Assignment 1:

```
class hashtable:
    def __init__(self):
        self.m= (int(input("enter size of hash table")))
        self.hashTable = [None] *self.m
        self.elecount=0
        self.comparions=0
        print(self.hashTable)
    def hashFunction(self,key):
        return key % self.m


    def isfull(self):
        if self.elecount== self.m:
            return True
        else:
            return False


    def linearprobr(self,key,data):
         index=self.hashFunction(key)
         compare=0
         while(self.hashTable[index]!=None):


                    index=index+1
                    compare=compare+1
                    if(index==self.m):
                              index=0
         self.hashTable[index] = [key,data]
         self.elecount +=1
         print("data inserted at",index)
         print(self.hashTable)
         print("no of cpmparisms= ",compare)


    def getlinear(self, key,data):
        index = self.hashFunction(key)
```

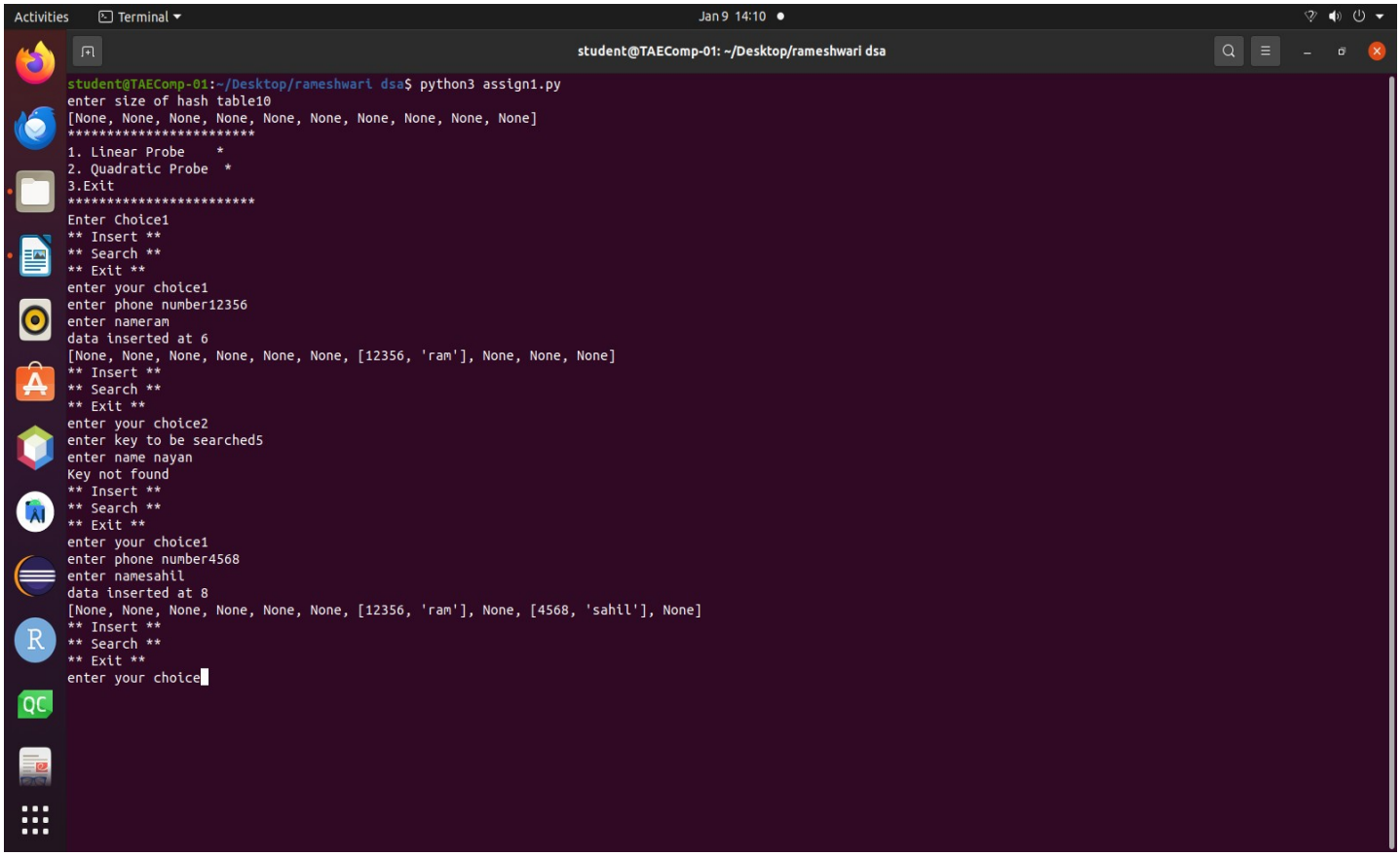
```
    while self.hashTable[index] is not None:
        if self.hashTable[index] == [key,data]:
            return index
        # Linear probing to search for the key
        index = (index + 1) % self.m

    # Key not found
    return None
def quadraticprobr(self,key,data):
    index=self.hashFunction(key)
    compare=0
    i=0
    while(self.hashTable[index]!=None):

            index=(index+i*i)% self.m
            compare=compare+1
            i=i+1

    self.hashTable[index] = [key,data]
    self.elecount +=1
    print("data inserted at",index)
    print(self.hashTable)
    print("no of cpmparisms= ",compare)

def getQuadratic(self, key,data):
    index = self.hashFunction(key)
    i=0
    while self.hashTable[index] is not None:

        if self.hashTable[index] == [key,data]:
            return index
        # Quadractic probing to search for the key
        i=i+1
        index = (index + i*i) % self.m
```

```
        # Key not found
        return None

    def insertvialinear(self,key, data):

        if self.isfull():
            print("table is full")
            return False
        index = self.hashFunction(key)



        if self.hashTable[index]== None:

            self.hashTable[index] = [key, data]
            self.elecount +=1
            print("data inserted at",index)
            print(self.hashTable)

        else:
         print("collision occured apply Linear method")
         self.linearprobr(key,data) # Corrected line

def insertviaQuadratic(self,key, data):

        if self.isfull():
            print("table is full")
            return False
        index = self.hashFunction(key)



        if self.hashTable[index]== None:

            self.hashTable[index] = [key, data]
            self.elecount +=1
            print("data inserted at",index)
```

```
            print(self.hashTable)


        else:
         print("collision occured apply quadratic method")
         self.quadraticprobr(key,data) # Corrected line


def menu():
    obj=hashtable()


    ch=0
    while( ch!=3):
        print("************************")
        print("1. Linear Probe     *")
        print("2. Quadratic Probe  *")
        print("3.Exit")
        print("************************")


        ch = int(input("Enter Choice"))


        if ch==1:


            ch2=0
            while(ch2!=3):
                print("** Insert **")
                print("** Search **")
                print("** Exit **")
                ch2=int(input("enter your choice"))
                if ch2==1:
                        a=int(input("enter phone number"))
                        b=str(input("enter name"))
                        obj.insertvialinear(a,b) # Corrected line
                elif ch2==2:
                        k=int(input("enter key to be searched"))
                        b=str(input("enter name"))
                        f=obj.getlinear(k,b)
```

```
                        if (f==None):
                                print("Key not found")
                        else:
                                print("key found at",f)
        elif ch==2:
            ch2=0
            obj1=hashtable()
            while(ch2!=3):
                print("** Insert **")
                print("** Search **")
                print("** Exit **")
                ch2=int(input("enter your choice"))
                if ch2==1:
                        a=int(input("enter phone number"))
                        b=str(input("enter name"))
                        obj1.insertviaQuadratic(a,b) # Corrected line
                elif ch2==2:
                        k=int(input("enter key to be searched"))
                        b=str(input("enter name"))
                        f=obj1.getQuadratic(k,b)
                        if (f==None):
                                print("Key not found")

                        else:
                                print("key found at",f)
menu()
```

Output:


Activities
Terminal
Jan 9 14:10
student@TAEComp-01: ~/Desktop/rameshwari dsa
student@TAEComp-01:~/Desktop/rameshwari dsa$ python3 assign1.py
enter size of hash table10
[None, None, None, None, None, None, None, None, None, None]
****
1. Linear Probe *
2. Quadratic Probe *
3.Exit
****
Enter Choice1
** Insert **
** Search **
** Exit **
enter your choice1
enter phone number12356
enter nameram
data inserted at 6
[None, None, None, None, None, None, [12356, 'ram'], None, None, None]
** Insert **
** Search **
** Exit **
enter your choice2
enter key to be searched5
enter name nayan
Key not found
** Insert **
** Search **
** Exit **
enter your choice1
enter phone number4568
enter namesahil
data inserted at 8
[None, None, None, None, None, None, [12356, 'ram'], None, [4568, 'sahil'], None]
** Insert **
** Search **
** Exit **
enter your choice