# Define the size of the hash table

size = 10

# Initialize two hash tables for Linear and Quadratic Probing

hashtable = []

hashtable1 = []

for i in range(size):

hashtable.append(0) # Fill with zeros

hashtable1.append(0) # Fill with zeros

# Linear Probing Hash Function

def hash\_v(num):

index = num % size # Compute hash index

# Find the next available slot if collision occurs

while hashtable[index] != 0:

index = (index + 1) % size # Move to the next index (circular handling)

hashtable[index] = num # Store the number in the hash table

# Quadratic Probing Hash Function

def quadratic\_v(num):

index1 = num % size # Compute hash index

if hashtable1[index1] == 0:

hashtable1[index1] = num # Store if no collision

else:

for k in range(1, size): # Try quadratic probing

t = (index1 + k \* k) % size # Quadratic formula to find new index

if hashtable1[t] == 0:

hashtable1[t] = num # Store number at empty slot

break

# Function to search for an element in the hash table

def find(num, hash\_table):

index2 = num % size # Compute hash index

if hash\_table[index2] == num:

print("Found", num)

else:

while hash\_table[index2] != 0:

if hash\_table[index2] == num:

print("Found", num)

return

index2 = (index2 + 1) % size # Move to the next index (circular handling)

print("Not found", num)

# Main function to run the program

def main():

while True:

# Display menu options

print("1. Linear Probing")

print("2. Quadratic Probing")

print("3. Find Element")

print("4. Exit")

# Get user choice

cd = int(input("Enter choice: "))

if cd == 1:

n = int(input("Enter total elements: "))

for j in range(n):

h = int(input("Enter phone number: "))

hash\_v(h) # Insert using Linear Probing

print("Hashtable using Linear Probing: ", hashtable)

elif cd == 2:

m = int(input("Enter total elements: "))

for j in range(m):

q = int(input("Enter phone number: "))

quadratic\_v(q) # Insert using Quadratic Probing

print("Hashtable using Quadratic Probing: ", hashtable1)

elif cd == 3:

n = int(input("Enter number to be found: "))

find(n, hashtable) # Search in hash table

elif cd == 4:

print("End of Program")

break # Exit loop

else:

print("Enter a valid choice")

# Run the main function

main()