CSD-310: Database Development and Use
Assignment 12.1: Case Study Critique
Green Group: Outland Adventures
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Naming Conventions

When naming tables, I recommend thinking about you would call a single record in that table, and then making it plural, because a table stores more than one record. So: employees, equipment, order_lines, equipment_orders, customers, trips, regions, bookings. This does not put the project in peril, it's just a nice thing for clarity.

ERD

In the ERD, Order_Line is represented as order_online. I suspect this is a documentation error. If it is NOT a documentation error, I strongly recommend updating both the ERD and the database creation SQL, because order_line (or, better yet, order_lines) is a much clearer name.

I was quite surprised to see region off in the corner connected to only one thing. Imagine Jim wants to rent out a canoe. He sees a quantity of canoes in the database and reserves one, unaware that the canoes in question are in the Amazon and he's in Italy. Is there a separate equipment line for canoes in each region?

I am however pleased by the inclusion of the quantity_on_hand in the equipment table. It's very easy when designing to create an unneeded stockkeeping entity- but as you can see, you can discover an inventory quantity-on-hand using *only* the equipment_id, so it does belong in the equipment table as pictured.

Booking is effectively what we'd call a link record or a link table, describing a many-to-many relationship between customers and trips. I believe this to be correct. However, when dealing with these, sometimes we need to be mindful of duplicates. Is it valid for a single customer to book the same trip (which has the same start/end date) three times? Because it's representable! This is going to come down to what you feel is valid, how you would interpret this data, but my gut would be to remove booking_id and use a composite key on (customer_id, trip_id) to reject duplicates.

Aging Equipment Report

The report seems effective, and I believe it contains enough information to make business decisions about these items (e.g. replacing them). However, as a customer-facing report, I

would spend a lot more time on formatting. Is the first item an equipment_id? Is the last item a quantity-on-hand? It would be nice to know this with a table header!

On a terminal with fixed character widths like this, there are two ways you can achieve well-aligned columns. One is to use ‘ljust’, ‘rjust’, and ‘center’ to add spaces to a string before you concatenate it into a printed row, like

```
print(
      str(row[0]).rjust(3) + ‘ ‘ +
      row[1].ljust(12) +
      …
)
```

Another way would be to use format specifiers in f-strings, like

```
print(f”{row[0]:>3} {row[1]:>12} …”)
```

With this being customer facing, I feel that a table header and aligned columns are pretty important to go right to the data you need.

Booking Trends by Region Report

Once again, I see tuples printed out, which are not the most readable information for the customer. See my comments above.

This report doesn’t seem to indicate trends to me. Are bookings trending upwards? Downwards? All I know is where they’re at now. I would add a second column and perhaps a “trend” or “difference” column so I can go right to the negative numbers and start asking questions.

Sales vs Rental Revenue Report

This is a very interesting output. Again, it needs formatting. But I can see how the way you designed the database really lent itself to creating the report this way. (That’s a good thing! Your database design should be making your job easier!)

I think perhaps we might like this data time-boxed. The customer didn’t specifically ask for trends over time, but I bet having a sales vs rental trend would also help make business decisions.

Guide Assignment Report

My gut feeling is to sort the list by last name as appears to have been done here, but combine them for display into “LastName, FirstName” in one column, because Blythe and Jim are likely to see this as one piece of data. “Guide” seems superfluous here – only Guides will be displayed in this report, so the column isn’t needed in the output. And then my usual gripes about formatting and labeling apply here too.

Equipment Order Frequency Report

I have to be honest, I haven’t the foggiest idea what I’m looking at. I can’t judge the fitness of the results because they’re completely unlabeled and obscured. I suspect there are problems but I’ll need to know what I’m looking at to be sure.

Conclusion

The ERD appears to be mostly well-formed and normalized, and each part actively and effectively supports the reports being generated. Some questions linger about documented names and some edge cases, but those are solvable with small tweaks.

The biggest opportunity for improvement in this project is in formatting and labeling reports so that Blythe and Jim can go straight to the data they need without the heavy mental burden of interpreting raw python tuple and type output.