

## HADHRAMOUT UNIVERSITY COLLEGE OF COMPUTERS & INFORMATION TECHNOLOGY FINAL EXAMINATION



Academic year: 2020-2021 Day and Date:

Examiner: Hussien . O . A\_lbaiti

Time allowed: 2



Exam Semester : First Level: Third

Department: IT

Subject: Data Structure

(B)

Answer following questions by use one class only:

1) Write function that print your name in reverse way by using Stack concept.

Note:

7/:

User accepted string out side class by object and don't use def\_init\_ [2 Marks]

Print string out side class

[2 Marks

2) Write function to add set of letters to list by using DQ concept?

Note:

,

• If user enter consonant letters add to rear side if enter vowels letters add to front side

If user enter number add to front

12 Marks

E KEY NOT IN O COUNTEE ON OR THE STEP IN COLD

3) Write a function to revers the words that are less than 4 from a given list of words. don't use revers function words.

lst = ['apple', 'car', 'box', 'window', 'milk', 'one']
output => ['apple', 'rac', 'xob', 'window', 'milk', 'eno']

Note:

· use accept items inside class

[1 Marks]

vuser sorted items inside class

[2 Marks]

print items out side class

[2 Marks]

```
CLass DS:
   [11]
    [L=[]
   def tername(self,s):
        foling lend(1)
           Self. L. append (1)
   for finding (rang (ten (self.L))
             X=Seff. L. Pop()
               Self. LL append(x)
         forts intrange (Hell (Self. IL)).
               StI= Self. IL. POP()
   for in sest = (xst) + st
        SHEETULKSH. +0(1)
        -11-5-11-5-1
     return St
    def degre (self):
        dequ-[]
       front = bear = -1
       for inrang(3):
              If Key not in "O Oulli I e Ea A" and key not in " 0123466789"
          key = InPut (" enter :")
           If Front Lo:
                   deau. append (ley)
                  dequiliset (oitey)
              else:
              If key not in "OO ullile Ead" and Ley not in " 0123456780"
            e15e:
                  dema Prend (Ket)
                   dequinser+ (o, hey)
               else:
               rear +=1
         return dequ
         الدكولة فراقه فارقيم
```

27.2					
N	n	17	17	$\alpha$	٠
1.7	C	34	ш	V	٠

Department: IT H &

Q. 1: Put (v) or (x) on the appropriate sentences, with correct the false ones: aliener data structures which have one end could Top -1- Stacks are classified into primitive and non-primitive.

- 2- If the elements are connected in a linear sequence memory locations, it called linear data
- 3- Circle queue is an example of non-linear data structure. X
- 5 +acks 4- An Queue can be accessed only at one of its ends called (top), for either adding or deleting. X
  - 5- Adding an element to the Queue is called enqueue,
  - definthess 6- Correctness means every step of the algorithm should be clear and well defined. X
  - 7- In the queue the operation Front is return the last element in it.  $\times$

O. 2: Compare ( 15) between check and anone in charts

Comparison Points . (نقاط المقارنة)	Stack	Queue	
Principle - المبدأ	(First In Last out) (Last In First out)	(Ferst in Forstout) (Last in Last out)	6.0
Adding الإضافة	Pushedby one end (TOP)	dry Fragt Rear	Popo
الحذف Deleting		Aby use Front Pop(0)	Freen
أول عنصر First element	English -	L. Front()	
آخر عنصر Last element	1.ToP()	(1. Plear()	

Q.3: Mention (JSJ) (two applications of circle queue?

1-trafic systems. 2-CPU scaduial

3- memory mag ement

4: Write a recursive function to find the Greatest Common Divisor (GCD), where, the function takes 2 parameters as input, the following recursive definition determines the GCD of x and y:

$$\gcd(x,y) = \begin{cases} x & \text{if } y = 0\\ \gcd(y,x\% y) & \text{if } y \neq 0 \end{cases}$$

def Gcd(x,y):

If y = 0:

retun x

else:

return Ged ( y , x doy)

Print (GCd(12,4))

End

GCd(12,4)

12/4=3 %=>0

19#0

GCd(4,0)

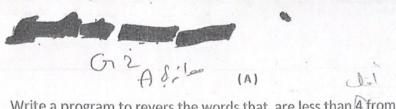
Lithet Y=0

12/4=3

Lithet Y=0

Lithet

-3x - 3J



Write a program to revers the words that are less than 4 from a given 

## Example:

lst = ['apple', 'car', 'box', 'window', 'milk', 'one'] output => ['apple', 'rac', 'xob', 'window', 'milk', 'eno']

1) User specific list size out side class by object

2) user accept items inside class

3) create function to search about words that interact with it from inside class

4) print items out side class

GIZ ASi's

Write a Python program that takes a list from user with unique odd items

## Example:

[st = [2, 2, 2, 3, 3, 3, 4, 5, 5]]

output :> [1, 2,2, 3, 4, 5]

Note (

- 1) Use stack concept
- 2) use class concept
- 3) print/list out side class

Class stack.

L=[1,2,2,3,3,3,4,5,5]

toP=Ven(L)-1

def POP (self, x):

global tob

toP -= 1

Leturn Self. Pop(X)

def Posh (self,i):

Global toP. hewl

new append(i)

def check (self):

news = []

Not Stack Sto for imrang (len (self. 1)). ip self. [[] = %2] = 0 and solf. [[i] norinnew

newl append (self. L[i])

elff self. L[i] %2==0: newl. append (self, LCiz)

return news

OOP - Stack ()

Print ( ool Check())