235229122-lab8-pavithiran-v

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Programming and Data Structures with Python Lab8. Managing Contacts Using Files and Sorting Algorithms

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```
[1]: #1
class Contact:
    def __init__(self, name, phone):
        self.name = name
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

# Example usage
contact1 = Contact("John Doe", "123-456-7890")
contact2 = Contact("Jane Smith", "987-654-3210")

print(contact1)
print(contact2)
```

```
Name: John Doe, Phone: 123-456-7890
Name: Jane Smith, Phone: 987-654-3210
```

```
[2]: #2
class Contact:
    def __init__(self, name, phone):
        self.name = name
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

def load_contacts(file_name):
    contacts = []

    with open(file_name, 'r') as file:
        for line in file:
            name, phone = line.strip().split(',')
```

```
            contact = Contact(name, phone)
            contacts.append(contact)

    return contacts

# Example usage
contact_list = load_contacts("contacts.txt")
for contact in contact_list:
    print(contact)
```

```
Name: Jane Smith, Phone:    987-654-3210
Name: John Doe, Phone:    123-456-7890
```

[3]:
```python
#3
class Contact:
    def __init__(self, name, phone):
        self.name = name
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

def save_contacts(file_name, contacts):
    with open(file_name, 'w') as file:
        for contact in contacts:
            file.write(f"{contact.name}, {contact.phone}\n")

# Example usage
contact_list = [
    Contact("John Doe", "123-456-7890"),
    Contact("Jane Smith", "987-654-3210")
]

save_contacts("contacts.txt", contact_list)
```

[4]:
```python
#4
class Contact:
    def __init__(self, name, phone):
        self.name = name
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

def display_contacts(file_name, contacts):
    for contact in contacts:
        print(contact)
```

```python
# Example usage
contact_list = [
    Contact("John Doe", "123-456-7890"),
    Contact("Jane Smith", "987-654-3210")
]

display_contacts("contacts.txt", contact_list)
```

```
Name: John Doe, Phone: 123-456-7890
Name: Jane Smith, Phone: 987-654-3210
```

[5]:
```python
#5
class Contact:
    def __init__(self, name, phone):
        self.name = name
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

def bubble_sort(contacts):
    n = len(contacts)
    for i in range(n):
        for j in range(0, n - i - 1):
            if contacts[j].name > contacts[j + 1].name:
                contacts[j], contacts[j + 1] = contacts[j + 1], contacts[j]

contact_list = [
    Contact("John Doe", "123-456-7890"),
    Contact("Jane Smith", "987-654-3210"),
    Contact("Alice Johnson", "555-123-4567")
]

bubble_sort(contact_list)

for contact in contact_list:
    print(contact)
```

```
Name: Alice Johnson, Phone: 555-123-4567
Name: Jane Smith, Phone: 987-654-3210
Name: John Doe, Phone: 123-456-7890
```

[17]:
```python
#6
class Contact:
    def __init__(self, name, phone):
        self.name = name
```

```python
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

def selection_sort(contacts):
    n = len(contacts)
    for i in range(1, n):
        current_contact = contacts[i]
        j = i - 1
        while j >= 0 and contacts[j].name > current_contact.name:
            contacts[j + 1] = contacts[j]
            j -= 1
        contacts[j + 1] = current_contact

# Example usage
contact_list = [
    Contact("John Doe", "123-456-7890"),
    Contact("Jane Smith", "987-654-3210"),
    Contact("Alice Johnson", "555-123-4567")
]

selection_sort(contact_list)

for contact in contact_list:
    print(contact)
```

```
Name: Alice Johnson, Phone: 555-123-4567
Name: Jane Smith, Phone: 987-654-3210
Name: John Doe, Phone: 123-456-7890
```

[7]:
```python
#7
class Contact:
    def __init__(self, name, phone):
        self.name = name
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

def selection_sort(contacts):
    n = len(contacts)
    for i in range(n - 1):
        min_index = i
        for j in range(i + 1, n):
            if contacts[j].name < contacts[min_index].name:
                min_index = j
```

```python
        # Swap the elements
        contacts[i], contacts[min_index] = contacts[min_index], contacts[i]

# Example usage
contact_list = [
    Contact("John Doe", "123-456-7890"),
    Contact("Jane Smith", "987-654-3210"),
    Contact("Alice Johnson", "555-123-4567")
]

selection_sort(contact_list)

for contact in contact_list:
    print(contact)
```

```
Name: Alice Johnson, Phone: 555-123-4567
Name: Jane Smith, Phone: 987-654-3210
Name: John Doe, Phone: 123-456-7890
```

[8]:
```python
#8
class Contact:
    def __init__(self, name, phone):
        self.name = name
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

def load_contacts(file_name):
    contacts = []

    with open(file_name, 'r') as file:
        for line in file:
            name, phone = line.strip().split(',')
            contact = Contact(name, phone)
            contacts.append(contact)

    return contacts

# Load contacts from a file
file_name = "contacts.txt"  # Replace with the actual file name
contact_list = load_contacts(file_name)

# Print the loaded contacts
for contact in contact_list:
    print(contact)
```

```
Name: John Doe, Phone:  123-456-7890
Name: Jane Smith, Phone:  987-654-3210
```

```python
[9]: #9
class Contact:
    def __init__(self, name, phone):
        self.name = name
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

def display_contacts(file_name):
    contacts = []

    with open(file_name, 'r') as file:
        for line in file:
            name, phone = line.strip().split(',')
            contact = Contact(name, phone)
            contacts.append(contact)

    for contact in contacts:
        print(contact)

# Display unsorted contacts from a file
file_name = "contacts.txt"  # Replace with the actual file name
display_contacts(file_name)
```

```
Name: John Doe, Phone:  123-456-7890
Name: Jane Smith, Phone:  987-654-3210
```

```python
[10]: #10
class Contact:
    def __init__(self, name, phone):
        self.name = name
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

def bubble_sort(contacts):
    n = len(contacts)
    for i in range(n):
        for j in range(0, n - i - 1):
            if contacts[j].name > contacts[j + 1].name:
                contacts[j], contacts[j + 1] = contacts[j + 1], contacts[j]
```

```python
def load_contacts(file_name):
    contacts = []

    with open(file_name, 'r') as file:
        for line in file:
            name, phone = line.strip().split(',')
            contact = Contact(name, phone)
            contacts.append(contact)

    return contacts

def display_contacts(contacts):
    for contact in contacts:
        print(contact)

# Load contacts from a file
file_name = "contacts.txt"  # Replace with the actual file name
contact_list = load_contacts(file_name)

# Sort contacts using bubble sort
bubble_sort(contact_list)

# Display sorted contacts
display_contacts(contact_list)
```

```
Name: Jane Smith, Phone:  987-654-3210
Name: John Doe, Phone:  123-456-7890
```

```python
#11
class Contact:
    def __init__(self, name, phone):
        self.name = name
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

def bubble_sort(contacts):
    n = len(contacts)
    for i in range(n):
        for j in range(0, n - i - 1):
            if contacts[j].name > contacts[j + 1].name:
                contacts[j], contacts[j + 1] = contacts[j + 1], contacts[j]

def load_contacts(file_name):
    contacts = []
```

```python
    with open(file_name, 'r') as file:
        for line in file:
            name, phone = line.strip().split(',')
            contact = Contact(name, phone)
            contacts.append(contact)

    return contacts

def display_contacts(contacts):
    for contact in contacts:
        print(contact)

# Load contacts from a file
file_name = "contacts.txt"  # Replace with the actual file name
contact_list = load_contacts(file_name)

# Sort contacts using bubble sort
bubble_sort(contact_list)

# Display sorted contacts
display_contacts(contact_list)
```

```
Name: Jane Smith, Phone:  987-654-3210
Name: John Doe, Phone:  123-456-7890
```

[12]:
```python
#12
class Contact:
    def __init__(self, name, phone):
        self.name = name
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

def insertion_sort(contacts):
    n = len(contacts)
    for i in range(1, n):
        current_contact = contacts[i]
        j = i - 1
        while j >= 0 and contacts[j].name > current_contact.name:
            contacts[j + 1] = contacts[j]
            j -= 1
        contacts[j + 1] = current_contact

def load_contacts(file_name):
    contacts = []
```

```
        with open(file_name, 'r') as file:
            for line in file:
                name, phone = line.strip().split(',')
                contact = Contact(name, phone)
                contacts.append(contact)

        return contacts

def display_contacts(contacts):
    for contact in contacts:
        print(contact)

# Load contacts from a file
file_name = "contacts.txt"  # Replace with the actual file name
contact_list = load_contacts(file_name)

# Sort contacts using insertion sort
insertion_sort(contact_list)

# Display sorted contacts
display_contacts(contact_list)
```

```
Name: Jane Smith, Phone:  987-654-3210
Name: John Doe, Phone:  123-456-7890
```

[13]:
```
#13
class Contact:
    def __init__(self, name, phone):
        self.name = name
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

def insertion_sort(contacts):
    n = len(contacts)
    for i in range(1, n):
        current_contact = contacts[i]
        j = i - 1
        while j >= 0 and contacts[j].name > current_contact.name:
            contacts[j + 1] = contacts[j]
            j -= 1
        contacts[j + 1] = current_contact

def load_contacts(file_name):
    contacts = []
```

```python
    with open(file_name, 'r') as file:
        for line in file:
            name, phone = line.strip().split(',')
            contact = Contact(name, phone)
            contacts.append(contact)

    return contacts

def display_contacts(contacts):
    for contact in contacts:
        print(contact)

# Load contacts from a file
file_name = "contacts.txt"  # Replace with the actual file name
contact_list = load_contacts(file_name)

# Sort contacts using insertion sort
insertion_sort(contact_list)

# Display sorted contacts
display_contacts(contact_list)
```

```
Name: Jane Smith, Phone:  987-654-3210
Name: John Doe, Phone:  123-456-7890
```

[14]:
```python
#14
class Contact:
    def __init__(self, name, phone):
        self.name = name
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

def selection_sort(contacts):
    n = len(contacts)
    for i in range(n - 1):
        min_index = i
        for j in range(i + 1, n):
            if contacts[j].name < contacts[min_index].name:
                min_index = j
        contacts[i], contacts[min_index] = contacts[min_index], contacts[i]

def load_contacts(file_name):
    contacts = []

    with open(file_name, 'r') as file:
```

```
        for line in file:
            name, phone = line.strip().split(',')
            contact = Contact(name, phone)
            contacts.append(contact)

    return contacts

def display_contacts(contacts):
    for contact in contacts:
        print(contact)

# Load contacts from a file
file_name = "contacts.txt"  # Replace with the actual file name
contact_list = load_contacts(file_name)

# Sort contacts using selection sort
selection_sort(contact_list)

# Display sorted contacts
display_contacts(contact_list)
```

```
Name: Jane Smith, Phone:  987-654-3210
Name: John Doe, Phone:  123-456-7890
```

[15]:
```
#15
class Contact:
    def __init__(self, name, phone):
        self.name = name
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

def selection_sort(contacts):
    n = len(contacts)
    for i in range(n - 1):
        min_index = i
        for j in range(i + 1, n):
            if contacts[j].name < contacts[min_index].name:
                min_index = j
        contacts[i], contacts[min_index] = contacts[min_index], contacts[i]

def load_contacts(file_name):
    contacts = []

    with open(file_name, 'r') as file:
        for line in file:
```

```
                name, phone = line.strip().split(',')
                contact = Contact(name, phone)
                contacts.append(contact)

    return contacts

def display_contacts(contacts):
    for contact in contacts:
        print(contact)

# Load contacts from a file
file_name = "contacts.txt"  # Replace with the actual file name
contact_list = load_contacts(file_name)

# Sort contacts using selection sort
selection_sort(contact_list)

# Display sorted contacts
display_contacts(contact_list)
```

```
Name: Jane Smith, Phone:  987-654-3210
Name: John Doe, Phone:  123-456-7890
```

[16]:
```
#16
class Contact:
    def __init__(self, name, phone):
        self.name = name
        self.phone = phone

    def __str__(self):
        return f"Name: {self.name}, Phone: {self.phone}"

def selection_sort(contacts):
    n = len(contacts)
    for i in range(n - 1):
        min_index = i
        for j in range(i + 1, n):
            if contacts[j].name < contacts[min_index].name:
                min_index = j
        contacts[i], contacts[min_index] = contacts[min_index], contacts[i]

def load_contacts(file_name):
    contacts = []

    with open(file_name, 'r') as file:
        for line in file:
            name, phone = line.strip().split(',')
```

```python
            contact = Contact(name, phone)
            contacts.append(contact)

    return contacts

def save_contacts(file_name, contacts):
    with open(file_name, 'w') as file:
        for contact in contacts:
            file.write(f"{contact.name}, {contact.phone}\n")

def display_contacts(contacts):
    for contact in contacts:
        print(contact)

# Load contacts from a file
file_name = "contacts.txt"  # Replace with the actual file name
contact_list = load_contacts(file_name)

# Sort contacts using selection sort
selection_sort(contact_list)

# Save sorted contacts back to the file
save_contacts(file_name, contact_list)

# Display sorted contacts
display_contacts(contact_list)
```

Name: Jane Smith, Phone: 987-654-3210
Name: John Doe, Phone: 123-456-7890