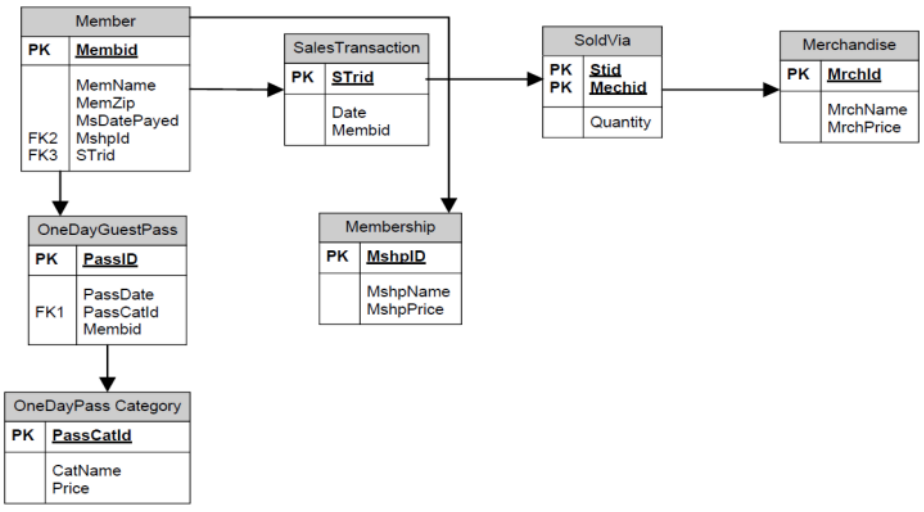
City of Miami Beach

Data Analytics and Visualization Exercise

Data Modeling

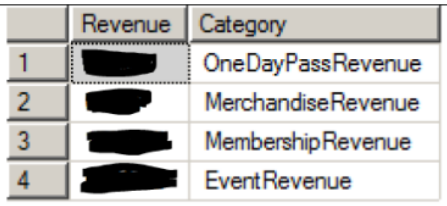
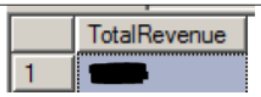
- **Goal**:
  - Create a Dimensional Model, Implement a Data Warehouse and build a PowerBI dashboard to present your findings.
- **Problem Description**:
  - Create a star schema diagram that will enable FIT-WORLD GYM INC. to analyze their revenue.
  - The fact table must include -- for every instance of revenue taken -- attribute(s) useful for analyzing revenue.
  - The star schema must include all dimensions that can be useful for analyzing revenue.
  - The only data sources available are shown below.

Source 1 – Fit World Gym Operational Data Base ERD



- **Tasks**:
  - Part 1:
    - 1. Implement the OLTP source data in SQL Server. [a data file will be provided for you to restore]

- 2. Create queries based on the OLTP tables to show amount of revenue from the different sources:

a.	**Revenue by category** (events, merchandise, membership, guest passes)	
b.	**Total revenue**	

- **Part 2**:

  3. Design a star schema (conceptual model) for the data warehouse.

- Part **3**:

  4. Implement the star schema in SQL Server with sample rows of data for the fact table and the dimension table(s) – use the sample data shown in this exercise.
  5. Create queries based on the data warehouse tables to show:
  a. Revenue by category (events, merchandise, membership, guest passes)
  b. Total revenue

- Part **4**:

  6. Build and deploy a multi-dimensional cube into SQL Server Analysis Services -- use the data warehouse as the data source. Create reports to generate the same information as in parts 1 and 3.

- Part 5

  7. Build a power BI Dashboard to present your findings.

- **Deliverables** (zip file)**:**
  - Visual Studio Solution (SSDT) containing at least the following project files:
    - DDBB(DW schema)
    - SSIS
    - SSAS
  - PowerPoint Presentation to show the approach followed towards the solution
  - Sql database backup file which contains the DW schema (.bak file)
  - .sql file containing the queries requested.
  - Cube backup file (.abf)
  - PowerBI dashboard file

Data Visualization

- **Goal**
  - Using the attached file(s), create a PowerBI dashboard which provides insights on the dataset(s) available for analysis. Use all the resources you have at hand.
  - Be creative
  - Feel free to create measures, statistical analysis, DAX expressions, maps, everything you think that will add value to your work
  - There are no right or wrong answers
  - Be ready to present and discuss with the Team.
  - Approach this exercise as if you were presenting your findings to the stakeholders

- **Deliverables**
  - Power Bi File (*.PBIX) containing the reports (dashboards) you built.