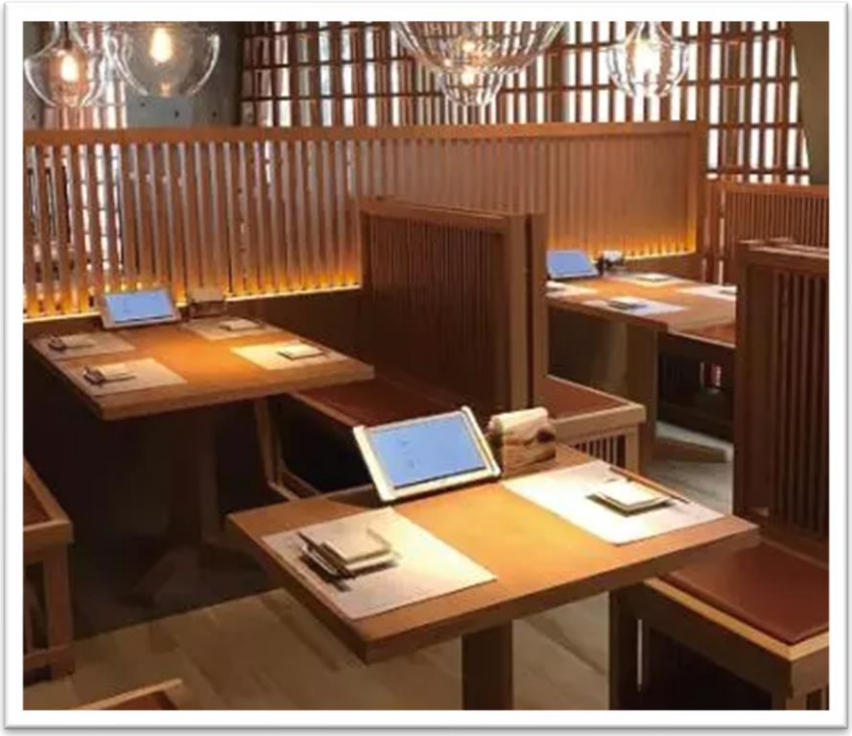
FINAL LAB MODULE

Computerizing a chain pizza restaurant



1. Introduction

A chain of pizzerias is already managing table reservations through a web application, so that it only accepts customers who have made a reservation in advance and have been sent a reservation code. Now they want to computerize the management of the orders, so that they can be made from the electronic devices at each table. In addition, to liven up the wait, customers can choose to participate in a game in which, in addition to having a fun time, they have the chance to win a prize.

The functionality of this application to be developed is detailed in the following sections.

2. Goal

The goal of this practical module will therefore be to develop a visual application in which a customer can consult the various products offered on the restaurant menu and make one or more orders. They will also have the opportunity to participate in a game to try to win various prizes.

3. General application requirements

The visual application, in our case desktop and with basic interaction through the mouse, will have the following general requirements:

R1. The application will ask the customer for their ID (DNI) and the assigned reservation code (made up of 6 random characters, excluding the @). After checking that the reservation details are correct, the customer may continue interacting with the application. Otherwise, the customer must be properly informed of the circumstance.

R2. The application has a reservations.dat file with the reservations of the day and the following format in each line:

```
client_id@reservation_code
```

Once a customer has been validated, their reservation will be deleted from the reservation file. (Note: for simplicity, no check should be made on the format of the ID number)

R3. Once validated, the application will allow the customer to consult the different products offered on the menu and place one or more orders.

R4. The application must show the customer a summary of each placed order and the amount to be paid.

R5. Once an order has been placed, if the user wishes, they will be able to access a game that will allow them to win various prizes. Only one game can be played per reservation.

R6. If the customer has received any gift, they will be presented with a list of the obtained gifts, including an image of each one. For simplicity, nothing more will be done with the received gifts.

4. Order requirements

R7. The list of products that the customer must be able to view in the application is in a file called menu.dat, with the following format on each line:

```
code@name@description@intolerances@category@price
```

Being:

- **Code**: Sequence of two letters and two numbers that uniquely identifies each product
- **Name**: name of the product
- **Description**: most relevant product characteristics
- **Intolerances**: (YES/NO) Indicates whether the product is compatible with food intolerances and/or whether it is possible to prepare it differently
- **Category:** The following are considered:
  - Drink, Salad, Starter, Bread, Pasta, Pizza, Dessert
- **Price**: Price of each product. All taxes are included.

Example:

```
BE01@Water@Still mineral water, half-litre bottle@YES@Drink@2,5
BE02@Coca cola@35cl bottle of colacola@YES@Drink@2,25
BE03@Godello wine@Delicate and elegant white wine, with a great balance between freshness and volume@YES@Drink@18
EN01@Caesar Salad@Lettuce, chicken, cherry tomatoes, parmesan, crispy bread and Caesar sauce@NO@Salad@13,70
EN02@Pasta Salad@Lettuce, spirals, corn, tomato, tuna, onion and black pepper@YES@Salad@12,50
ET01@Cheese crisps@Breaded and fried cheese portions with tomato jam@NO@Starter@9,50
ET02@Baked Provolone@Italian cheese originating from southern Italy, melted and accompanied by spices and fresh herbs@YES@Starter@11,75
ET03@Italian charcuterie board@Guanciale, mortadella di Bologna, coppa piancentina, prosciutto cotto, salame@YES@Starter@13
PA01@Grissini@Thin, elongated crispbread. 12 units@YES@Bread@2
PA02@Garlic bread@6 slices of bread with garlic and extra virgin olive oil@NO@Bread@3,25
PS01@Spaghetti carbonara@Spaghetti, carbonara sauce, bacon, mushrooms and parmesan cheese@NO@Pasta@12,5
PS02@Vegetable lasagna@Spinach pasta with eggplant, carrot, cheese, tomato, basil and oregano, covered with bechamel sauce@YES@Pasta@13
PS03@Ravioli with pesto@Cheese ravioli, with pine nuts, cherry tomatoes, parmesan cheese y basil@YES@Pasta@13,75
PI01@Four Cheese Pizza@Tomato, mozzarella, cabrales cheese, emmental, parmesan and oregano@NO@Pizza@12,75
PI02@Margherita Pizza@Tomato, mozzarella y basil@YES@Pizza@10,5
PI03@Roman Pizza@Tomato, mozzarella, anchovies and black olives@YES@Pizza@11,5
PI04@Vegetable Pizza@Tomato, mozzarella, peppers, artichokes, mushrooms, capers and onion@YES@Pizza@12,25
PO01@Fruit salad@Watermelon, kiwi, grapes, mango and blueberries with honey sauce@YES@Dessert@3,25
PO02@Cheesecake@Baked cheesecake with red berry jam@NO@Dessert@4,50
PO03@Tiramisu@Layers of coffee-soaked sponge cake, soft cheese and whipped cream@NO@Dessert@4,75
```

R8. Each product will have a descriptive photograph associated with it. This will have the name of the product code and the extension corresponding to the type of image in question. For example, BE01.png will be the image file corresponding to Water. These images can be of any size and must be resized to be displayed properly.

R9. When placing an order, one of the pizzas will be randomly selected as the pizza of the day and will be on sale, with a 20% discount on the original price.

R10. The user will be able to consult the list of all products and will be able to add all those that interest them to an order, indicating, where necessary and possible, whether the product must be prepared differently due to a food intolerance.

R11. The customer may also modify the order, adding more products or removing or modifying those already added.

R12. The order and its price must be visible/accessible so that the customer can check what is included in the order and the amount to be paid.

R13. To finalize the order, the customer will add any comments they deem appropriate, especially if they have indicated that a product needs to be prepared in a special way due to intolerance.

R14. Once completed, the order will be sent to the kitchen for preparation: the customer must be informed of its reception in the kitchen.

R15. The order will be saved in a file whose name will consist of the reservation code_C+order number.dat, starting with 1 (it will be incremented if there is more than one order associated with a reservation). The format of this file will be as follows:

```
Product code 1@name@units
Product code 2@name@units
Product code 3@name@units
....
Observations: observations
```

Example. File *bH%O8F_C1*:

```
BE01@Water@2
BE03@Godello wine@1
EN02@Pasta Salad@2
ET03@Italian charcuterie board @1
PA01@Grissini@1
PI02@Margherita Pizza@1
PO01@Fruit Salad@1
PO02@Cheesecake@2
Observations: The margherita pizza with gluten-free base
```

R16. From this moment on, the customer will no longer be able to cancel or modify products from the already completed order, but will be able to start a new one, if desired.

5. Game requirements

R17. After completing an order, if the customer wishes, they can access a board game to try to win a prize.

R18. Clients are only allowed to play once per reservation. That is, if customers make more than one order under the same reservation, they will only have the opportunity to play once.

R19. The game is played on a 4x4 board on which 8 pairs of elements will be hidden. The theme of the elements and the corresponding images will be chosen by the student. The board configuration must be displayed on the console to facilitate testing.

R20. The customer will have the possibility to uncover two cells at a time. If they make a pair, the customer will win a prize and both squares will be uncovered. Otherwise, both cells will be hidden again. The number of attempts to make pairs will be 5.

R21. If a pair is made:

- On first try: the user wins a random product from the Pizza category.
- On the second try: the user wins a random product from the Starter category
- On the third try: the user wins a random product from the Salad category
- On the fourth try: the user wins a random item from the category Dessert
- On the fifth try: the user wins a random item from the Drink category

R22. The game ends when the 5 possible attempts are used. At the end of the game the customer will be able to:

- Have won one or more prizes
- Not have won any prize

R23. At the end of the game, the board should be uncovered for the customer to check the board configuration.
R24. Finally, the customer will be informed of the result of the game and, if applicable, a summary will be presented with the name and image of the prizes won. For simplicity, the prizes will not be saved in any file.

6. End of the interaction

R25. When a user finishes his interaction with the application (either because they have finished an order and does not want to play, or because they have finished the game), it must be ready to interact again with the same client, in case they want to make a new order.
R26. The person in charge of the table must also be provided with the possibility to leave the application ready for the interaction of a new client.

7. Help support

R27. The application must incorporate a complete help system with at least 5 html files.

8. Important considerations

- The application must be developed and be compilable and executable in the version of Eclipse and Java used in the development of the lab practices.
- All files (input and output) must be located in a files folder in the root directory of the project and without subfolders, as was done in the lab practices.
- All images needed for the application must be located in the src/img folder, without including any subfolders.
- At least, the screen displaying the available products must be able to be resized appropriately.
- The interface will have to respect the original design made by the student and refined after the evaluation process carried out (Wireframe V2). Any change to this design must be **properly justified** in the documentation. Changes not properly justified will imply the failure of the module.
- The application must be prepared to deal adequately with any number of elements contained in the files. Possible changes in the format of the files or the existence of erroneous values in the files must not be considered. Modifying the file formats is not allowed; this would mean that the module would not work with the files used in the correction and therefore, the failure of the module.
- Do not incorporate any extra functionality; only the functionality indicated in this document must be implemented.

9. Optional to increase the mark

Internationalized and localized application for Spanish and English. It is not necessary for the help to be internationalized.

10. Implementation aspects, graphic interface and evaluation.

- Please note that there must be a clear separation between the code corresponding to the visual presentation and the code representing the business logic of the application. Serious errors in this aspect will not be admitted to reach the minimum grade in the module. A package structure similar to the one developed in the practices of the course must be implemented.
- The event management of the visual components that configure the board must be optimized. A class ShowCell will be created with the appropriate functionality and only one object will have to be created to receive the event in question.
- Given the nature of the course, the graphical interface should be consistent with the guidelines given in theory by applying the standards and recommendations concerning the design of user interfaces. The appropriateness of the components selected in the development of the application will be especially valued.
- All components used in the practice must have a meaningful name. Names such as btnNewButton will be penalized.

11. Documentation

In addition to the files that are part of the project, an **explanatory document** must be delivered with the solution adopted to resolve the proposed problem. This document will have the name “PL-I-X-Name-Surname-DNI” of the student, replacing the x with the number of the lab group, and must contain, at least:

- **Cover with student identification**
- **Table of Contents**
- **Introduction**: the problem to be solved will be posed. It will be clearly indicated if the option to raise the grade (internationalization) and any other element that has to be taken into account when correcting (use of sound, for example) has been included.
- Application **development**:
  - **Logic**: description and explanation of **the class/es** added to resolve the logic part of the application as well as the **most relevant methods** of each of them.
  - **Interface**: **Screenshots of each of the screen(s)** (windows and/or panels) that make up the developed application, as well as the **corresponding window/screen in the Wireframe V2** designed by the student (next to each other). For each window/panel, the most relevant components must be indicated as well as the justification for their choice.
  - **Testing**: The results obtained after carrying out **the 8 scenarios used to validate the wireframe** must be documented once the development of the module is completed. If an error has been detected that has required its correction, the scenario, the error found, and the solution implemented must be documented.

12. Delivery rules

The student should deliver a compressed file named the Student ID (DNI). By unzipping the file, the teacher should obtain:

- The explanatory document described in the previous section.
- The entire project folder (do not include workspace). The project will be called **PL-I-x-FirstName-Surname1-DNI**, with PL-I-x being the student's laboratory group.

Delivery will be made through the Virtual Campus. The deadline for delivery will be **Monday, January 6 at 23:59 p.m. Deliveries after that date or deliveries made via email will not be accepted.**

13. Other

- Carrying out this practice is **strictly individual**. Each student is responsible for preventing their practice from being copied or plagiarized in any way. Copying in practices (as in any other exam) **constitutes a very serious event**, and the teaching staff reserves the right to take appropriate measures.
- The **exam on the module** will be held on the day established for the exam of the ordinary call in January. If several time slots have to be established, they will be mailed the day before.
- Independently of this exam, if the professor considers it appropriate, a student may be **cited for individual defense** of their lab module.