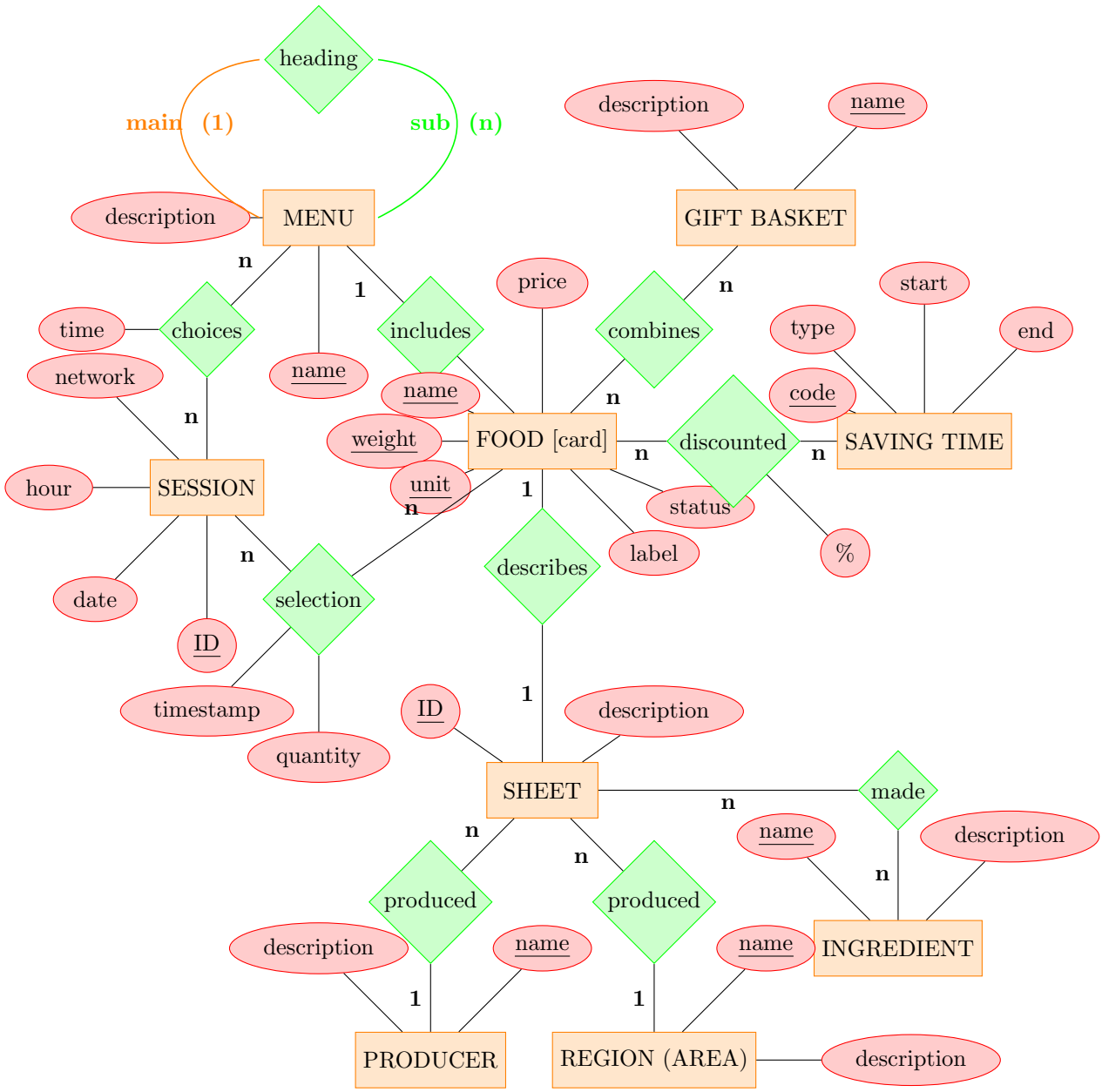
Practice Session # 2

This practice session aims to query a database, designing "advanced SELECT statements".

Database: "Online Market"

1. Conceptual Schema [E/R Diagram]



2. **Relational Model [Tables]**

   Region(name, description)
   Producer(name, description)
   Sheet(ID, description, Region.name, Producer.name)
   Ingredient(name, description)
   Made(Ingredient.name, Sheet.ID)
   Menu(name, description, main)
   Food(name, weight, unit, label, price, status, Menu.menu_name, Sheet.ID)
   Saving(code, type, start, end)
   Discounted(Food.name, Food.weight, Food.unit, Saving.code, perc)
   GiftBasket(name, description)
   BasketCombines(GiftBasket.name, Food.name, Food.weight, Food.unit)
   Session(ID, date, hour, network)
   Choices(Session.ID, Menu.name, time)
   Selection(Session.ID, Food.name, Food.weight, Food.unit, quantity, timestamp)

3. **online_market_large.sql**

Advanced Queries

1. Consider to check which food products are offered at least in two different format (i.e. different weights). List all these products, adding to the data identifying the products the two different weights detected.

```
SELECT f1.name, f1.unit, f1.weight AS w1, f2.weight AS w2
  FROM food f1, food f2
 WHERE f1.name = f2.name
   AND f1.unit = f2.unit
   AND f1.weight > f2.weight;
```

2. Which food products have been mostly selected?

```
SELECT food_name, food_weight, food_unit, COUNT(*) AS nr
  FROM selection
GROUP BY food_name, food_weight, food_unit
HAVING COUNT(*) >=ALL(SELECT COUNT(*)
                        FROM selection
                      GROUP BY food_name, food_weight, food_unit);
```

3. Report for each product in **pasta** menu how many times they have been selected, considering only the 1st semester.

```
SELECT name, weight, unit, COUNT(food_name) AS selected
  FROM food LEFT OUTER JOIN
       (SELECT food_name, food_unit, food_weight
          FROM selection
         WHERE month(timestamp) >= 1
           AND month(timestamp) <= 6) S
       ON (food.name = S.food_name
          AND food.weight = S.food_weight
          AND food.unit = S.food_unit)
WHERE food.menu_name = 'Pasta'
GROUP BY name, weight, unit;
```

4. It is the aim to analyse browsing sessions. The analysis is realized on the **year 2023** reporting for each month and day time (hour) how many menus were clicked on. Show only relevant day times, which is when clicks are less than 5.

```
SELECT month(date) AS 2023_month, HOUR(hour), COUNT(choices.ID) AS nr_browse
  FROM session LEFT OUTER JOIN choices ON session.ID = choices.ID
 WHERE year(date) = 2023
GROUP BY month(date), HOUR(hour)
HAVING COUNT(choices.ID) <= 5
ORDER BY month(date), HOUR(hour);
```

5. We would like to create a particular gift basket having in mind something from Sicily and a selection of foods from each menu. List name, weight, unit of foods from 'Sicilia' then detect from each menu the product in container - can/box/glass - (**unit is in grams**) having the largest quantity. [**Tip:** The second selection should use in the condition the pair `(menu_name, weight)`].

```
(SELECT name, weight, unit, 'Sicily'
   FROM food JOIN sheet ON sheet_ID = ID
  WHERE region_name = 'Sicilia')
UNION
(SELECT name, weight, unit, 'Big Can/Box/Glass'
   FROM food
  WHERE (menu_name, weight) IN (SELECT menu_name, MAX(weight)
                                  FROM food
                                 WHERE unit = 'g'
                              GROUP BY menu_name))
ORDER BY name, weight;
```

6. The statistics of food appreciation is necessary to make suitable sale strategies, therefore:

   A) Compute for each menu and for each producer description (**in attribute 'label'**), the number of selected food items (in the basket to buy), including those producers whose food items have never been selected.

   B) Reports only data with the best statistic, that is **the largest number of selected items**.

```
SELECT menu_name, label, count(selection.food_name) AS nr
  FROM food LEFT JOIN selection ON
       (food.name = selection.food_name
   AND food.weight = selection.food_weight
   AND food.unit = selection.food_unit)
GROUP BY menu_name, label
HAVING nr >= ALL (SELECT count(selection.food_name) AS nr
                    FROM food LEFT JOIN selection ON
                         (food.name = selection.food_name
                     AND food.weight = selection.food_weight
                     AND food.unit = selection.food_unit)
                  GROUP BY menu_name, label);
```