**A9: Main Accesses to the database and transactions**

This artefact contains the main accesses to the database, including the transactions.

**1. Main Accesses**

Main accesses to the database.

**1.1. M01: Authentication and Profile**

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| **SQL101** | **Creates a new user in the platform** |
| **Web Resource** | [**R105**](https://afonsobspinto.github.io/lbaw1764/register.html) |
| INSERT INTO "users" (id, username, first\_name, last\_name, password, email, zip\_code, address, registration\_date, profile\_picture\_path, location, rating, is\_administrator)  VALUES ($id, $username, $first\_name, $last\_name, $password, $email, $zip\_code, $address, $registration\_date, $profile\_picture\_path, $location, $rating, $is\_administrator); | |

**1.2. M02: Auctions**

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| **SQL201** | **Add a new auction to the system** |
| **Web Resource** | [**R202**](https://afonsobspinto.github.io/lbaw1764/sell_page.html) |
| INSERT INTO "auctions" (id, item\_name, description, starting\_price, current\_price, condition, publication\_date, end\_date, payment\_type, shipping\_options, shipping\_cost, images\_folder, owner\_id, category\_id, city\_id)  VALUES ($id, $item\_name, $description, $starting\_price, $current\_price, $condition, $publication\_date, $end\_date, $payment\_type, $shipping\_options, $shipping\_cost, $images\_folder, $owner\_id, $category\_id, $city\_id); | |

**1.3. M03: Messaging System**

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| **SQL301** | **Add a new message to the system** |
| **Web Resource** | [**R301**](https://afonsobspinto.github.io/lbaw1764/chat.html) |
| INSERT INTO "messages" (id, subject, message, send\_date)  VALUES ($id, $subject, $message, $send\_date); | |

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| **SQL302** | **Add a new report to the system** |
| **Web Resource** | [**R107**](https://afonsobspinto.github.io/lbaw1764/profile/profile) |
| INSERT INTO "reports" (id)  VALUES ($id); | |

**1.4. M04: User administration**

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| **SQL401** | **Add a new banned user** |
| **Web Resource** | [**R401**](https://afonsobspinto.github.io/lbaw1764/profile/profile_asAdmin) |
| INSERT INTO "bans" (id, banned\_id, admin, ban\_start\_date, ban\_expiration\_date, ban\_reason)  VALUES ($id, $banned\_id, $admin, $ban\_start\_date, $ban\_expiration\_date, $ban\_reason); | |

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| **SQL402** | **Add a new administrator** |
| **Web Resource** | [**R404**](https://afonsobspinto.github.io/lbaw1764/profile/profile_asAdmin) |
| INSERT INTO "users" (id, username, first\_name, last\_name, password, email, zip\_code, address, registration\_date, profile\_picture\_path, location, rating, is\_administrator)  VALUES ($id, $username, $first\_name, $last\_name, $password, $email, $zip\_code, $address, $registration\_date, $profile\_picture\_path, $location, $rating, $is\_administrator); | |

**2. Transactions**

Transactions needed to assure the integrity of the data, with a proper justification.

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| **T01** | Get banned users and insert a new users into bans. |
| Isolation level | SERIALIZABLE READ WRITE |
| Web Resource | [**R401**](https://afonsobspinto.github.io/lbaw1764/profile/profile_asAdmin) |
| Justification | In the middle of the transaction, the insertion of new rows in the table of bans can occur, which implies the information retrieved in the selection is different, resulting in a Phantom read.  It is *READ WRITE* because we have an INSERT. |
| BEGIN TRANSACTION  SET TRANSACTION ISOLATION LEVEL SERIALIZABLE READ WRITE  --Get banned users  SELECT id FROM bans WHERE ban\_expiration\_date > CURRENT\_TIMESTAMP AND banned\_id = $userID;  -- Insert user into bans  INSERT INTO "bans" (id, banned\_id, admin, ban\_start\_date, ban\_expiration\_date, ban\_reason)  VALUES ($id, $banned\_id, $admin, $ban\_start\_date, $ban\_expiration\_date, $ban\_reason);  COMMIT; | |

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| **T02** | Insert a new message. |
| Isolation level | REPEATABLE READ |
| Web Resource | [**R301**](https://afonsobspinto.github.io/lbaw1764/chat.html) |
| Justification | In order to maintain consistency, it's necessary to use a transaction to ensure that the all the code executes without errors. If an error occurs, a *ROLLBACK* is issued (when the insertion of a e*mail* fails, per example). The isolation level is Repeatable Read, because, otherwise, an update of *id* could happen, due to an insert in the table *messages* committed by a concurrent transaction, and as a result, inconsistent data would be stored. |
| BEGIN TRANSACTION  SET TRANSACTION ISOLATION LEVEL REPEATABLE READ  -- Insert email  INSERT INTO "emails" (id,has\_been\_opened,receiver\_id,sender\_id)  VALUES ($id , $has\_been\_opened, $receiver\_id, $sender\_id);  -- Insert message  INSERT INTO "messages" (id, subject, message, send\_date)  VALUES ($id, $subject, $message, $send\_date);  COMMIT; | |

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| **T03** | Insert new report. |
| Isolation level | REPEATABLE READ |
| Web Resource | [**R305**](https://afonsobspinto.github.io/lbaw1764/report.html) |
| Justification | In order to maintain consistency, it's necessary to use a transaction to ensure that the all the code executes without errors. If an error occurs, a *ROLLBACK* is issued (when the insertion of a *reports* fails, per example). The isolation level is Repeatable Read, because, otherwise, an update of *id* could happen, due to an insert in the table *messages* committed by a concurrent transaction, and as a result, inconsistent data would be stored. |
| BEGIN TRANSACTION  SET TRANSACTION ISOLATION LEVEL REPEATABLE READ  -- Insert report  INSERT INTO "reports" (id)  VALUES ($id);  -- Insert message  INSERT INTO "messages" (id, subject, message, send\_date)  VALUES ($id, $subject, $message, $send\_date);  COMMIT; | |

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| **T04** | Pick the auction’s winner. |
| Isolation level | SERIALIZABLE READ ONLY |
| Web Resource | [**R2XX**](https://afonsobspinto.github.io/lbaw1764/auction/auction.html) |
| Justification | When the auction is closed and we get a winner, we need to retrieve the profile of the bidder. It's READ ONLY because it only uses Selects. |
| BEGIN TRANSACTION  SET TRANSACTION ISOLATION LEVEL SERIALIZABLE READ ONLY  -- Select Auction Winner  SELECT bids.bidder\_id  FROM (auctions JOIN won\_auctions ON auctions.id = won\_auctions.id) AS auction JOIN bids ON auction.id = bids.id  WHERE auctions.id = $auctionId  ORDER BY bid\_amount DESC  LIMIT 1  -- Select User  SELECT id  FROM users  WHERE id = bidder\_id  COMMIT; | |

**Revision history**  
   
Changes made to the first submission:

1. Changed T01 Isolation Level
2. Added Resources to the transactions

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