FileOutputFormat.setOutputPath(job, new Path(args[1]));
42         System.exit(job.waitForCompletion(true) ? 0 : 1);
43     }
44 }
45
File Edit Source Refactor Navigate Search Project Run Window Help
File Edit Source Refactor Navigate Search Project Run Window Help
WordCount2.java X
1 package wordcount;
2
3 import java.io.IOException;
4
5 public class WordCount2 {
6     // Map function
7     public static class MyMapper extends Mapper<LongWritable, Text, Text, IntWritable>{
8         private Text word = new Text();
9         public void map(LongWritable key, Text value, Context context)
10            throws IOException, InterruptedException {
11             // Splitting the line on spaces
12             String[] stringArr = value.toString().split("\s+");
13             for (String str : stringArr) {
14                 word.set(str);
15                 context.write(word, new IntWritable(1));
16             }
17         }
18     }
19     // Reduce function
20     public static class MyReducer extends Reducer<Text, IntWritable, Text, IntWritable>{
21         private IntWritable result = new IntWritable();
22         public void reduce(Text key, Iterable<IntWritable> values, Context context)
23            throws IOException, InterruptedException {
24             int sum = 0;
25             for (IntWritable val : values) {
26                 sum += val.get();
27             }
28             result.set(sum);
29             context.write(key, result);
30         }
31     }
32     public static void main(String[] args) throws Exception{
33         Configuration conf = new Configuration();
34 }
```

The code defines a `WordCount2` class with a `MyMapper` and `MyReducer` inner classes. The `MyMapper` class splits input lines into words and emits each word with a count of 1. The `MyReducer` class sums up the counts for each word and emits the total count. The `main` method sets up the job and runs it.

Information Retrieval

Neeraj Appari T073

Information Retrieval

The screenshot shows a Windows desktop environment with three windows open:

- Administrator: Command Prompt**: The top-left window displays a series of Hadoop command-line errors related to file operations and permissions.
- Administrator: Command Prompt**: The bottom-left window shows the execution of the MapReduce WordCount example, which fails due to Java class loading issues.
- input_file - Notepad**: The rightmost window contains a simple CSV-like data file with five rows of information.

Administrator: Command Prompt (Top Left)

```
java:62> at sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccesso
sorImpl.java:43)
at java.lang.reflect.Method.invoke(Method.java:498)
at org.apache.hadoop.io.retry.RetryInvocationHandler.invokeMethod(RetryInvocat
ionHandler.java:191)
at org.apache.hadoop.io.retry.RetryInvocationHandler.invoke(RetryInvocat
ionHandler.java:102)
at com.sun.proxy.$Proxy11.addBlock(Unknown Source)
at org.apache.hadoop.hdfs.DFSOutputStream$DataStreamer.locateFollowingBl
ock(DFSOutputStream.java:1603)
at org.apache.hadoop.hdfs.DFSOutputStream$DataStreamer.nextBlockOutputSt
ream(DFSOutputStream.java:1308)
at org.apache.hadoop.hdfs.DFSOutputStream$DataStreamer.run(DFSOutputStream
.java:554)
put: File /input_dir/input_file.txt: COPYING could only be replicated to 0 node(s)
instead of minReplication <1>. There are 0 datanode(s) running and no node(s)
are excluded in this operation.

C:\hadoop-2.7.6\bin>hadoop fs -put C:/input_file.txt /input_dir
The filename, directory name or volume label syntax is incorrect.
The filename, directory name or volume label syntax is incorrect.

C:\hadoop-2.7.6\bin>hadoop fs -put C:/input_file.txt /input_dir
The filename, directory name or volume label syntax is incorrect.

C:\hadoop-2.7.6\bin>hadoop fs -mkdir /input_dir
The filename, directory name or volume label syntax is incorrect.
mkdir: '/input_dir': File exists

C:\hadoop-2.7.6\bin>hadoop fs -put C:/input_file.txt /input_dir
The filename, directory name or volume label syntax is incorrect.
put: /input_dir/input_file.txt: File exists

C:\hadoop-2.7.6\bin> hadoop fs -ls /input_file/
The filename, directory name or volume label syntax is incorrect.
Found 1 items
-rw-r--r-- 1 peje supergroup 167 2022-03-07 12:14 /input_dir/input_file
.txt

C:\hadoop-2.7.6\bin>hadoop dfs -cat /input_dir/input_file.txt
The filename, directory name or volume label syntax is incorrect.
DEPRECATED: Use of this script to execute hdfs command is deprecated.
Instead use the hdfs command for it.
The filename, directory name or volume label syntax is incorrect.
TVCS IR DIP CS
TVCS Wireless IR Ethical
TVCS CS IR Software
Ethical Hardware TVCS Jyoti
TVCS IR Wireless Chauhan
C:\hadoop-2.7.6\bin>
C:\hadoop-2.7.6\bin>
```

Administrator: Command Prompt (Bottom Left)

```
Administrator: Command Prompt
The filename, directory name or volume label syntax is incorrect.
put: /input_dir/input_file.txt: File exists

C:\hadoop-2.7.6\bin> hadoop fs -ls /input_dir
The filename, directory name or volume label syntax is incorrect.
Found 1 items
-rw-r--r-- 1 peje supergroup 167 2022-03-07 12:14 /input_dir/input_file
.txt

C:\hadoop-2.7.6\bin>hadoop dfs -cat /input_dir/input_file.txt
The filename, directory name or volume label syntax is incorrect.
DEPRECATED: Use of this script to execute hdfs command is deprecated.
Instead use the hdfs command for it.
The filename, directory name or volume label syntax is incorrect.
TVCS IR DIP CS
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C:\hadoop-2.7.6\bin>
C:\hadoop-2.7.6\bin>hadoop jar C:/MapReduceClient.jar WordCount /input_dir /out
put
The filename, directory name or volume label syntax is incorrect.
Exception in thread "main" java.lang.ClassNotFoundException: WordCount
at java.net.URLClassLoader.findClass(URLClassLoader.java:382)
at java.lang.ClassLoader.loadClass(ClassLoader.java:419)
at java.lang.ClassLoader.loadClass(ClassLoader.java:351)
at java.lang.Class.forName0(Native Method)
at java.lang.Class.forName(Class.java:348)
at org.apache.hadoop.util.RunJar.run(RunJar.java:214)
at org.apache.hadoop.util.RunJar.main(RunJar.java:136)
2>

C:\hadoop-2.7.6\bin>hadoop jar C:/Users/peje/Desktop/ir/WordCount3.jar wordcount
WordCount2 /input_dir/output_dir
The filename, directory name or volume label syntax is incorrect.
Exception in thread "main" java.lang.UnsupportedClassVersionError: wordcount/Wor
dCount2 has been compiled by a more recent version of the Java Runtime (class fi
le version 59.0), this version of the Java Runtime only recognizes class file ve
rsions up to 59.0
at java.lang.ClassLoader.defineClass1(Native Method)
at java.lang.ClassLoader.defineClass(ClassLoader.java:756)
at java.security.SecureClassLoader.defineClass(SecureClassLoader.java:14
2)
at java.net.URLClassLoader.defineClass(URLClassLoader.java:468)
at java.net.URLClassLoader.access$100(URLClassLoader.java:74)
at java.net.URLClassLoader$1.run(URLClassLoader.java:369)
at java.net.URLClassLoader$1.run(URLClassLoader.java:363)
at java.security.AccessController.doPrivileged(Native Method)
at java.net.URLClassLoader.findClass(URLClassLoader.java:362)
at java.lang.ClassLoader.loadClass(ClassLoader.java:418)
at java.lang.ClassLoader.loadClass(ClassLoader.java:351)
at java.lang.Class.forName0(Native Method)
at java.lang.Class.forName(Class.java:348)
at org.apache.hadoop.util.RunJar.run(RunJar.java:214)
at org.apache.hadoop.util.RunJar.main(RunJar.java:136)
2>
```

input_file - Notepad

TVCS	IR	DIP	CS
TVCS	Wireless	IR	Ethical
TVCS	CS	IR	Software
Ethical	Hardware	TVCS	Jyoti
TVCS	IR	Wireless	Chauhan