

COMPUTER SCIENCE

PRACTICAL FILE

2020-2021

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SUBMITTED TO:
MS. SWATI NARANG

COMPUTER SCIENCE

PRACTICAL FILE

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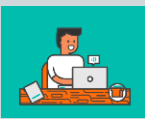
PYTHON

PROGRAMS





Python Programs



1. Write a python program to show entered string is a palindrome or not.

```
palindrome.py - C:\Users\Shivkant\AppData\Local\Programs\Python\Python38-32\palindrome.py (...)  
File Edit Format Run Options Window Help  
a=input("Enter your word:")  
b=a[::-1] #Reversing a string  
if a.lower()==b.lower(): #converting all to lowercase for matching  
    print("Entered word is a palindrome")  
else:  
    print("Entered word is not a palindrome")  
Ln: 1 Col: 0
```

← Source Code

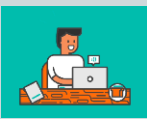
```
Python 3.8.2 Shell  
File Edit Shell Debug Options Window Help  
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 22:45:29) [MSC v.1916 32  
bit (Intel)] on win32  
Type "help", "copyright", "credits" or "license()" for more information.  
>>>  
= RESTART: C:\Users\Shivkant\AppData\Local\Programs\Python\Python38  
-32\palindrome.py  
Enter your word:Nitin  
Entered word is a palindrome  
>>>  
Ln: 6 Col: 0
```

← Output





Python Programs



2. Write a python program that calculates and print number of seconds in a year .

```
noofsecondsinyear.py - C:/Users/Shivkant/AppData/Local/Progr...
File Edit Format Run Options Window Help
year=1
month=12
days=30
hour=60
minute=60
seconds=year*12*30*24*60*60
print("Number of seconds in a year : {}".format(seconds))
Ln: 5 Col: 9
```

← Source Code

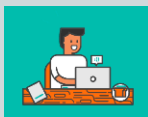
```
Python 3.8.2 Shell
File Edit Shell Debug Options Window Help
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 22:45:29) [MSC v.1916 32
bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:/Users/Shivkant/AppData/Local/Programs/Python/Python38-32
/noofsecondsinyear.py
Number of seconds in a year : 31104000
>>>
Ln: 3 Col: 4
```

← Output





Python Programs



3. One foot equal 12 inches . Write a function that accepts a length written in feet as an arguement and returns this length written in inches .Write a second function that asks the user for a number of feet and returns this value . Write a third function that accepts a number of inches and displays this to screen . Using these three functions to write a program that asks the user for a number of feet and tells them corresponding number of inches

```
*footinch.py - C:/Users/Shivkant/AppData/Local/Programs/Python/Python...
File Edit Format Run Options Window Help

def feet_to_inch(feet):
    inch=feet*12
    return inch

def display_feet(__feet):
    return(__feet)

def _inch(inches):
    print(inches)

feet_input=float(input("Enter number of feet: "))
calc_inches=feet_to_inch(feet_input)
print("No of inches in {} feet => {}".format(feet_input,calc_inches))

Ln: 10 Col: 15
```

← Source Code

```
Python 3.8.2 Shell
File Edit Shell Debug Options Window Help

Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 22:45:29) [MSC v.19
16 32 bit (Intel)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
55= RESTART: C:/Users/Shivkant/AppData/Local/Programs/Python/Pyth
on38-32/footinch.py
Enter number of feet: 5
No of inches in 5 feet => 60
>>>

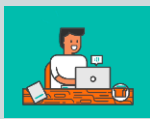
Ln: 7 Col: 4
```

← Output





Python Programs



4) Write a program that reads an integer N from the keyboard and displays the sum of the numbers from N to (2*N) if N is non negative . If N is a negative number ,then its the sum of the number from (2*N) to N . The starting and ending points are included in the sum.

```
sum.py - C:/Users/Shivkant/AppData/Loc...
File Edit Format Run Options Window Help
N=int(input("Enter number :"))
sum1=sum2=0
if N>0:
    upper_limit=(2*N)+1
    for i in range(N,upper_limit):
        sum1+=i
    print("Sum is",sum1)
elif N<0:
    upper_lim=N+1
    for j in range(2*N,upper_lim):
        sum2+=j
    print("Sum is",sum2)
Ln: 13 Col: 4
```

← Source Code

Output

```
C:\Users\Shivkant>python C:\Users\Shivkant\AppData\Local\Microsoft\Windows\CurrentVersion\Shell\8-32\sum.py
Enter number :5
Sum is 45
C:\Users\Shivkant>
```

```
C:\Users\Shivkant>python C:\Users\Shivkant\AppData\Local\Microsoft\Windows\CurrentVersion\Shell\8-32\sum.py
Enter number :-5
Sum is -45
C:\Users\Shivkant>
```

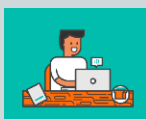


Python
Programming





Python Programs



5) Write a program that takes any two lists L and M of the same size and adds their element together to form a new list N whose elements are sum of the corresponding elements in L and M. For instance if L=[3,1,4] and M=[1,5,9], then N should equal to [4,6,13]

```
*listaddn.py - C:/Users/Shivkant/...
File Edit Format Run Options Window Help
l3=[]
_sum_=0
l1=[1,5,8]
l2=[4,8,12]
len_list=len(l1)
for i in range(len_list):
    _sum_=l1[i]+l2[i]
    l3.append(_sum_)
    _sum_=0
print("L1 : ",l1)
print("L2: ",l2)
print("New list : ",l3)
Ln: 1 Col: 6
```

Source Code

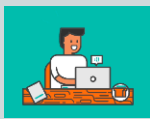
```
Python 3.8.2 Shell
File Edit Shell Debug Options Window Help
Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25
2020, 22:45:29) [MSC v.1916 32 bit (Intel)]
on win32
Type "help", "copyright", "credits" or "licens
e()" for more information.
>>>
= RESTART: C:/Users/Shivkant/AppData/Loc
al/Programs/Python/Python38-32/listaddn.py
L1 : [1, 5, 8]
L2: [4, 8, 12]
New list : [5, 13, 20]
>>>
Ln: 8 Col: 4
```

Output





Python Programs



6. Write a program that prompts the user to type some sentence(s) followed by enter. It should then print original sentence and the following statistics related to the sentence.

- (i) Number of words
- (ii) Number of characters (including whitespace and punctuation)
- (iii) Percentage of characters that are alpha numeric.

```
sentence.py - C:/Users/Shivkant/AppData/Local/Prog...
File Edit Format Run Options Window Help

ct_alnum=0
sen=input("Type sentence : ")
print(sen)
no_of_char=len(sen)
l1=sen.split()
word_ct=0
for i in l1:
    word_ct+=1 #no of words
for j in l1:
    if j.isalnum():
        ct_alnum+=1
r_alnum=(ct_alnum)/(no_of_char)
print("Number of words :",word_ct)
print("Number of characters :",no_of_char)
print("% of alphanumeric characters:",(r_alnum*100))

Ln: 15 Col: 8
```

Source Code

Type sentence : I love python 3000

I love python 3000

Number of words : 4

Number of characters : 18

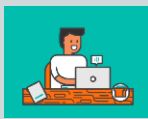
Percentage of alphanumeric characters: 22.22222222222222

Output





Python Programs



7. Write a program that rotates the elements of a list so that the element at first index moves to the second index, the element in second index moves to the third index, etc and the element in the last index moves to the first index.

```
lis=eval(input('Enter list : '))  
last=lis[-1]  
for i in range(len(lis)-1,0,-1):  
    lis[i]=lis[i-1]  
lis[0]=last  
print(lis)
```

```
Enter list : [1,2,3,4]  
[4, 1, 2, 3]  
>>> |
```

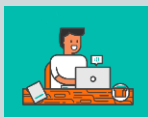
Source Code

Output





Python Programs



8. Write a program to have following functions :

- (i) A function that takes a number as a argument and calculates cube for it . The function does not return a value . If there is no value passed to the function in function call , the function should calculate value of 2 .
- (ii) a function that takes two char aguements and returns True if both the arguments are equal otherwise false .

```
cube.py - C:/Users/Shivkant/AppData/Local/Programs/Python/Python38...
File Edit Format Run Options Window Help

def cube(a=2):
    return a**3

def check(char1,char2):
    if char1==char2:
        return True
    else:
        return False

res=cube()
print("If no arguement provided : ",res)
n=int(input("Enter number "))
print('Cube of given number is',cube(n))
c1=input("Enter 1st character: ")
c2=input("Enter 2nd character: ")
resp=check(c1,c2)
print(resp)

Ln: 16 Col: 11
```

```
Python 3.8.2 Shell
File Edit Shell Debug Options Window Help

Python 3.8.2 (tags/v3.8.2:7b3ab59, Feb 25 2020, 22:45:29) [MSC
v.1916 32 bit (Intel)] on win32

Type "help", "copyright", "credits" or "license()" for more informat
ion.
>>>

= RESTART: C:/Users/Shivkant/AppData/Local/Programs/Python/P
ython38-32/cube.py =
If no arguement provided : 8
Enter number 5
Cube of given number is 125
Enter 1st character: Ravi
Enter 2nd character: Ravi
True

Ln: 11 Col: 4
```

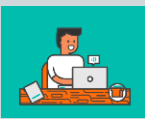
Source Code

Output





Python Programs



9. Write a function that receives two numbers and generates a random number from that range. Using this function, the main program should be able to print three numbers randomly.

```
*randgen.py - C:/Users/...
File Edit Format Run Options Window Help

import random
def randgen(n1,n2):
    a=random.randint(n1,n2)
    return a
n1=int(input("Enter number :"))
n2=int(input("Enter number :"))
for i in range(3):
    ran_no=randgen(n1,n2)
    print(ran_no)

Ln: 6 Col: 27
```

Source Code

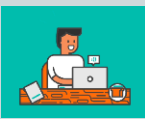
```
= RESTART: C:/Users/Shivkant/AppData/Local/Programs/Python/Python38-32/randgen.py
Enter number :2
Enter number :10
10
3
2
```

Output





Python Programs



10. Write a function that take two numbers and reurns the number that has minimum ones digit.

```
onechecker.py - C:/Users/Shivkant/AppData/Local/Pr...
File Edit Format Run Options Window Help
def one_checker(n1,n2):
    first_n=n1%10
    sec_n=n2%10
    if first_n<sec_n:
        return n1
    elif first_n>sec_n:
        return n2
    else:
        return "Ones digit of both numbers are same"
n1=int(input("Enter 1st no: "))
n2=int(input("Enter 2nd no: "))
res=one_checker(n1,n2)
print(res,"has minimum one's value ")
Ln: 10 Col: 31
```

Source Code

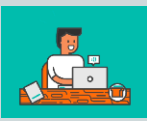
```
8-32\onechecker.py
Enter 1st no: 2344
Enter 2nd no: 3458
2344 has minimum one's value
```

Output





Python Programs



11. Write a menu driven program to input string from user and perform all string functions.

```
T='y'
while T=='y' or T=='Y':
    def menu():
        print("""MENU DRIVEN PROGRAM FOR STRING MANIPULATION""")
        print('1. For capitalize() ')
        print('2. For lower() ')
        print('3. For upper()')
        print('4. For swapcase() ')
        print('5. For title() ')
        print('6. For count()')
        print('7. For find() ')
        print('0 To exit ....')

    menu()
    temp=input("Enter your string:")
    choice=int(input("Enter your choice: "))

    if choice==0:
        exit()
```

```
menu()
temp=input("Enter your string:")
choice=int(input("Enter your choice: "))

if choice==0:
    exit()

elif choice==1:
    res1=temp.capitalize()
    print(res1)

elif choice==2:
    res2=temp.lower()
    print(res2)

elif choice==3:
    res3=temp.upper()
    print(res3)
```

```
elif choice==4:
    res4=temp.swapcase()
    print(res4)
```

```
elif choice==5:
    res5=temp.title()
    print(res5)
```

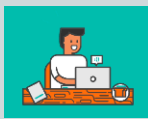
```
elif choice==6:
    ele=input('Element to count:')
    res6=temp.count(ele)
    print(res6)
```

```
else:
    ele=input('Enter element to found:')
    res7=temp.find(ele)
    print('Element found at position', res7+1)
```

```
T=input("Press y to continue, n to exit : ")
```



Python Programs



OUTPUT

```

**MENU DRIVEN PROGRAM FOR STRING MANIPULATION**
1. For capitalize()
2. For lower()
3. For upper()
4. For swapcase()
5. For title()
6. For count()
7. For find()
0 To exit ....
Enter your string:computer technology
Enter your choice: 1
Computer technology
Press y to continue, n to exit : y

```

Choice==1

```

**MENU DRIVEN PROGRAM FOR STRING MANIPULATION**
1. For capitalize()
2. For lower()
3. For upper()
4. For swapcase()
5. For title()
6. For count()
7. For find()
0 To exit ....
Enter your string:TECHNOLOGY
Enter your choice: 2
technology
Press y to continue, n to exit : y

```

Choice==2

```

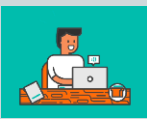
**MENU DRIVEN PROGRAM FOR STRING MANIPULATION**
1. For capitalize()
2. For lower()
3. For upper()
4. For swapcase()
5. For title()
6. For count()
7. For find()
0 To exit ....
Enter your string:tech
Enter your choice: 3
TECH
Press y to continue, n to exit : y

```

Choice==3



Python Programs



OUTPUT

```
***MENU DRIVEN PROGRAM FOR STRING MANIPULATION***
1. For capitalize()
2. For lower()
3. For upper()
4. For swapcase()
5. For title()
6. For count()
7. For find()
0 To exit ....
Enter your string:cOmPuter
Enter your choice: 4
CoMpUTER
Press y to continue, n to exit : y
```

Choice==4

```
***MENU DRIVEN PROGRAM FOR STRING MANIPULATION***
1. For capitalize()
2. For lower()
3. For upper()
4. For swapcase()
5. For title()
6. For count()
7. For find()
0 To exit ....
Enter your string:i love programming
Enter your choice: 5
I Love Programming
Press y to continue, n to exit : y
```

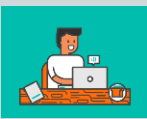
Choice==5

```
***MENU DRIVEN PROGRAM FOR STRING MANIPULATION***
1. For capitalize()
2. For lower()
3. For upper()
4. For swapcase()
5. For title()
6. For count()
7. For find()
0 To exit ....
Enter your string:Apple
Enter your choice: 6
Element to count:p
2
Press y to continue, n to exit : y
```

Choice==6



Python Programs



OUTPUT

```

**MENU DRIVEN PROGRAM FOR STRING MANIPULATION**
1. For capitalize()
2. For lower()
3. For upper()
4. For swapcase()
5. For title()
6. For count()
7. For find()
0 To exit ....
Enter your string:TECHNOLOGICAL
Enter your choice: 7
Enter element to found:H
Element found at position 4
Press y to continue, n to exit : Y

```

Choice==7

```

Press y to continue, n to exit : Y
**MENU DRIVEN PROGRAM FOR STRING MANIPULATION**
1. For capitalize()
2. For lower()
3. For upper()
4. For swapcase()
5. For title()
6. For count()
7. For find()
0 To exit ....
Enter your string:Cloud_computer
Enter your choice: 0

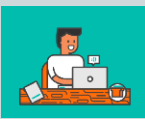
C:\Users\Shivkant>

```

Choice==0

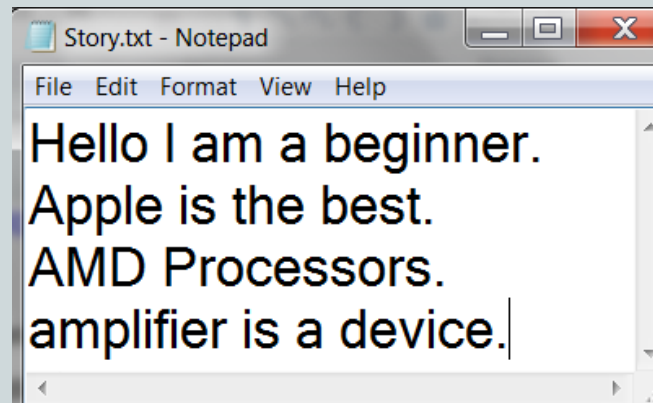


Python Programs



12. Write a function in python to count number of lines in a text file "STORY.TXT" which is starting with an alphabet 'A' .

```
def CountA(filename):  
    ct=0  
    with open(filename) as f:  
        con=f.readlines()  
        for i in con:  
            if i[0]=="A":  
                ct+=1  
    return ct  
res=CountA("story.txt")  
print('Total lines starting with A is: ',res)
```



Total lines starting with A is: 2

```
>>> |
```

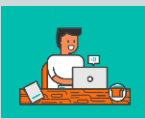
OUTPUT

SOURCE CODE





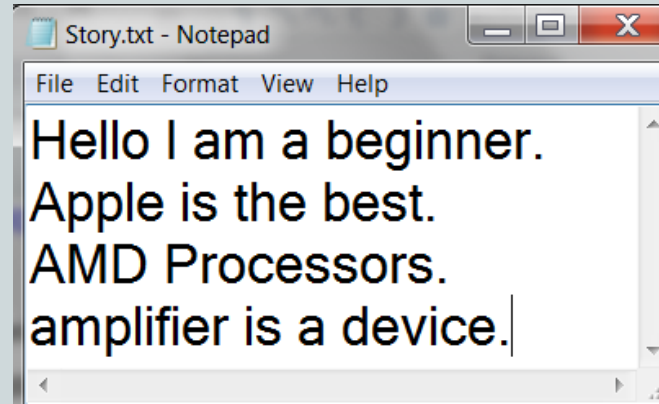
Python Programs



13. Write a function/method DISPLAYWORDS() in python to read lines from a text file "STORY.TXT" and display those words which are less than 4 characters.

```
def DISPLAYWORDS(filename):  
    ct=0  
    file=open(filename)  
    line=file.read()  
    list_word=line.split()  
    for word in list_word:  
        if len(word)<4:  
            print(word)  
    file.close()  
DISPLAYWORDS('Story.txt')
```

SOURCE CODE



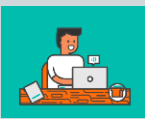
```
I  
am  
a  
is  
the  
AMD  
is  
a  
>>> |
```

OUTPUT





Python Programs



14. Write a function `addrecord()` to add a new record to the binary file "student" using list. The list should consist of student number, student name and marks of the student.

```
addrrec.py - C:/Users/Shivkant/AppData/Local/...
File Edit Format Run Options Window Help

import pickle
def addrecord(list1):
    with open('student.dat','wb') as fo:
        pickle.dump(list1,fo)
list1=[]
stu_no=int(input("Enter Student Number:"))
stu_name=input("Enter Student Name:")
stu_marks=int(input("Enter Student Marks:"))
list1.extend([stu_no,stu_name,stu_marks])
addrecord(list1)
print("Recod added Successfully!")

Ln: 19 Col: 12
```

```
= RESTART: C:/Users/Shivkant/AppData/Local/Programs/Python/Python38-32/addrrec.py
Enter Student Number:45
Enter Student Name:Suman
Enter Student Marks:99
Recod added Successfully!
```

```
student.dat - Notepad
File Edit Format View Help

€-◀ ]"(K-œ | Suman"Kce.
```

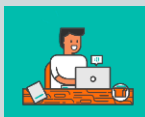
SOURCE CODE

OUTPUT





Python Programs



15. Write a program to save the dictionary records to the student.csv file

Sno,Student,Subject
1, Shilpa,English
2,Sakshi,Computer
3,Sahil, Chemistry

```
csvwriting.py - C:/Users/Shivkant/AppData/Local/Pr...
File Edit Format Run Options Window Help
import csv
with open('student.csv','a') as csvfile:
    mywriter=csv.writer(csvfile)
    mywriter.writerow(['Sno','Student','Subject'])
    mywriter.writerow([1,'Shilpa','English'])
    mywriter.writerow([2,"Sakshi",'Computer'])
    mywriter.writerow([3,"Sahil","Chemistry"])
    print("Records added Successfully !")
Ln: 4 Col: 49
```

SOURCE CODE

38-32/csvwriting.py

Records added Successfully !

>>>

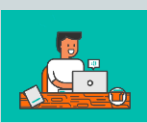
```
student.csv - Notepad
File Edit Format View Help
Sno,Student,Subject
1,Shilpa,English
2,Sakshi,Computer
3,Sahil,Chemistry
```

OUTPUT





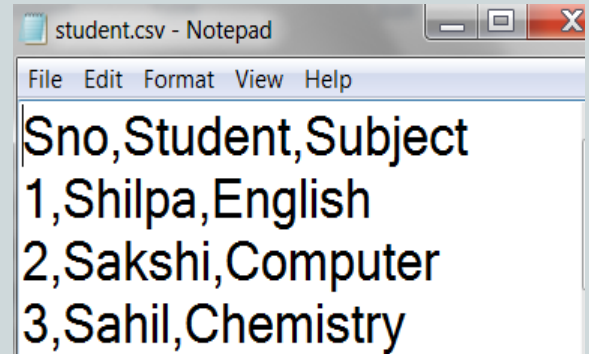
Python Programs



16. Write a program to read the content of student.csv file in dictionary .

```
import csv

with open('student.csv') as f:
    csv_f=csv.DictReader(f)
    for row in csv_f:
        print(row)
```



student.csv - Notepad

File Edit Format View Help

Sno,Student,Subject
1,Shilpa,English
2,Sakshi,Computer
3,Sahil,Chemistry

```
= RESTART: C:/Users/Shivkant/AppData/Local/Programs/Python/Python38-32/Python.exe
{'Sno': '1', 'Student': 'Shilpa', 'Subject': 'English'}
{'Sno': '2', 'Student': 'Sakshi', 'Subject': 'Computer'}
{'Sno': '3', 'Student': 'Sahil', 'Subject': 'Chemistry'}
>>> |
```

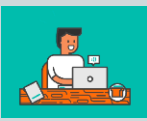
Source Code

Output





Python Programs



17. Write a python program using method to create the list of numeric values and search the number in the list using the Binary Search Technique .

```
def Bsearch(key,lst):
    low=0
    high=len(lst)-1
    while low<=high:
        mid=(high+low)//2 # Getting middle value in array
        if lst[mid]==key:
            return mid
        elif key<lst[mid]: # if key<middle element means higher index needs
            #to be modified as right side wasted
            high=mid-1
        else: #if key>middle element means left side waste and lower index needs
            #to be modified as mid+1
            low=mid+1
    else:
        return -1

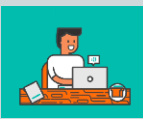
l=[]
n=int(input("Enter how many items:"))
for i in range(n):
    a=int(input("Enter integer: "))
    l.append(a)
key=int(input("Enter value to be search in array :"))
print(l)
a=Bsearch(key,l)
if a!=-1:

    print("Element not found in array")
else:
    print(f'Element found at position {a+1}')

print(f'Element found at position {a+1}')
```



Python Programs

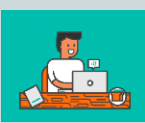


OUTPUT

```
Enter how many items:4
Enter integer: 2
Enter integer: 3
Enter integer: 4
Enter integer: 6
Enter value to be search in array :4
[2, 3, 4, 6]
Element found at position 3
```



Python Programs



18. Write a python program that accepts a list X of integers and sets all the negative element to the left and all the positive elements to the right of the list.

```
l=[]
n=int(input('Enter no of elements in list:'))
for i in range(n):
    a=int(input('Enter integer:'))
    l.append(a)
    l.sort()
print('Your list is' , l)
```

```
Enter no of elements in list:4
Enter integer:-2
Enter integer:5
Enter integer:-6
Enter integer:10
Your list is [-6, -2, 5, 10]
>>> |
```

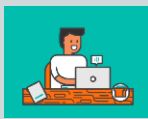
Source Code

Output





Python Programs



19. Write a menu driven program in python to implement the various methods of insertion and deletion in a list

```
T='y'
while T=='y' or T=='Y':
    def menu():
        print("""Menu Driven Insertion and Deletion in LIST""")
        print('1. Using insert() ')
        print('2. Using append() ')
        print('3. Using extend() ')
        print('4. Using pop() ')
        print('5. Using remove() ')
        print('6. Using delete command ')
        print('7. Type 0 to exit')

    menu()
    l=eval(input('Enter your list here:'))
    ch=int(input('Enter your choice:'))
    if ch==0:
        exit()
    elif ch==1:
        ele=eval(input('Enter element to be inserted:'))
        idx=int(input('Enter position to insert element :'))
        l.insert(idx-1,ele)
        print('Element Inserted !',l)
    elif ch==2:
        el=eval(input('Enter element to be inserted:'))
        l.append(el)
        print('Element appended!',l)
    elif ch==3:
        l1=eval(input("Enter list to be inserted:"))
        l.extend(l1)
        print('List inserted!',l)
    elif ch==4:
        print('Pop will by default remove element at last!')
        chi=input("Do you want to change if yes, type 'y', otherwise hit enter :)")
        if chi=='y':
            idx=int(input('Enter new position : '))
            del l[idx-1]
            print('Element from your given position has been removed!!',l)
        else:
            l.pop()
            print('Element popped successfully!!',l)
    elif ch==5:
        el=eval(input('Enter element to be removed:'))
        l.remove(el)
        print('Element removed Successfully!!',l)
    else :
        id=int(input('Enter position of element to be removed:'))
        del l[id-1]
        print('Deleted successfully from given position',l)
    T=input("Want to continue type 'Y' / 'y' :")
```

SOURCE CODE

```

*Menu Driven Insertion and Deletion in LIST*
1. Using insert()
2. Using append()
3. Using extend()
4. Using pop()
5. Using remove()
6. Using delete command
7. Type 0 to exit
Enter your list here:[34,56,67,89,90]
Enter your choice:1
Enter element to be inserted:10
Enter position to insert element :1
Element Inserted ! [10, 34, 56, 67, 89, 90]
Want to continue type 'Y' / 'y' :y

```

Choice==1

```

Want to continue type 'Y' / 'y' :y
*Menu Driven Insertion and Deletion in LIST*
1. Using insert()
2. Using append()
3. Using extend()
4. Using pop()
5. Using remove()
6. Using delete command
7. Type 0 to exit
Enter your list here:[34,56,67,89,90]
Enter your choice:2
Enter element to be inserted:1000
Element appended! [34, 56, 67, 89, 90, 1000]
Want to continue type 'Y' / 'y' :y

```

Choice==2

```

Want to continue type 'Y' / 'y' :y
*Menu Driven Insertion and Deletion in LIST*
1. Using insert()
2. Using append()
3. Using extend()
4. Using pop()
5. Using remove()
6. Using delete command
7. Type 0 to exit
Enter your list here:[34,56,67,89,90]
Enter your choice:3
Enter list to be inserted:[4,5]
List inserted! [34, 56, 67, 89, 90, 4, 5]
Want to continue type 'Y' / 'y' :y

```

Choice==3

```

Want to continue type 'Y' / 'y' :y
*Menu Driven Insertion and Deletion in LIST*
1. Using insert()
2. Using append()
3. Using extend()
4. Using pop()
5. Using remove()
6. Using delete command
7. Type 0 to exit
Enter your list here:[34,56,67,89,90]
Enter your choice:4
Pop will by default remove element at last!
Do you want to change if yes, type "y", otherwise hit enter :
Element popped successfully! [34, 56, 67, 89]
Want to continue type 'Y' / 'y' :y

```

Choice==4

```

Want to continue type 'Y' / 'y' :y
*Menu Driven Insertion and Deletion in LIST*
1. Using insert()
2. Using append()
3. Using extend()
4. Using pop()
5. Using remove()
6. Using delete command
7. Type 0 to exit
Enter your list here:[34,56,67,89,90]
Enter your choice:5
Enter element to be removed:34
Element removed Successfully!! [56, 67, 89, 90]
Want to continue type 'Y' / 'y' :y

```

Choice==5

```

*Menu Driven Insertion and Deletion in LIST*
1. Using insert()
2. Using append()
3. Using extend()
4. Using pop()
5. Using remove()
6. Using delete command
7. Type 0 to exit
Enter your list here:[34,56,67,89,90]
Enter your choice:6
Enter position of element to be removed:3
Deleted successfully from given position [34, 56, 89, 90]
Want to continue type 'Y' / 'y' :y

```

Choice==6

```

Want to continue type 'Y' / 'y' :y
*Menu Driven Insertion and Deletion in LIST*
1. Using insert()
2. Using append()
3. Using extend()
4. Using pop()
5. Using remove()
6. Using delete command
7. Type 0 to exit
Enter your list here:[34,56,67,89,90]
Enter your choice:0
>>> |

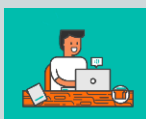
```

Choice==7
THAT IS
TYPE 0 TO
EXIT..

OUTPUT
SCREENS



Python Programs



20. Write a menu driven program using function Push(), Pop() and Display() to implement the stack. The program will store the name of the books.

```
1 def isEmpty(stk):
2     if stk==[]:
3         return True
4     else:
5         return False
6 def Push(stk,item):
7     stk.append(item)
8     top=len(stk)-1
9 def Pop(stk):
10    if isEmpty(stk):
11        return "Underflow"
12    else:
13        item=stk.pop()
14        if len(stk)==0:
15            top=None
16        else:
17            top=len(stk)-1
18        return item
19 def Display(stk):
20    if isEmpty(stk):
21        print('Stack Empty')
22    else:
23        top=len(stk)-1
24        i=len(stk)-1
25        while i>=0:
26            print(stk[i])
27            i-=1
28 stk=[]
29 top=None
30 while True:
31     print('1. Push')
32     print('2. Pop')
33     print('3. Display')
34     print('4. Exit')
35     ch=int(input("Enter your choice(1-3):"))
36     if ch==1:
37         item=(input("Enter item :"))
38         Push(stk,item)
39     elif ch==2:
40         item=Pop(stk)
41         if item=="Underflow":
42             print("Underflow stack is Empty")
43         else:
44             print("Popped item is :",item)
45     elif ch==3:
46         Display(stk)
47     else:
48         exit()
49
```

Source
Code

OUTPUT SCREENS

1. Push

2. Pop

3. Display

4. Exit

Enter your choice(1-3):1

Enter item :Sumita Arora

1. Push

2. Pop

3. Display

4. Exit

Enter your choice(1-3):1

Enter item :Preeti Arora

1. Push

2. Pop

3. Display

4. Exit

Enter your choice(1-3):1

Enter item :Foundation IT

Push

Enter your choice(1-3):3

Foundation IT

Preeti Arora

Sumita Arora

Display

Enter your choice(1-3):2

Popped item is : Foundation IT

P
o
p

1. Push

2. Pop

3. Display

4. Exit

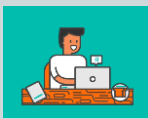
Enter your choice(1-3):4

>>> |

Exit



Python Programs



21. Program to connect with database and store record of employee and display records.

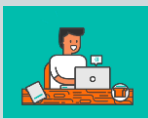
Source Code

```
import mysql.connector as ms
mycon=ms.connect(host='localhost',user='root',passwd='kali',database='Emg')
cursor=mycon.cursor()
print('1. Store record')
print('2. Display records')
ch=int(input("Enter choice:"))
if ch==1:
    eno=int(input("Enter Employee no:"))
    ename=input("Enter Employee Name:")
    sal=input("Enter Salary:")
    q='insert into Employee values({}, "{}", {})' .format(eno,ename,sal)
    mycon.commit()
    print("Record added successfully!")
else:
    q='Select * from Employee'
    cursor.execute(q)
    r=cursor.fetchall()
    for row in r:
        print(row)
```





Python Programs



Output Screen

```
1. Store record
2. Display records
Enter choice:1
Enter Employee no:7000
Enter Employee Name:Rohit
Enter Salary:39000
Record added successfully!
>>> |
```

Choice==1

EmpNo	EmpName	Sal
7000	Rohit	39000
7124	Kush	19000

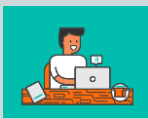
```
1. Store record
2. Display records
Enter choice:2
(7000, 'Rohit', 39000)
(7124, 'Kush', 19000)
>>> |
```

Choice==2





Python Programs



22. Program to connect with database and search employee number in table employee, if not found display appropriate message.

```
import mysql.connector as ms
mycon=ms.connect(host='localhost',user='root',passwd='kali',database='Emg')
cursor=mycon.cursor()
eno=int(input("Enter Employee no:"))
chk_q='Select * from Employee where EmpNo={}'.format(eno)
cursor.execute(chk_q)
res=cursor.fetchone()
if res!=None:
    print("Record found, details are")
    print(res)
else:
    print("Employee details not found")
```

Code

```
Enter Employee no:7124
Record found, details are
(7124, 'Kush', 19000)
>>> |
```

```
Enter Employee no:5555
Employee details not found
>>> |
```

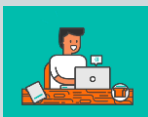


Output





Python Programs



23. Program to connect with database and update record of entered empno.

```
import mysql.connector as ms
mycon=ms.connect(host='localhost',user='root',passwd='kali',database='Emg')
cursor=mycon.cursor()
eno=int(input("Enter Employee no:"))
q='Select * from Employee where EmpNo={}'.format(eno)
cursor.execute(q)
r=cursor.fetchone()
if r!=None:
    eno=int(input("Enter new Employee no:"))
    ename=input("Enter new Employee Name:")
    sal=input("Enter new Salary:")
    q='update Employee set Empno={},EmpName="{}",Sal={}'.format(eno,ename,sal)
    mycon.commit()
    print("Record updated successfully!")
else:
    print("Record does not exist !")
```

Source Code

Output

```
Enter Employee no:7000
Enter new Employee no:8001
Enter new Employee Name:Rohit Sharma
Enter new Salary:40000
Record updated successfully!
>>> |
```

Before

EmpNo	EmpName	Sal
7000	Rohit	39000
7124	Kush	19000

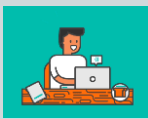
After ➡

EmpNo	EmpName	Sal
8001	Rohit Sharma	40000
7124	Kush	19000





Python Programs



24. Program to connect with database and delete the employee record of entered empno.

```
import mysql.connector as ms
mycon=ms.connect(host='localhost',user='root',passwd='kali',database='Emg')
cursor=mycon.cursor()
eno=int(input("Enter Employee no:"))
chk_q='Select * from Employee where EmpNo={}'.format(eno)
cursor.execute(chk_q)
res=cursor.fetchone()
if res!=None:
    q='delete from Employee where EmpNo={}'.format(eno)
    cursor.execute(q)
    mycon.commit()
    print("Record deleted successfully!")
else:
    print("Invalid Emp Number !")
```

Source Code

Output

```
Enter Employee no:7123
Record deleted successfully!
>>> |
```

Before

EmpNo	EmpName	Sal
7123	Ankita	29000
7124	Kush	19000

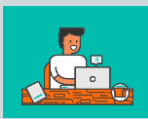
After

EmpNo	EmpName	Sal
7124	Kush	19000





Python Programs



25. Program to display all records from the table Employee.

```
import mysql.connector as ms
mycon=ms.connect(host='localhost',user='root',passwd='kali',database='Emg')
cursor=mycon.cursor()
q='Select * from Employee'
cursor.execute(q)
res=cursor.fetchall()
if res!=[]:
    for row in res:
        print(row)
else:
    print("No records !")
```

← Source Code

Output

```
(7123, 'Ankita', 29000)
(7124, 'Kush', 19000)
```

TABLE

EmpNo	EmpName	Sal
7123	Ankita	29000
7124	Kush	19000



COMPUTER SCIENCE

PRACTICAL FILE

2020-2021

MYSQL

QUESTIONS



1. Write SQL commands for (a) to (f) and write the output of (g) on the basis of table HOSPITAL.

HOSPITAL

No	Name	Age	Department	DateofAdm	Charges	Gender
1	Arpit	62	Surgery	1998-01-21	300	M
2	Zarina	22	ENT	1997-12-12	250	F
3	Kareem	32	Orthopaedic	1998-02-19	200	M
4	Arun	12	Surgery	1998-01-11	300	M
5	Zubeem	30	ENT	1998-01-12	250	M
6	Ketaki	16	ENT	1998-02-24	250	F
7	Ankita	29	Cardiology	1998-02-20	800	F
8	Zareen	45	Gynaecology	1998-02-22	300	F
9	Kush	19	Cardiology	1998-01-13	800	M
10	Shilpa	23	Nuclear Medicine	1998-02-21	400	F

- (a) To select all the information of patients of cardiology department.

```
mysql> Select * from HOSPITAL where Department="Cardiology;"
+-----+-----+-----+-----+-----+-----+-----+
| No | Name | Age | Department | DateofAdm | Charges | Gender |
+-----+-----+-----+-----+-----+-----+-----+
| 7 | Ankita | 29 | Cardiology | 1998-02-20 | 800 | F |
| 9 | Kush | 19 | Cardiology | 1998-01-13 | 800 | M |
+-----+-----+-----+-----+-----+-----+-----+
```

- (b) To list the names of female patients who are in ENT department.

```
mysql> Select name from Hospital where Department="ENT" and Gender="F";
+-----+
| Name |
+-----+
| Zarina |
| Ketaki |
+-----+
```

- (c) To list names of all patients with their date of admission in ascending order.

```
mysql> Select Name,DateofAdm from Hospital order by DateofAdm;
+-----+-----+
| Name | Date |
+-----+-----+
| Zarina | 1997-12-12 |
| Arun | 1998-01-11 |
| Zubeem | 1998-01-12 |
| Kush | 1998-01-13 |
| Arpit | 1998-01-21 |
| Kareem | 1998-02-19 |
| Ankita | 1998-02-20 |
| Shiilpa | 1998-02-21 |
| Zareen | 1998-02-22 |
| Ketaki | 1998-02-24 |
+-----+-----+
```

(d) To display patients name, charges, age of only female patients.

```
mysql> Select name ,Charges,Age from hospital where Gender="F";
+-----+-----+-----+
| Name | Charges | Age |
+-----+-----+-----+
| Zarina | 250 | 22 |
| Ketaki | 250 | 16 |
| Ankita | 800 | 29 |
| Zareen | 300 | 45 |
| Shilpa | 400 | 23 |
+-----+-----+-----+
```

(e) To count the number of patient with age < 30.

```
mysql> Select Count(Name) from Hospital where age<30;
+-----+
| Count(Name) |
+-----+
| 6 |
+-----+
```

**(f) To insert new row in the HOSPITAL table with the following data
11, Aftab,60, Surgery, 1998-02-25, 300, M**

```
mysql> insert into Hospital values(11, "Aftab",60, "Surgery", "1998-02-25", 300, "M")
Query OK, 1 row affected (0.047 sec)
```

(g) Give the output of the following statements:

i. Select count(Distinct Charges) from Hospital;

```
mysql> Select Count(Distinct Charges) from Hospital;
+-----+
| Count(Distinct Charges) |
+-----+
|          5              |
+-----+
```

ii. **Select min(age) from Hospital where gender = "F";**

```
mysql> Select min(age) from Hospital where gender = "F";
+-----+
| min(age) |
+-----+
|    16    |
+-----+
```

iii. **Select sum(charges) from Hospital where department = "ENT";**

```
mysql> Select sum(charges) from Hospital where department = "ENT";
+-----+
| sum(charges) |
+-----+
|    750       |
+-----+
```

iv. **Select avg(charges) from Hospital where DateOfAdm < '1998-02-12';**

```
mysql> Select avg(charges) from Hospital where DateOfAdm < `1998-02-12`;
+-----+
| avg(charges) |
+-----+
|    380.0     |
+-----+
```

2. Given the following table :

EMPLOYEE

EmpNo	Ename	Job	MGR	HireDate	Sal	Comm	Dept
7369	Sunita Sharma	Clerk	7902	17-DEC-80	2800		20
7499	Ashok Singhal	Salesman	7698	20-FEB-81	3600	300	30
7521	Rohit Rana	Salesman	7698	22-FEB-81	5250	500	30
7566	Jyoti Lamba	Manager	7839	02-APR-81	4975		20
7654	Martin.S	Salesman	7698	28-SEP-81	6250	1400	30
7698	Binod Goel	Manager	7839	01-MAY-81	5850		30
7782	Chetan Gupta	Manager	7839	09-JUN-81	2450		10
7788	Sudhir Rawat	Analyst	7566	19-APR-87	5000		20
7839	Kawita Sharma	President	-	17-NOV-81	5000		10
7844	Tushar Tiwari	Salesman	7698	08-SEP-81	4500	0	30
7876	Anand Rathi	Clerk	7788	23-MAY-87	6100		20
7900	Jagdeep Rana	Clerk	7698	03-DEC-81	4950		30
7902	Summits Vats	Manager	7566	03-DEC-81	3500	3600	20
7934	Manoj Kaushik	Clerk	7782	23-JAN-82	5300		10

(I) **To convert designation into lowercase.**

```
mysql> Select LCASE(Job) "Designation" from EMPLOYEE;
+-----+
| Designation |
+-----+
| clerk       |
| salesman    |
| salesman    |
| manager     |
| salesman    |
| manager     |
| manager     |
| analyst     |
| president   |
| salesman    |
| clerk       |
| clerk       |
| manager     |
| clerk       |
+-----+
```

(II) To list the name and employee number by converting the name into uppercase.

```
mysql> Select UCASE(Ename) ,EmpNo from EMPLOYEE;
+-----+-----+
| UCASE(Ename) | EmpNo |
+-----+-----+
| SUNITA SHARMA | 7369 |
| ASHOK SINGHAL | 7499 |
| ROHIT RANA    | 7521 |
| JYOTI LAMBA   | 7566 |
| MARTIN.S      | 7654 |
| BINOD GOEL    | 7698 |
| CHETAN GUPTA  | 7782 |
| SUDHIR RAWAT  | 7788 |
| KAWITA SHARMA | 7839 |
| TUSHAR TIWARI | 7844 |
| ANAND RATHI   | 7876 |
| JAGDEEP RANA  | 7900 |
| SUMMITS UATS  | 7902 |
| MANOJ KAUSHIK | 7934 |
+-----+-----+
```

(III) To list position of charcter "a" in the name employees.

```
mysql> select INSTR(ename,"a") from employee;
+-----+
| INSTR(ename,"a") |
+-----+
| 6 |
| 1 |
| 8 |
| 8 |
| 2 |
| 0 |
| 5 |
| 9 |
| 2 |
| 5 |
| 1 |
| 2 |
| 10 |
| 2 |
+-----+
14 rows in set (0.00 sec)
```

(IV) Display first three characters of the field JOB.

```
mysql> Select SUBSTR(Job,1,3) from Employee;
+-----+
| SUBSTR(Job,1,3) |
+-----+
| cle |
| sal |
| sal |
| man |
| sal |
| man |
| man |
| ana |
| pre |
| sal |
| cle |
| cle |
| man |
| cle |
+-----+
```

3. Given the following table :

MOV

No	TITLE	TYPE	RATING	Stars	QTY	PRICE
1	Gone with the Wind	Drama	G	Gable	4	39.95

2	Friday the 13 th	Horror	R	Jason	2	69.95
3	Top Gun	Drama	PG	Tom Cruise	7	49.95
4	Splash	Comedy	PG13	Tom Hanks	3	29.95
5	Independence Day	Drama	R	Turner	3	19.95
6	Risky Business	Comedy	R	Tom Cruise	2	44.95
7	Cocoon	Scifi	PG	Ameche	2	31.95
8	Crocodile Dundee	Comedy	PG13	Harris	2	69.95
9	101 Dalmations	Comedy	G	Bow Wow	3	59.95
10	Tootsie	Comedy	PG	Hoffman	1	29.95

Give the output of following SQL commands on the basis of table MOV.

(I) SELECT AVG(price) From Mov WHERE Price < 30;

```
mysql> SELECT AVG(price) From mov WHERE price < 30;
+-----+
| AVG(price) |
+-----+
| 26.61666742960612 |
+-----+
1 row in set (0.06 sec)
```

(II) SELECT MAX(Price) FROM Mov Where Price > 30;

```
mysql> SELECT MAX(price) FROM mov WHERE price>30;
+-----+
| MAX(price) |
+-----+
| 69.95 |
+-----+
1 row in set (0.03 sec)
```

(III) SELECT SUM(Price * Qty) From MOV Where Qty < 4;

```
mysql> SELECT SUM(price*Qty) from mov where Qty<4;
+-----+
| SUM(price*Qty) |
+-----+
| 793.0999984741211 |
+-----+
1 row in set (0.04 sec)
```

(IV) SELECT COUNT(DISTINCT Type) From Mov;

```
mysql> SELECT COUNT(DISTINCT Type) from mov;
+-----+
| COUNT(DISTINCT Type) |
+-----+
| 4 |
+-----+
1 row in set (0.07 sec)
```

4. Create table as per following table Chart:

COLUMN NAME	Cust_ID	Cust_Name	Cust_Address1	Cust_Address2	PINCODE	Cust_Phone
DATATYPE	NUMBER	VARCHAR	VARCHAR	VARCHAR	NUMBER	VARCHAR
LENGTH	7	30	20	30	6	10

```
mysql> create table customer
-> (Cust_ID int,
-> Cust_Name varchar(30),
-> Cust_Address1 varchar(20),
-> Cust_Address2 varchar(30),
-> Pincode int,
-> Cust_Phone varchar(10));
Query OK, 0 rows affected (0.52 sec)
```

```
mysql> desc customer;
```

Field	Type	Null	Key	Default	Extra
Cust_ID	int	YES		NULL	
Cust_Name	varchar(30)	YES		NULL	
Cust_Address1	varchar(20)	YES		NULL	
Cust_Address2	varchar(30)	YES		NULL	
Pincode	int	YES		NULL	
Cust_Phone	varchar(10)	YES		NULL	

```
6 rows in set (0.00 sec)
```

A). Add one more column Email of datatype VARCHAR and SIZE 30 to the table Customer

```
mysql> Alter table Customer
-> Add EMAIL VARCHAR(30);
Query OK, 0 rows affected (0.047 sec)
```

B). Add one more column CustomerIncomeGroup of data type VARCHAR(10).

```
mysql> Alter table Customer
-> Add CustomerIncomeGroup VARCHAR(10);
Query OK, 0 rows affected (0.047 sec)
```

C). Drop the column CustomerIncomeGroup from table Customer.

```
mysql> Alter table Customer
-> Drop column CustomerIncomeGroup;
Query OK, 0 rows affected (0.047 sec)
```

5. Write SQL commands to create table HOSPITAL with following specification:

(a) (Pno, WardNo, Pname, Dept, PAge, Disease, DOA)

```
mysql> create table Hospital
-> (Pno int,
-> WardNo varchar(5),
-> PName varchar(30),
-> Dept varchar(20),
-> PAge char(3),
-> Disease varchar(25),
-> DOA date);
Query OK, 0 rows affected (0.95 sec)
```

(b) Write a command to describe structure of above table?

```
mysql> desc hospital;
```

Field	Type	Null	Key	Default	Extra
Pno	int	YES		NULL	
WardNo	varchar(5)	YES		NULL	
PName	varchar(30)	YES		NULL	
Dept	varchar(20)	YES		NULL	
PAge	char(3)	YES		NULL	
Disease	varchar(25)	YES		NULL	
DOA	date	YES		NULL	

```
7 rows in set (0.00 sec)
```

(c) Add one more column in the above table as Address of type char (20).

```
mysql> alter table hospital
-> add (Address char(20));
Query OK, 0 rows affected (0.89 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

(d) Modify the column Address as char(25).

```
mysql> alter table hospital
-> modify Address char(25);
Query OK, 0 rows affected (1.51 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

(e) Drop the column Address.

```
mysql> alter table hospital
-> drop column Address;
Query OK, 0 rows affected (0.98 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

(f) Change the name of Address to Home_Address.

```
mysql> alter table hospital
-> change column Address Home_Address char(25);
Query OK, 0 rows affected (0.51 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

(g) Delete all rows of the table HOSPITAL.

```
mysql> delete from hospital;
Query OK, 0 rows affected (0.05 sec)
```

(h) Increase the size of age column to 3 digits.

```
mysql> alter table hospital
-> modify PAge char(3);
Query OK, 0 rows affected (0.21 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

(i) Add primary key constraint on column PNo of table HOSPITAL.

```
mysql> alter table hospital
-> add primary key (PNo);
Query OK, 0 rows affected (1.25 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

(j) Remove Department column of HOSPITAL table.

```
mysql> alter table hospital
-> drop column Dept;
Query OK, 0 rows affected (1.25 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

6. Create table Employee as per following Tale Instance Chart.

Column Name	EmpID	EmpName	EmpAddress	EmpPhone	EmpSal	DeptID
Key Type	Primary					Foreign
Nulls/Unique		NOT NULL				
Fk Table						Department
Fk Column						Dept_ID
Datatype	NUMBER	VARCHAR	VARCHAR	VARCHAR	NUMBER	VARCHAR
Length	6	20	30	10	9,2	2

```
mysql> create table emp
-> (EmpID int Primary Key,
-> Empname varchar(20) Not Null,
-> EmpAddress varchar(30),
-> EmpPhone varchar(10),
-> EmpSal int,
-> DeptID varchar(30) references department (Dept_id));
Query OK, 0 rows affected (0.54 sec)
```

```
mysql> Desc emp;
```

Field	Type	Null	Key	Default	Extra
EmpID	int	NO	PRI	NULL	
Empname	varchar(20)	NO		NULL	
EmpAddress	varchar(30)	YES		NULL	
EmpPhone	varchar(10)	YES		NULL	
EmpSal	int	YES		NULL	
DeptID	varchar(30)	YES		NULL	

```
6 rows in set (0.00 sec)
```

7. Consider the following tables Item and Customer. Write SQL commands for the statements (i) to (iv) and give output for SQL queries (v) to (vii)

RELATION: ITEM

Item_Id	ItemName	Manufacturer	Price
PC01	Personal Computer	ABC	35000
LC05	Laptop	ABC	55000
PC03	Personal Computer	XYZ	32000
PC06	Personal Computer	COMP	37000
LC03	Laptop	PQR	57000

RELATION: CUSTOMER

C_Id	CustomerName	City	Item_Id
01	N Roy	Delhi	LC03
06	H Singh	Mumbai	PC03
12	R Pandey	Delhi	PC06
15	C Sharma	Delhi	LC03
16	K Aggarwal	Bangalore	PC01

- i) To display the details of those customer whose city is Delhi.

```
mysql> select * from customer
-> where city = 'Delhi';
+-----+-----+-----+-----+
| c_id | CustomerName | City | Item_id |
+-----+-----+-----+-----+
| 1    | N Roy       | Delhi | LC03    |
| 12   | R Pandey    | Delhi | PC06    |
| 15   | C Sharma    | Delhi | LC03    |
+-----+-----+-----+-----+
3 rows in set (0.00 sec)
```

- ii) To display the details of items whose price is in the range of 35000 to 55000

```
mysql> Select * from Item where Price between 35000 and 55000;
+-----+-----+-----+-----+
| Item_Id | ItemName | Manufacturer | Price |
+-----+-----+-----+-----+
| PC01    | Personal Computer | ABC | 35000 |
| LC05    | Laptop | ABC | 55000 |
| PC06    | Personal Computer | COMP | 37000 |
+-----+-----+-----+-----+
```

- iii) To display the customerName, City from table Customer and ItemName and price from table item with their corresponding Item_Id.

```
mysql> select customername, city, itemname, price
-> from item, customer where item.item_id=customer.item_id;
```

customername	city	itemname	price
N Roy	Delhi	Laptop	57000
C Sharma	Delhi	Laptop	57000
K Aggarwal	Bangalore	Personal Computer	35000
H Singh	Mumbai	Personal Computer	32000
R Pandey	Delhi	Personal Computer	37000

5 rows in set (0.07 sec)

- iv) To increase the price of all items by 1000 in table Item.

```
mysql> update item
-> set price = price+1000;
Query OK, 5 rows affected (0.10 sec)
Rows matched: 5 Changed: 5 Warnings: 0
```

- v) Select Distinct (City) from Customer;

```
mysql> Select Distinct(City) from Customer;
```

Distinct(City)
Delhi
Mumbai
Bangalore

- vi) Select ItemName, Max(Price), Count(*) from Item group by ItemName;

```
mysql> Select ItemName, Max(Price), Count(*) from Item group by ItemName;
```

ItemName	Max(Price)	Count(*)
Laptop	57000	2
Personal Computer	37000	3

2 rows in set (0.06 sec)

- vii) Select ItemName, Price*100 from Item where Manufacturer='ABC';

```
mysql> Select ItemName, Price*100 from Item where Manufacturer='ABC';
```

ItemName	Price*100
Laptop	5500000
Personal Computer	3500000

2 rows in set (0.00 sec)

Q8) Consider the following tables Employee and Salary . Write SQL commands for the statements (i) to (iv) and give outputs for SQL queries (v) to (vii) .

EMPLOYEE

Eid	Name	Depid	Qualifcation	Sex
1	Depali Gupta	101	MCA	F
2	Rajat Tyagi	101	BCA	M
3	Hari Mohan	102	B.A.	M
4	Harry	102	M.A	M
5	Sumit Mittal	103	B.Tech	M
6	Jyoti	101	M.Tech	F

SALARY

Eid	Basic	DA	HRA	Bonus
1	6000	2000	2300	200
2	2000	300	300	30
3	1000	300	300	40
4	1500	390	490	30
5	8000	900	900	80
6	10000	300	490	89

(i) To display the frequency of employee department wise.

```
mysql> select depid ,count(*) from employee group by depid;
```

depid	count(*)
101	3
102	2
103	1

```
3 rows in set (0.00 sec)
```

(ii) To list name of those employees whose name starts with 'H'

```
mysql> select name from employee
-> where name like 'H%';
+-----+
| name |
+-----+
| Hari Mohan |
| Harry |
+-----+
2 rows in set (0.03 sec)
```

(iii) To add a new column in salary table. The column name is Total_Sal.

```
mysql> alter table salary
-> add (total_sal int);
Query OK, 0 rows affected (0.52 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

(iv) To store the corresponding values in total_sal column.

```
mysql> update salary
-> set total_sal=Basic+DA+HRA+Bonus;
Query OK, 6 rows affected (0.16 sec)
Rows matched: 6 Changed: 6 Warnings: 0

mysql> select * from salary;
```

Eid	Basic	DA	HRA	Bonus	total_sal
1	6000	2000	2300	200	10500
2	2000	300	300	30	2630
3	1000	300	300	40	1640
4	1500	390	490	30	2410
5	8000	900	900	80	9880
6	10000	300	490	89	10879

```
6 rows in set (0.00 sec)
```

(v) Select MAX(basic) from salary where Bonus>40;

```
mysql> select max(basic) from salary
-> where bonus>40;
+-----+
| max(basic) |
+-----+
| 8000 |
+-----+
1 row in set (0.00 sec)
```

(vi) Select count(*) from Employee group by Sex;


```
mysql> select count(*) from employee
-> group by sex;
+-----+
| count(*) |
+-----+
| 2 |
| 4 |
+-----+
2 rows in set (0.00 sec)
```

(vii) select distinct depid from employee;

```
mysql> select distinct depid from employee;
+-----+
| depid |
+-----+
| 101 |
| 102 |
| 103 |
+-----+
3 rows in set (0.00 sec)
```

Q9) With references to the table below, answer the questions that follow:

Employees

```
mysql> select * from employees;
```

Empid	Firstname	Lastname	Address	City
10	Ravi	kumar	Raj nagar	GZB
105	Harry	Walter	Gandhi nagar	GZB
152	Sam	Tones	33 Elam St.	Paris
215	Sarah	Ackerman	440 U.S. 110	Upton
244	Manila	Sengupta	24 Friends street	New Delhi
300	Robert	Samuel	9 Fifth Cross	Washington
335	Ritu	Tondon	Shashtri Nagar	GZB
400	Rachel	Lee	121 Harrison St.	New York
441	Peter	Thompson	11 Red Road	Paris

EmpSalary

```
mysql> select * from EmpSalary;
```

Empid	Salary	Benefits	Designation
10	75000	15000	Manager
105	65000	15000	Manager
152	80000	25000	Director
215	75000	12500	Manager
244	50000	12000	Clerk
300	45000	10000	Clerk
335	40000	10000	Clerks
400	32000	7500	Salesman
441	28000	7500	Salesman

Write the SQL commands for the following using above tables:

(i) To show first name, last name, address, and city of all employees living in Paris.

```
mysql> select firstname,lastname,address,city from employees where city='Paris';
```

firstname	lastname	address	city
Sam	Tones	33 Elam St.	Paris
Peter	Thompson	11 Red Road	Paris

(ii) To display the content of the employees table in descending order of first name.

```
mysql> select * from employees order by firstname desc;
```

Empid	Firstname	Lastname	Address	City
215	Sarah	Ackerman	440 U.S. 110	Upton
152	Sam	Tones	33 Elam St.	Paris
300	Robert	Samuel	9 Fifth Cross	Washington
335	Ritu	Tondon	Shashtri Nagar	GZB
10	Ravi	kumar	Raj nagar	GZB
400	Rachel	Lee	121 Harrison St.	New York
441	Peter	Thompson	11 Red Road	Paris
244	Manila	Sengupta	24 Friends street	New Delhi
105	Harry	Waltor	Gandhi nagar	GZB

(iii) To display the first name, lastname, and total salary of all managers from the tables Employees and Empsalary, where the total salary is

calculated as Salary+Benefits.

```
mysql> select firstname,lastname,(Salary+benefits)"total salary" from employees,empsalary
where employees.empid=empsalary.empid and designation="Manager";
+-----+-----+-----+
| firstname | lastname | total salary |
+-----+-----+-----+
| Ravi      | kumar    | 90000        |
| Harry     | Waltor   | 80000        |
| Sarah     | Ackerman | 87500        |
+-----+-----+-----+
3 rows in set (0.00 sec)
```

(iv)To display the maximum salary among managers and clerks from the table empsalary.

```
mysql> select max(salary) from empsalary where designation in ("Manager","Clerk");
+-----+
| max(salary) |
+-----+
| 75000       |
+-----+
```

Give the Output of following SQL commands:

(i)

```
mysql> select firstname, salary from employees, empsalary where designation = 'salesman' and employees.empid = empsalary.empid;
+-----+-----+
| firstname | salary |
+-----+-----+
| Rachel    | 32000  |
| Peter     | 28000  |
+-----+-----+
```

(ii)

```
mysql> select count(distinct designation) from empsalary;
+-----+
| count(distinct designation) |
+-----+
| 5                             |
+-----+
```

(iii)

```
mysql> select designation,sum(salary) from empsalary group by designation having count(*)>2;
+-----+-----+
| designation | sum(salary) |
+-----+-----+
| Manager    | 215000      |
+-----+-----+
```

(iv)

```
mysql> select sum(benefits) from empsalary where designation = 'clerk';
+-----+
| sum(benefits) |
+-----+
| 22000         |
+-----+
```

Q10)In a database there are two tables given below:

Table: EMPLOYEE

EMPLOYEEID	NAME	SALES	JOBID
E1	SUMIT SINHA	1100000	102
E2	VIJAY SINGH TOMAR	1300000	101
E3	AJAY RAJPAL	1400000	103
E4	MOHIT RAMNANI	1250000	102
E5	SHAILIJA SINGH	1450000	103

TABLE :JOB

JOBID	JOBTITLE	SALARY
101	President	200000
102	Vice President	125000
103	Administration Assistant	80000
104	Accounting Manager	70000
105	Accountant	65000
106	Sales Manager	80000

Write SQL query for the following:

(i) To Display employee ids, names of employees,job ids with corresponding job titles.

```
mysql> select employeeid,Name,employee.Jobid,Jobtitle from employee,job
where employee.Jobid=job.Jobid;
```

employeeid	Name	Jobid	Jobtitle
E2	Vijay Singh Tomar	101	President
E1	Sumit Singh	102	Vice President
E4	Mohit Ramnani	102	Vice President
E3	Ajay Rajpal	103	Administration Assistant
E5	Shailja Singh	103	Administration Assistant

```
5 rows in set (0.00 sec)
```

(ii) To Display names of employees ,sales and corresponding job titles who have achieved sales more than 1300000.

```
mysql> select name, sales ,jobtitle from employee, job
-> where employee.jobid=job.jobid and sales>1300000;
```

name	sales	jobtitle
Ajay Rajpal	1400000	Administration Assistant
Shailja Singh	1450000	Administration Assistant

```
2 rows in set (0.00 sec)
```

(iii) To Display names and corresponding job titles of these who have "SINGH"(anywhere) in their names .

```
mysql> select name,jobtitle from employee,job
-> where employee.jobid=job.jobid and name like '%singh%';
```

name	jobtitle
Vijay Singh Tomar	President
Shailja Singh	Administration Assistant

```
2 rows in set (0.00 sec)
```

(iv) Identify foreign key in the table Employee.

-> Jobid

(v) Write SQL command to change the JOBID to 104 of the EMPLOYEE with ID as E4 in the table "EMPLOYEE".

```
mysql> Update EMPLOYEE Set JOBID=104 where EMPLOYEEID="E4";
Query OK, 0 rows affected (0.047 sec)
```