Good morning, thank you for (TA’s name) joining our demo. We’re excited to present what we came up with for this project.

In this project, we used **Python**as our programming language to build a web application. MySQL is the database we used in this project. Django is our main backend framework. Our frontend framework uses bootstrap.

To demo the web application, we type the command in the command prompt the python runserver command and it gives us this link. We can copy and paste it to the browser to launch the site. Our main menu interface includes 5 statistics, reporting areas and the maintenance area. The basic 5 statistics are displayed here including count of stores offering childcare, count of products, count of distinct advertising campaigns, count of stores, count of stores offering food. These five statistics will help the you to get a glance of their data and also as a checkpoint to make sure that the data is accurate before viewing reports. The following are 9 reports and 2 maintenances including population and holiday maintenance as required by the project spec. I’ll show you the reporting section first, and then the 2 maintenance.

Let’s go over to the reports.

Report 1 is the category report. The purpose of this report is to show a summary of the products in each category.

1. Columns include category name, total number of products, Min & Average & Max retail price of products.

2. All categories in the database including those without products are listed here, for example, pet furniture.

3. This report is sorted by category name in ascending order.

4. From the results, we can see that bar furniture category…there are 30 categories in total.

5. Click the “Dashboard” here, you can return to main menu.

Report 2 is the report about actual versus predicted revenue for couches and sofas. The purpose of this report is to predict whether offering items at a discount actually helps to increase revenue by encouraging a higher volume of sales. This report compares how much revenue was actually generated from a product’s sales versus if the product were never discounted.

1. This report is only for the products in the category of couches and sofas.

2. The columns in this table include product ID, name, retail price, total number of items sold, total number of items sold at discount price, total number of items sold at retail price, actual revenue, predicted revenue, and the difference between actual and predicted revenue.

3. Predicted revenue assumes that the product is never offered at a discount. It is calculated based on 75% original volume selling at a retail price on discounted days.

4. As required by the spec, difference is calculated by subtracting predicted revenue from the actual revenue. Only differences greater than $5000 (either positive or negative) are displayed here and the report is sorted by differences in descending order.

5. From the results, there are 15 products from the category, we can see offering discount for these products can result in huge differences. If the difference is positive, it means that the actual revenue is higher, and we are better off offering this product at the discounted price. If the difference is negative, it means that offering the product at regular price and selling at 75% of the sales volume is better. For most of the products listed here, offering discount cannot increase the revenue, but decrease the revenue.

This is the report 2. Again, click “Dashboard” and return the main menu.

Report 3 is the store revenue by year by states report. It shows the revenue collected by stores per state grouped by year.

1. When clicking this link, states available for querying is displayed in the drop-down box. You can select a state and then click Run Report button. Note, here if you don’t select any state, run report button is disabled. Once we select a state and click the button, it goes to this table.

2. Columns include store ID, Store Address, city name, sales year and total revenue.

3. The report is sorted first by year in ascending order and then by revenue in descending order.

4. In the XX state report: For the year 2000, you can see that stores XX have the highest sales revenue.

Report 4 presents outdoor furniture revenue on Groundhog Day. The goal of this report is to prove if the outdoor furniture sales spikes on Groundhog Day.

1. This report only queries for products in the category of outdoor furniture.

2. It returns the table with columns of year, total number of items sold, average number of items sold per day (calculated by total units sold/365…assuming 365 days), total number of items sold on Groundhog Day (Feb.2).

3. The report is sorted by year in ascending order.

4. From the results, For most years, outdoor furniture sales are better on Groundhog Day than the daily average.

Report 5 is the State with Highest Volume Report. This report will help you to know all stores in the states that sell the greatest number of units for each category.

1. This is a monthly report, so we need to select year and month first. If no selection, Run Report button is disabled. If we reset the year, the month will be reset as well. Once we have both year and month selected, we can run the report.

Then, it returns this table with the column of the category name, the states that sold the highest number of units in that category (include items sold by all stores in the state), and the number of units that were sold by stores in that state.

2. The table is sorted by category name in ascending order.

3. Note: This report queries for all categories. Each category will only be listed once unless there are more than one state with the highest sales units.

4. From the results, we can tell XX and XX both have the highest sales volume for Aquarium furniture category.

Regarding indices, we checked the common places like WHERE, JOIN, ORDER BY, etc. where indices become really helpful, and found that all related columns are already indexed by MySQL. A double-check was done using the EXPLAIN statement, and it shows that all queries indeed use the indices. Thus, no additional index tuning was conducted.

(Optional part) If we select 2012-06, it will take longer to run due to larger dataset but it can still finish in around 10 seconds.

Report 6 is the revenue by population report. This report will help you to forecast expansions into other cities, it lets us see what the total revenue is for specific population categories, and to see if there is a trend for revenue growth on an annual basis.

1. Each row represents a year, while each column represents a city size category. The categories are based on the population ranges as indicated in the column headers.

2. Both rows and columns are in ascending order, from the oldest to newest year and from smallest to largest city size categories.

3. From the results, we can see in most of the years, medium city size has higher revenue, comparing with other city sizes. So, from that perspective, the LEOFURN furniture company should consider expansions into medium size cities. Also, with the increase of year, there is not a clear trend for growth for each city size categories.

4. One thing to note: when population is updated in the Population Maintenance, the city size category in this report will also be updated simultaneously, which will result in different data. (AK-Lousiville-make the population small?)

Report 7 is the report about childcare sales volumes. This report will help you to understand how offering childcare has an impact on sales.

1. It returns all available sales data for the last 12 months and for each childcare time limit.

2. Each column represents all available childcare limits provided by stores including a column for stores with no childcare service. Each row represents a month in the past 12 months.

3. From the results, there is not a clear indication that providing more childcare will lead to higher sales volume. As we can see, during some months, providing no childcare brings in similar sales volume or higher than providing childcare. 2012-04, 2012-05, 2012-06.

Report 8 is about the Restaurant Impact on Category Sales. According to the project spec, the purpose of this report is to help you to see if the presence of a restaurant can result in less sales in certain categories such as dining room furniture, while more sales in other categories such as beds, etc.

1. The columns include category, store type, quantity sold. Categories are presented as grouped rows with store type separated into non-restaurant and restaurant.

2. The report is ordered by category name ascendingly, with non-restaurant store data listed first.

3. For the Store Type that has no quantity sold, 0 will be shown in the quantity sold column.

4. Note: any categories that are not assigned products is not included in this report as their information is not useful here.

As shown here, for **all** categories, the sales volume for restaurant store type is roughly 4 times of the volume for non-restaurant store type. Note that this is from the perspective of the total quantity sold.

However, since the number of stores with and without restaurant are not at the same level, it’s fairer to estimate the average quantity sold per store in order to better evaluate the impact of a restaurant. So, we looked further into the data and found that the number of stores with restaurant (794) is roughly 4 times of the number of stores without a restaurant (206). Thus, from the perspective of the rough average quantity sold, the quantity is roughly the same for the two store types, and this is true for all categories. So, the presence of a restaurant doesn’t result in significant sales changes.

But from the perspective of total quantity sold, it is hard to tell if the presence of a restaurant contributes to a sales volume change.

Report 9 is advertising campaign analysis report. This report will help you to know whether an advertising campaign affects product sales volume if the product is discounted.

1. This report queries for all products, and when a discount price is in effect. For each product, we are showing product ID, product name, units sold during campaign, units old outside campaign and the difference (the difference column is calculated by subtracting the sold outside campaign from the sold during campaign).

2. The results are sorted by difference in descending (highest to lowest) order. And only the top 10, followed by the bottom 10 from the results are shown in this report.

3. From the results, we can see for these products, advertising campaign has a positive effect on product sales volume when a discount price is in effect as there are significantly more discounted products sold during a campaign than outside of a campaign.

For all reports, if there are no data meet the report criteria, “No Records!” will be shown.

There are two maintenances: Population and holiday maintenance.

1. Click on population link to come to the population maintenance interface, if there is no selection, update population button is disabled. You can select state, city to show the corresponding population.

2. The update population button will only become enabled when you update the population to a different number.

Note: population length should be between 0 - 10 digits.

3. If at any time, you decide to change the selected state, then the city and population will be reset. If you change the city, then the population will be reset to reflect the correct for that location. And the update button stays disabled until you change the population to a different number.

4. Once the update is successful, you will receive a success message at the bottom.

Graphical user interface, application

Description automatically generated

Click on the top and we go back to the dashboard.

Next, click on the holiday maintenance link:

1. It shows the holiday list with holiday date and holiday name. Note: A date can have multiple holiday names.

2. If you want to add holiday, you will click add holiday button. Similarly, if there is no selection, the add holiday button is disabled. You need to input Holiday Name and Select Holiday Date from DateTimePicker to enable the button.

A couple of notes: The Date Text box is read only and only support the time picker to reduce the error handling cost. If we enter a holiday that has already existed with the same name and same date, it shows a warning message to remind you of this. For example: New Year’s Day 2012/1/1.

Add success example: April fool’s day 4/1/2021

And when we go back to holiday list you can see the holiday is added.

Graphical user interface, text, application, email

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End~

That concludes all the functionalities in our dashboard. Any questions? Again, thank you for joining us. We’ve learnt a lot from this course. Thanks! Have a good weekend……