1. Write the Python program for the below representation of Class (using inheritance) and create objects.

Diagram

Description automatically generated

1. Write a python script to transform the data available in the Data Files using Python/Pandas to be able to fit into a typical Database table. Aggregate the sales of both the branches and load the cleansed and transformed data into a CSV file (final.csv) that can be easily loaded into a table.

Come up with the table DDL with all the necessary fields/columns needed. (Refer to Data Files: Branch1\_Sales.csv, Branch2\_Sales.csv; Files contain sales information of two different Convenient store branches; As of now, data is only made available until Feb 2021)



The final aggregated csv file should look like below.



1. Read the file Q1.xlsx



Input columns:

Start Time

End Time

Start Latitude

Start Longitude

End Latitude

End Longitude

Expected Output:

Duration(s) – time between start and end time in seconds

is\_weekend – based on start time

hour\_of\_the\_day – based on start time

distance(km) – distance between start and end coordinates (latitude and longitude)

Table

Description automatically generated

Load the output as a SQL table.

1. Read from SQL Server

Database: Northwind

Tables: Orders, Order\_details

Read the two tables and join them in python using proper joining conditions

1. Input list: [9,4,4,7,1,8,4,7,3,0,2,5,7,3,7,2,6,8,4,6,7,1,3,2]

* Expected Output: [0,1,2,3,4,5,6,7,8,9,1,2,3,4,6,7,8,2,3,4,7,4,7,7]

Hint: Sorted format of the list

* Convert the output list to a 6x4 numpy array
* Convert the array to a pandas dataframe with index names from ‘a’ to ‘f’ and column names from ‘A’ to ‘D’

1. Create a DataFrame like below and find the lags and leads in Python DataFrame

Input:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | a | b | c | d |
| 0 | 66 | 34 | 76 | 47 |
| 1 | 20 | 86 | 10 | 81 |
| 2 | 75 | 73 | 51 | 28 |
| 3 | 1 | 1 | 9 | 83 |
| 4 | 30 | 47 | 67 | 4 |

Desired Output:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | a | b | c | d | a\_lag | d\_lead |
| 0 | 66 | 34 | 76 | 47 | NaN | 81 |
| 1 | 20 | 86 | 10 | 81 | 66 | 28 |
| 2 | 75 | 73 | 51 | 28 | 20 | 83 |
| 3 | 1 | 1 | 9 | 83 | 75 | 4 |
| 4 | 30 | 47 | 67 | 4 | 1 | NaN |

1. Read the student\_marks.csv   
    

a. Find the age of the students.

b. Find the Average and Grade.

c. Save the file(excel) with details of passed students.