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YEAR: SE **DIV:** A(A2)

EXPRIMENT NO :4

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print("Samarth Khorate(22539)SE AIDS")
def fibonacci_search(contacts, name):
    def generate_fibonacci_sequence(n):
        fib = [0, 1]
        while fib[-1] < n:
            fib.append(fib[-1] + fib[-2])
        return fib

    fib = generate_fibonacci_sequence(len(contacts))
    offset = -1

    while fib[-2] > 1:
        i = min(offset + fib[-2], len(contacts) - 1)
        if contacts[i][0] < name:
            fib = fib[:-2]
            offset = i
        elif contacts[i][0] > name:
            fib = fib[:-1]
        else:
            return i

    if len(contacts) > 0 and contacts[offset + 1][0] == name:
        return offset + 1
    return -1
```

```
def insert_contact(contacts, name, number):
    index = fibonacci_search(contacts, name)
    if index == -1:
        contacts.append((name, number))
        contacts.sort(key=lambda x: x[0])  # Sort by names
        print(f"{name} added to the phonebook.")
    else:
        print(f"{name} is already in the phonebook.")

def search_contact(contacts, name):
    index = fibonacci_search(contacts, name)
    if index != -1:
        print(f"Name: {contacts[index][0]}, Mobile: {contacts[index][1]}")
    else:
        print(f"{name} is not found in the phonebook.")

def main():
    contacts = []

    while True:
        print("\nPhonebook Options:")
        print("1. Add a contact")
        print("2. Search for a contact (Fibonacci Search)")
        print("3. Quit")

        choice = input("Enter your choice: ")

        if choice == '1':
            name = input("Enter the name: ")
            number = input("Enter the mobile number: ")
            insert_contact(contacts, name, number)
```

```
        elif choice == '2':
            name = input("Enter the name to search for: ")
            search_contact(contacts, name)

        elif choice == '3':
            print("Goodbye!")
            break

if __name__ == "__main__":
    main()
```

OUTPUT: