# CS 6400 Database Project

# BuzzBuy Data Warehouse

# Team 34

## Table of Contents:

The first phase of the project deals with the Analysis and Specifications.

## Data Types:

| Entity.Attribute | Type | Format |
|---|---|---|
| User.EmployeeID | String | Unique |
| User.FirstName | String | |
| User.Password | String | |
| District.DistrictNumber | Integer | Unique |
| AuditLog.ReportName | String | |
| AuditLog.TimeStamp | DateTime | |
| Holidays.HolidayName | String | |
| Holidays.Date | Date | |
| Store.Number | integer | Unique |
| Store.PhoneNumber | string or integer | 10 digit phone number, (_ _ _)-_ _ _-_ _ _ _ |
| Store.District | String | |
| Store.City | String | City name and City state |
| City.CityName | String | |
| City.State | String | 2 letter abbreviation, ex. TX |
| Product.PID | String | To use much wider range of unique identifier, we use a string instead of using integer.<br>Unique |
| Product.RetailPrice | Float | |
| Product.Name | String | |
| Product.ManufacturerName | String | |
| Manufacturer.Name | String | Unique |
| Category.Name | String | Unique |
| Categories.PID | String | Categories – a relationship mapping table |
| Categories.Name | String | Category Name |
| Discount.DiscountDate | Date | |
| Discount.DiscountPrice | Float | |

| | | |
|---|---|---|
| ProductDiscount.PID | String | Product-Discount relationship mapping table |
| ProductDiscount.DiscountDate | Date | |
| ProductDiscount.DiscountPrice | Float | |
| SellsTransactions.QuantitySold | Integer | |
| SellsTransactions.DateSold | Date | |
| SellsTransactions.PID | String | |
| | | |

## Business Logic Constraints

- An audit log entry must be created each time a report is viewed
- If a product in discounted, it has the same price in all stores
- The retail price is in effect unless there is a temporary, promotional discount
- If a product is discounted for multiple days in a row, then a record is stored in the data warehouse for each day

# Task Decomposition & Abstract Code

## Login

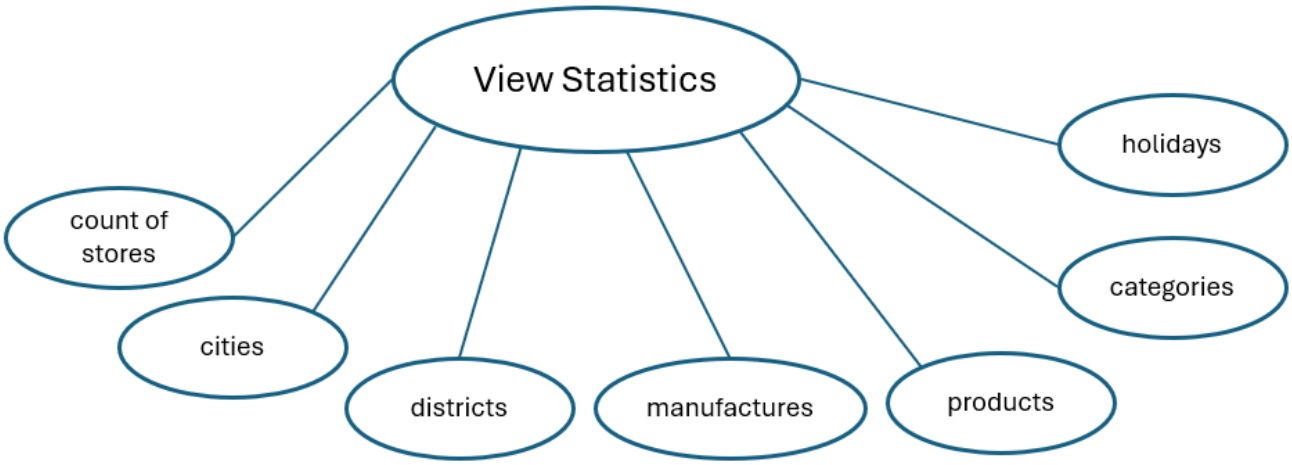
### Task Decomp:


- **Lock Types**: Read-Only **User** Table
- **Number of Locks**: Single
- **Enabling Conditions:** None
- **Frequency**: Frequent
- **Consistency:** Not Critical, order is not critical
- **Subtasks:** Subtask is not needed, no further decomposition needed

### Abstract Code:

- User enters employee id and password (last 4 ssn + "-" + LastName) input fields
- If data validation is success for both employee id and password input fields, then:
  - When Login button is clicked:
    - If User record is found but user password != (last 4 ssn + "-" + LastName)
      - Go back to **Login** form with error message
    - Else:
      - Store login information as session variable (EmployeeID)
      - Go to **Main Menu** Form

## View Statistics



## Task Decomp:

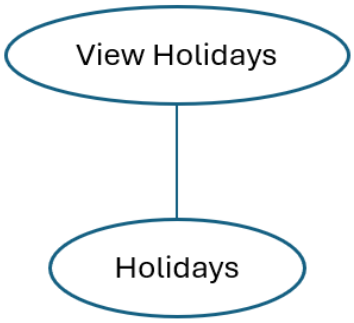
- **Lock Types:** Read-Only Lookups
- **Number of Locks:** Several schema constructs are needed
- **Enabling Conditions:** Successful login
- **Frequency:** Occasional (Upon successful login)
- **Consistency:** Not Critical
- **Subtasks:**
    - List available reports with navigation options.

## Abstract Code:

- Display Data: Count of Stores, Cities, districts, manufacturers, products, categories, and holidays
- Show "***Manufacturer's Product Report***", "***Category Report****"*, "***Actual versus Predicted Revenue For GPS units***", *"**Air Conditioners on Groundhog Day?**"*, *"**Store Revenue by Year by State***", "***District with Highest Volume for each Category****",* "***Revenue by Population***", *"**Edit Holiday**",* and *"**View Audit Log**"* Links
- Upon:
    - Click ***Manufacturer's Product Report*** button- Jump to **View Reports** Task
    - Click ***Category Report*** button- Jump to **View Reports** Task
    - Click ***Actual versus Predicted Revenue For GPS units*** button- Jump to **View Reports** Task
    - Click ***Air Conditioners on Groundhog Day?*** button- Jump to **View Reports** Task
    - Click ***Store Revenue by Year by State*** button- Jump to **View Reports** Task
    - Click ***District with Highest Volume for each Category*** button- Jump to **View Reports** Task
    - Click ***Revenue by Population*** button- Jump to **View Reports** Task
    - Click ***Edit Holiday*** button- Jump to **Edit Holiday** Task
    - Click ***View Audit Log*** button- Jump to View **Audit Log** Task

## View Holidays

### Task Decomp:



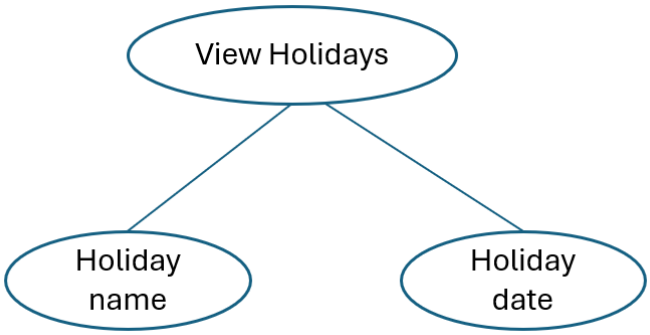

- **Lock Types**: 2 Read-Only Lookups of HolidayName and HolidayDate from **Holiday** Table
- **Number of Locks:** Several different schema constructs are needed
- **Enabling Conditions:** Both enabled to user's login screen
- **Frequency:** Occasionally
- **Consistency:** Not Critical
- **Subtasks:**
  - User clicked ***View Holidays*** button from **Main Menu**
  - Run **View Holiday** task: query information about Holidays

### Abstract Code

- Check if user has been granted to access to all districts
- If all districts are accessible, then:
  - View all holidays

## Edit Holidays

### Task Decomp:



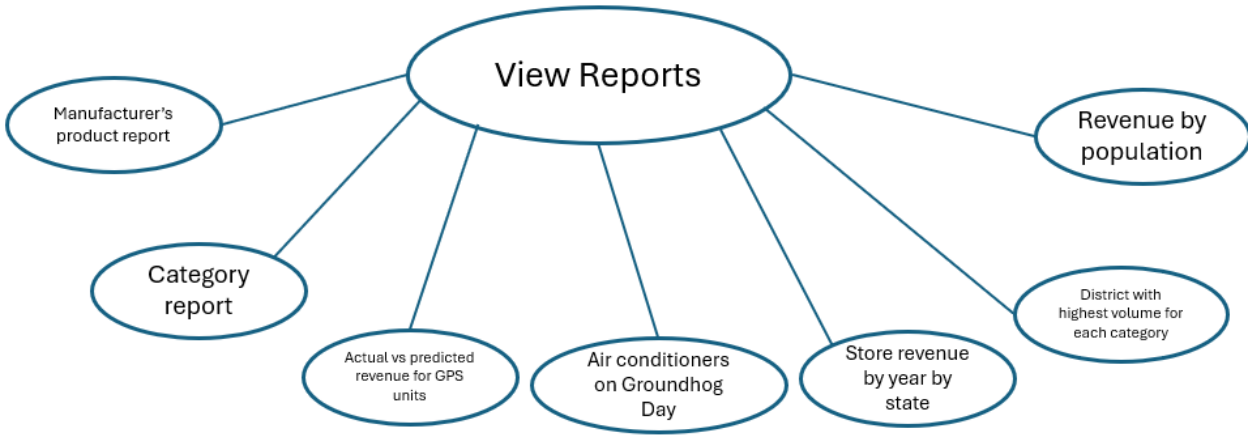

- **Lock Types**: Write Locks on **Holiday** Table
- **Number of Locks**: Several schema constructs are needed
- **Enabling Conditions**: User has access to all districts
- **Frequency**: Infrequent (Only certain users can add holidays)
- **Consistency**: Critical (To prevent duplicate holidays)
- **Subtasks**:
  - User clicks ***Edit Holidays*** button from the **Main Menu**.

- Validate user's permission to add holidays.
- If permission is valid:
    - Check if the holiday already exists for the date.
    - If not, allow user to add a new holiday.
    - Record which user added the holiday.

## Abstract Code:

- Check if user has been granted to access to all districts
- If all districts are accessible, then:
    - View all holidays
    - Select a holiday to edit
    - "Delete" is also supported from the same view ***"All Holidays***"

## View Reports

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## Task Decomp:

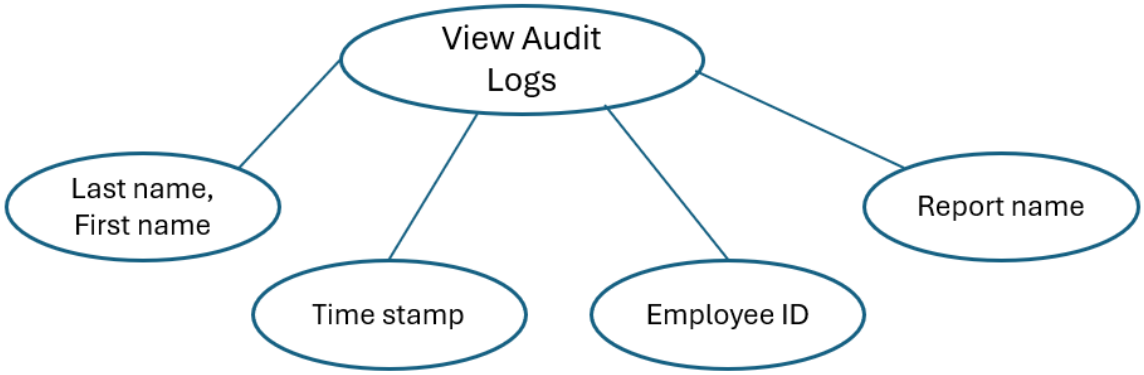
- **Lock Types:** Read-Only Lookups
- **Number of Locks**: Several schema constructs are needed
- **Enabling Conditions**: Successful login
- **Frequency**: Occasional (Reports viewed based on user needs)
- **Consistency**: Not Critical
- **Subtasks**:

- User selects a report from the list.
- Query the data warehouse for the selected report.
- Display the report data to the user.

## Abstract Code:

- Check if user has been granted to access to Reports
- If a user is granted to access, then:
  - View all available reports
  - Choose a report to generate a report
  - Upon completion of generating a report
    - User is able to export the output to different formats of files (PDF or CSV)

## View Audit Logs

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## Task Decomp:

- **Lock Types:** Read-Only Lookups on **Audit Log** Table
- **Number of Locks:** Several schema constructs are needed
- **Enabling Conditions**: User has audit log permissions
- **Frequency**: Infrequent (Only users with permissions can view)
- **Consistency**: Not Critical
- **Subtasks**:
  - User clicks ***View audit log*** button from the **Main Menu**.
  - Query the most recent audit log records.

- Display the audit log records in a table format, highlighting entries where the user has access to all districts.

## Abstract Code:

- Check if user has been granted to access to Audit Logs
- If a user is granted to access, then:
  - View all available audit logs
    - Search by Date, User, ReportName
    - Sort by Date
  - Choose an audit log to view
  - A selected log or multiple logs can be printed or exported to other file formats