Shreya Nair - 24BIT196

AIM: To develop Python programs that demonstrate various file handling operations including working with CSV, Excel-compatible data, vCards, directory manipulation, text processing, file copying, merging contents, and serialization of objects.

HARDWARE & SOFTWARE REQUIREMENTS: Hardware:16GB RAM, Intel Processor(i9), Software: Python (Version 3.x), Google Colab (Cloud-based)

SYSTEM CONFIGURATION: Operating System: Windows 11, IDE: Google Colab

THEORY: Python file handling lets us read, write, and manage files like text, CSV, and binary. It's useful for storing data, creating reports, handling contacts, and processing content efficiently.

REFERENCES: Geeks for Geeks, Python Documentation: https://docs.python.org/3/

1) Write a program to create a csv file that we can directly open in MS-Excel.

```
import csv
with open('student.csv', mode='w', newline='') as file:
    writer = csv.writer(file)
    writer.writerow(['Roll No', 'Name', 'Subject1', 'Subject2', 'Subject3'])
    writer.writerow([15, 'Sam', 78, 88, 90])
    writer.writerow([25, 'Tam', 67, 72, 80])
print("CSV file created.")
```

```
CSV file created.
```

2) Read the data stored in MS-Excel file and convert it into a dictionary. The record contains rollno, name of student, marks of three subjects. Also calculate total. Display the dictionary data on the monitor.

```
import csv

students = {}
with open('student.csv', mode='r') as file:
    reader = csv.DictReader(file)
    for row in reader:
        total = int(row['Subject1']) + int(row['Subject2']) + int(row['Subject3'])
        students[row['Roll No']] = {'Name': row['Name'], 'Marks': [int(row['Subject1']), int(row['Subject2']), int(row['Subject3'])], 'Total'

print("Student Data:", students)
```

```
Student Data: {'15': {'Name': 'Sam', 'Marks': [78, 88, 90], 'Total': 256}, '25': {'Name': 'Tam', 'Marks': [67, 72, 80], 'Total': 219}}
```

3) Accept contact details from the user and create a vcard that we can directly store in our mobile.

```
name = input("Enter Name: ")
phone = input("Enter Phone: ")
email = input("Enter Email: ")

vcard = f"""BEGIN:VCARD
VERSION:3.0
FN:{name}
TEL;TYPE=CELL:{phone}
EMAIL:{email}
END:VCARD"""

with open("contact.vcf", "w") as file:
    file.write(vcard)

print("vCard created.")
```

```
Enter Name: Shreya
Enter Phone: 1234567890
Enter Email: n@gmail.com
vCard created.
```

5) Write a program to copy contents of one file to another. While doing so, replace all lowercase characters into uppercase characters

```
with open('source.txt', 'r') as src_file, open('destination.txt', 'w') as dest_file:
    for line in src_file:
        dest_file.write(line.upper())
print("File copied with uppercase conversion.")
```

6) Write a program that merges lines alternatively from two files and writes the results to new file. If one file has less number of lines than the other, the remaining lines from the larger file should be simply copied into the target file.

```
with open('file1.txt') as f1, open('file2.txt') as f2, open('merged.txt', 'w') as out:
    lines1 = f1.readlines()
    lines2 = f2.readlines()
    max_len = max(len(lines1), len(lines2))
    for i in range(max_len):
        if i < len(lines1):
            out.write(lines1[i])
        if i < len(lines2):
            out.write(lines2[i])
print("Files merged alternately.")
```

7) If an Employee object contains following details:empcode, empname, Date of Joining, Salary Write a program to serialize and deserialize this data.

```
import pickle
class Employee:
    def __init__(self, empcode, empname, doj, salary):
        self.empcode = empcode
        self.empname = empname
        self.doj = doj
        self.salary = salary
emp = Employee(1001, "Rasvi", "2022-08-01", 50000)

with open("employee.pkl", "wb") as file:
    pickle.dump(emp, file)

with open("employee.pkl", "rb") as file:
    emp_loaded = pickle.load(file)

print("Deserialized Data:", vars(emp_loaded))
```

```
Deserialized Data: {'empcode': 1001, 'empname': 'Rasvi', 'doj': '2022-08-01', 'salary': 50000}
```

8) Given a text file, write a program to create another text file deleting the words ‘a’, ‘the’, ‘an’ and replacing each one of them with a blank space

```
remove_words = [' a ', ' the ', ' an ']

with open("original.txt", "r") as infile, open("cleaned.txt", "w") as outfile:
    for line in infile:
        for word in remove_words:
            line = line.replace(word, ' ')
        outfile.write(line)
print("Text file cleaned.")
remove_words = [' a ', ' the ', ' an ']

with open("original.txt", "r") as infile, open("cleaned.txt", "w") as outfile:
    for line in infile:
        for word in remove_words:
            line = line.replace(word, ' ')
        outfile.write(line)
print("Text file cleaned.")
```