**SQL QUESTIONS**

Q1. What is the difference between UNION & UNION ALL in SQL?

Answer: Union returns discrete or unique set of records whereas union all allows duplicates

Q2. What is CAST function in SQL?

Answer:

This is used to force the variable type e.g. real decimals to integer

Q3. What is PARTITION BY function in SQL?

Answer:

This is used to group a larger dataset into clusters which helps with speed and memory issues.

A common use would be to split a large dataset into year, month, date for fast retrieval.

|  |  |
| --- | --- |
| Name | Sport |
| Adam | Cricket |
| Brad | Soccer |
| Kathy | Baseball |
| Dimi | Tennis |

|  |  |
| --- | --- |
| Person | Transport |
| Kathy | Car |
| Dimi | Bus |
| Eric | Bike |
| Faith | Train |

Q4. What is the difference between LEFT JOIN and LEFT OUTER JOIN (please refer to the tables X & Y below for explanation). Please use the empty table below to display the outputs if required.

Table X Table Y

Answer:

Left join is always an outer join and returns X plus any records from Y where the key field exists in X

In this case, Adam and Brad with null transport and Kathy and Dimi with Car/Bus

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Name | Sport | Transport |  |  |  |  |  |
| Adam | Cricket | null |  |  |  |  |  |
| Brad | Soccer | null |  |  |  |  |  |
| Kathy | Baseball | Car |  |  |  |  |  |
| Dimi | Tennis | Bus |  |  |  |  |  |
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Q5. Write a SQL query to find the second highest score and the Name of the person for that score from the Table below.

|  |  |
| --- | --- |
| Name | Score |
| Adam | 101 |
| Brad | 123 |
| Kathy | 99 |
| Dimi | 56 |

Table X

Answer:

Select Score,Name from X order – descending and pick the second entry or skip the first

Q6. What is the difference between *List* and *Dictionary* in Python?

Answer:

List e.g. [1,2,3] contains multiple entries that can be of different type and are mutable, i.e. you can edit them.

Dictionary e.g. {a:1,b:2,c:3} contains item pairs of key and value entries. These can also be edited, removed or new entries added.

Q7. Referring to the DataFrame (df) below, write a Python command (preferably 1 liner) to create a new DataFrame (new\_df) to contain only rows where **Action** is ‘ValidData’ AND **Status** is ‘Yes’



Answer:

new\_df = df.where([df.Action == ‘ValidData’,df.Status=’Yes’])

Alternatively, you can drop the rows where condition is not met

Q8. Using the same DataFrame (df), write a Python command (preferably 1 liner) to replace **Status** column values to ‘Audit’ WHERE **Action** column values are ‘NeedsReview’



Answer:

df.Status[df.Action==’NeedsReview’] = ‘Audit’

Q9. Using the same dataset as above (df), how do we get the number of times each country (*Country of Origin*) is appearing in the data?

Answer:

df.groupby([Country]).info()

or any other method that lists the result from the groupby object like values, etc.

Q10. Assuming, we are trying to achieve *LEFT JOIN* between the two given DataFrames (df1 and df2), write a Python command for the same, and write the expected output in the empty table below.

df1 df2

|  |  |
| --- | --- |
| Name | Tax |
| Adam | 5050 |
| Brad | 89 |
| Tim | 1256 |
| Adam | 1900 |

|  |  |
| --- | --- |
| Name | Age |
| Adam | 21 |
| Brad | 17 |
| Kathy | 43 |
| Dimi | 30 |

Answer:

df1.merge(df2, on=Name,type=’left’)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Name | Age | Tax |  |  |  |  |  |
| Adam | 21 | 5050 |  |  |  |  |  |
| Brad | 17 | 89 |  |  |  |  |  |
| Kathy | 43 | Null |  |  |  |  |  |
| Dimi | 30 | Null |  |  |  |  |  |
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Q11. What is a ***Filter*** and a ***Slicer*** in Power BI?

Answer:

These are tools on the right-hand pane that can take the dataset and present a subset of it in the dashboard that either shows the rows that obey the condition or the particular field of interest.

Output of filter can be the whole table if it fits or a drop-down option.

Q12. How can we prevent visuals in Power BI dashboard from changing / keep them static while applying drill down to other visuals?

Answer:

The default setting as you build a dashboard is to link the items so a total will change if a filter list chooses different values. You can change this is the ellipsis top right corner settings to be independent and hold a value even if the other items change

Q13. What is the input file size limitation in Power BI?

Answer:

Don’t know

Q14: Mention a few common DAX functions you have used in Power BI

Answer:

I’ve mainly used PowerBI ‘out of the box’ but did do a course on the DAX language used for expressions and the M commands used in the query editor but, other than having their command lists to reference list, I have not used them extensively

Q15. You have two ropes coated in an oil to help them burn. Each rope will take exactly 1 hour to burn all the way through. You cannot cut the ropes; and you do not have a timer.

Only with a lighter to ignite the ropes, how can you measure exactly 45 minutes?

Answer:If I can light them separately, I would light the first bent exactly in two so it burns out in 30 minutes and then light the second folded in four to mark 15 minutes.

Otherwise, I would tie a knot half way and then half again in one rope and stop the clock at the third knot and would not need the second rope.