DATA FILE HANDLING

Text Files and Binary Files

TEXT FILES

Functions:

1. **open(filename, mode)** → Opens a file in given mode (`r`, `w`, `a`, `rb`, `wb`, etc.)
2. **close()** → Closes file
3. **read()** → Reads whole file or given characters
4. **readline()** → Reads one line at a time
5. **readlines()** → Reads all lines into a list
6. **write()** → Writes string to file
7. **writelines()** → Writes list of strings to file
8. **seek(pos)** → Moves file pointer to position
9. **tell()** → Returns file pointer position

TEXT FILE PROGRAMS

1. Write to text file

```
f = open("data.txt", "w")
f.write("Hello, this is a text file.\nWelcome!")
f.close()
```

2. Read entire file

```
f = open("data.txt", "r")
print(f.read())
f.close()
```

3. Read first 10 characters

```
f = open("data.txt", "r")
print(f.read(10))
f.close()
```

4. Read one line

```
f = open("data.txt", "r")
print(f.readline())
f.close()
```

5. Read all lines into list

```
f = open("data.txt", "r")
lines = f.readlines()
```

```
print(lines)
f.close()
```

6. Append data

```
f = open("data.txt", "a")
f.write("\nAppending new line.")
f.close()
```

7. Writelines

```
f = open("data.txt", "w")
f.writelines(["Line 1\n", "Line 2\n", "Line 3\n"])
f.close()
```

8. Seek and Tell

```
f = open("data.txt", "r")
f.seek(6)
print("Pointer at:", f.tell())
print(f.read(5))
f.close()
```

9. Count words in file

```
f = open("data.txt", "r")
text = f.read()
print("Word count:", len(text.split()))
f.close()
```

10. Copy file content

```
f1 = open("data.txt", "r")
f2 = open("copy.txt", "w")
f2.write(f1.read())
f1.close()
f2.close()
```

BINARY FILES (using `pickle`)

Functions:

- **dump(obj, file)** → Writes Python object to binary file
- **load(file)** → Reads Python object from binary file

BINARY FILE PROGRAMS

1. Write list to binary file

```
import pickle
data = [1, 2, 3, 4, 5]
```

```
f = open("data.dat", "wb")
pickle.dump(data, f)
f.close()
```

2. Read list from binary file

```
import pickle
f = open("data.dat", "rb")
data = pickle.load(f)
print(data)
f.close()
```

3. Store dictionary

```
import pickle
d = {"name": "John", "age": 25}
f = open("dict.dat", "wb")
pickle.dump(d, f)
f.close()
```

4. Read dictionary

```
import pickle
f = open("dict.dat", "rb")
d = pickle.load(f)
print(d)
f.close()
```

5. Append multiple records

```
import pickle
records = [{"id":1,"name":"A"}, {"id":2,"name":"B"}]
f = open("records.dat", "ab")
for r in records:
    pickle.dump(r, f)
f.close()
```

6. Read multiple records

```
import pickle
f = open("records.dat", "rb")
try:
    while True:
        print(pickle.load(f))
except EOFError:
    pass
f.close()
```

7. Seek & Tell in binary file

```
f = open("data.dat", "rb")
f.seek(0, 2)  # Move to end
print("File size:", f.tell(), "bytes")
f.close()
```

8. Update a record

```
import pickle
f = open("data.dat", "rb")
data = pickle.load(f)
f.close()
data.append(6)
f = open("data.dat", "wb")
pickle.dump(data, f)
f.close()
```

9. Serialize tuple

```
import pickle
t = (10, 20, 30)
f = open("tuple.dat", "wb")
pickle.dump(t, f)
f.close()
```

10. Deserialize tuple

```
import pickle
f = open("tuple.dat", "rb")
t = pickle.load(f)
print(t)
f.close()
```

DATA FILE HANDLING

Text Files and Binary Files

TEXT FILES

Common Functions:

1. `open(filename, mode)` – Opens a file
2. `close()` – Closes the file
3. `read()` – Reads whole file or given characters
4. `readline()` – Reads one line
5. `readlines()` – Reads all lines into a list
6. `write()` – Writes a string
7. `writelines()` – Writes list of strings
8. `seek(pos)` – Moves pointer to given position
9. `tell()` – Returns pointer position

TEXT FILE PROGRAMS

1. Write to text file

```
f = open("data.txt", "w")
f.write("Hello, this is a text file.\nWelcome!")
f.close()
```

2. Read entire file

```
f = open("data.txt", "r")
print(f.read())
f.close()
```

3. Read first 10 characters

```
f = open("data.txt", "r")
print(f.read(10))
f.close()
```

4. Read one line

```
f = open("data.txt", "r")
print(f.readline())
f.close()
```

5. Read all lines into list

```
f = open("data.txt", "r")
lines = f.readlines()
print(lines)
f.close()
```

6. Append data

```
f = open("data.txt", "a")
f.write("\nAppending new line.")
f.close()
```

7. Writelines

```
f = open("data.txt", "w")
f.writelines(["Line 1\n", "Line 2\n", "Line 3\n"])
f.close()
```

8. Seek and Tell

```
f = open("data.txt", "r")
f.seek(6)
print("Pointer at:", f.tell())
print(f.read(5))
f.close()
```

9. Count words in file

```
f = open("data.txt", "r")
text = f.read()
```

```
print("Word count:", len(text.split()))
f.close()
```

10. Copy file content

```
f1 = open("data.txt", "r")
f2 = open("copy.txt", "w")
f2.write(f1.read())
f1.close()
f2.close()
```

EXTRA TEXT FILE PROGRAMS

11. Search a certain word in file

```
word = input("Enter word to search: ")
found = False
f = open("data.txt", "r")
for line in f:
    if word in line:
        found = True
        break
f.close()
if found:
    print("Word found")
else:
    print("Word not found")
```

12. Copy and create new file

```
f1 = open("data.txt", "r")
f2 = open("newfile.txt", "w")
for line in f1:
    f2.write(line)
f1.close()
f2.close()
```

13. Count total characters

```
f = open("data.txt", "r")
content = f.read()
print("Total characters:", len(content))
f.close()
```

14. Count total words

```
f = open("data.txt", "r")
content = f.read()
print("Total words:", len(content.split()))
f.close()
```

15. Replace word with new one

```
old = input("Word to replace: ")
new = input("New word: ")
```

```
f = open("data.txt", "r")
content = f.read()
f.close()
content = content.replace(old, new)
f = open("data.txt", "w")
f.write(content)
f.close()
```

BINARY FILES

Extra Functions (pickle module):

- `dump(obj, file)` – Save Python object
- `load(file)` – Read Python object

BINARY FILE PROGRAMS

1. Write list to binary file

```
import pickle
data = [1, 2, 3, 4, 5]
f = open("data.dat", "wb")
pickle.dump(data, f)
f.close()
```

2. Read list from binary file

```
import pickle
f = open("data.dat", "rb")
data = pickle.load(f)
print(data)
f.close()
```

3. Store dictionary

```
import pickle
d = {"name": "John", "age": 25}
f = open("dict.dat", "wb")
pickle.dump(d, f)
f.close()
```

4. Read dictionary

```
import pickle
f = open("dict.dat", "rb")
d = pickle.load(f)
print(d)
f.close()
```

5. Append multiple records

```
import pickle
```

```
records = [{"id":1,"name":"A"}, {"id":2,"name":"B"}]
f = open("records.dat", "ab")
for r in records:
    pickle.dump(r, f)
f.close()
```

6. Read multiple records

```
import pickle
f = open("records.dat", "rb")
try:
    while True:
        print(pickle.load(f))
except EOFError:
    pass
f.close()
```

7. Seek & Tell in binary

```
f = open("data.dat", "rb")
f.seek(0, 2)
print("File size:", f.tell(), "bytes")
f.close()
```

8. Update a record

```
import pickle
f = open("data.dat", "rb")
data = pickle.load(f)
f.close()
data.append(6)
f = open("data.dat", "wb")
pickle.dump(data, f)
f.close()
```

9. Serialize tuple

```
import pickle
t = (10, 20, 30)
f = open("tuple.dat", "wb")
pickle.dump(t, f)
f.close()
```

10. Deserialize tuple

```
import pickle
f = open("tuple.dat", "rb")
t = pickle.load(f)
print(t)
f.close()
```

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