JC1 Promotional Examination 2017

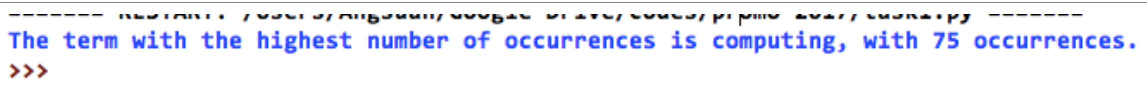
Candidate name: ______
Centre number: **<u>3030</u>**
Index number: ______
Programming language used: ______

QUESTION 1: WORDS

EVIDENCE 1

```
wordFile = open("WORDS1.txt", "r")
wordArray = [] #2-D list of (word, number) in the file WORDS1
currentHighest = ["",0] #a list containing the word with highest
occurrences
for eachWord in wordFile:
    if eachWord[-1] == "\n": #not the last line
        currentWord = eachWord[:-1].split(",")
    else: #the last line
        currentWord = eachWord.split(",")

    if int(currentWord[1]) > currentHighest[1]:
        currentHighest = [currentWord[0], int(currentWord[1])]

print("The term with the highest number of occurrences is {0},
with {1} occurrences.".format(currentHighest[0],
currentHighest[1]))
```

EVIDENCE 2

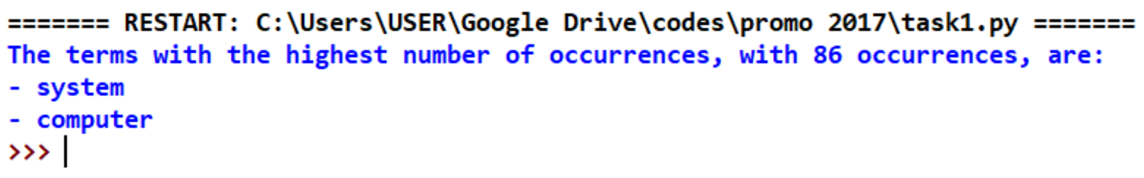


```
======== RESTART: /Users/AngJuan/Google Drive/codes/prpmo 2017/task1.py ========
The term with the highest number of occurrences is computing, with 75 occurrences.
>>>
```

EVIDENCE 3

```
wordFile = open("WORDS2.txt", "r")
wordArray = [] #a list containing all entries in WORDS2
currentHighestNo = 0 #the highest number of occurrences
for wordLine in wordFile: #every 2 lines since readline is also
called
    wordLine = wordLine[:-1] #all lines with the term are not
last line
    numberLine = wordFile.readline()
    if numberLine[-1] == "\n": #not the last line
        numberLine = numberLine[:-1]
    wordArray.append([wordLine, int(numberLine)])

    if int(numberLine) > currentHighestNo:
        currentHighestNo = int(numberLine)
wordFile.close()
print("The terms with the highest number of occurrences, with {}
occurrences, are:".format(currentHighestNo))

for eachWord in wordArray:
    if eachWord[1] == currentHighestNo: #has highest occurrences
        print("-", eachWord[0])
```

EVIDENCE 4



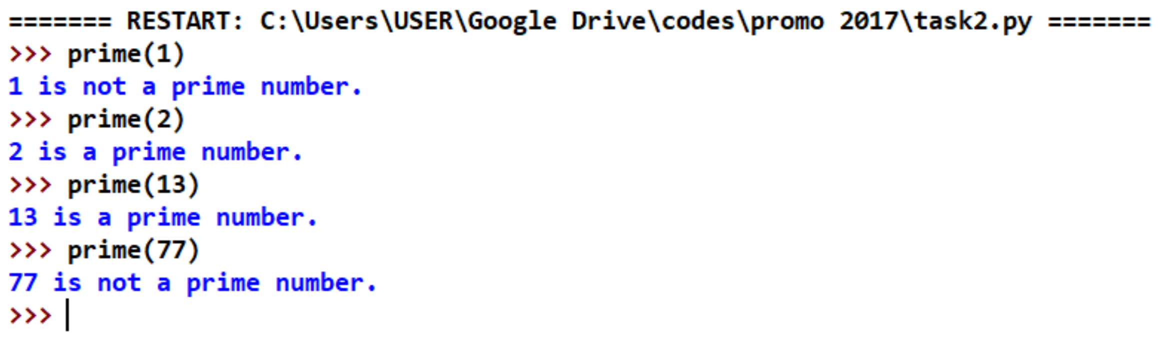
```
======= RESTART: C:\Users\USER\Google Drive\codes\promo 2017\task1.py =======
The terms with the highest number of occurrences, with 86 occurrences, are:
- system
- computer
>>> |
```

QUESTION 2: PRIME NUMBER

EVIDENCE 5

```
def prime(N):
    flag = True
    for i in range(2, N):          # from 2 to N - 1, or always
returns False
        if N % i == 0:             # i is a factor of N
            flag = False
            exit                   # exits the for loop as flag is
False
        else:                      # i is not a factor of N
            pass                   # do nothing, flag remains the
same
    if N == 1:
        flag = False               # 1 is not a prime number

    if flag:
        primeFlag = " "            # if prime, adds a space
    else:
        primeFlag = " not "        # if not prime, inserts word
'not'

    print("{} is{}a prime number.".format(N, primeFlag))
```

EVIDENCE 6

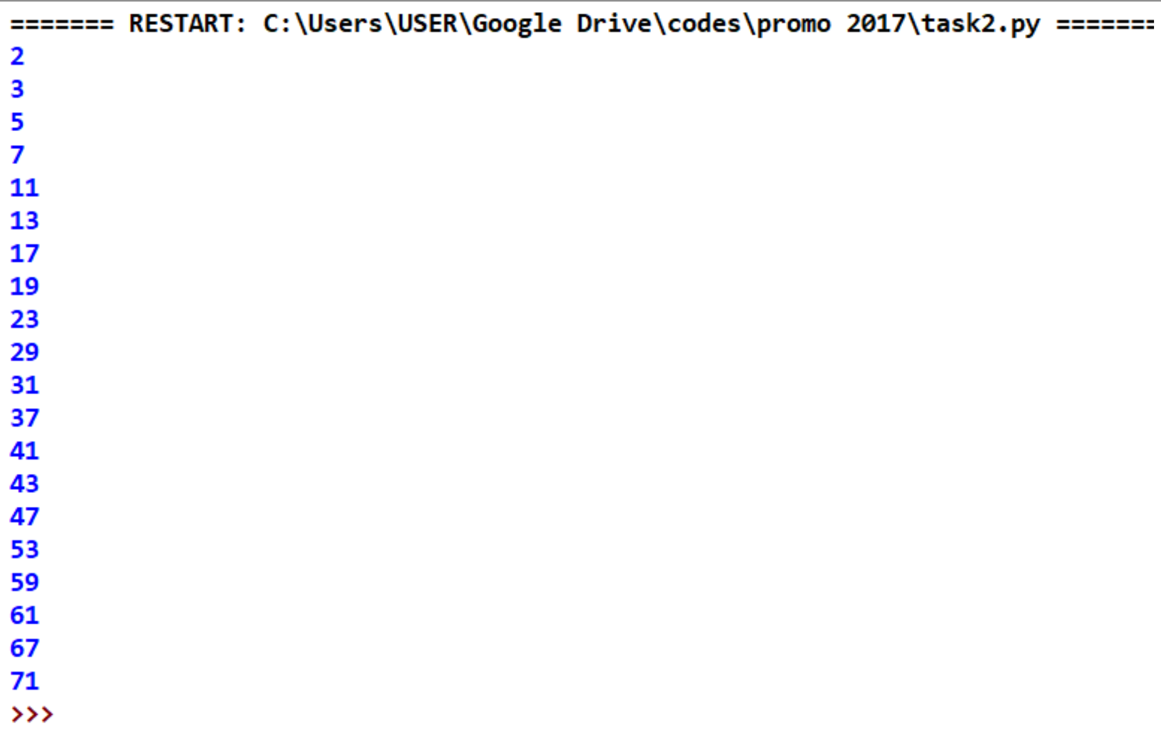


```
======= RESTART: C:\Users\USER\Google Drive\codes\promo 2017\task2.py =======
>>> prime(1)
1 is not a prime number.
>>> prime(2)
2 is a prime number.
>>> prime(13)
13 is a prime number.
>>> prime(77)
77 is not a prime number.
>>> 
```

EVIDENCE 7

```
def IsPrime(N):
    flag = True
    for i in range(2, N):           # from 2 to N - 1, or always
returns False
        if N % i == 0:              # i is a factor of N
            flag = False
            exit                    # exits the for loop as flag is
False
        else:                       # i is not a factor of N
            pass                    # do nothing, flag remains the
same
    if N == 1:
        flag = False                # 1 is not a prime number
    return flag

counter = 0                         # number of prime numbers between
1 and N
N = 0
while counter < 20:
    N += 1
    if IsPrime(N):                  # N is prime
        print(N)
        counter += 1                # counter increments
```

EVIDENCE 8



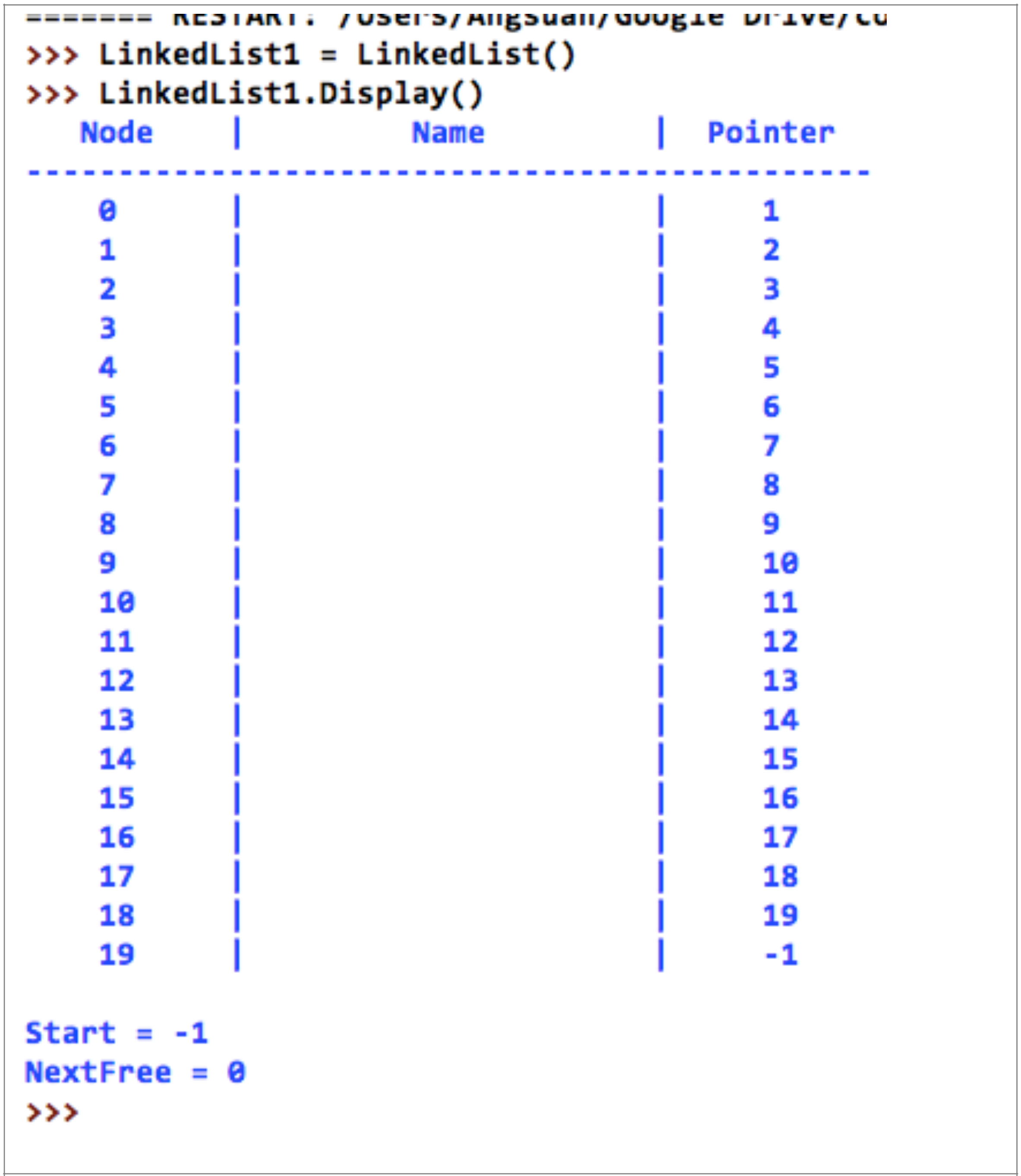
```
======= RESTART: C:\Users\USER\Google Drive\codes\promo 2017\task2.py =======
2
3
5
7
11
13
17
19
23
29
31
37
41
43
47
53
59
61
67
71
>>>
```

QUESTION 3: COUNTRIES LINKED LIST

EVIDENCE 9

```
class ListNode:
    def __init__(self, Name = "", Pointer = -1):
        self.__Name = Name
        self.__Pointer = Pointer
    def GetName(self):
        return self.__Name
    def SetName(self, NewName):
        self.__Name = NewName
    def GetPointer(self):
        return self.__Pointer
    def SetPointer(self, NewPointer):
        self.__Pointer = NewPointer

class LinkedList:
    def __init__(self, Size = 20):
        self.__Node = [ListNode() for i in range(Size)]
        for i in range(Size - 1):
            self.__Node[i].SetPointer(i + 1)
        self.__Start = -1
        self.__NextFree = 0

    def Display(self):
        print("{:^10} | {:^20} | {:^10}".format("Node", "Name",
"Pointer"))
        print("-"*46)
        for i in range(len(self.__Node)):
            print("{:^10} | {:^20} | {:^10}".format(i,
self.__Node[i].GetName(), self.__Node[i].GetPointer()))
        print()
        print("Start =", str(self.__Start))
        print("NextFree =", str(self.__NextFree))

    def IsEmpty(self):
        return self.__Start == -1

    def IsFull(self):
        return self.__NextFree == -1
```

EVIDENCE 10



```
======= RESTART: /Users/Angsuan/Google Drive/Co
>>> LinkedList1 = LinkedList()
>>> LinkedList1.Display()
   Node    |              Name            |   Pointer
----------------------------------------------------------
    0      |                              |     1
    1      |                              |     2
    2      |                              |     3
    3      |                              |     4
    4      |                              |     5
    5      |                              |     6
    6      |                              |     7
    7      |                              |     8
    8      |                              |     9
    9      |                              |     10
    10     |                              |     11
    11     |                              |     12
    12     |                              |     13
    13     |                              |     14
    14     |                              |     15
    15     |                              |     16
    16     |                              |     17
    17     |                              |     18
    18     |                              |     19
    19     |                              |     -1

Start = -1
NextFree = 0
>>>
```

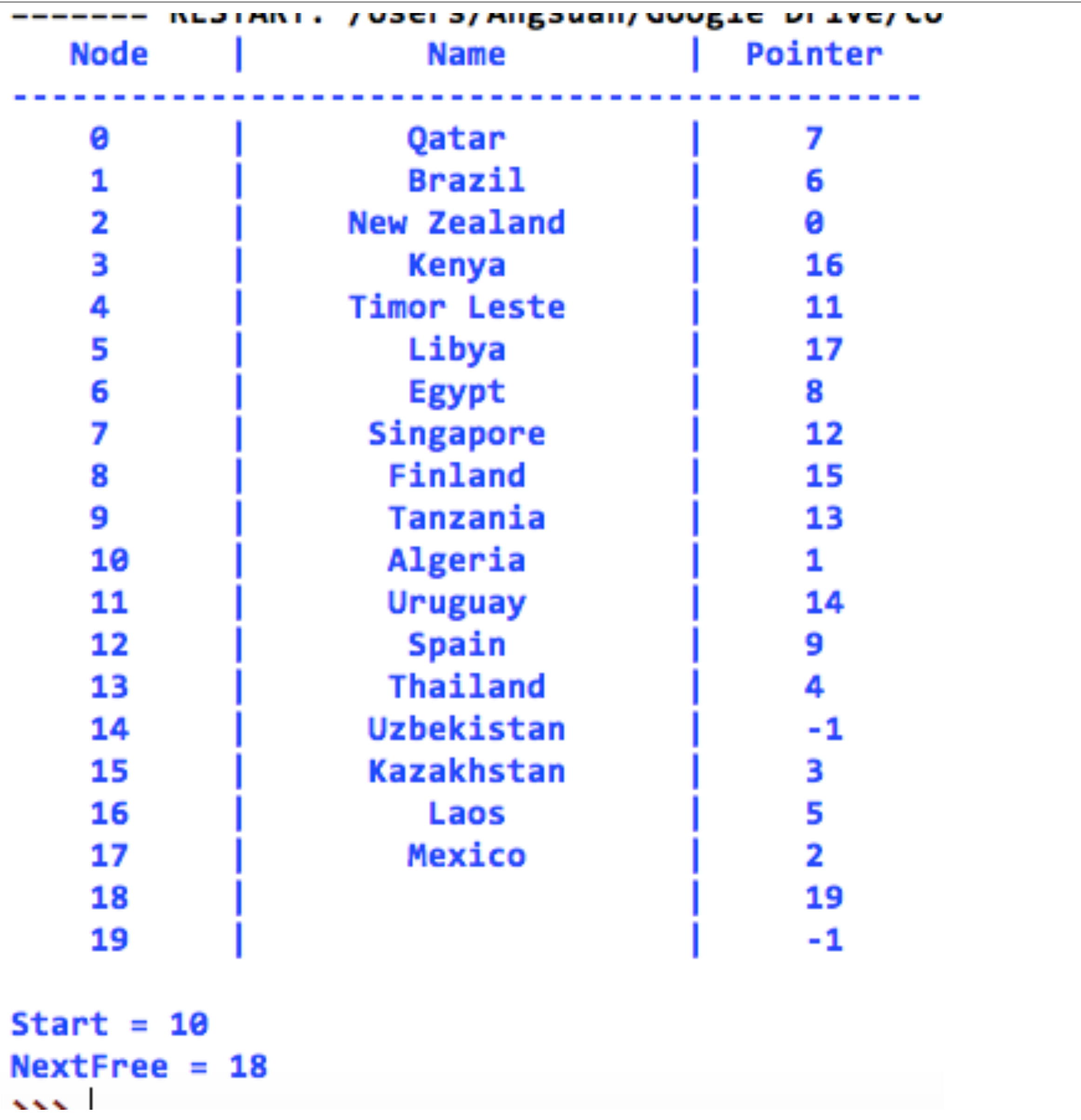
EVIDENCE 11

```
    def Insert(self, NewName):
        if self.__NextFree == -1:                           #no
free nodes
            print("No space to insert.")
            return
        self.__Node[self.__NextFree].SetName(NewName)
#store in next free node
        if self.__Start == -1:
#insert into empty list
            HoldFree = self.__Node[self.__NextFree].GetPointer()
            self.__Node[self.__NextFree].SetPointer(-1)
            self.__Start = self.__NextFree
            self.__NextFree = HoldFree
        else:
            if NewName < self.__Node[self.__Start].GetName():
#as first node of list
                HoldFree =
self.__Node[self.__NextFree].GetPointer()

self.__Node[self.__NextFree].SetPointer(self.__Start)
                self.__Start = self.__NextFree
                self.__NextFree = HoldFree
            else:
                Previous = self.__Start
                Current = self.__Start
                while NewName > self.__Node[Current].GetName()
and self.__Node[Current].GetPointer() != -1:
                    #search position to insert node
                    Previous = Current
                    Current = self.__Node[Current].GetPointer()
                if NewName > self.__Node[Current].GetName() and
self.__Node[Current].GetPointer() == -1:
                    #insert at last node of list
                    HoldFree =
self.__Node[self.__NextFree].GetPointer()

self.__Node[Current].SetPointer(self.__NextFree)
                    self.__Node[self.__NextFree].SetPointer(-1)
                    self.__NextFree = HoldFree
                else:   #insert in between nodes
                    HoldFree =
self.__Node[self.__NextFree].GetPointer()

self.__Node[Previous].SetPointer(self.__NextFree)

self.__Node[self.__NextFree].SetPointer(Current)
                    self.__NextFree = HoldFree
```

EVIDENCE 12

```
CountryFile = open("COUNTRIES.txt", "r")
CountryList = LinkedList()          #new linked list
for Country in CountryFile:
    if Country[-1] == "\n":         #not the last line
        CountryList.Insert(Country[:-1])
    else:                           #the last line
        CountryList.Insert(Country)
CountryFile.close()
CountryList.Display()
```

EVIDENCE 13

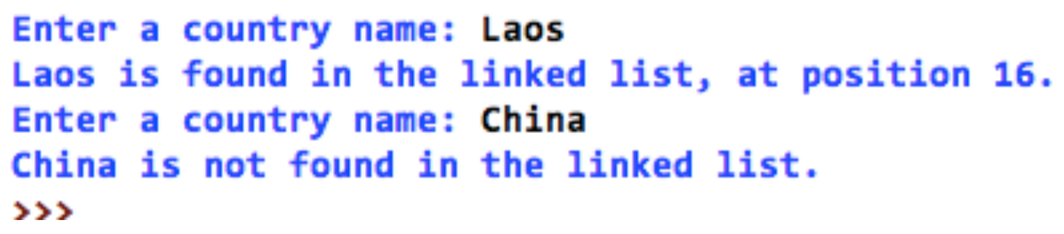


```
------- RESTART: /Users/Angsuan/Google Drive/Co
   Node     |          Name          |  Pointer
-----------------------------------------------
    0       |         Qatar          |    7
    1       |         Brazil         |    6
    2       |       New Zealand      |    0
    3       |         Kenya          |    16
    4       |       Timor Leste      |    11
    5       |         Libya          |    17
    6       |         Egypt          |    8
    7       |       Singapore        |    12
    8       |        Finland         |    15
    9       |        Tanzania        |    13
    10      |        Algeria         |    1
    11      |        Uruguay         |    14
    12      |         Spain          |    9
    13      |        Thailand        |    4
    14      |       Uzbekistan       |    -1
    15      |       Kazakhstan       |    3
    16      |         Laos           |    5
    17      |         Mexico         |    2
    18      |                        |    19
    19      |                        |    -1

Start = 10
NextFree = 18
>>>
```

EVIDENCE 14

```
    def Query(self):
        CountryInput = input("Enter a country name: ")
        Previous = self.__Start
        Current = self.__Start
        while CountryInput > self.__Node[Current].GetName():
            #traverse linked list to find node
            Previous = Current
            Current = self.__Node[Current].GetPointer()
        if CountryInput == self.__Node[Current].GetName():
#country is found
            print("{} is found in the linked list, at position
{}.".format(CountryInput, Current))
        else:
            print("{} is not found in the linked
list.".format(CountryInput))
```

EVIDENCE 15



```
Enter a country name: Laos
Laos is found in the linked list, at position 16.
Enter a country name: China
China is not found in the linked list.
>>>
```

At the end of the examination, save your `EVIDENCE.docx` in pdf with filename `EVIDENCE_yourname.pdf` in your removable storage device.