```python
import sys

def initial_phonebook():
  rows, cols = int(input("Enter initial number of contacts: ")), 4

  phone_book = []
  print(phone_book)
  for i in range(rows):
    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

    phone_book.append(temp)

  print(phone_book)
  return phone_book

def menu():
  print("****************************************************************")
  print("1. Add a new contact")
  print("2. Delete an existing contact")
  print("3. Delete all contacts")
  print("4. Search for a contact")
  print("5. Show all contacts")
  print("6. Exit ")

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

  return choice

def add_contact(pb):
  din = []
```

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  u-p    LJ
    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): ")))

    pb.append(dip)
    return pb

# This function is to remove a contact's details from existing phonebook
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

# This function will delete all the entries in the phonebook
def delete_all(pb):
  return pb.clear()

# This function searches for an existing contact and displays the result
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])
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        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])

    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

  # this function displays all content of phonebook
  def display_all(pb):
    if not pb:
      print("List is empty: []")
    else:
      for i in range(len(pb)):
        print(pb[i])


  # Main function
  print("....................................PHONE DIRECTORY.............................."
```

```
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:
    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)
```

```
    Please enter your choice: 1
    Enter name: Karla
    Enter number: 8693756390
    Enter e-mail address: karla@gmail.com
    Enter date of birth(dd/mm/yy): 13/08/02
    **********************************************************************
    1. Add a new contact
    2. Delete an existing contact
    3. Delete all contacts
    4. Search for a contact
    5. Show all contacts
    6. Exit
    Please enter your choice: 5
    ['Mark', 3748593846, 'mark@gmail.com', '23/04/99']
    ['Karla', 8693756390, 'karla@gmail.com', '13/08/02']
    **********************************************************************
    1. Add a new contact
    2. Delete an existing contact
    3. Delete all contacts
    4. Search for a contact
    5. Show all contacts
    6. Exit
    Please enter your choice: 2
    Please enter the name of the contact you wish to remove: Mark

    ['Mark', 3748593846, 'mark@gmail.com', '23/04/99']
    This query has now been removed
    **********************************************************************
    1. Add a new contact
    2. Delete an existing contact
    3. Delete all contacts
    4. Search for a contact
    5. Show all contacts
    6. Exit
    Please enter your choice: 5
    ['Karla', 8693756390, 'karla@gmail.com', '13/08/02']
    **********************************************************************
    1. Add a new contact
    2. Delete an existing contact
    3. Delete all contacts
    4. Search for a contact
    5. Show all contacts
```

```
5. Show all contacts
6. Exit
Please enter your choice: 3
*********************************************************************
1. Add a new contact
2. Delete an existing contact
3. Delete all contacts
4. Search for a contact
5. Show all contacts
6. Exit
Please enter your choice: 5
List is empty: []
*********************************************************************
1. Add a new contact
2. Delete an existing contact
3. Delete all contacts
4. Search for a contact
5. Show all contacts
6. Exit
```

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