CSI3007 – Advanced Python Programming
Lab Activity 18 (14-10-2025)

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Introduction to VSCODE

1. Integrated terminal for seamless execution: VS Code includes a robust integrated terminal that simplifies the process of installing libraries and running code (Java, c, c++, Python)
2. Powerful extensions for enhanced productivity: VS Code offers a vast ecosystem of extensions that transform it from a simple text editor into a full-featured IDE.
3. VSCode Supports Git Repository: User friendly to handle git repo using git commands on VSCode

TASK – 1: Sentiment analysis using textblob

Install prerequisites
pip install pandas textblob

```
(base) matlab@sjt318scope020:~/22MID0061$ pip install pandas textblob
Requirement already satisfied: pandas in /home/software/software/lib/python3.12/site-packages (2.2.2)
Collecting textblob
  Downloading textblob-0.19.0-py3-none-any.whl.metadata (4.4 kB)
Requirement already satisfied: numpy>=1.26.0 in /home/software/software/lib/python3.12/site-packages (from pandas) (1.26.4)
Requirement already satisfied: python-dateutil>=2.8.2 in /home/software/software/lib/python3.12/site-packages (from pandas) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in /home/software/software/lib/python3.12/site-packages (from pandas) (2024.1)
Requirement already satisfied: tzdata>=2022.7 in /home/software/software/lib/python3.12/site-packages (from pandas) (2023.3)
Collecting nltk>=3.9 (from textblob)
  Downloading nltk-3.9.2-py3-none-any.whl.metadata (3.2 kB)
Requirement already satisfied: click in /home/software/software/lib/python3.12/site-packages (from nltk>=3.9->textblob) (8.1.7)
Requirement already satisfied: joblib in /home/software/software/lib/python3.12/site-packages (from nltk>=3.9->textblob) (1.4.2)
Requirement already satisfied: regex>=2021.8.3 in /home/software/software/lib/python3.12/site-packages (from nltk>=3.9->textblob) (2023.10.3)
Requirement already satisfied: tqdm in /home/software/software/lib/python3.12/site-packages (from nltk>=3.9->textblob) (4.66.4)
Requirement already satisfied: six>=1.5 in /home/software/software/lib/python3.12/site-packages (from python-dateutil>=2.8.2->pandas) (1.16.0)
Downloading textblob-0.19.0-py3-none-any.whl (624 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 624.3/624.3 kB 15.6 MB/s eta 0:00:00
Downloading nltk-3.9.2-py3-none-any.whl (1.5 MB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 1.5/1.5 MB 31.4 MB/s eta 0:00:00
Installing collected packages: nltk, textblob
  Attempting uninstall: nltk
    Found existing installation: nltk 3.8.1
    Uninstalling nltk-3.8.1:
      Successfully uninstalled nltk-3.8.1
Successfully installed nltk-3.9.2 textblob-0.19.0
(base) matlab@sjt318scope020:~/22MID0061$
```

CODE:

```
from textblob import TextBlob
text = input("Enter a sentence: ")
blob = TextBlob(text)
print("Polarity:", blob.sentiment.polarity)
print("Subjectivity:", blob.sentiment.subjectivity)
if blob.sentiment.polarity > 0:
    print("Sentiment: Positive ")
elif blob.sentiment.polarity < 0:
    print("Sentiment: Negative")
else:
    print("Sentiment: Neutral ")
```

OUTPUT:

```
(base) matlab@sjt318scope020:~/22MID0061$ /home/software/software/bin/python /home/matlab/22MID0061/practice.py
Enter a sentence: Gokula is a good girl
Polarity: 0.7
Subjectivity: 0.6000000000000001
Sentiment: Positive
(base) matlab@sjt318scope020:~/22MID0061$
```

CODE (Import IMDB dataset and perform Sentimental Analysis)

```
import pandas as pd
from textblob import TextBlob

# Load the IMDB dataset from the CSV file
try:
    df = pd.read_csv("IMDB Dataset.csv")
except FileNotFoundError:
    print("File not found error")
    exit()

# Filter a smaller sample for demonstration purposes to avoid long processing times.
# Using the full 50,000 reviews is computationally intensive with TextBlob.
sample_size = 1000
df_sample = df.sample(n=sample_size, random_state=42)

# Function to get sentiment category from TextBlob's polarity
def get_textblob_sentiment(text):
    """
    Analyzes a text's sentiment using TextBlob and returns 'positive', 'negative', or 'neutral'.
    A polarity > 0 is considered positive, < 0 is negative, and 0 is neutral.
    """
    analysis = TextBlob(text)
    if analysis.sentiment.polarity > 0:
        return 'positive'
    elif analysis.sentiment.polarity < 0:
        return 'negative'
    else:
        return 'neutral'

# Apply the TextBlob sentiment analysis to each review in the sample
df_sample['textblob_sentiment'] = df_sample['review'].apply(get_textblob_sentiment)

# Compare TextBlob's sentiment with the actual labeled sentiment from the dataset
# TextBlob does not have a 'neutral' category for these reviews, so we will ignore 'neutral'
predictions.
correct_predictions = 0
total_comparisons = 0

for index, row in df_sample.iterrows():
    actual_sentiment = row['sentiment']
    predicted_sentiment = row['textblob_sentiment']
```

```
    # We can only compare 'positive' and 'negative' predictions since TextBlob has a neutral option.
    if predicted_sentiment in ['positive', 'negative']:
        total_comparisons += 1
        if predicted_sentiment == actual_sentiment:
            correct_predictions += 1

# Calculate the accuracy based on comparable predictions
accuracy = (correct_predictions / total_comparisons) * 100

print(f"Number of reviews in sample: {sample_size}")
print(f"Number of comparable predictions (excluding TextBlob 'neutral'): {total_comparisons}")
print(f"Correct predictions: {correct_predictions}")
print(f"TextBlob Accuracy on IMDB sample: {accuracy:.2f}%")

# Display a few example predictions to see the results
print("\nExample Predictions")
for i in range(5):
    review = df_sample.iloc[i]
    print(f"Review: {review['review'][:100]}...")
    print(f"Actual Label: {review['sentiment'].capitalize()}")
    print(f"TextBlob Predicted: {review['textblob_sentiment'].capitalize()}\n")
```

OUTPUT:

```
(base) matlab@sjt318scope020:~/22MID0061$ /home/software/software/bin/python /home/matlab/22MID0061/Sentimental_Analysis.py
Number of reviews in sample: 1000
Number of comparable predictions (excluding TextBlob 'neutral'): 1000
Correct predictions: 683
TextBlob Accuracy on IMDB sample: 68.30%

Example Predictions
Review: I really liked this Summerslam due to the look of the arena, the curtains and just the look overall ...
Actual Label: Positive
TextBlob Predicted: Negative

Review: Not many television shows appeal to quite as many different kinds of fans like Farscape does...I kno...
Actual Label: Positive
TextBlob Predicted: Positive

Review: The film quickly gets to a major chase scene with ever increasing destruction. The first really bad ...
Actual Label: Negative
TextBlob Predicted: Positive

Review: Jane Austen would definitely approve of this one!<br /><br />Gwyneth Paltrow does an awesome job cap...
Actual Label: Positive
TextBlob Predicted: Positive

Review: Expectations were somewhat high for me when I went to see this movie, after all I thought Steve Care...
Actual Label: Negative
TextBlob Predicted: Positive
```

TASK-2:
Data Visualization using matplotlib

Install prerequisites
pip install matplotlib

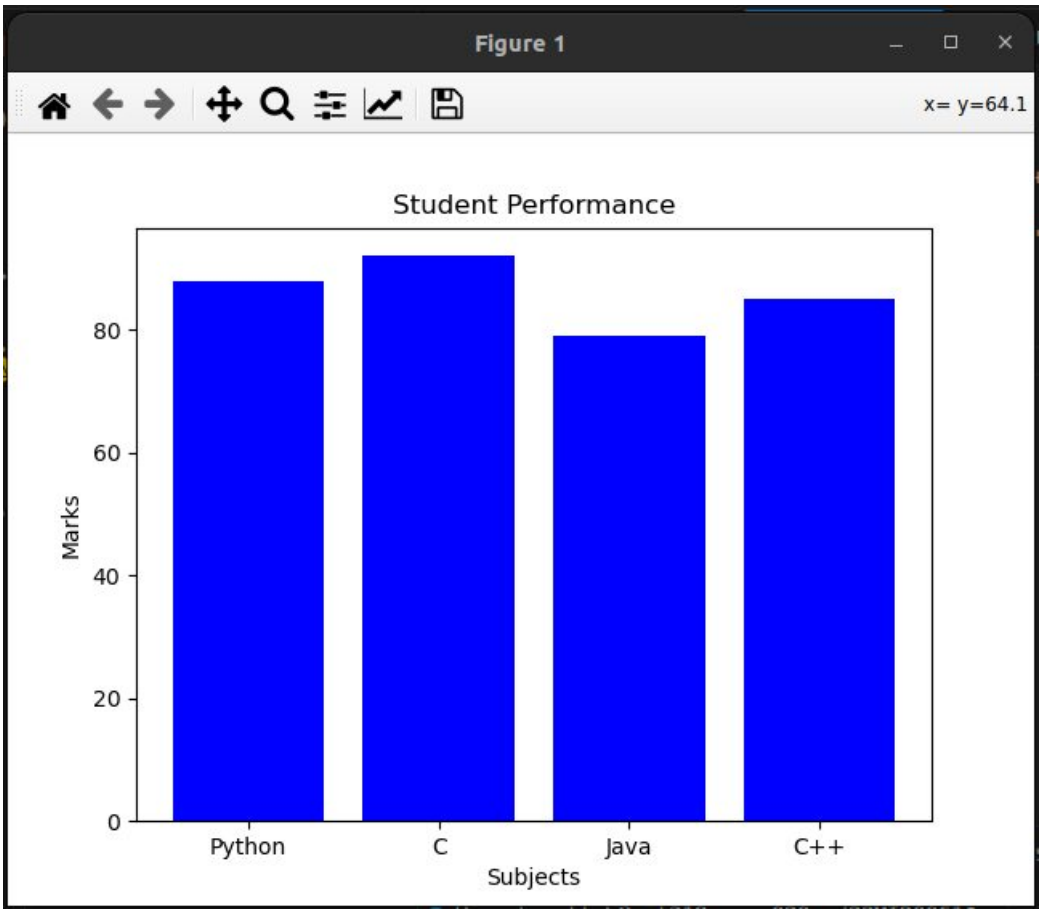
```
(base) matlab@sjt318scope020:~/22MID0061$ pip install pandas matplotlib
Requirement already satisfied: pandas in /home/software/software/lib/python3.12/site-packages (2.2.2)
Requirement already satisfied: matplotlib in /home/software/software/lib/python3.12/site-packages (3.8.4)
Requirement already satisfied: numpy>=1.26.0 in /home/software/software/lib/python3.12/site-packages (from pandas) (1.26.4)
Requirement already satisfied: python-dateutil>=2.8.2 in /home/software/software/lib/python3.12/site-packages (from pandas) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in /home/software/software/lib/python3.12/site-packages (from pandas) (2024.1)
Requirement already satisfied: tzdata>=2022.7 in /home/software/software/lib/python3.12/site-packages (from pandas) (2023.3)
Requirement already satisfied: contourpy>=1.0.1 in /home/software/software/lib/python3.12/site-packages (from matplotlib) (1.2.0)
Requirement already satisfied: cycler>=0.10 in /home/software/software/lib/python3.12/site-packages (from matplotlib) (0.11.0)
Requirement already satisfied: fonttools>=4.22.0 in /home/software/software/lib/python3.12/site-packages (from matplotlib) (4.51.0)
Requirement already satisfied: kiwisolver>=1.3.1 in /home/software/software/lib/python3.12/site-packages (from matplotlib) (1.4.4)
Requirement already satisfied: packaging>=20.0 in /home/software/software/lib/python3.12/site-packages (from matplotlib) (23.2)
Requirement already satisfied: pillow>=8 in /home/software/software/lib/python3.12/site-packages (from matplotlib) (10.3.0)
Requirement already satisfied: pyparsing>=2.3.1 in /home/software/software/lib/python3.12/site-packages (from matplotlib) (3.0.9)
Requirement already satisfied: six>=1.5 in /home/software/software/lib/python3.12/site-packages (from python-dateutil>=2.8.2->pandas) (1.16.0)
(base) matlab@sjt318scope020:~/22MID0061$
```

CODE:

```
import matplotlib.pyplot as plt

subjects = ["Python", "C", "Java", "C++"]
scores = [88, 92, 79, 85]
plt.bar(subjects, scores, color='blue')
plt.title("Student Performance")
plt.xlabel("Subjects")
plt.ylabel("Marks")
plt.show()
```

OUTPUT:



TASK-3
Qrcode generator using qrcode

Install Prerequistie:
pip install qrcode[pil]

```
(base) matlab@sjt318scope020:~/22MID0061$ pip install qrcode[pil]
Collecting qrcode[pil]
  Downloading qrcode-8.2-py3-none-any.whl.metadata (17 kB)
Requirement already satisfied: pillow>=9.1.0 in /home/software/software/lib/python3.12/site-packages (from qrcode[pil]) (10.3.0)
Downloading qrcode-8.2-py3-none-any.whl (45 kB)
   ━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 46.0/46.0 kB 5.1 MB/s eta 0:00:00
Installing collected packages: qrcode
Successfully installed qrcode-8.2
(base) matlab@sjt318scope020:~/22MID0061$
```

CODE:

```
import qrcode

data = "https://www.google.com"
qr = qrcode.make(data)
qr.save("google_qr.png")
print("QR Code Has Been Generated")
```

OUTPUT:

```
(base) matlab@sjt318scope020:~/22MID0061$ /home/software/software/bin/python /home/matlab/22MID0061/Qrcode.py
QR Code Has Been Generated
(base) matlab@sjt318scope020:~/22MID0061$
```