**Assignment- A04**

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**Problem Statement:**

a) Write a Python program to store names and mobile numbers of your friends in sorted order on names. Search your friend from list using binary search (recursive and non- recursive). Insert friend if not present in phone-book

# b) Write a Python program to store names and mobile numbers of your friends in sorted order on names. Search your friend from list using Fibonacci search. Insert friend if not present in phone-book.

**Program:**

def accept(A):

n=int(input("\n Enter total nuber of friends:"))

print("\n Enter your friends information: ")

for i in range(n):

print("\n Enter friend %d information :"%(i+1))

name=input("\n Enter the name: ")

mob=input("\n Enter mobile number: ")

X=[name,mob]

A.append(X)

return n

def display(A,n):

if(n==0):

print("\n No record found")

else:

print("\n Your friends information is : ")

for i in range(n):

print("\tFriend no. %d : %s %s"%((i+1),A[i][0],A[i][1]))

def iteractive\_Binary(A,n,s):

lb=0

ub=n-1

while(lb<=ub):

mid=int((lb+ub)/2)

if(s==A[mid][0]):

return mid

else:

if(s<A[mid][0]):

ub=mid-1

else:

lb=mid+1

return -1

def recursive\_Binary(A,lb,ub,s):

if(lb<=ub):

mid=int((lb+ub)/2)

if(s==A[mid][0]):

return mid

else:

if(s<A[mid][0]):

return recursive\_Binary(A,lb,mid-1,s)

else:

return recursive\_Binary(A,mid+1,ub,s)

else:

return -1

def Fibonacci(A,n,s):

f1=0

f2=1

f3=f1+f2

offset=-1

while(f3<=n):

f1=f2

f2=f3

f3=f1+f2

while(f3>=0):

i=min(offset+f1,n-1)

if(A[i][0]==s):

return i

else:

if(s<A[i][0]):

f3=f1

f2=f3-f2

f1=f3-f2

else:

f3=f2

f2=f1

f1=f3-f2

offset=i

return -1

def insert(A,n,s):

mob=input("\nEnter your friends mobile number : ")

X=[s,mob]

A.append(X)

j=n-1

while(j>=0):

if(A[j][0]<=s):

break

else:

A[j+1]=A[j]

j=j-1

A[j+1]=X

display(A,n+1)

def main():

A=[]

while True:

print("\nPress 1.Accept friends information :")

print("\nPress 2.Iteractive Binary Search :")

print("\nPress 3.Recursive Bunary Search :")

print("\nPress 4.Fibonacci Search :")

print("\nPress 5.Display Record :")

print("\nPress 6.Exit :")

ch=int(input("\n Enter your choice :"))

if(ch==1):

n=accept(A)

display(A,n)

elif(ch==2):

s=input("\n Enter the friend you want to search: ")

f=iteractive\_Binary(A,n,s)

if(f==-1):

print("\nFriend id not present")

insert(A,n,s)

n=n+1

else:

print("Friend id present")

elif(ch==3):

s=input("\n Enter the friend you want to search: ")

f=recursive\_Binary(A,0,n-1,s)

if(f==-1):

print("\nFriend id not present")

insert(A,n,s)

n=n+1

else:

print("\nFriend id present")

elif(ch==4):

s=input("\n Enter the friend you want to search: ")

f=Fibonacci(A,n,s)

if(f==-1):

print("\nFriend id not present")

insert(A,n,s)

n=n+1

else:

print("\nFriend id present")

elif(ch==5):

display(A,n)

elif(ch==6):

break

main()

