Cairo University
Faculty of Computers & Artificial Intelligence
Department of Computer Science
Artificial Intelligence Course

Assignment 1

Problem Statement

Given the data.pl file, you are required to write a prolog problem that answers some questions about the customers and their orders. Also, you shall help the customers to know boycott items and their alternatives.

Facts (data.pl file):

You **must** use this data file in your assignment. You are given some facts about customers, items, orders, boycott companies and their alternatives. For Example:

customer(CustID, CustUserName).
→ customer(104, mazen122)
item(ItemName, companyName, Price).
→ item(pepsi, “PepsiCo”, 8.5).
order(CustID,OrderID,[Items]).
→ order(1,1,[ariel_4k, biskrem, cheese]).
boycott_company(companyName, justification).
→boycott_company(“PepsiCo”, “PepsiCo purchased the ...”)
alternative(ItemName,AlternativeItem).
→alternative(chipsy, tiger).

Required Predicates:

1. [0.75 mark] List all orders of a specific customer (as a list).
Example: ?- list_orders(shahd_ghazal2002,L). L = [order(101, 2, [loreal_hair_serum_100ml, sunsilk_shampoo_350ml]), order(101, 1, [puvana, orange_1k, feba_dishwash_1L, snickers, ahlawy])].

2. [0.75 mark] Get the number of orders of a specific customer given customer id.
Example: ?- countOrdersOfCustomer(shahd_ghazal2002,Count). Count = 2.

3. **[0.25 mark] List all items in a specific customer order given customer id and order id.**

Example:
?- getItemsInOrderById(shahd_ghazal2002,1,Items).
Items = [puvana, orange_1k, feba_dishwash_1L, snickers, ahlawy] .

4. **[0.25 mark] Get the num of items in a specific customer order given customer Name and order id.**

Example:
?- getNumOfItems(shahd_ghazal2002,2,Count).
Count = 2.

5. **[1 mark] Calculate the price of a given order given Customer Name and order id**

Example:
?- calcPriceOfOrder(shahd_ghazal2002,2,TotalPrice).
TotalPrice = 319.

6. **[0.25 mark] Given the item name or company name, determine whether we need to boycott or not.**

Examples:
?- isBoycott(sunbites).
true.

?- isBoycott(biskrem).
false.

7. **[0.25 mark] Given the company name or an item name, find the justification why you need to boycott this company/item.**

Examples:
?- whyToBoycott(dasani, Justification).
Justification = 'Coca-Cola israel: owns farms in the illegal israeli settlements of Shadmot Mechola in the Jordan Valley and a plant in the industrial zone of Katzerin in the occupied Golan Heights'.

8. **[0.75 mark] Given an username and order ID, remove all the boycott items from this order.**

Examples:
?- removeBoycottItemsFromAnOrder(abu_juliaa, 1, NewList).
NewList = [flour_1k] .

9. [0.75 mark] Given an username and order ID, update the order such that all boycott items are replaced by an alternative (if exists).

Examples:
?- replaceBoycottItemsFromAnOrder(abu_juliaa, 1, NewList).
NewList = [juhayna_yogurt, corona_chocolate, puvana, flour_1k] .

10. [0.5 mark] Given an username and order ID, calculate the price of the order after replacing all boycott items by its alternative (if it exists).

Examples:
?- calcPriceAfterReplacingBoycottItemsFromAnOrder(abu_juliaa, 1, NewList, TotalPrice).
NewList = [juhayna_yogurt, corona_chocolate, puvana, flour_1k],
TotalPrice = 56 .

11. [0.5 mark] calculate the difference in price between the boycott item and its alternative.

Examples:
?- getTheDifferenceInPriceBetweenItemAndAlternative(lipton, A, DiffPrice).
A = elarosa_tea,
DiffPrice = -11.25.

12. [1 mark] BONUS: Insert/Remove (1)item, (2)alternative and (3)new boycott company to/from the knowledge base. Hint: use assert to insert new fact and retract to remove a fact

Examples:
?- add_item(alpella_wafer, 'Alpella', 4).
true.
?- item(alpella_wafer, 'Alpella', 4).
true.
?- remove_item(alpella_wafer, 'Alpella', 4).
true.
?- item(alpella_wafer, 'Alpella', 4).
false.

Important Notes

Please read these notes carefully to avoid losing grades

- ☐ Don’t change the structure of "data.pl".
- ☐ Include “data.pl” in your source code by writing this line in the beginning of your source code make sure to place “data.pl” in same location of your source code

```
:-consult(data).
```

- ☐ Don't use any built-in predicates.
- ☐ The number of students in a team is **3-4 students** from the **same lab group** or with the same TA.
- ☐ Please make sure that the load is almost equally distributed between team members.
- ☐ Please submit one .pl file containing your solution. The file name must follow this structure: ID1_ID2_ID3_ID4_DEPARTMENT_GROUP.pl
- ☐ **Cheaters will be given a NEGATIVE grade and no excuses will be accepted.**

References

https://github.com/TechForPalestine/boycott-israeli-consumer-goods-dataset

https://play.google.com/store/apps/details?id=com.moqate3.moqate3&hl=en_SG&gl=US
https://www.tutorialspoint.com/prolog/index.htm