# Data Types:

1)  
2)

# Business Logic Constraints:

1. User can view and add holiday information but can’t delete holiday.
2. User can update population of cities in the system, then the city’s category part also need to be updated.
3. **(Report 1)** The report should query for each category including those without products.
4. **(Report 2)** For Couches and Sofas Category, user assumes that if an item that was offered at a discount were instead offered at the retail prices, the quantity of items sold would be reduced by 25%.
5. **(Report 2)** In Actual versus Predicted Revenue for Couches and Sofas Report, only predicted revenue differences greater than $5000 (positive or negative) should be displayed and sorted in descending order.
6. **(Report 3)** In Store Revenue by Year by State Report, only states available in the drop-down box can be chosen. In the revenue calculation, items that were sold at a discount are also included.
7. **(Report 4)** When generating Outdoor Furniture on Groundhog Day Report, user explicitly query for February 2 in each year to get total number of items sold, the average number of units solid per day, and the total number of units in the outdoor furniture category. Assume a year is exactly 365 days when calculating average number of units sold per day.
8. **(Report 5)** In State with Highest Volume for each Category Report, user can only select year and month from the available dates. Each category will only be listed only once unless two or more states tied for selling the highest number of unites in that category. Products which do not have category is not considered in this report.
9. The city sizes are only categorized into four groups: Small (population <3,700,000), Medium (population >=3,700,000 and <6,700,000), Large (population >=6,700,000 and <9,000,000) and Extra Large (population >=9,000,000).
10. **(Report 7)** In the Childcare Sales Volume Report, stores that do not offer childcare should be included and grouped as “No childcare”. Other childcare categories include: XXXX. Only sales data in the last 12 months are included in this report. All limits may need to be updated if it changes.
11. **(Report 8)** In Restaurant Impact on Category Sales Report, any categories that are not assigned products are excluded from this report. The report should be ordered by category name ascending and with non-restaurant store data listed first.
12. **(Report 9)** In Advertising Campaign Analysis Report, all products sold at a discount price are included in this report. The report should be ordered by difference in descending order and only the top 10, followed by bottom 10 from the difference result should be displayed.

Some ideas for business logic based on user requirements –

* City and states name/data must exist in the United States.
* The childcare center limit needs to apply to all stores.
* City may have multiple stores; city may also have zero stores.
* All products need to be available in all stores; All stores carry all products.
* A product must be assigned to one or more categories; A category may or may not have a product associated with it.
* A product always has a retail price. Retail price is in effect unless there is a discount price.
* Discount products have a date range or different dates with different prices.
* If a product is discounted, it is for the same price in all stores.
* Multiple holidays can happen on the same day.
* Product sales amounts do not account for sales tax values.
* The total amount of the sale is determined by date purchased, quantity, and individual item price (either retail price or discount price).
* A sales transaction does not need to include each product item.
* Advertising dates can overlap each other.
* Day class cannot include dates greater than today’s date.
* No user authentication needed.
* User can add and view holiday information.
* User can update the population of any cities in the system.
* The system needs to check for filter conditions, such as certain time period before running the report.

# Task Decomposition:

1)  
2)

# IFD Decomposition:

1. Task “Add Holidays” should be renamed as Add Holiday. Without “s”
2. Need to change “Holiday Maintainance” to “Holiday Maintenance” in IFD.
3. Just a suggestion – standardize view report tasks’ names:
   1. View Product by Category Report
   2. View Actual vs. Predicted Revenue for Couches and Sofas Report
   3. View Store Revenue by Year by State Report
   4. View GroundHog Day Outdoor Furniture Report
   5. View State with Highest Volume by Category Report
   6. View Revenue by Population Report
   7. View Childcare Sales Volume Report
   8. View Restaurant Impact on Category Sales Report
   9. View Advertising Campaign Analysis Report

**Questions:**

1. Lock types – read lock and write lock. One action from one entity constitutes as one lock. @[294](https://piazza.com/class/ki71j93fono3wt?cid=294) on piazza.

Should we call those entities “constructs”, “entities”, or “tables”?

1. Do we want to standardize the view reports’ tasks names in IFD?

Part of View Statistics AC below – This is based on the original tasks’ names from IFD…put it in here just in case we want to keep the original naming of tasks.

* Show *“****View Holidays****”, “****View Category Report****”, “****Compare Revenue Report****”, “****Display Store Revenue Report****”, “****Display Outdoor Furniture Revenue Report****”, “****Display State with Highest Volume Report****”, “****Display Revenue by Population Report****”, “****View Childcare Sales Volume Report****”, “****View Restaurant Impact on Category Sales Report****”, “****Analyze Advertising Impact Report****”,* and *“****Maintain Population****”* buttons/links from **View Statistics** form.
* Upon:
  + Click ***View* *Holidays*** button – Jump to the **View Holidays** task.
  + Click ***View Category******Report*** button – Jump to the **View Category Report** task.
  + Click ***Compare Revenue******Report*** button – Jump to the **Compare Revenue** **Report** task.
  + Click ***Display Store Revenue******Report*** button – Jump to the **Display Store Revenue** **Report** task.
  + Click ***Display Outdoor Furniture Revenue******Report*** button – Jump to the **Display Outdoor Furniture Revenue** **Report** task.
  + Click ***Display State with Highest Volume******Report*** button – Jump to the **Display State with Highest Volume** **Report** task.
  + Click ***Display Revenue by Population******Report*** button – Jump to the **Display Revenue by Population** **Report** task.
  + Click ***View Childcare Sales Volume******Report*** button – Jump to the **View Childcare Sales Volume** **Report** task.
  + Click ***View Restaurant Impact on Category Sales******Report*** button – Jump to **View Restaurant Impact on Category Sales** **Report** task.
  + Click ***Analyze Advertising Impact******Report*** button – Jump to the **Analyze Advertising Impact** **Report** task.
  + Click ***Maintain Population*** button – Jump to the **Maintain Population** task.

1. Should we refer to the **“View Statistics”** form as “**Main Menu / View statistics**” form since we are referring to this form as **Main Menu** in all the tasks?
2. When users click on the ***View State with Highest Volume by Category Report*** button, which tasks is triggered? **View State with Highest Volume by Category Report** or **Get Year and Month List**? Same question for report 3.
3. What should we call the form that displays year and month drop-down list? Right now, I am just calling it the drop-down list UI form…would be nice to have a specific name for it.
4. Question regarding the weak entity DISCOUNT – Can a weak entity inherit all the attributes from the strong entity? – should discount product be a subclass of product and regular product be a subclass of product and they overlap each other??
5. Page 2 – ad hoc querying – should we consider adding that functionality?
6. After each report is displayed, should we mention in the abstract code what users can do next on the screen? Something like “When ready, user can click ***Finish*** button to return to main menu..etc.”? In the case of report 3 and report 5, maybe user can click a ***Return*** button to return to previous screen.