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import sys

def initial_phonebook():
    rows, cols = int(input("Please enter initial number of contacts: ")), 5

phone_book = []
    print(phone_book)
    for i in range(rows):
        print("\nEnter contact %d details in the following order (ONLY):" %
(i+1))
        print("NOTE: * indicates mandatory fields")

print("................................................................")
        temp = []
        for j in range(cols):

                    if j == 0:
                temp.append(str(input("Enter name*: ")))

                if temp[j] == '' or temp[j] == ' ':
                    sys.exit(
                        "Name is a mandatory field. Process exiting due to blank
field...")
                                if j == 1:
                temp.append(int(input("Enter number*: ")))
if j == 2:
                temp.append(str(input("Enter e-mail address: ")))
if temp[j] == '' or temp[j] == ' ':
                    temp[j] = None

            if j == 3:
                temp.append(str(input("Enter date of birth(dd/mm/yy): ")))
                if temp[j] == '' or temp[j] == ' ':

                                    temp[j] = None
            if j == 4:
                temp.append(
                    str(input("Enter category(Family/Friends/Work/Others): ")))
if temp[j] == "" or temp[j] == ' ':
                    temp[j] = None

        phone_book.append(temp)
print(phone_book)
    return phone_book

def menu():

print("*********************************************************************")
    print("\t\t\tSMARTPHONE DIRECTORY", flush=False)

print("*********************************************************************")
    print("\tYou can now perform the following operations on this phonebook\n")
    print("1. Add a new contact")
    print("2. Remove an existing contact")
    print("3. Delete all contacts")
    print("4. Search for a contact")
    print("5. Display all contacts")
    print("6. Exit phonebook")

    choice = int(input("Please enter your choice: "))

    return choice

def add_contact(pb):
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        dip = []
    for i in range(len(pb[0])):
        if i == 0:
            dip.append(str(input("Enter name: ")))
        if i == 1:
            dip.append(int(input("Enter number: ")))
        if i == 2:
            dip.append(str(input("Enter e-mail address: ")))
        if i == 3:
            dip.append(str(input("Enter date of birth(dd/mm/yy): ")))
        if i == 4:
            dip.append(
                str(input("Enter category(Family/Friends/Work/Others): ")))
    pb.append(dip)

def remove_existing(pb):
query = str(
        input("Please enter the name of the contact you wish to remove: "))

    temp = 0

    for i in range(len(pb)):
        if query == pb[i][0]:
            temp += 1
                        print(pb.pop(i))

            print("This query has now been removed")

            return pb
    if temp == 0:
        print("Sorry, you have entered an invalid query.\
    Please recheck and try again later.")

        return pb

def delete_all(pb):
return pb.clear()

def search_existing(pb):
        choice = int(input("Enter search criteria\n\n\
    1. Name\n2. Number\n3. Email-id\n4. DOB\n5.
Category(Family/Friends/Work/Others)\
    \nPlease enter: "))

    temp = []
    check = -1

    if choice == 1:
            query = str(
            input("Please enter the name of the contact you wish to search: "))
        for i in range(len(pb)):
            if query == pb[i][0]:
                check = i
                temp.append(pb[i])

    elif choice == 2:
           query = int(
            input("Please enter the number of the contact you wish to search:
"))
        for i in range(len(pb)):
            if query == pb[i][1]:
                check = i
                temp.append(pb[i])
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 elif choice == 3:
            query = str(input("Please enter the e-mail ID\
        of the contact you wish to search: "))
        for i in range(len(pb)):
            if query == pb[i][2]:                check = i
                temp.append(pb[i])

    elif choice == 4:
        query = str(input("Please enter the DOB (in dd/mm/yyyy format ONLY)\
            of the contact you wish to search: "))
        for i in range(len(pb)):
            if query == pb[i][3]:
                check = i
                temp.append(pb[i])

    elif choice == 5:
            query = str(
            input("Please enter the category of the contact you wish to search:
"))
        for i in range(len(pb)):
            if query == pb[i][4]:
                check = i
                temp.append(pb[i])


    else:
            print("Invalid search criteria")
        return -1

    if check == -1:
        return -1
            else:
        display_all(temp)
        return check


def display_all(pb):
    if not pb:
            print("List is empty: []")
    else:
        for i in range(len(pb)):
            print(pb[i])

def thanks():

print("**********************************************************************")
    print("Thank you for using our Smartphone directory system.")
    print("Please visit again!")

print("**********************************************************************")
    sys.exit("Goodbye, have a nice day ahead!")

print("......................................................................")
print("Hello dear user, welcome to our smartphone directory system")
print("You may now proceed to explore this directory")
print("......................................................................")
ch = 1
pb = initial_phonebook()
while ch in (1, 2, 3, 4, 5):
    ch = menu()
    if ch == 1:
        pb = add_contact(pb)
    elif ch == 2:
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    pb = remove_existing(pb)
elif ch == 3:
    pb = delete_all(pb)
elif ch == 4:
    d = search_existing(pb)
    if d == -1:
        print("The contact does not exist. Please try again")
elif ch == 5:
    display_all(pb)
else:
    thanks()
```