FR. CONCEICAO RODRIGUES COLLEGE OF ENGINEERIG
Department of Computer Engineering

Experiment 5 - Python Programs for file handling operations.

1. Course Details:

Academic Year	**2023 - 24**	**Estimated Time**	**Experiment No. 5 – 02 Hours**
Course & Semester	**S.E. (COMP) – Sem. IV**	**Subject Name**	**Python Programming Lab**
Module No.	**02**	**Chapter Title**	**Python Basics**
Experiment Type	**Software Performance**	**Subject Code**	**CSL405**

Name of Student	Mark Lopes	**Roll No.**	9913
Date of Performance.:	4/03/2024	**Date of Submission. :**	8/03/2024
CO Mapping	**CSL405.2:** Implement file handling techniques and text processing functionalities.		

Timeline (2)	Preparedness (2)	Effort (2)	Result (2)	Documentation (2)	Total (10)

2. Aim & Objective of Experiment

To implement following programs in Python.

Objective of experiment 5 is to understand the concepts of File Handling in Python.

Pre-Requisite: Any programming language like C, C++

Tools: Python IDE

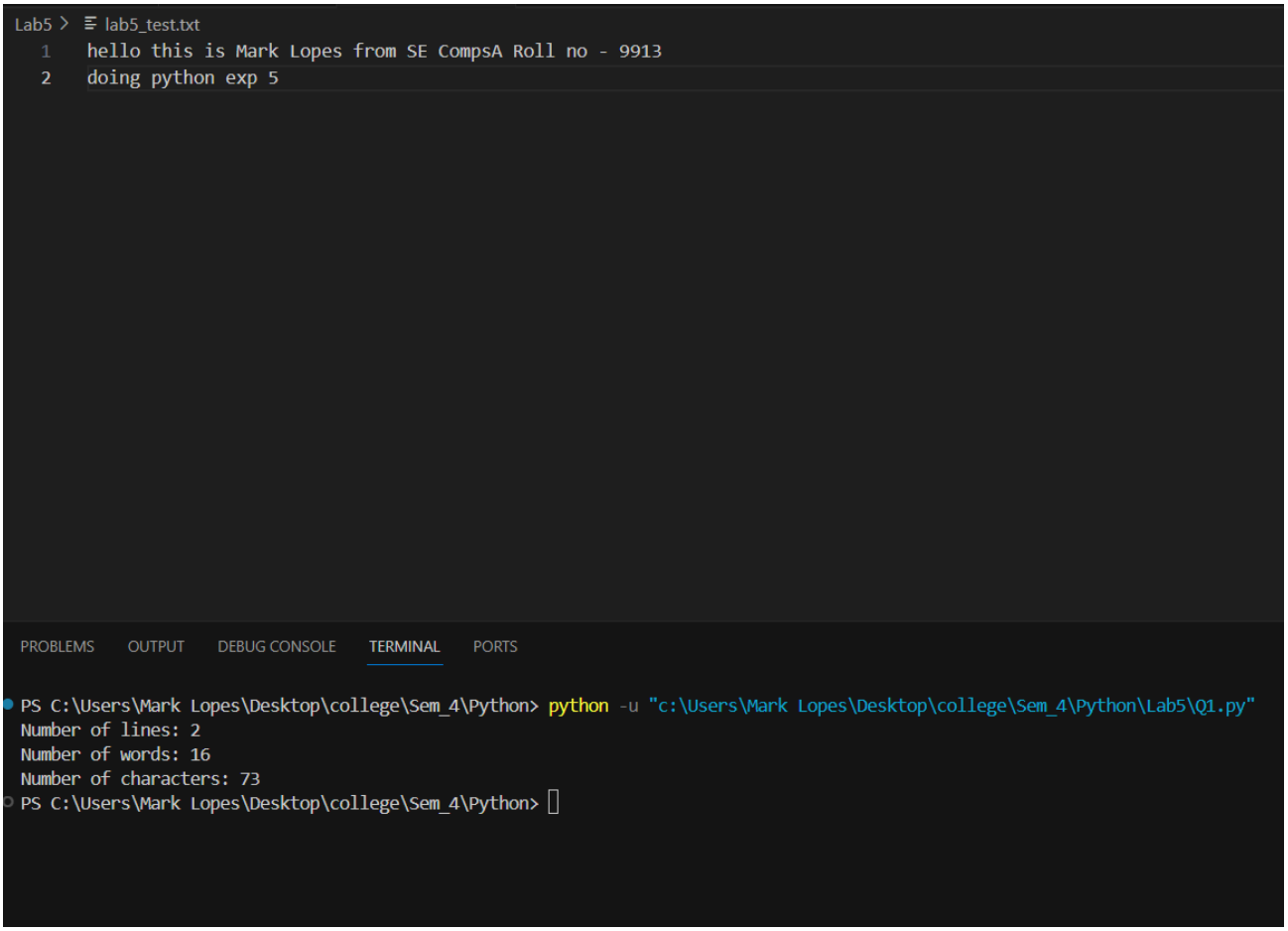
Python Lab 5 (File Handling)

Write python programs

a. To count number of lines, words and characters in the file.

```
def count_lines_words_characters(file_name):
    with open(file_name, 'r') as file:
        num_lines = 0
```

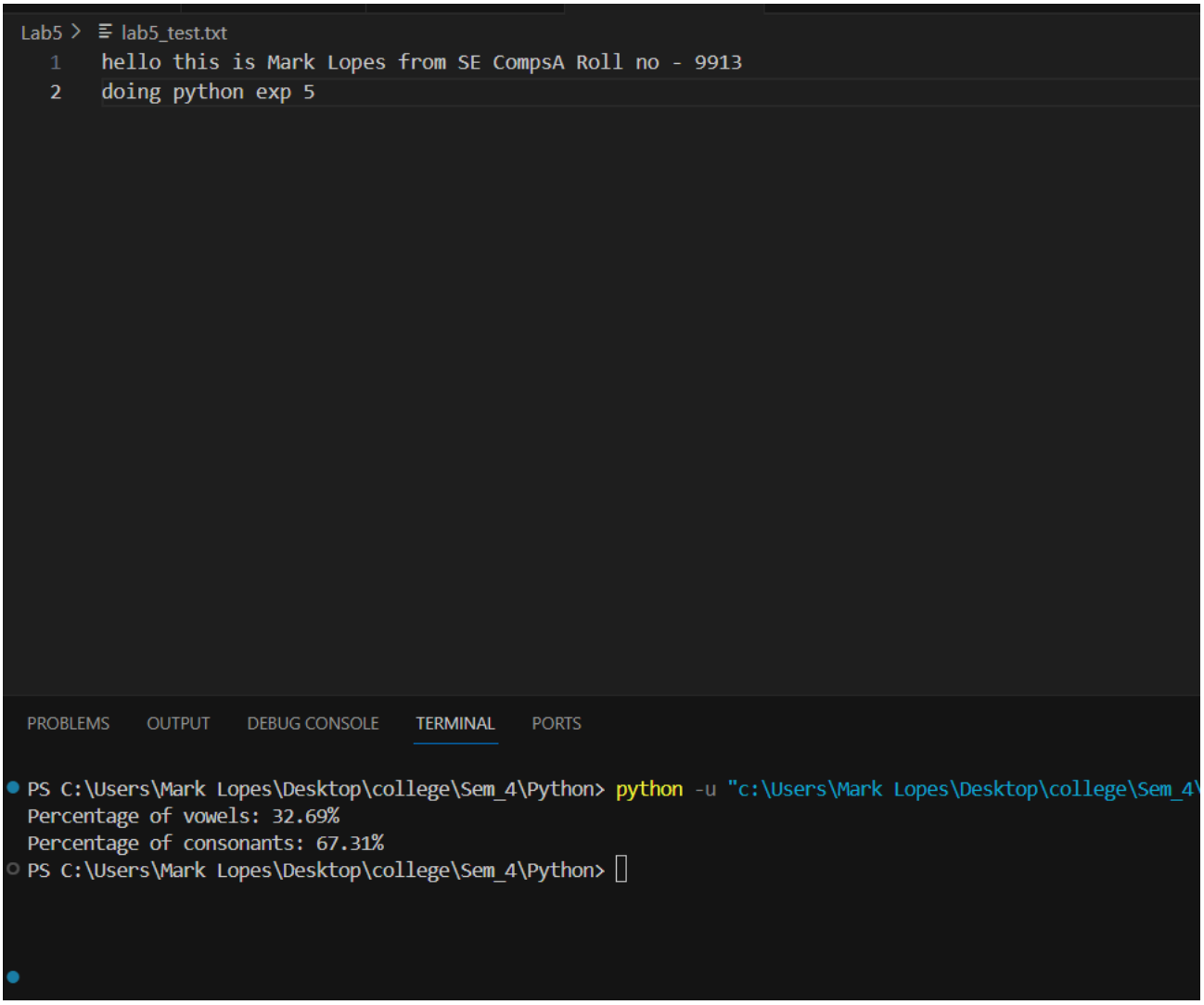
```
        num_words = 0
        num_characters = 0

        for line in file:
            num_lines += 1
            words = line.split()
            num_words += len(words)
            num_characters += len(line)

    print(f"Number of lines: {num_lines}")
    print(f"Number of words: {num_words}")
    print(f"Number of characters: {num_characters}")

file_name = "Lab5/lab5_test.txt"
count_lines_words_characters(file_name)
```



b. To read data from a file and calculates the percent count of vowels and consonants.

```
def count_vowels_consonants(file_name):
    with open(file_name, 'r') as file:
        num_vowels = 0
```

```
        num_consonants = 0
        total_characters = 0
        vowels = "aeiou"

        for char in file.read():
            if char.isalpha():
                total_characters += 1
                if char.lower() in vowels:
                    num_vowels += 1
                else:
                    num_consonants += 1

        percent_vowels = (num_vowels / total_characters) * 100
        percent_consonants = (num_consonants / total_characters) * 100

        print(f"Percentage of vowels: {percent_vowels:.2f}%")
        print(f"Percentage of consonants: {percent_consonants:.2f}%")


file_name = "Lab5/lab5_test.txt"
count_vowels_consonants(file_name)
```



c. To perform Mail Merge.

```
def merge_template(template_file, data, output_file_base_name):
    with open(template_file, "r") as template:
        template_content = template.read()

    for values in data:
        applicant_name = values["name"]
        position = values["position"]
        start_date = values["start_date"]

        # Replace placeholders with actual values
        merged_content = template_content.replace("{{name}}",
applicant_name)
        merged_content = merged_content.replace("{{position}}", position)
        merged_content = merged_content.replace("{{start_date}}",
start_date)

        output_file = f"{applicant_name}_{output_file_base_name}"
```

```
        # Write merged content to output file
        with open(output_file, "w") as output:
            output.write(merged_content)

def read_mails(data, output_file_base_name):
    for values in data:
        applicant_name = values["name"]

        output_file = f"{applicant_name}_{output_file_base_name}"

        print("-"*70)
        print(f"Email received for {applicant_name}: ")
        print("-"*70)
        with open(output_file, "r") as output:
            print(output.read())

# Main program
template_file = "Lab5/template.txt"
data = [
    {"name": "Mark Lopes", "position": "Intern", "start_date":
"2024-03-15"},
    {"name": "Vivian Ludrick", "position": "Intern", "start_date":
"2024-03-20"}
]
output_file_base_name = "email.txt"

merge_template(template_file, data, output_file_base_name)
print("Emails generated successfully!")
read_mails(data, output_file_base_name)
```

Q1.py | Q2.py | Q3.py | Mark Lopes_email.txt | template.txt

Lab5 > template.txt

```
Indian Oil
Indian Oil Bhavan, G-9,
Ali Yavar Jung Marg,
Bandra East,
Mumbai,
Maharashtra,
India - 400051

7th March 2024

Dear {{name}},

We are pleased to inform you that your application for the position of {{position}} at Indian Oil has been accepted. You have demonstrated the skill

Your employment with Indian OIl will begin on {{start_date}}. Please report to the Human Resources department on your first day for orientation and

If you have any questions or need additional information, please do not hesitate to contact us at 12345678 or IndianOil@gmail.com.

We look forward to welcoming you aboard and wish you every success in your new role.

Sincerely,

ABC
HR
```

vian Ludrick_email.txt

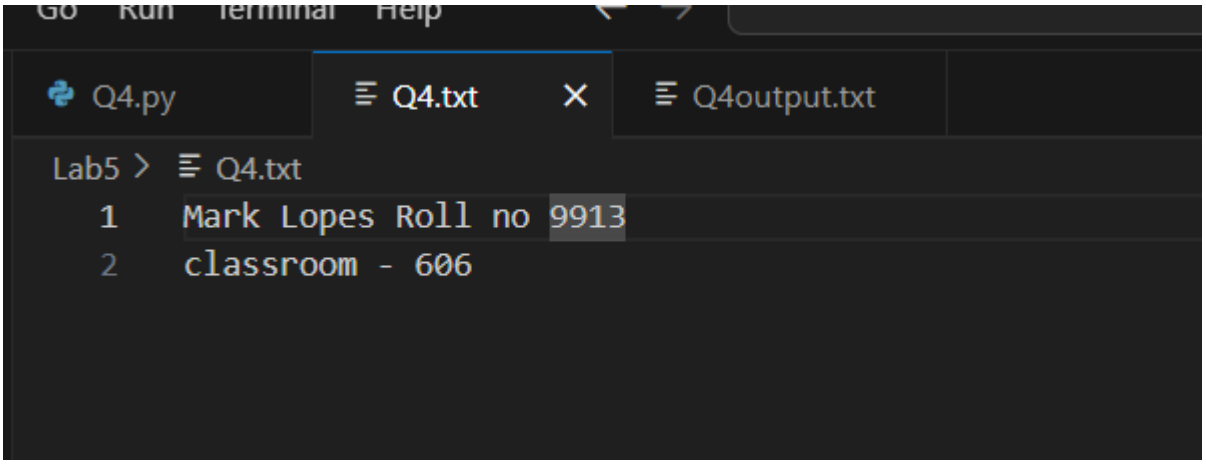
```
Indian Oil
Indian Oil Bhavan, G-9,
Ali Yavar Jung Marg,
Bandra East,
Mumbai,
Maharashtra,
India - 400051

7th March 2024

Dear Vivian Ludrick,

We are pleased to inform you that your application for the position of Intern at Indian Oil has been accepted. You have demonstrated the skills and

Your employment with Indian OIl will begin on 2024-03-20. Please report to the Human Resources department on your first day for orientation and fur

If you have any questions or need additional information, please do not hesitate to contact us at 12345678 or IndianOil@gmail.com.

We look forward to welcoming you aboard and wish you every success in your new role.

Sincerely,

ABC
HR
```

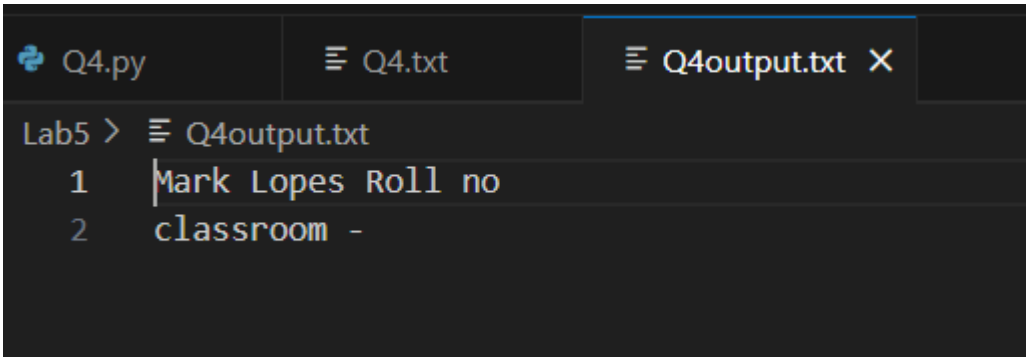
Mark Lopes_email.txt

```
Indian Oil
Indian Oil Bhavan, G-9,
Ali Yavar Jung Marg,
Bandra East,
Mumbai,
Maharashtra,
India - 400051

7th March 2024

Dear Mark Lopes,

We are pleased to inform you that your application for the position of Intern at Indian Oil has been accepted. You have demonstrated the skills and

Your employment with Indian OIl will begin on 2024-03-15. Please report to the Human Resources department on your first day for orientation and furt

If you have any questions or need additional information, please do not hesitate to contact us at 12345678 or IndianOil@gmail.com.

We look forward to welcoming you aboard and wish you every success in your new role.

Sincerely,

ABC
HR
```

d. A text file “Python.txt” contains alphanumeric text. Write a program that reads this text file and Writes to another file “new.txt” entire file except the numbers or digits in the file.

```
with open("Lab5/Q4.txt", 'r') as input_file:
    data = input_file.read()

data_without_digits = ''.join(char for char in data if not char.isdigit())

with open("Lab5/Q4output.txt", 'w') as output_file:
    output_file.write(data_without_digits)
```





Algorithms:

a)

Open the file in read mode.

Initialize counters for lines, words, and characters to zero.

Iterate through each line in the file:

a. Increment the line counter for each line.

b. Split the line into words using whitespace as a delimiter.

c. Increment the word counter by the number of words in the line.

d. Increment the character counter by the length of the line.

Close the file.

Output the total number of lines, words, and characters.

b.
Open the file in read mode.
Initialize counters for vowels, consonants, total characters, and percent counts for vowels and consonants to zero.
Iterate through each character in the file:
a. Check if the character is an alphabet character.
b. If it is an alphabet character, check if it is a vowel or consonant.
c. Increment the respective counter accordingly.
d. Increment the total character counter.
Calculate the percentage count of vowels and consonants using the counters.
Close the file.
Output the percentage count of vowels and consonants.

c.
Mail merge is a process of merging a template document with a data source (such as a spreadsheet or database) to produce multiple personalized documents. Here's a basic algorithm to perform mail merge:

Read the template document and the data source.
For each record in the data source:
a. Replace placeholders in the template document with corresponding values from the record.
b. Save the personalized document with a unique identifier or name.
Repeat step 2 for all records in the data source.
Optionally, if sending emails, send the personalized documents to their respective recipients.

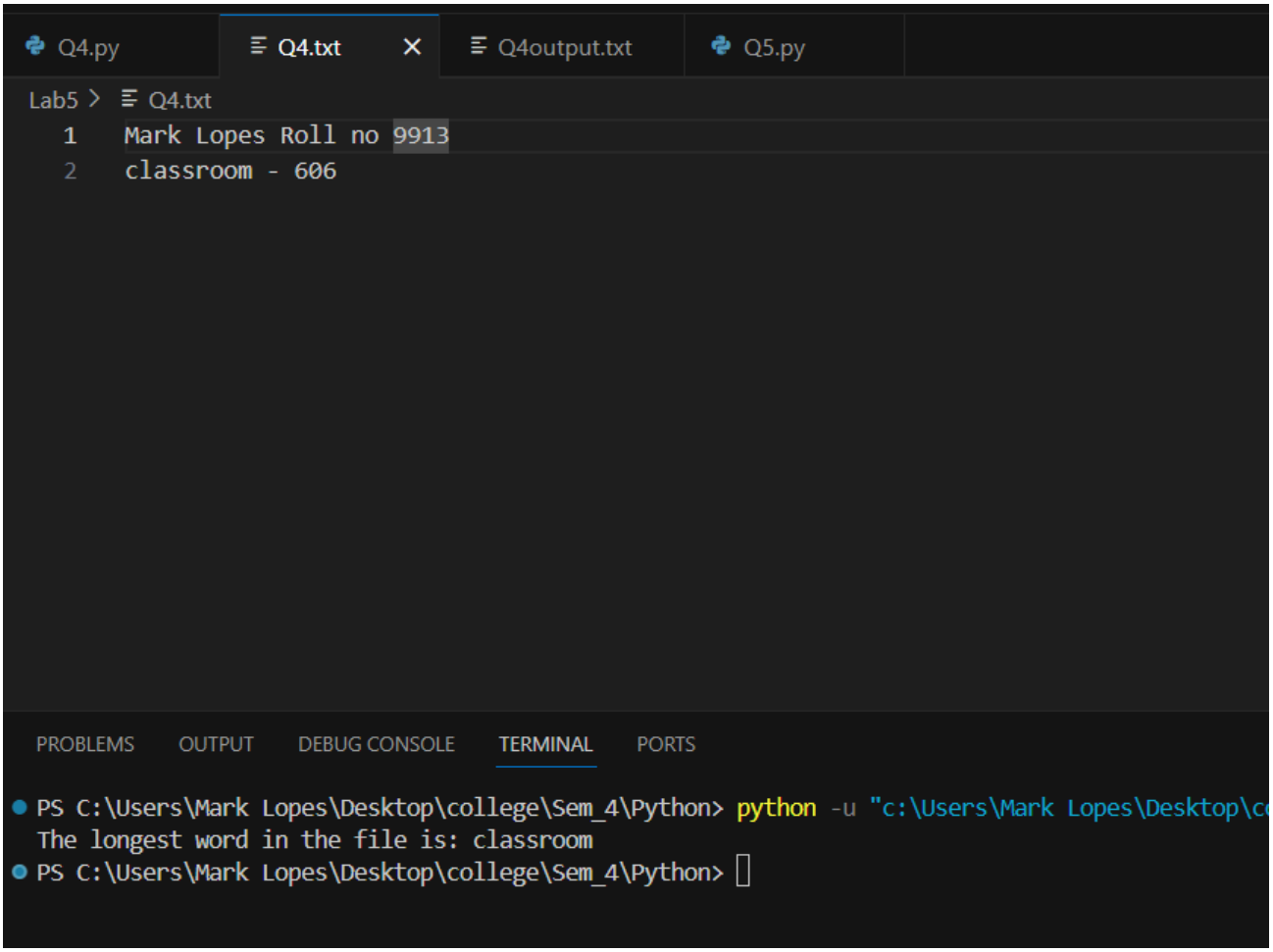
d.
Open the input file ("Python.txt") in read mode.
Read the entire content of the file into a string variable.
Initialize an empty string to store the modified content without digits.
Iterate through each character in the content:
a. Check if the character is a digit.
b. If it is not a digit, append it to the modified content string.
Close the input file.
Open the output file ("new.txt") in write mode.
Write the modified content string to the output file.
Close the output file.

Post Lab:

1. Write a program to find the longest word in a text file.

```
def find_longest_word(file_name):

    longest_word = ""

    max_length = 0
```

```
    with open(file_name, 'r') as file:
        for line in file:
            words = line.split()
            for word in words:
                word = word.strip(".,!?")
                if len(word) > max_length:
                    longest_word = word
                    max_length = len(word)

    return longest_word

file_name = "Lab5/Q4.txt"
longest_word = find_longest_word(file_name)
print("The longest word in the file is:", longest_word)
```



2. How are renaming and deleting performed on a file? Give the syntax for each.

Renaming a File:

import os

os.rename(current_file_name, new_file_name)

Deleting a File:

import os

os.remove(file_name)