Python Question

1. Given an array find the consecutive occurrences of each element for k time  
    sample Input = [1,1,1] desired output = [[1,1], [1,1]] k =2. No usage of external packages. Discuss the time complexity and Auxiliary and space complexity.

Def find\_consecutive(arr, k):  
 result = []  
 count = 0

Current\_element = None

For elem in arr:

if elem == current\_element:

count +=1   
 if count == k:

result.append([elem \* k])

count -= 1 # decrement for next group checks

else:

current\_element = elem

count = 1

return result   
  
 Time complexity: O(n)  
 Space complexity: O(n)  
 Aux space: O(1)

1. Read website request log text file and store the line by line in dictionary (Multiple manipulation like find the requests which got status as 200, find the bites of data transferred per request etc.)

Ans:

1. Given an array find all combination indexes of two elements which sum is equals to user input. No usage of external packages. Discuss the time complexity and space complexity, No repetitive combinations.

Ans:

1. Write a function to read the text file and get the sum of bytes where status is success.

example file: -

URL IP Method Status Bytes

google.com 2.3.4.5 GET 200 1081

yahoo.com 2.3.4.5 PUT 404 3481

makemytrip.com 2.3.4.5 POST 200 6781

motivity.com 2.3.4.5 GET 500 1043

Ans:  
  
def get\_sum(input\_file\_path: str):  
 total\_bytes = 0

With open(input\_file\_path, ‘r’) as file:

next(file)

for line in file:

data = line.strip().split()

If len(data) <3: # check for columns

Continue

Status = data[4]

Bytes\_Count = data[5]

If status == 200:

Total\_bytes += int(Bytes\_Count)

Return Total\_bytes

1. Given an array find all combination indexes of three elements which sum is equals to user input. No usage of external packages. Discuss the time complexity and space complexity, No repetitive combinations.

Ans:

SQL

**Sample tables**

|  |  |  |  |
| --- | --- | --- | --- |
|  | EmployeeTable |  |  |
| Department | EmpiD | EMPname | EMPStatus |
| HR | 1 | A | FTE |
| HR | 2 | B | FTE |
| Sales | 3 | C | FTE |
| IT | 4 | D | Contractor |
| Sales | 5 | E | FTE |
| IT | 6 | F | Contractor |

|  |  |  |
| --- | --- | --- |
|  | WorklogTable |  |
| EMPID | HoursWOrked | FinancialYear |
| 1 | 200 | 2001 |
| 2 | 300 | 2001 |
| 3 | 500 | 2001 |
| 4 | 400 | 2002 |
| 5 | 600 | 2002 |
| 6 | 800 | 2002 |

SQL Questions

1. Find the employee worked for minimum hours in the current year department wise?

Select et.empId, et.department,et.EmpStatus, MIN(wt.HoursWorked) as MinHoursWorked from EmployeeTable et

Left join WorklogTable wt

JOIN et.empid = wt.empid

Where wt.FinancialYear = year(current\_date)  
group by et.department, et.empId

Order by et.department, MinHoursWorked

1. Find the employee worked for maximum hours in the current year department wise?  
   Select et.empId, et.department,et.EmpStatus, MAX(wt.HoursWorked) as MinHoursWorked from EmployeeTable et

Left join WorklogTable wt

JOIN et.empid = wt.empid

Where wt.FinancialYear = year(current\_date)  
group by et.department, et.empId

Order by et.department, MinHoursWorked

1. Find the count of full-time employee (fte) department wise who have worked 10 percent or more hours in current year than previous year?

SELECT

Et.empId,

Count(et.empId)

from EmployeeTable et  
JOIN

(

SELECT   
 empId,   
 sum(case when Financialyear = Year(current\_date) then Hours Worked else 0 end) as HoursCurrentYear,  
 sum(case when Financialyear = Year(current\_date)-1 then Hours Worked else 0 end) as HoursPrevYear

From Worktable wt  
 group by empId

)

wt  
 ON et.empid = wt.empid

Where et. EMPStatus = ‘FTE’

And wt. HoursPrevYear > 0   
AND (wt. HoursCurrentYear / wt. HoursPrevYear \*100) = >=10

Group by et.department

1. Calculate the percentage of employee distributed by FTE and Contactor empstatus wise based on the departments.

with fte\_Ct as (

Select et.department,

Count(distinct et.empId) as fte\_count  
from employeeTable et

Where et. EMPStatus = ‘FTE’  
group by et.department

),

Cont\_cte as (

Select et.department,

Count(distinct et.empId) as cont\_count  
from employeeTable et

Where et. EMPStatus = ‘Contractor’  
group by et.department

)

Select distinct et.department, () fte\_cte.count / (fte\_Count + cont\_count) \* 100 as fte\_percent,

(cont\_count / (fte\_Count + cont\_count) \* 100 )as cont\_percent

From employeeTable et

JOIN **fte**\_cte on fte\_cte.department = et.department

JOIN cont\_Cte on cont\_cte.department = et.department

1. Find the Average of hours worked department wise write a SQL query which give the output**:**

* **Department, percentageofhours,PercentageofEmployees, TotalnumberofEmployees**

with departmentHours as (

Select et.department , sum(wt.hoursworked) as totalHrs,

Count(distinct et.empId) as TotalEmp

From EmployeeTable et   
Join  
Worklogtable wt

ON et.empId = wt.empId  
group by department  
),

TotalData as (

Select sum(TotalHours) as grandTotalHours,  
sum(TotalEmp) as GrantTotalEmp  
from DepartmentHours

)   
select

Dh.department,

Dh.TotalEmp **As TotalnumberofEmployees,**

Round((dh.TotalHours/td. grandTotalHours) \* 100,2 ) as **percentageofhours,**

Round((dh. TotalEmp /td. GrantTotalEmp) \* 100,2 ) as **PercentageofEmployees**

**From departmentHours dh, TotalHours th**