***Assignment # 2,3,4***

***AI LAB***

***Submitted by: Rabia Zeb***

***Sp20-bcs-037***

***Submitted to: Sir Qazi Waqas Khan***

# Assignment 2------------

import time

D={'O':['Z','S'],

'Z':['A','O'],

'A':['Z','S','T'],

'T':['A','L'],

'L':['T','M'],

'M':['L','D'],

'D':['M','C'],

'C':['D','R','P'],

'R':['C','P','S'],

'S':['O','A','R','F'],

'F':['S','B'],

'P':['R','C','B'],

'B':['G','P','U','F'],

'G':['B'],

'U':['B','H','V'],

'H':['E','U'],

'V':['U','I'],

'I':['N','V'],

'N':['I'],

'E':['H']

}

# PART A----------------

start = time.time()

q=[]

explored=[]

goal='B'

q.append('A')

while len(q)!=0:

node=q.pop(0)

if node not in explored:

explored.append(node)

if node==goal:

print(explored)

break

child=D.get(node)

for i in child:

if i not in q and explored:

q.append(i)

count=0

for i in explored:

count=count+1

print('Number of visited nodes for A',count)

end=time.time()

print('start time of A',start)

print('end time of A',end)

print('Total time of A',end - start)

# PART B---------------

start =time.time()

q=[]

explored=[]

goal='B'

q.append('O')

while len(q)!=0:

node=q.pop(0)

if node not in explored:

explored.append(node)

if node==goal:

print(explored)

break

child=D.get(node)

for i in child:

if i not in q and explored:

q.append(i)

count=0

for i in explored:

count=count+1

print('Number of visited nodes for O ',count)

end=time.time()

print('start time of O',start)

print('end time of O',end)

print('Total time of O',end - start)

# PART C---------------------

start=time.time()

q=[]

explored=[]

goal='B'

q.append('N')

while len(q)!=0:

node=q.pop(0)

if node not in explored:

explored.append(node)

if node==goal:

print(explored)

break

child=D.get(node)

for i in child:

if i not in q and explored:

q.append(i)

count=0

for i in explored:

count=count+1

print('Number of visited nodes for N ',count)

end=time.time()

print('start time of N',start)

print('end time of N',end)

print('Total time of N',end - start)

# PART D----------------

start=time.time()

q=[]

explored=[]

goal='B'

q.append('T')

while len(q)!=0:

node=q.pop(0)

if node not in explored:

explored.append(node)

if node==goal:

print(explored)

break

child=D.get(node)

for i in child:

if i not in q and explored:

q.append(i)

count=0

for i in explored:

count=count+1

print('Number of visited nodes for T' ,count)

end=time.time()

print('start time of T',start)

print('end time of T',end)

print('Total time of T',end - start)

Output:

['A', 'Z', 'S', 'T', 'O', 'R', 'F', 'L', 'C', 'P', 'B']

Number of visited nodes for A 11

start time of A 1648659265.2222304

end time of A 1648659265.2272296

Total time of A 0.0049991607666015625

['O', 'Z', 'S', 'A', 'R', 'F', 'T', 'C', 'P', 'B']

Number of visited nodes for O 10

start time of O 1648659265.2292302

end time of O 1648659265.2312284

Total time of O 0.0019981861114501953

['N', 'I', 'V', 'U', 'B']

Number of visited nodes for N 5

start time of N 1648659265.2342248

end time of N 1648659265.2352238

Total time of N 0.0009989738464355469

['T', 'A', 'L', 'Z', 'S', 'M', 'O', 'R', 'F', 'D', 'C', 'P', 'B']

Number of visited nodes for T 13

start time of T 1648659265.236221

end time of T 1648659265.236221

Total time of T 0.0

Assignment: 3

# Assignment 3-----------

import time

start\_time = time.time()

import random

num=int(input("enter the numbers"))

def Rand(start,end,num):

res=[]

for i in range(num):

res.append(random.randint(start,end))

return res

start=20000

end=90000

print(Rand(start,end,num))

print("---%seconds---"%(time.time()-start\_time))

Output:

enter the numbers5

[24946, 58071, 46216, 78552, 74898]

---13.299343585968018econds---

import time

start\_time = time.time()

import random

num=int(input("enter the numbers"))

def Rand(start,end,num):

res=[]

for i in range(num):

res.append(random.randint(start,end))

return res

start=30000

end=90000

print(Rand(start,end,num))

print("---%seconds---"%(time.time()-start\_time))

Output:

enter the numbers4

[37944, 48001, 57189, 36347]

---3.967954158782959econds---

import time

start\_time = time.time()

import random

num=int(input("enter the numbers"))

def Rand(start,end,num):

res=[]

for i in range(num):

res.append(random.randint(start,end))

return res

start=50000

end=90000

print(Rand(start,end,num))

print("---%seconds---"%(time.time()-start\_time))

Output:

enter the numbers6

[77003, 75366, 78913, 81198, 85383, 71711]

---6.6249306201934814econds---

import time

start\_time = time.time()

import random

num=int(input("enter the numbers"))

def Rand(start,end,num):

res=[]

for i in range(num):

res.append(random.randint(start,end))

return res

start=80000

end=90000

print(Rand(start,end,num))

print("---%seconds---"%(time.time()-start\_time))

Output:

enter the numbers3

[86912, 85071, 88166]

---5.927342176437378econds---

import time

start\_time = time.time()

import random

num=int(input("enter the numbers"))

def Rand(start,end,num):

res=[]

for i in range(num):

res.append(random.randint(start,end))

return res

start=90000

end=90000

print(Rand(start,end,num))

print("---%seconds---"%(time.time()-start\_time))

Output:

enter the numbers8

[90000, 90000, 90000, 90000, 90000, 90000, 90000, 90000]

---3.6132290363311768econds---

Assignment # 4:

# Assignment 4-----------------------

# PART A---------

import re

email=input('please enter the email address:')

eReg="(\w+)@((\w+\.)+(com))"

r=re.match(eReg,email)

print(r.group(1))

print(r.group(2))

Output:

please enter the email address:rabia@gmail.com

rabia

gmail.com

# PART B--------------------

weight= float(input("enter your weight in kilograms:"))

height= float(input("enter your height in feet:"))

print("your body mass index is:",round(weight/height\*height),2)

if weight>128 and weight<=200:

print("you are over weight")

elif weight>90 and weight<=110:

print("you are obese")

elif weight>60 and weight<=80:

print("you are normal weight")

elif weight>20 and weight<=50:

print("you are under weight")

else:

print("you have no weight")

Output:

enter your weight in kilograms:75

enter your height in feet:6

your body mass index is: 75 2

you are normal weight

# PART C------------------

str=input("enter a string")

dict={}

L=len(str);

d={str:L};

print(d)

Output:

enter a string"The CUI was established in 1998, as a project of the Commission on Science and Technology for Sustainable Development in the South"

{'"The CUI was established in 1998, as a project of the Commission on Science and Technology for Sustainable Development in the South"': 132}

# PART D----------------------

def isvowel(c):

return(c=='a' or c=='e' or

c=='i' or c=='o' or

c=='u');

def pigLatin(s):

length=len(s);

index=-1;

for i in range(length):

if(isvowel(s[i])):

index=i;

break;

if(index==-1):

return "-1";

return s[index:]+s[0:index]+"ay";

str=pigLatin("rabiazeb");

if(str=="-1"):

print("no vowel found.pig Latin not possible");

else:

print(str);

Output:

abiazebray

# PART E------------------

list1\_keys=["a","b","c","d","e"]

list2\_values=[1,2,3,4,5]

print("Original key list is :" + str(list1\_keys))

print("Original value list is :" + str(list2\_values))

res={}

for key in list1\_keys:

for value in list2\_values:

res[key]=value

list2\_values.remove(value)

break

print("resultant dictionary is:" + str(res))