COMPANY MANAGEMENT: MBE

Alessandro Folloni, matricola 141839

I declare that this paper is the result of my personal work, carried out basically individually and independently.

BUSINESS NEED

The application arose from the need to facilitate certain internal operations in a shipping company. In the normal workflow, these operations are done by hand and are therefore a possible source of errors; other software on the market could not meet these specific needs.

The main problem is the management of excel files: filtering operations are needed on different parameters, so that only certain lines are sorted or searched.

The application also manages an internal warehouse management system: parcels, to be shipped at a later date, must be arranged in the warehouse, and the application keeps track of their location.

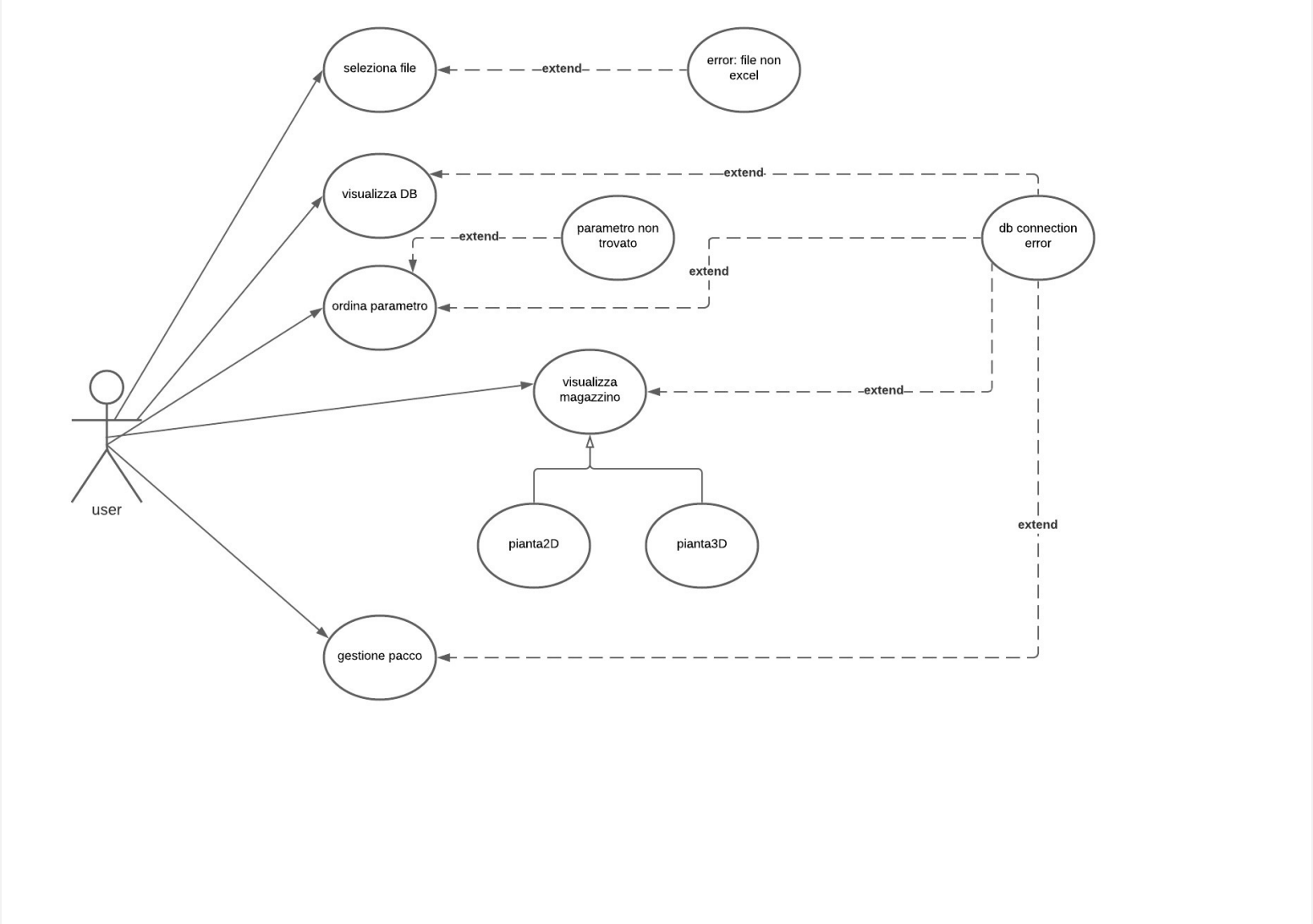
FUNCTIONAL REQUIREMENTS

- The application must allow the user to enter the excel file needed to control the activities
- The user must be able to perform the main filtering/selection operations related to the various fields in the excel file
- The user must be able to view the warehouse floor plan (2D and 3D) and view the parcels in each location
- The user must be able to add and delete parcels from the warehouse

NON-FUNCTIONAL REQUIREMENTS

- The application needs each user to have MySQL installed and have their own username and password
- The application must be extensible to add new functionality later; one idea for extension is the ability to notify the user of upcoming payments by parsing the "date" field in the excel file
- The excel files should consist of two sheets, labeled Assets and Liabilities, for incoming and outgoing transactions
- The excel files must have columns of the exact parameter type, otherwise errors or null values are generated

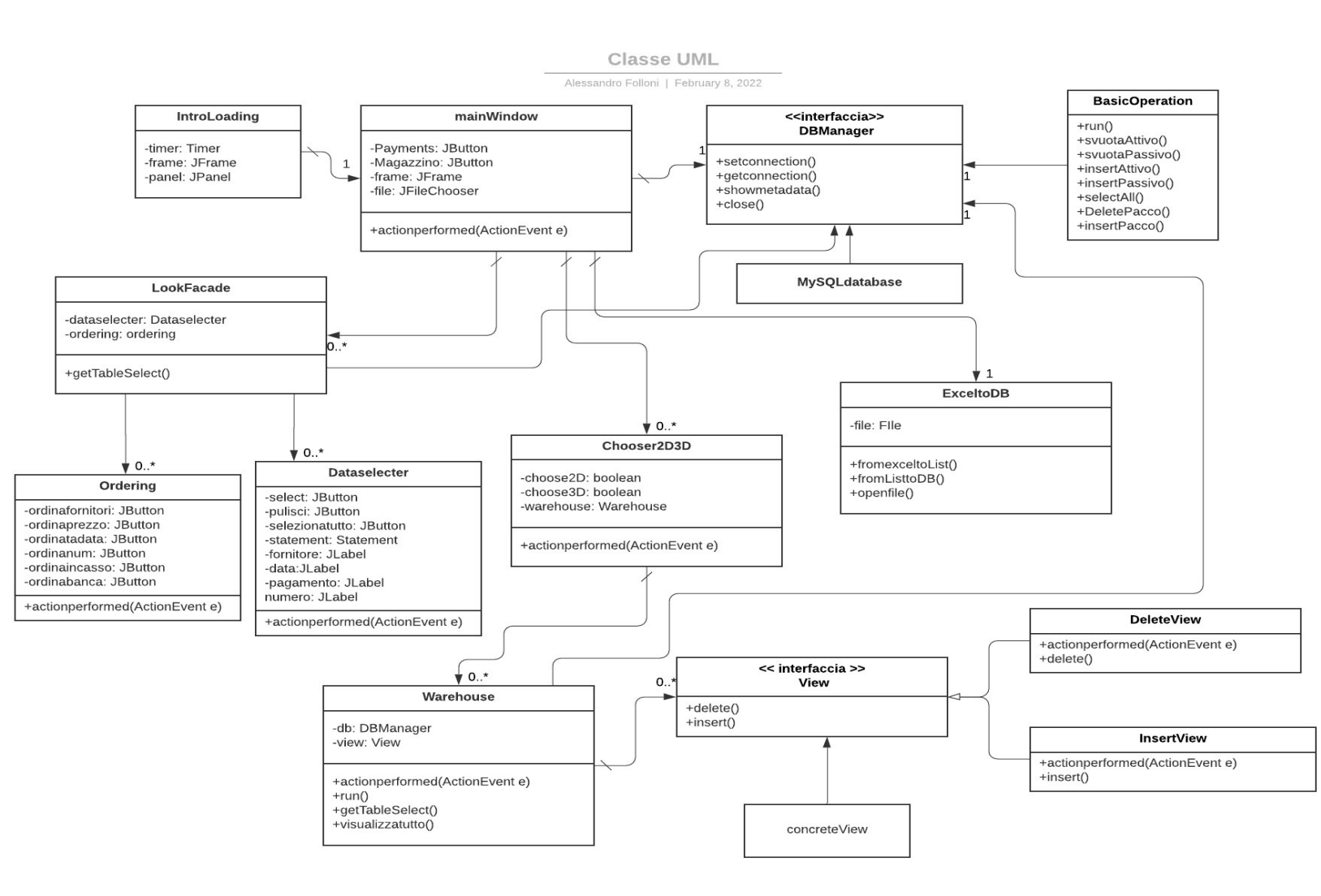
USE CASE DIAGRAM: USER



USE CASE COMMENT

- Control of the functions to be performed is left to the user: from the main startup screen he can manage the two main functions, payments and warehouse management.
- Fundamental is the correct connection to the database; almost all functions require connection to MySQL and the right credentials to create everything.
- The user, as far as payment management is concerned, can select the filter (sorting) most appropriate to the situation of interest; he can also search on a specific shipment parameter.
- Regarding warehouse management, he can view a 2D (from above) or 3D warehouse plan.
- The user can manage parcels within the warehouse with appropriate insertion (or deletion) functions, with appropriate index for parcel location.

CLASS DIAGRAM



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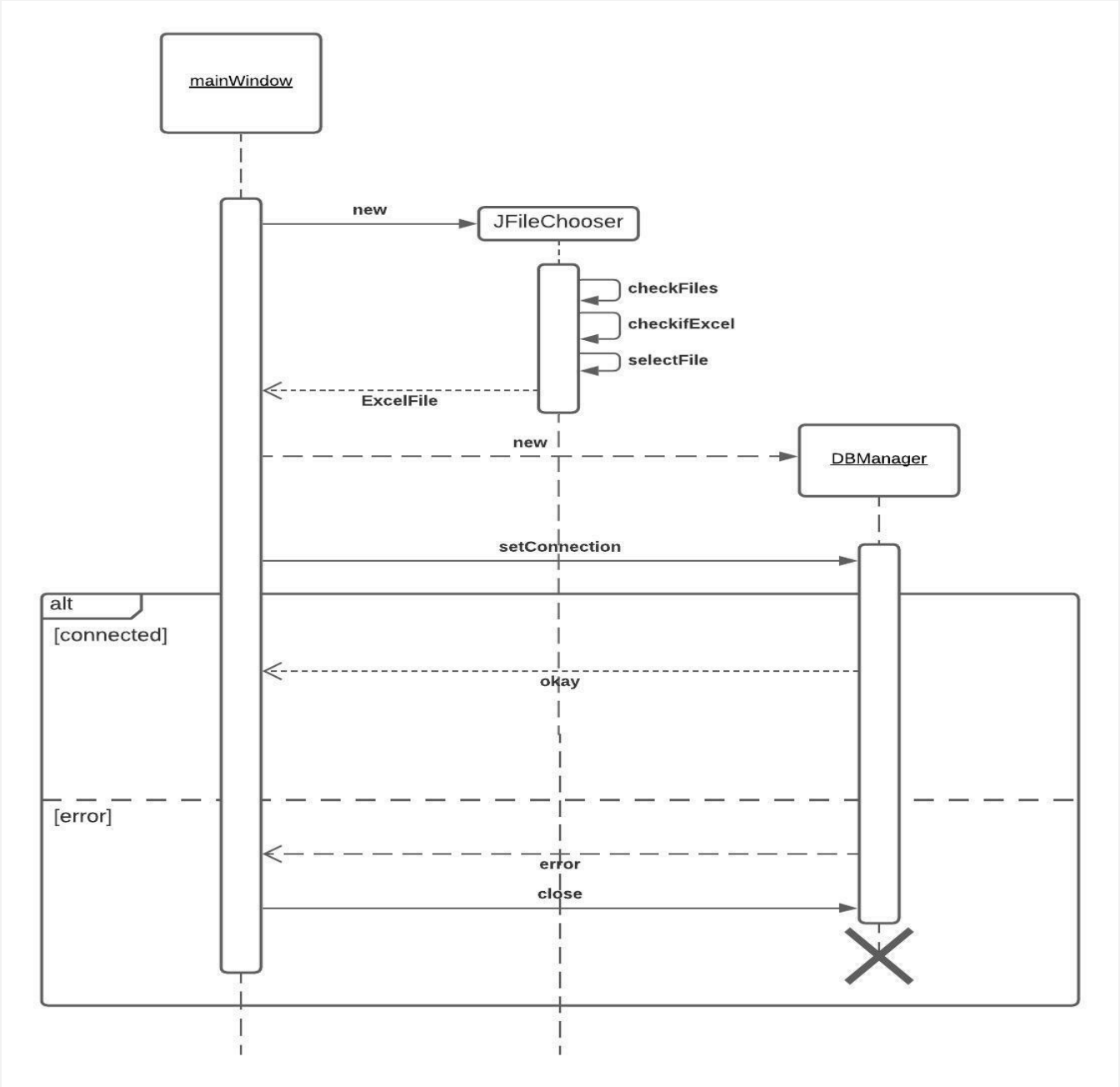
CLASS DIAGRAM COMMENT

- The main elements of the application are clearly distinguishable: mainWindow main screen, connection to the DB, filtering operations via the Facade, and stock display.
- The LookFacade is a facade object that collects the functionality divided and implemented into Ordering (for data sorting buttons) and DataSelecter (for selection buttons by parameter).
- The connection to the database is handled with a DBManager interface that handles login credentials, etc.; in BasicOperation we find the methods that describe all the functionality for sorting, selection, etc.
- For warehouse management, a strategy is implemented: view serves the warehouse for insert and delete functions, depending on the desired functionality the application will behave differently and display the correct UI.

SEQUENCE DIAGRAM: FILE SELECTION AND DB CONNECTION



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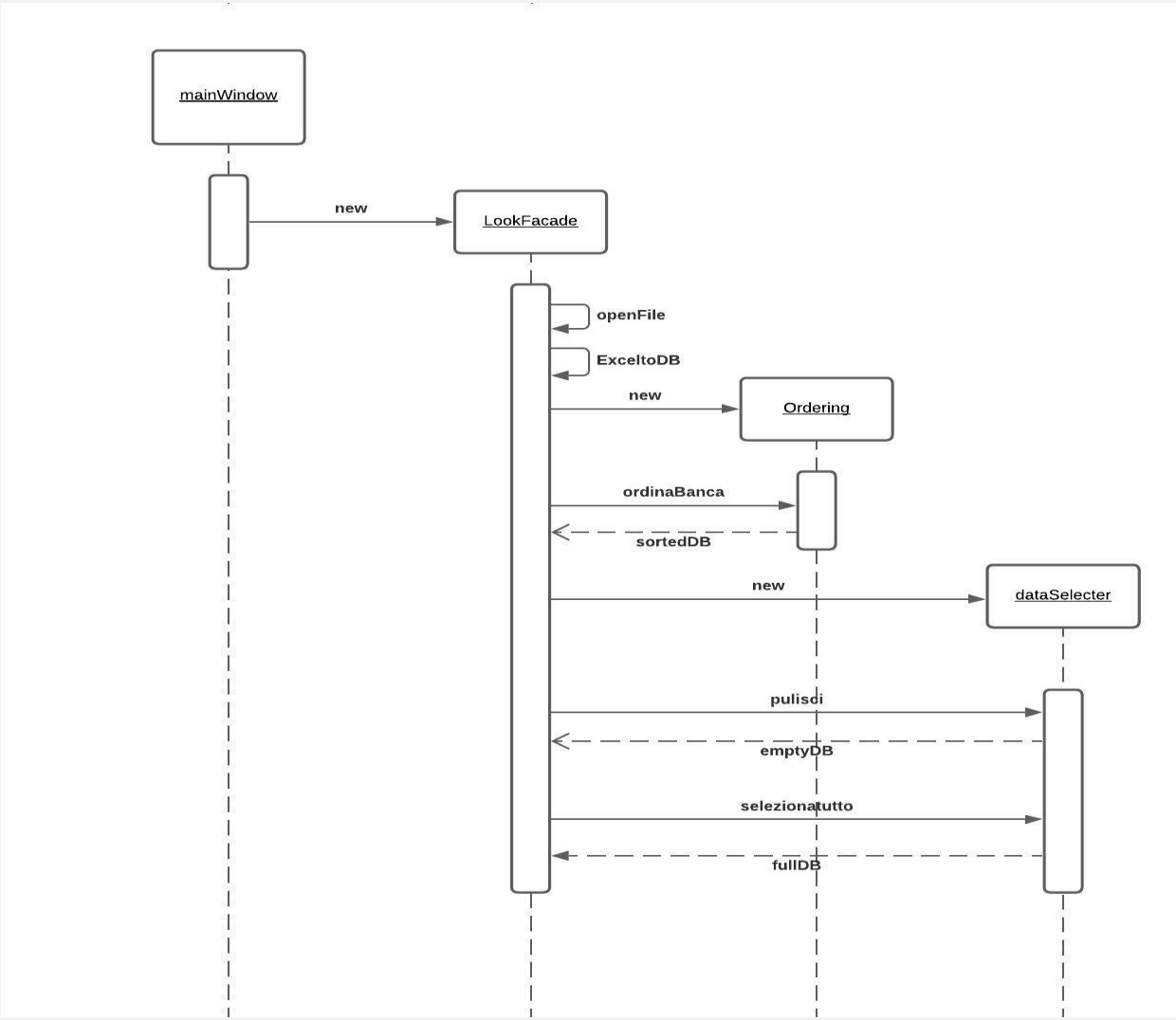
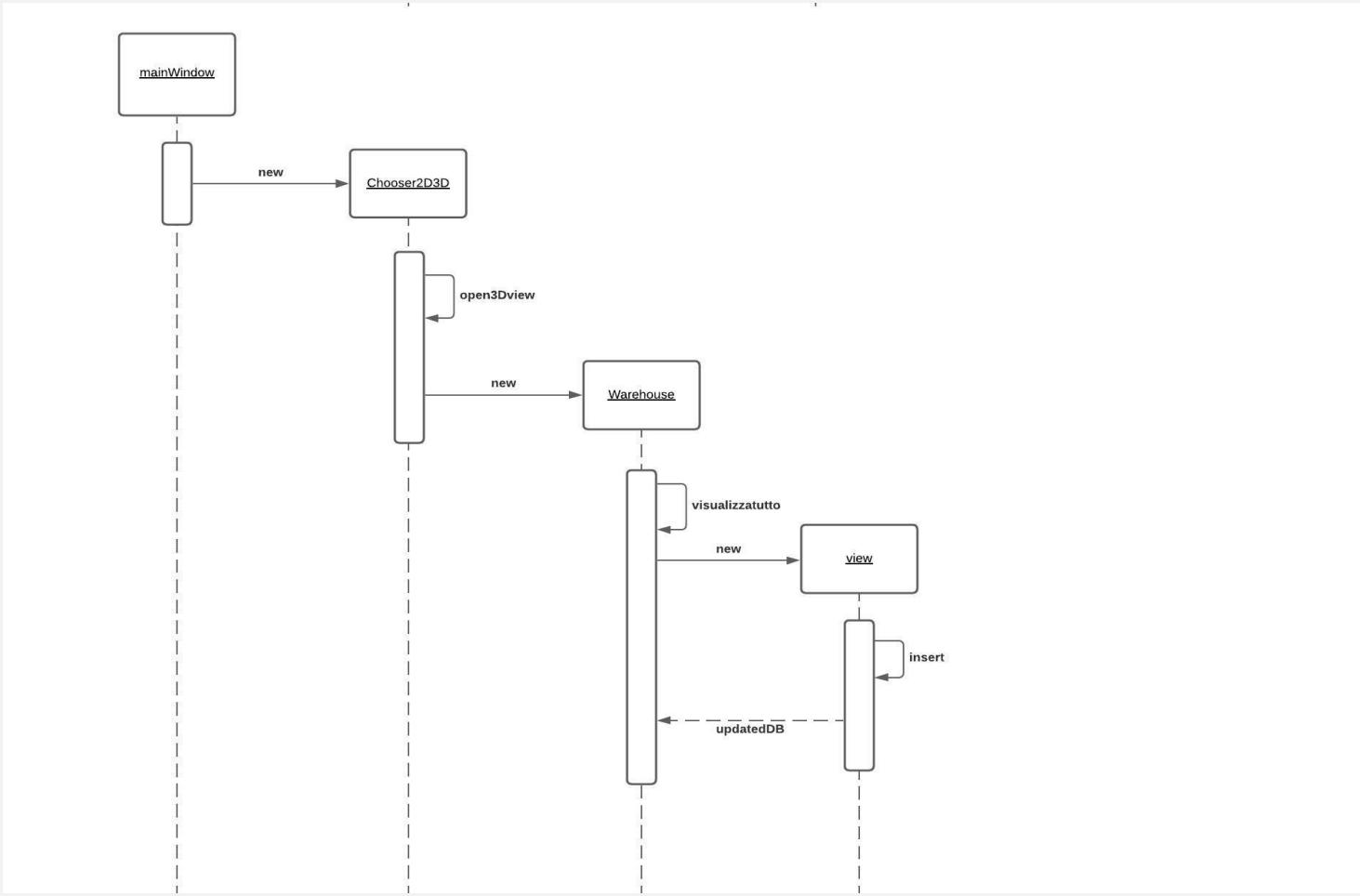
SEQUENCE COMMENT

- The operations described in the previous sequence are essential for each start of the application.
- File selection is performed from the first screen: through a JFileChooser the screen with the files in the system is opened, a filter goes to exclude those not in excel format; at this point the correct selection can take place.
- NB: the file must be excel but it should also contain the two correct sheets (named active and passive), there is no guarantee that the selection reflects this requirement, it must be the user who chooses properly
- A connection is made to the database via a DBManager object that handles the credentials to interface properly with MySQL. Next, the information taken from the file will be read and rewritten to the db, then shown to the user with the appropriate filters.

SEQUENCE: PAYMENTS



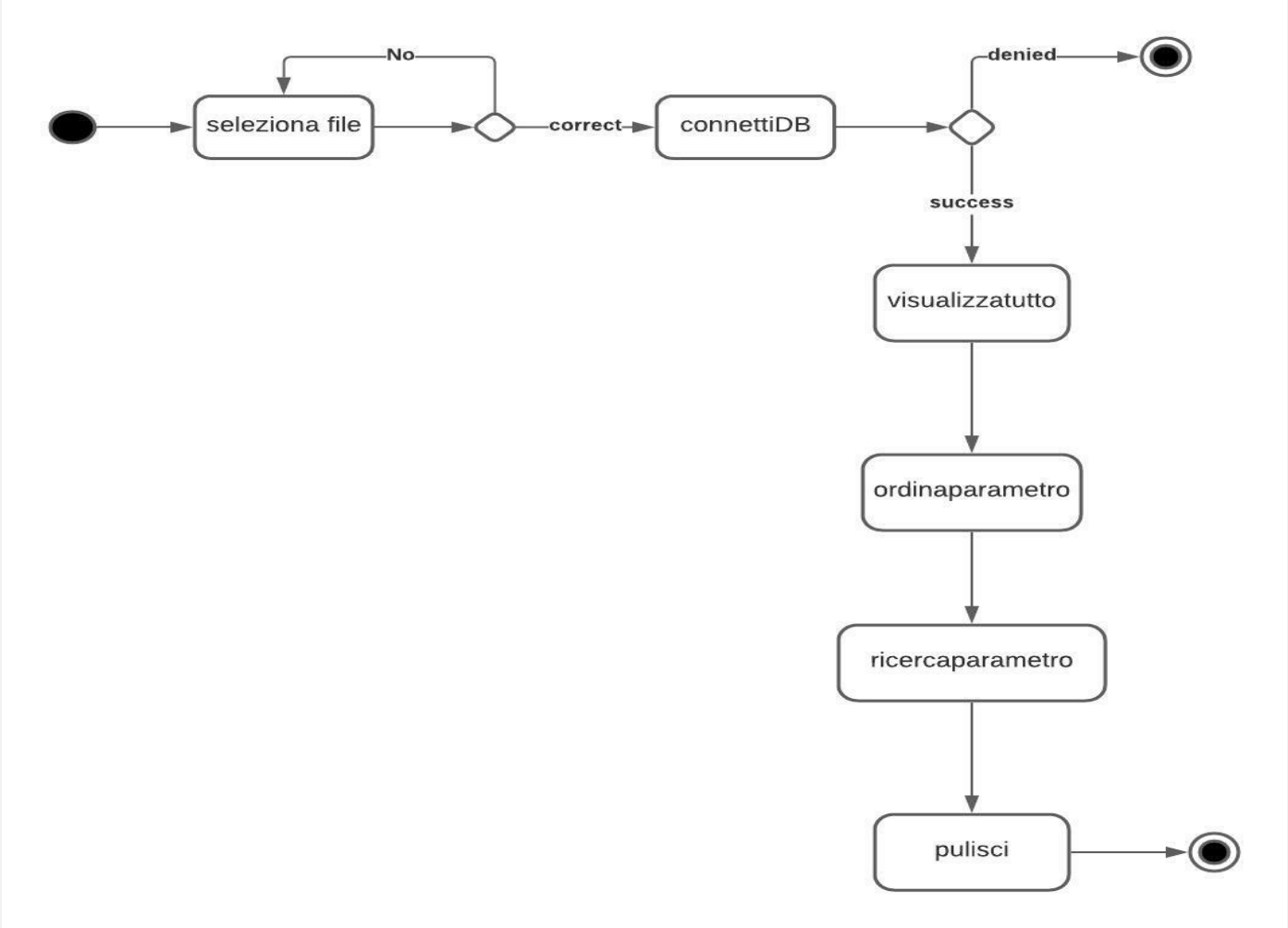
SEQUENCE: WAREHOUSE



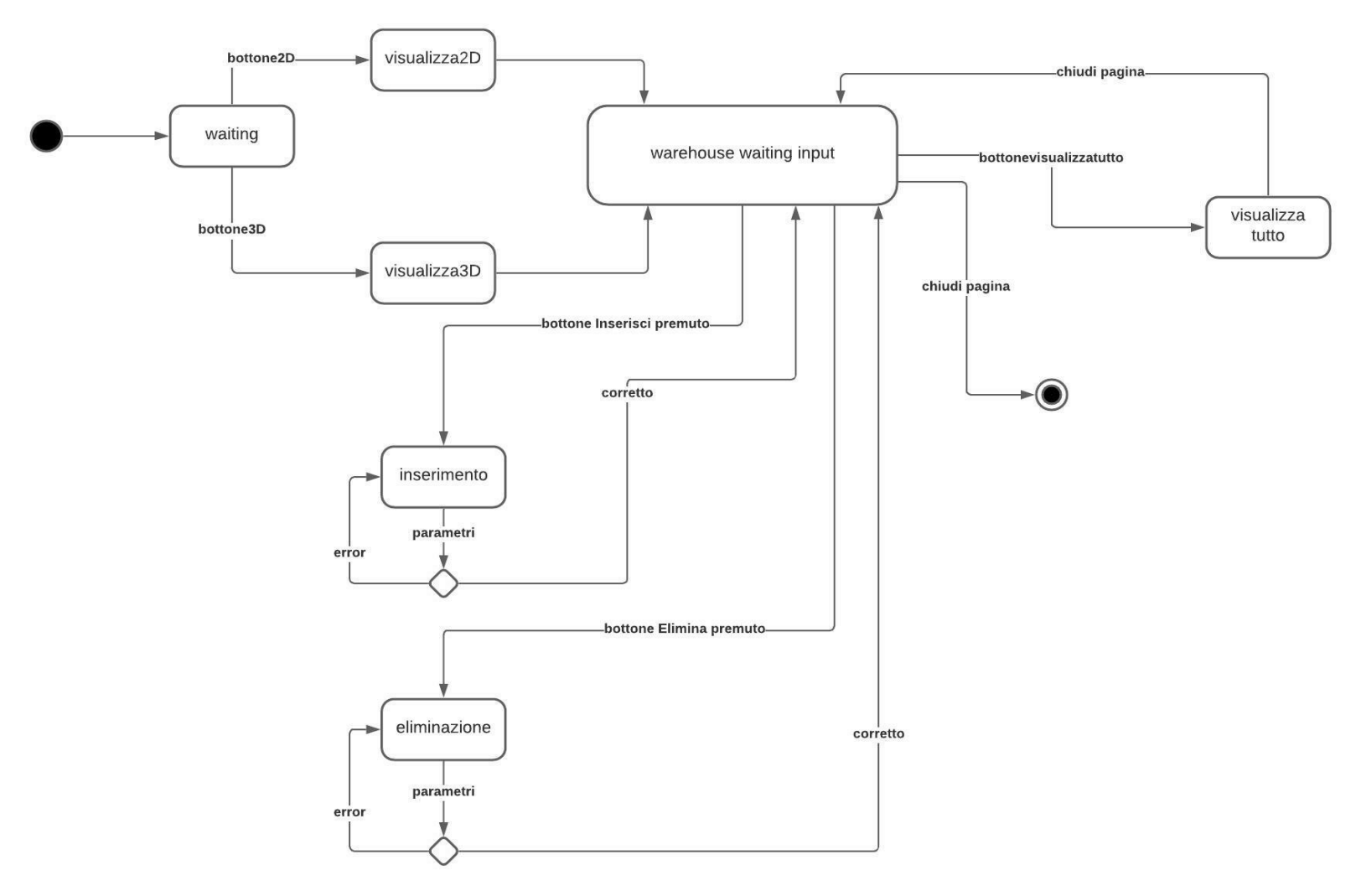
SEQUENCE COMMENT

- The two sequence diagrams above represent two possible operations of the application.
- In the first one operates on payment management: the excel file has already been selected as described above, as well as the connection to the DB is ready, at which point one can operate on the file, sorting for example by bank, cleaning the results and selecting everything again.
- In the second one operates on warehouse management: there is no connected file, it is all subject to actions external to the application itself, which only plays the role of tracking by shelves; one then chooses 2D or 3D view as desired and can view parcels, insert or delete them (in the example only insertion is done but the procedure is similar).

ACTIVITY: PAYEMENTS



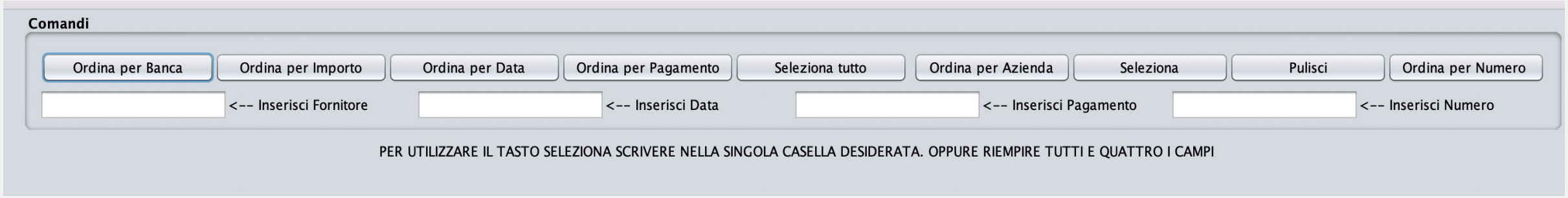
STATE: WAREHOUSE

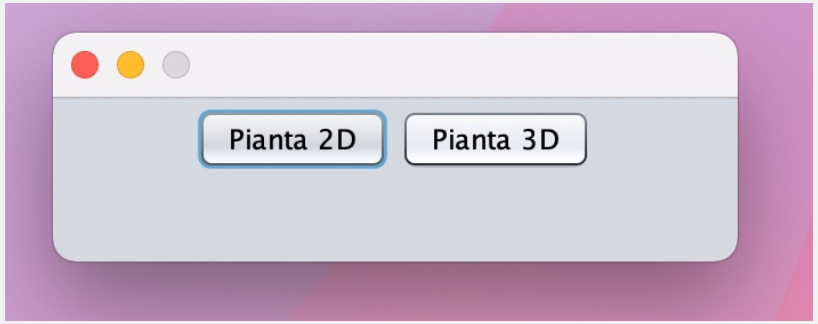


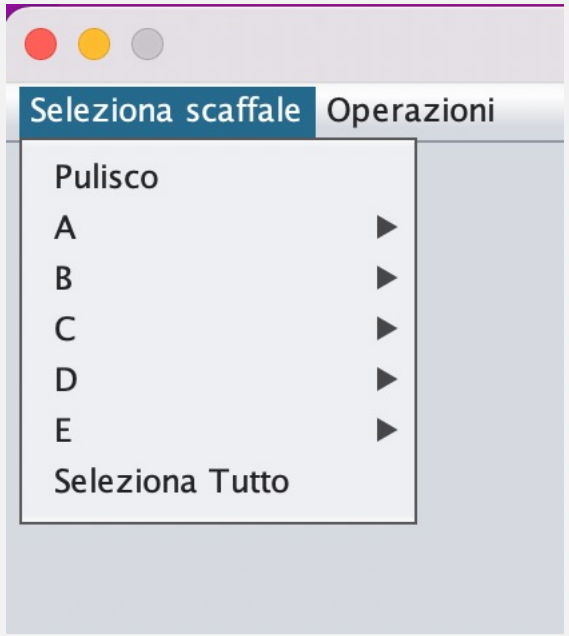
ACTIVITY AND STATE COMMENT

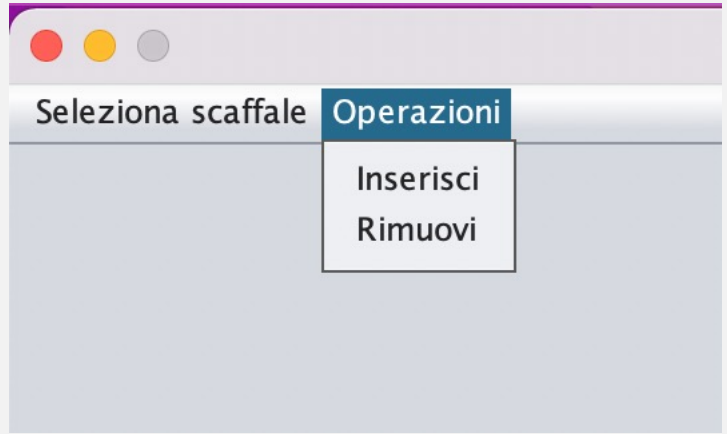
- An activity diagram was chosen to be shown regarding payment management.
- The operations described are similar to the example operations for the corresponding sequence: first you select file and connect to the DB, then you can perform all appropriate operations, and then close.
- A state diagram was chosen to be shown with regard to warehouse management.
- In that (usually), later activity, the connection to the DB was left out, which is done when the application is started; the file is not needed.
- After selecting the floor plan of interest, the application waits for input on what action to perform: you can view everything or insert or delete. Actually, individual locations can also be displayed, but for simplicity this has been omitted.

SCREENSHOT OF THE APPLICATION









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