**MINISTRY OF EDUCATION AND TRAINING**

**FPT UNIVERSITY**

Capstone Project Report 3

**Building the laboratory tests management system**

|  |  |
| --- | --- |
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| **Capstone Project Code** | eLTMS |

- Ho Chi Minh City, 14 September 2018 -

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# Software Requirement Specification

## User Requirement Specification

### Guest Requirement:

Guest is a person who wants to use functions of the system. He/she must login or register to use more functions. He/she can use the following functions:

* Login
* Register
* Search auctions
  + Search by keyword
  + Search by category
  + Sort by time interval: ending soonest, newly list
  + Sort by price: lowest first, highest first
  + Sort by number of bidders: fewest first, most first
  + Filter by range of price
* View auction’s information
  + Basic information: name, current item’s price, seller, current highest bidder…
  + Bidding transactions
  + Suggested auctions

### Auctioneer Requirement

Auctioneer is a member of system who is able to create auctions for selling their items, track selling history. He/she can use the following functions:

* + Post an auction
  + Update ship address
  + View selling history
  + View winner’s contact information
  + Get notified when:
    - Admin accepted or refused his/her submitted auction
    - His/her auction is ending soon in 1 day, 1 hour
    - His/her auction ended and its result

### Bidder Requirement

Bidder is a member of system who can take part in auction, place bid, track bidding history. He/she can use the following functions:

* Update shipping address
* Place a bid
* View bidding history
* View contact information of won item’s seller
* Get notified when:
  + He/she is outbid by higher maximum bidder
  + He/she has bid at an auction successfully
  + Auction is ending soon in 1 day, 1 hour
  + Auction ended and its result

### Admin Requirement

Admin is a member of system who has the highest role, he/she controls system and manages its components to make sure it works in the best and the most convenient way. He/she can use the following function:

* Manage auctions
  + View list of auctions
  + Search auctions
  + Accept/reject pending auctions
* Manage users
  + Search users
  + Activate/restrict users
* View statistics about auctions, users

## System Requirement Specification

### External Interface Requirement

#### User Interface

* The user interface must be friendly and easy to use.
* All functions are arranged and displayed clearly.
* The interface design is an iterated process includes design, sketching and user assessment.

#### Hardware Interface

* The system will use the standard hardware and data communications resources of a standard computer.
* Desktop, laptop, smartphone or tablet has the ability to connect to the Internet.

#### Software Interface

* The website work with Chrome (v25 or above), Firefox (v46.1).
* The mobile application work on Android devices whose version is 4.4.2 or above.

#### Communication Protocol

* Use the HTTP, HTTPS protocol for communication between web browser and web server, between mobile device and web server.

### System Overview Use Case

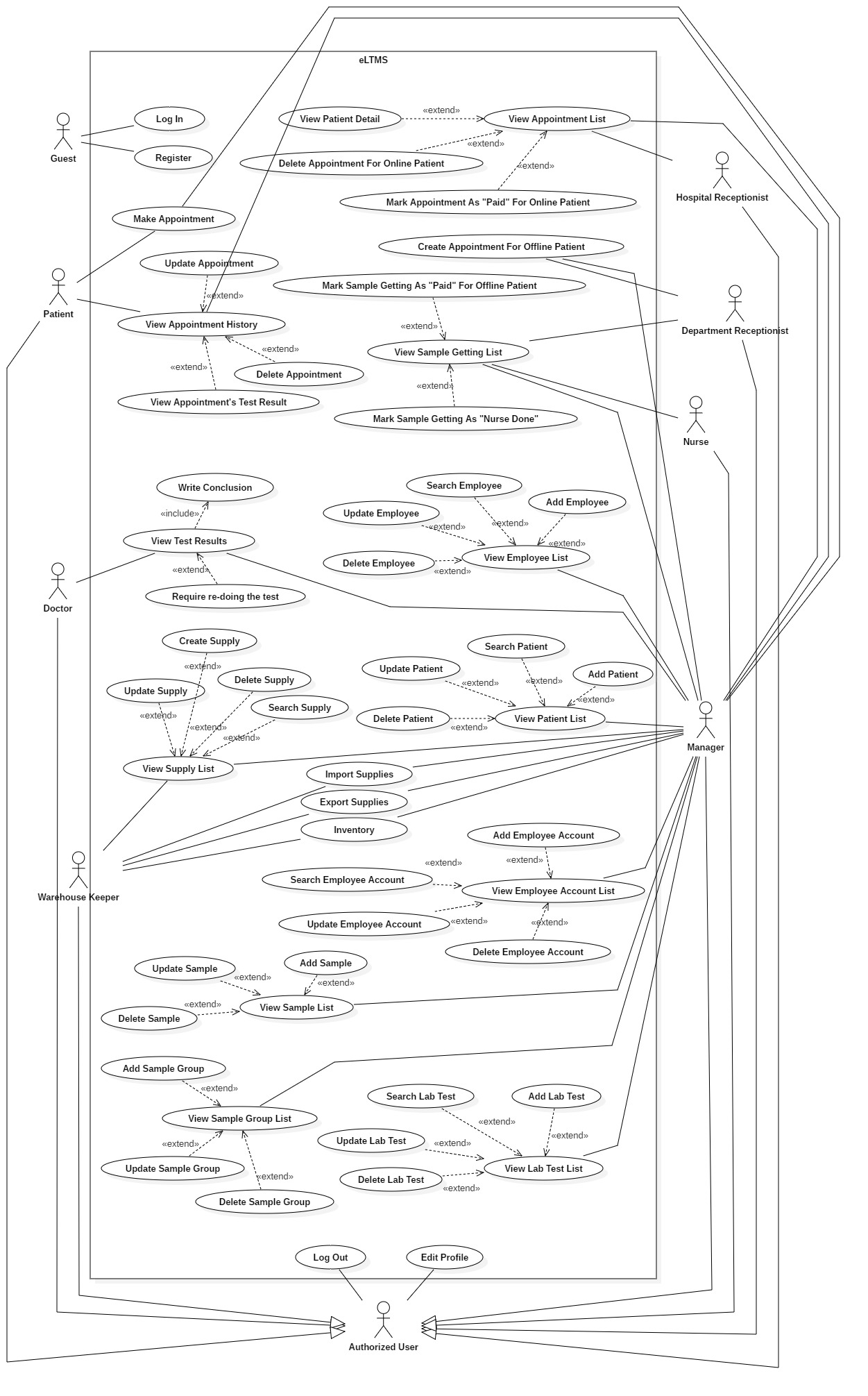


Figure 1 - System Overview Use Case

### List of Use Case

#### Guest Overview Use Case

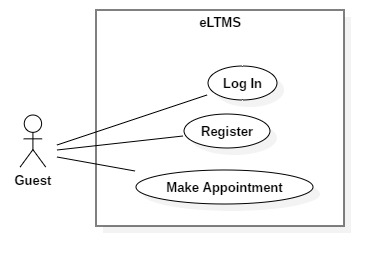


Figure 2 - <Guest>Overview Use Case

##### <Guest> Login

**Use Case Diagram**

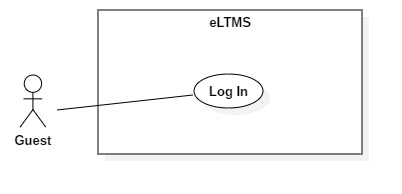


Figure 3 - < Guest > Login

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| USE CASE - UC\_01 | | | |
| Use Case No. | 01 | **Use Case Version** | 1.0 |
| Use Case Name | Login | | |
| Author |  | | |
| Date | 1/10/2018 | **Priority** | Normal |
| Actor:   * Guest.   Summary:   * This use case allows Guest to login to the system.   Goal:   * Guests are authorized as their role.   Triggers:   * User clicks “Đăng nhập” button.   Preconditions:   * User has an account.   Post Conditions:   * Success: User logs into the system successfully and gets redirected to a specified page depends on user’s role. * Fail: System shows error message.   Main Success Scenario:   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User goes to Login page. | System requires information:   * Phone: text input. * Password: password input. | | 2 | User inputs information.  User clicks “Đăng Nhập” button. | User will login to the system with roles of this account.  [Exception 1,2,3,4] |   Exceptions:   |  |  |  | | --- | --- | --- | | No | Cause | System Response | | 1 | Phone is invalid length. | Show error message. | | 2 | Password is invalid length. | Show error message. | | 3 | Phone and password does not match with any accounts. | Show error message. |   Relationships: N/A  Business Rules:   * Patient can only log in to user-web. * Employee (Hospital Receptionist, Department Receptionist, Nurse, Doctor, Warehouse Keeper, Manager) can only log in to admin-web. | | | |

##### <Guest> Register

**Use Case Diagram**

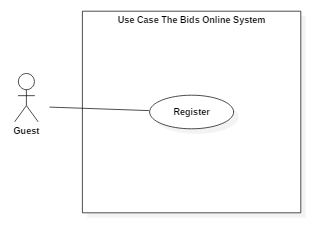


Figure 4 - < Guest > Register

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| USE CASE - UC\_02 | | | |
| Use Case No. | 02 | **Use Case Version** | 1.0 |
| Use Case Name | Register | | |
| Author |  | | |
| Date | 1/10/2018 | **Priority** | Normal |
| Actor:   * Guest.   Summary:   * This use case allows Guest to register account.   Goal:   * Create a new account for guest.   Triggers:   * User clicks “Đăng ký” button.   Preconditions:   * N/A   Post Conditions:   * Success: System saves account on database and shows success message. * Fail: System shows error message.   Main Success Scenario:   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User goes to “Đăng ký” page. | System requires information:   * Phone: text input. * Password: password input. * Confirm password: password input * Full name: text input. * Date of birth: date input. * Email: text input. * Home address: text input. * Company address: text input. | | 2 | User inputs all required field.  Then clicks “Đăng ký” button. | User will register the system with roles of this account.  [Exception from 1 to 8]. |   Alternative Scenario: N/A  Exceptions:   |  |  |  | | --- | --- | --- | | No | Cause | System Response | | 1 | Phone is invalid. | Show error message. | | 2 | Password is invalid. | Show error message. | | 3 | Confirm password does not match | Show error message. | | 4 | Full name is empty. | Show error message. | | 5 | Date of birth is invalid | Show error message. | | 6 | Email is invalid. | Show error message. | | 7 | Home address is invalid. | Show error message. | | 8 | Company address is invalid. | Show error message. |   Relationships: N/A  Business Rules:   * Guest can only register as patient. * Phone is not null and must be verified by code. * Email is not null, correct email format. * Password is not null, in range of 8-255 characters, includes at least one digit and includes both lowercase and uppercase letters. * Date of birth is not null and not over the current date. * Full name is not null, in range of 5-50 characters. | | | |

##### <Guest, Patient> Make Appointment

**Use Case Diagram**

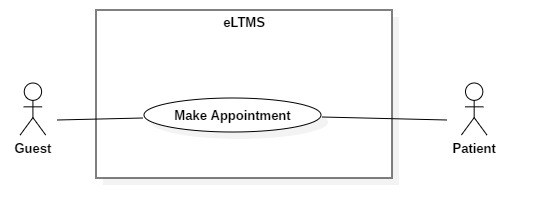


Figure 11 - < Guest, Patient > Make Appointment

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE - UC\_07** | | | |
| **Use Case No.** | 07 | **Use Case Version** | 1.0 |
| **Use Case Name** | Make Appointment | | |
| **Author** |  | | |
| **Date** | 1/10/2018 | **Priority** | Normal |
| **Actor:**   * Patient   **Summary:**   * Patient makes appointment with personal information, types of LabTest, date and time.   **Goal:**   * A new appointment of the patient is made.   **Triggers:**   * User clicks on “Đặt lịch hẹn” menu item on the website or “Đặt lịch” button on mobile app.   **Preconditions:**   * N/A.   **Post Conditions:**   * **Success:** Show success message. * **Fail:** Show error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Đặt lịch hẹn”. | System requires information input:   * Full name * Phone number | | 2 | User clicks on “Bước 2”. | System displays a checkbox list of LabTest types for user to select. | | 3 | User clicks on “Bước 3”. | System displays a table that shows the selected LabTests and requires input date and time for each of them. | | 4 | User clicks on “Đặt lịch”. | System show message on a popup (success/error). |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Cause | System Response | | 1 | Full name or phone number is empty. | Show error message. | | 2 | No LabTests are selected. | Show error message. | | 3 | A date or time is empty. | Show error message. | | 4 | Two date-times intersects. | Show error message. |   **Relationships:** N/A  **Business Rules:**   * User cannot book a Sample twice or more on the same day. * Number of bookings of a Sample-Group, on the same day, at the same slot cannot exceed the number of tables of that Sample-Group. * User cannot make an appointment with date-time in the past. * User cannot book 2 date-times which intersects each other. | | | |

#### Patient Overview Use Case

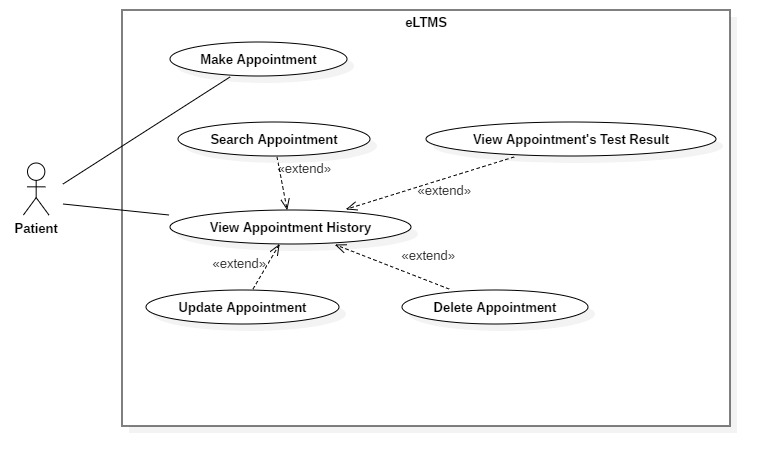


Figure 10 - < Administrator > Overview Use Case

##### <Patient> View Appointment History

**Use Case Diagram**

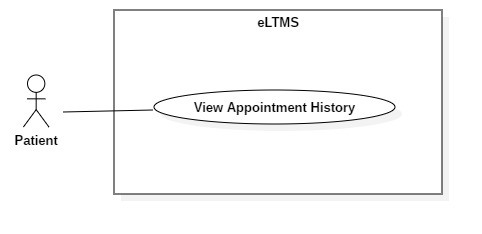


Figure 12 - <Patient> View Appointment History

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| USE CASE - UC\_07 | | | |
| Use Case No. | 07 | **Use Case Version** | 1.0 |
| Use Case Name | View Appointment History | | |
| Author |  | | |
| Date | 1/10/2018 | **Priority** | Normal |
| Actor:   * Patient   Summary:   * Patient views his/her appointment history including new appointment, being processed appointment and done appointment.   Goal:   * A list of appointments of the patient, with search, filter and pagination controls, is shown.   Triggers:   * User clicks on “Danh sách cuộc hẹn” on the Website/Mobile App.   Preconditions:   * User is logged in as Patient.   Post Conditions:   * Has data: Show a list of appointments of the patient with search, filter and pagination controls. * Has no data: Show “Bạn chưa có cuộc hẹn nào.” text.   Main Success Scenario:   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Danh sách cuộc hẹn” on the Website or Mobile App. | System shows a list of appointments of the patient with search, filter and pagination controls. |   Alternative Scenario:   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Danh sách cuộc hẹn” on the Website or Mobile App. | System shows a text: “Bạn chưa có cuộc hẹn nào.” |   Exceptions: N/A  Relationships: N/A.  Business Rules:   * In this list, each appointment has 3 status:   + “mới tạo”: User can edit and delete on Web. User can view detail (selected Samples, LabTests, date, time and price), edit and delete on Mobile App.   + “đang xử lý”: User can do nothing   + “hoàn tất”: User can view result on Web. User can view detail and view result on Mobile App. | | | |

##### <Patient> Update Appointment

**Use Case Diagram**

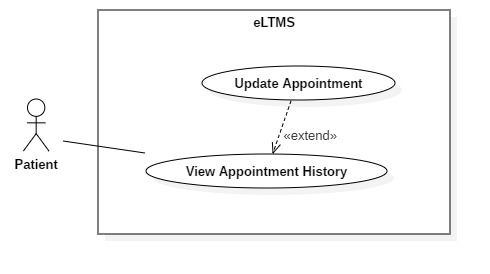


Figure 13 - < Patient >Update Appointment

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| USE CASE - UC\_08 | | | |
| Use Case No. | 08 | **Use Case Version** | 1.0 |
| Use Case Name | Update Appointment | | |
| Author |  | | |
| Date | 1/10/2018 | **Priority** | Normal |
| Actor:   * Patient   Summary:   * Update an appointment’s LabTest types, date and time.   Goal:   * LabTest types, date and time of an appointment are updated.   Triggers:   * User clicks Edit Button in the appointment row.   Preconditions:   * User is logged in as Patient.   Post Conditions:   * Success: A success message is shown. * Fail: An error message is shown.   Main Success Scenario:   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on Edit Button in the appointment row. | System redirect to Edit page. Old values of LabTests are set on a checkbox list. | | 2 | User re-selects new LabTests. Then, user clicks “Bước 2” | System show a table of Samples with date and time. | | 3 | User re-selects date and time. Then, user clicks “Cập Nhật” | System processes and return message. |   Alternative Scenario: N/A  Exceptions: N/A  Relationships: Extended from View Appointment History use case.  Business Rules:   * User cannot book a Sample twice or more on the same day. * Number of bookings of a Sample-Group, on the same day, at the same slot cannot exceed the number of tables of that Sample-Group. * User cannot make an appointment with date-time in the past. * User cannot book 2 date-times which intersects each other. | | | |

##### <Patient> View Appointment’s Test Result

**Use Case Diagram**

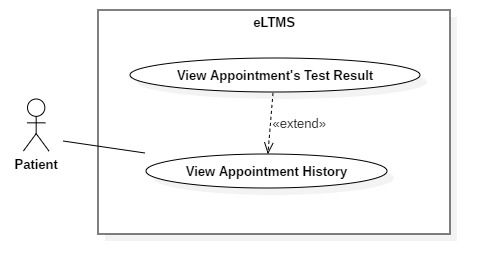


Figure 14 - < Patient > View Appointment’s Test Result

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE - UC\_10** | | | |
| **Use Case No.** | 10 | **Use Case Version** | 1.0 |
| **Use Case Name** | View Appointment’s Test Result | | |
| **Author** |  | | |
| **Date** | 1/10/2018 | **Priority** | Normal |
| **Actor:**   * Patient   **Summary:**   * Patient views appointment’s test result.   **Goal:**   * Patient views appointment’s test result, a soft version of result paper.   **Triggers:**   * Patient clicks View Result Button in the appointment row.   **Preconditions:**   * User is logged in as Patient.   **Post Conditions:**   * The test result is shown.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | **1** | User clicks on View Result Button on the appointment row. | System redirects to View Result page which shows:   * Test results indexes: Name, value, status (normal/low/high), result, unit * “Tải tập tin PDF” button. | | **2** | User clicks on “Tải tập tin PDF”. | A PDF version is downloaded and opened on browser. |   **Exceptions:** N/A  **Relationships:** Extended from View Appointment History use-case.  **Business Rules:**   * In the test result grid: the rows has high or low status must be highlighted (bold, italic and underlined). If high, the result number marked “H” and righ-aligned. If low, the result number marked “L” and left-aligned. | | | |

##### <Patient> Delete Appointment

**Use Case Diagram**

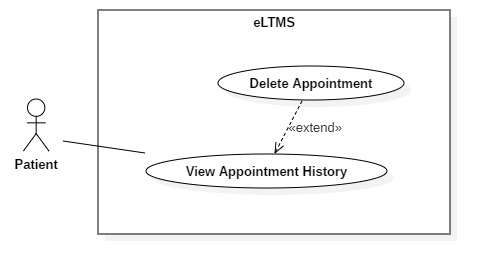


Figure 15 - < Administrator > Search Users

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE - UC\_12** | | | |
| **Use Case No.** | 12 | **Use Case Version** | 1.0 |
| **Use Case Name** | Delete Appointment | | |
| **Author** |  | | |
| **Date** | 1/10/2018 | **Priority** | Normal |
| **Actor:**   * Patient   **Summary:**   * Delete (cancel) an appointment that patient made.   **Goal:**   * Help patients can flexibly delete the appointments that they cannot come.   **Triggers:**   * Patient clicks on Delete Button on the appointment row.   **Preconditions:**   * User is logged in as Patient.   **Post Conditions:**   * Show success message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on Delete Button on the appointment row. | System show a confirm popup with message: “Bạn có chắc chắn muốn hủy cuộc hẹn này không?” | | 2 | User clicks “Có”. | System deletes the appointment and show popup: “Cuộc hẹn đã được hủy thành công.” |   **Alternative Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on Delete Button on the appointment row. | System show a confirm popup with message: “Bạn có chắc chắn muốn hủy cuộc hẹn này không?” | | 2 | User clicks “Không”. | System closes the popup and come back to the appointment history list. |   **Exceptions:**   |  |  |  | | --- | --- | --- | | No | Cause | System Response | | 1 | The appointment have been deleted before user confirmed “Có”. It is deleted from another device (maybe web or mobile). | Show error message. |   **Relationships:** Extended from View Appointment History List.  **Business Rules:** N/A | | | |

#### <Hospital Receptionist> Overview Use Case

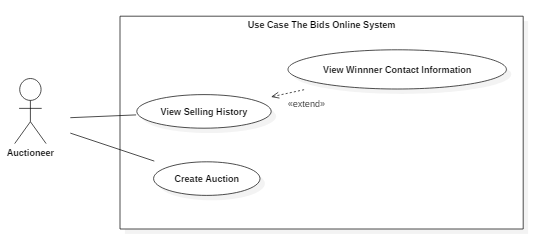


Figure 20 - < Auctioneer> Overview Use Case

##### <Hospital Receptionist> View Appointment List

**Use Case Diagram**

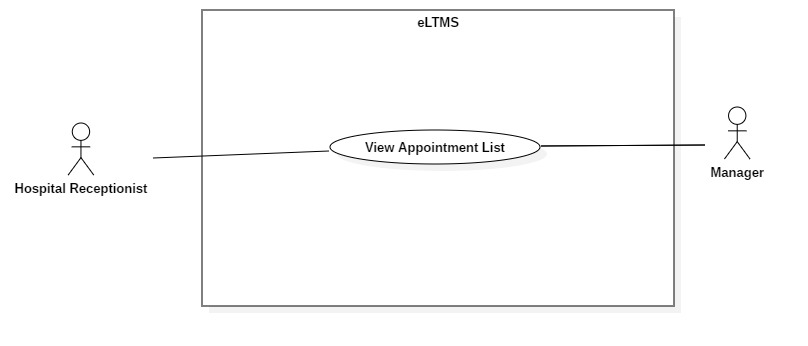


Figure 21 - < Hospital Receptionise> View Appointment List

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| USE CASE - UC\_10 | | | |
| Use Case No. | 10 | **Use Case Version** | 1.0 |
| Use Case Name | View Appointment List | | |
| Author |  | | |
| Date | 1/10/2018 | **Priority** | Normal |
| Actor:   * Auctioneer.   Summary:   * Hospital Receptionist views a list of appointments to guide patients coming to the hospital.   Goal:   * Hospital Receptionist can view all appointments, search by appointment code and filter by date.   Triggers:   * After Hospital Receptionist logged in successfully or clicks on “Quản lý cuộc hẹn” menu item.   Preconditions:   * User logged in as Hospital Receptionist.   Post Conditions:   * A list of appointments is shown, with search, filter and pagination controls.   Main Success Scenario:   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Quản lý cuộc hẹn” menu item. | A list of appointments is shown, with search, filter and pagination controls. |   Alternative Scenario: N/A  Exceptions:   |  |  |  | | --- | --- | --- | | No | Cause | System Response | | 1 | Appointment table has no data. | Show message: “Chưa có cuộc hẹn nào” |   Relationships: N/A  Business Rules:   * Initially, all IsPaid Switches are set to OFF. | | | |

##### <Hospital Receptionist> View Appointment Detail

**Use Case Diagram**

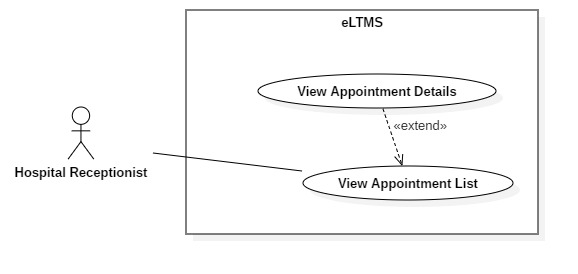


Figure 23 - < Hospital Receptionist> View Appointment Details

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| USE CASE - UC\_11 | | | |
| Use Case No. | 11 | **Use Case Version** | 1.0 |
| Use Case Name | View Appointment Details | | |
| Author |  | | |
| Date | 1/10/2018 | **Priority** | Normal |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Actor:   * Hospital Receptionist.   Summary:   * This use-case allows Hospital Receptionist to view appointment details.   Goal:   * Appointment details, includes patient’s information and a list of booked Sample-Getting of the appointment, are shown.   Triggers:   * User clicks on “Xem chi tiết” button on the appointment row.   Preconditions:   * User logged in as Hospital Receptionist. * User is at View Appointment List page.   Post Conditions:   * Success: A pop up with appointment details is shown.   Main Success Scenario:   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on on “Xem chi tiết” button on the appointment row. | A pop up appears and shows these information:   * Patient profile: Full name, phone number, gender, date of birth, email, home address, company address. * A list of booked Sample-Getting. |   Alternative Scenario: N/A  Exceptions: N/A  Relationships: Extend from View Appointment List use case  Business Rules: N/A. |

##### <Hospital Receptionist> Delete Sample Getting

**Use Case Diagram**

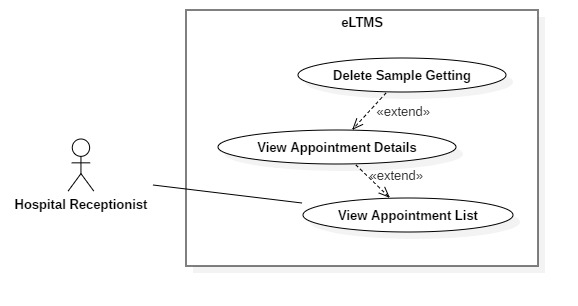


Figure 22 - <Hospital Receptionist> Delete Sample Getting

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE - UC\_10** | | | |
| **Use Case No.** | 10 | **Use Case Version** | 1.0 |
| **Use Case Name** | Delete Sample Getting | | |
| **Author** |  | | |
| **Date** | 1/10/2018 | **Priority** | Normal |
| **Actor**:   * Hospital Receptionist   **Summary**:   * This use-case allows Hospital Receptionist to delete Sample-Getting for online patient.   **Goal**:   * Sample-Getting of online patient is deleted.   **Triggers**:   * Hospital Receptionist clicks on Delete Button on the Sample-Getting row.   **Preconditions**:   * User logged in as Hospital Receptionist. * User is at Appointment Detail Popup.   **Post** **Conditions**:   * **Success**: Show success message. * **Fail:** Show error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on Delete Button on the Sample-Getting row. | System shows a popup: “Bạn có chắc chắn muốn xóa ca lấy mẫu này không?” | | 2 | User clicks “Có”. | System deleted the Sample-Getting and shows pop up: “Ca lấy mẫu đã được xóa.” |   Alternative Scenario 1:   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on Delete Button on the Sample-Getting row. | System shows a popup: “Bạn có chắc chắn muốn xóa ca lấy mẫu này không?” | | 2 | User clicks “Không”. | System closes the popup and come back to the Sample-Getting list. |   **Exceptions**: N/A  **Relationships**: N/A  **Business** **Rules**:   * Price should be displayed as VND currency format. * Date should be displayed as Vietnamese date format. * For active auctions: user can sort the result by active time (newly listed/ending soon), number of bids (asc/desc), current price (asc/desc). User also can click on the row to visit auction’s detail page. * For ended auctions: user can sort the result by ended time (asc/desc), number of bids (asc/desc), current price (asc/desc). Each row provides a Contact icon for user can click and view seller’s contact information if the auction has a winner. | | | |

##### <Hospital Receptionist> Mark Appointment As "Paid"

**Use Case Diagram**

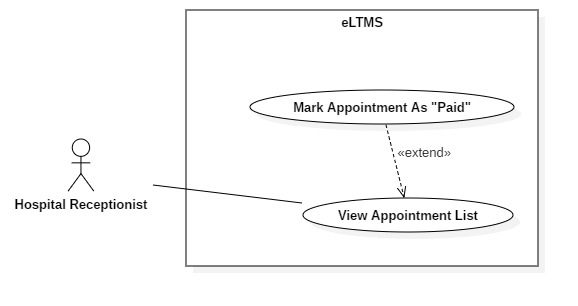


Figure 22 - <Hospital Receptionist> Mark Appointment As Paid

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE - UC\_10** | | | |
| **Use Case No.** | 10 | **Use Case Version** | 1.0 |
| **Use Case Name** | Mark Appointment As Paid | | |
| **Author** |  | | |
| **Date** | 1/10/2018 | **Priority** | Normal |
| **Actor**:   * Hospital Receptionist   **Summary**:   * This use-case allows Hospital Receptionist to mark the appointment as Paid.   **Goal**:   * Appointment is marked as Paid.   **Triggers**:   * User clicks on “Thanh toán” switch on the appointment row.   **Preconditions**:   * User logged in as Hospital Receptionist. * User is at Appointment List page.   **Post** **Conditions**:   * **Success**: Show success message. * **Fail:** Show error message.   **Main Success Scenario:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Thanh toán” switch on the appointment row. | System show a pop up with a price list of all LabTests, and ask: “Bạn có chắc chắn muốn thanh toán không?” | | 2 | User clicks “Có”. | System processes and push notification to Nurses: “Đã thanh toán”. |   Alternative Scenario 1:   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks on “Thanh toán” switch on the appointment row. | System show a pop up with a price list of all LabTests, and ask: “Bạn có chắc chắn muốn thanh toán không?” | | 2 | User clicks “Không”. | Come back to Appointment List page. |   **Exceptions**: N/A  **Relationships**: N/A  **Business** **Rules**: N/A | | | |

#### Bidder Overview Use Case

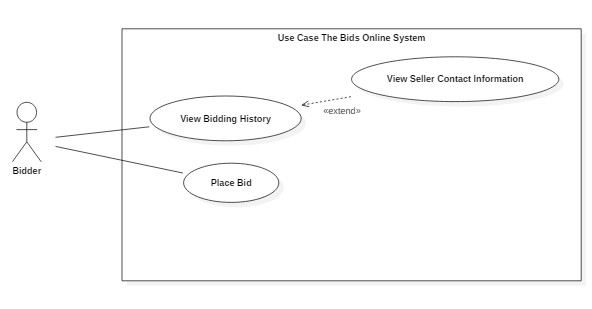
****

Figure 24 - < Bidder > Overview Use Case

##### Bidder Place Bid

**Use Case Diagram**

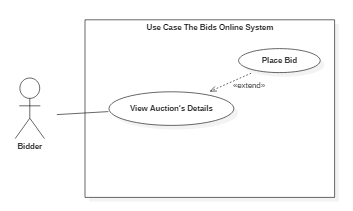


Figure 25 - < Bidder > Place Bid

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| USE CASE - UC\_12 | | | |
| Use Case No. | 12 | **Use Case Version** | 1.0 |
| Use Case Name | Place Bid | | |
| Author | Hà Trung Kiên | | |
| Date | 1/10/2018 | **Priority** | Normal |
| Actor:   * Bidder .   Summary:   * This use case allows Bidder to place bid at an auctions.   Goal:   * Bidder can place bid at an auction.   Triggers:   * Bidder clicks on “Đấu giá” button.   Preconditions:   * User must log into the system with Bidder role. * Bidder’s at “Thông tin phiên đấu giá” page.   Post Conditions:   * Success: System saves bid on database and shows success message, auction’s information and table of bidding transactions is updated on UI directly. * Fail: System shows error message.   Main Success Scenario:   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Bidder clicks on any link of auction’s details page. | Redirect user to “Thông tin phiên đấu giá” displaying the auction’s information. | | 2 | Bidder inputs price in text input. | System formats input as currency format. | | 3 | Bidder clicks “Đấu giá” button. | System shows confirmation popup. | | 4 | Bidder clicks “Đồng ý” button on the popup. | System shows success message.  System updates auction’s information: current price, current minimum bid, current highest bidder’s username on UI.  System updates table of bidding transactions on UI.  System sends notification to bidder to confirm he/she is the highest bidder or not. |   Alternative Scenario: N/A  Exceptions:   |  |  |  | | --- | --- | --- | | No | Cause | System Response | | 1 | Bidder inputs price on their own products. | System shows “Bạn không thể đấu giá trên sản phẩm của mình” message. | | 2 | Bidder inputs reserve price that not divisible for 500. | System shows “Giá của bạn phải chia hết cho 500đ” message. | | 3 | Bidder inputs price too high comparing to item’s current price. | System shows “Giá của bạn nhập quá cao” message. | | 4 | Bidder inputs price lower than minimum bid. | System shows “Giá đấu của bạn phải bằng hoặc lớn hơn giá tối thiểu” message. |   Relationships: Extend from View Auction’s Details  Business Rules:   * The bid bidder types is not null, greater than 1000 and less than 200000000 and divisible for 500. * The bid bidder types needs to equal or be higher than the current minimum bid. * Automatic bidding system is provided to current highest bidder to bid on his/her behalf. See more at Algorithms section. * UI will be updated immediately after bidder places bid successfully without reloading the page. (real-time updating). | | | |

##### Bidder View Bidding History

**Use Case Diagram**

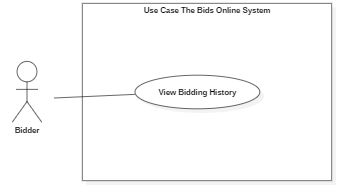


Figure 26 - < Bidder > View Bidding History

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| **USE CASE - UC\_13** | | | |
| **Use Case No.** | 13 | **Use Case Version** | 1.0 |
| **Use Case Name** | View Bidding History | | |
| **Author** | Hà Trung Kiên | | |
| **Date** | 1/10/2018 | **Priority** | Normal |
| **Actor**:   * Bidder.   **Summary**:   * This use case allows Bidder view bidding history.   **Goal**:   * Bidder can view bidding history.   **Triggers**:   * Bidder clicks on “Đấu giá hiện tại” tab.   **Preconditions**:   * User must be login to the system with Bidder role. * User’s at “Lịch sử đấu giá” page.   **Post Conditions**:   * Success: Bidder can view bidding history in the system.   **Main Success Scenario**:   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Bidder goes to “Lịch sử đấu giá” page and clicks “Hiện tại” tab. | System shows list of bidding auction which includes following information:   * Item’s name * Item’s current price * Auction’s status * Auction’s number of bids * Seller username * Ended date time |   **Alternative Scenario 1:**   |  |  |  | | --- | --- | --- | | **Step** | **Actor Action** | **System Response** | | 1 | Bidder goes to “Lịch sử đấu giá” page and clicks “Đã thắng” tab. | System shows list of won auction which includes following information:   * Item’s name * Item’s final price * Auction’s status * Auction’s number of bids * Seller username * Ended date time |   **Alternative Scenario 2:**   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Bidder goes to “Lịch sử đấu giá” page and clicks “Đã thua” tab. | System shows list of lost auction which includes following information:   * Item’s name * Item’s final price * Auction’s status * Auction’s number of bids * Seller username * Ended date time |   **Exceptions:** N/A  **Relationships:** N/A  **Business Rules:**   * Price should be displayed as VND currency format. * Date should be displayed as Vietnamese date format. * For bidding auctions: user can sort the result by active time (newly listed/ending soon), number of bids (asc/desc), current price (asc/desc). User also can click on the row to visit auction’s detail page. * For won and lost auctions: user can sort the result by ended time (asc/desc), number of bids (asc/desc), current price (asc/desc). For won auctions, each row provides a Contact icon for user can click and view seller’s contact information. | | | |

##### Bidder View Seller Contact Information

**Use Case Diagram**

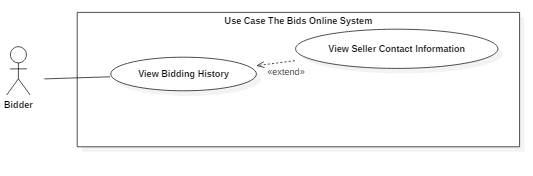
****

Figure 27 - < Bidder > View Seller Contact Information

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| USE CASE - UC\_13 | | | |
| Use Case No. | 13 | **Use Case Version** | 1.0 |
| Use Case Name | View Seller Contact Information | | |
| Author | Hà Trung Kiên | | |
| Date | 1/10/2018 | **Priority** | Normal |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Actor:   * Bidder.   Summary:   * This use case allows Bidder to view seller’s contact information of won item.   Goal:   * Bidder can view seller contact information.   Triggers:   * Bidder clicks on “Contact” icon displayed on a bidding history record.   Preconditions:   * User must log into the system with Bidder role. * User has at least one won auction.   Post Conditions:   * Success: Bidder can view seller contact information in the system.   Main Success Scenario:   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | Bidder goes to “Lịch sử đấu giá” page and clicks “Đã thắng” tab. | System shows list of ended auction which includes following information:   * Item’s name * Item’s final price * Auction’s status * Auction’s number of bids * Seller username * Ended date time | | 2 | Bidder clicks Contact icon in any record. | System show seller’s contact information including:   * Full name * Phone number * Address |   Alternative Scenario: N/A  Exceptions: N/A  Relationships: Extend from View selling history use case  Business Rules: N/A |

#### Authorized User Overview Use Case

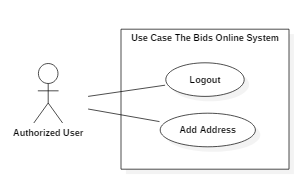
****

Figure 28 - <Authorized User> Overview Use Case

##### Authorized User Logout

**Use Case Diagram**

****

Figure 29 - < Authorized User> Logout

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| USE CASE - UC\_14 | | | |
| Use Case No. | 14 | **Use Case Version** | 1.0 |
| Use Case Name | Logout | | |
| Author | Hà Trung Kiên | | |
| Date | 1/10/2018 | **Priority** | Normal |
| Actor:   * Authorized User.   Summary:   * This use case allows user to log out.   Goal:   * User can log out.   Triggers:   * User clicks “Đăng xuất” button.   Preconditions:   * User must have logged into system.   Post Conditions:   * Success: System reloads page.   Main Success Scenario:   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User clicks “Đăng xuất” button. | Reload current page. |   Alternative Scenario: N/A  Exceptions: N/A  Relationships: N/A  Business Rules: N/A | | | |

##### Authorized Add Address

**Use Case Diagram**

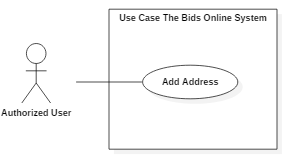
****

Figure 30 - <Authorized User> Add Address

**Use Case Specification**

|  |  |  |  |
| --- | --- | --- | --- |
| USE CASE - UC\_15 | | | |
| Use Case No. | 15 | **Use Case Version** | 1.0 |
| Use Case Name | Add Address | | |
| Author | Hà Trung Kiên | | |
| Date | 1/10/2018 | **Priority** | Normal |
| Actor:   * Authorized User.   Summary:   * This use case allows User to add address.   Goal:   * User can add address information.   Triggers:   * User clicks on “Cập nhật” button.   Preconditions:   * User must log into the system.   Post Conditions:   * Success: System saves address on database and shows success message. * Fail: System shows error message.   Main Success Scenario:   |  |  |  | | --- | --- | --- | | Step | Actor Action | System Response | | 1 | User goes to “Đăng ký” page. | System requires information:   * Name: text input. * Phone: text input. * Address Line: text input. * District: text input. * City: password input. | | 2 | User inputs all required field.  Then clicks “Cập nhật” button. | User will register the system with roles of this account.  [Exception 1,2,3,4,5,6,7] |   Alternative Scenario: N/A  Exceptions:   |  |  |  | | --- | --- | --- | | No | Cause | System Response | | 1 | Name is empty. | Show error message. | | 2 | Phone is empty. | Show error message. | | 3 | Address Line is empty. | Show error message. | | 4 | District is empty. | Show error message. | | 5 | City is empty. | Show error message. |   Relationships: N/A  Business Rules:   * Name is not null, in range of 5-50 characters. * Phone is not null, follows phone format. * Address Line is not null, maximum length is 100 characters. * District is not null, maximum length is 30 characters. * City is not null, maximum length is 30 characters. | | | |

## Software System Attribute

### Usability

* The system usability is easy to use. It takes about 8 hours to get acquainted and use the system.
* Icons that indicate the actions should be easy to understand and users will not meet any troubles to recognize the feature of page.

### Reliability

* The rate of failure occurrence shall be 1/200 (1 occurrence in 200 days).
* The number of sending notification failure is 1 time per 200 notifications.
* Timer tasks run at configured time with 100% execution rate.
* The data should be backed up every day.

### Availability

* System is divided into modules, if a module is down, it will not affect others.
* The system can be adapted for a large number of request.

### Security

* Privacy: Each role of user has a specific permission to interact with system.
* System always checks authorization and authentication before doing anything.
* Only admin can grant permission to other roles.

### Maintainability

* The system is divided into separate modules.
* The code is easy to maintain and upgrade.

### Portability

* The web application is running on Windows 7 or above.
* The mobile application is running on Android 4.4.2 or above
* Providing easy installation.

### Portability

* All requests are handling in maximum time of 12 seconds.

## Conceptual Diagram

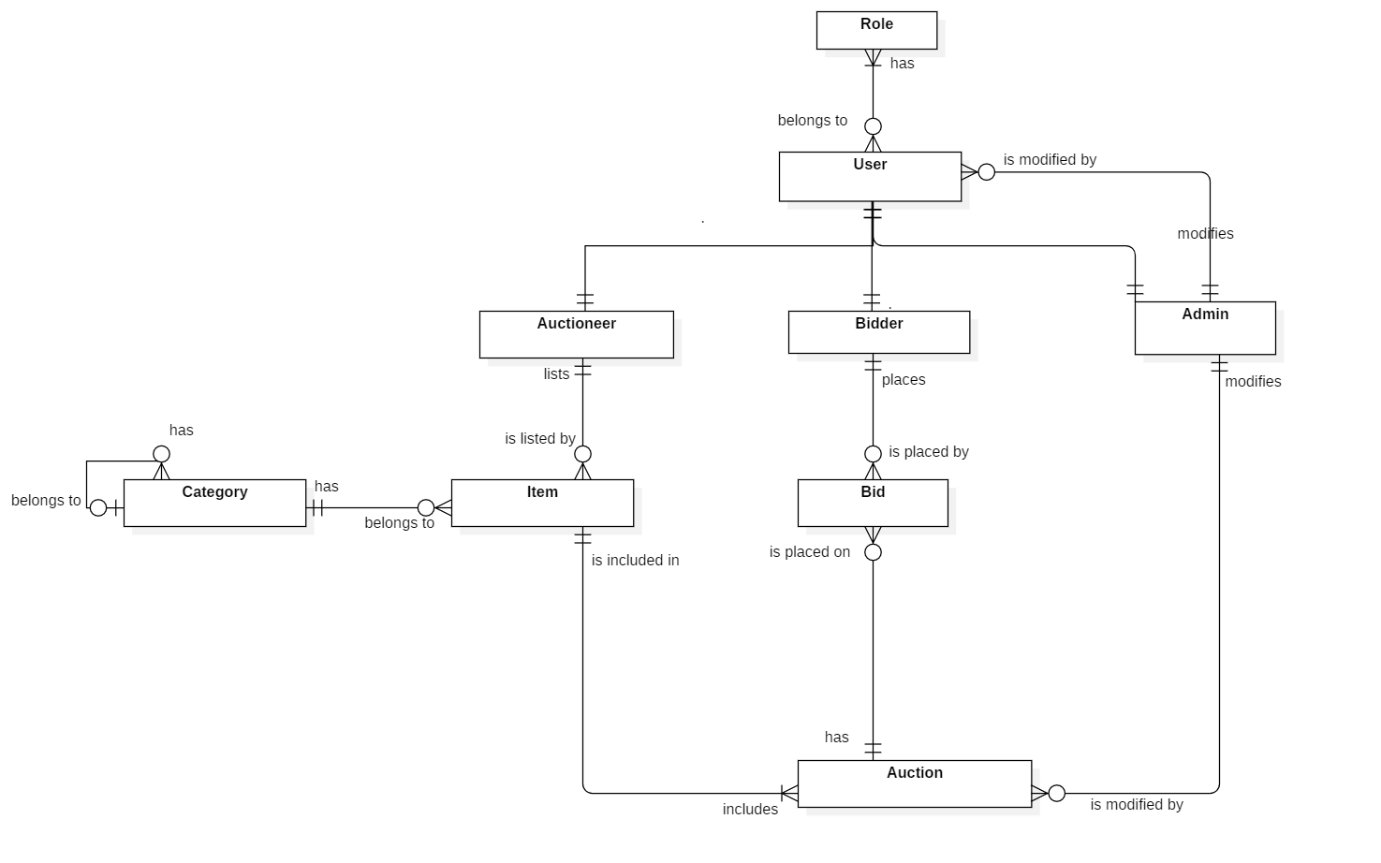


Figure 31 - Conceptual Diagram

**Data Dictionary**

|  |  |
| --- | --- |
| Entity Data dictionary: describe all content of all entities | |
| Entity Name | **Description** |
| Admin | Contain the administrator information. |
| Auction | Contain the auction information. |
| Auctioneer | Contain the auctioneer report information. |
| Bid | Contain the bid information |
| Bidder | Contain the bidder information. |
| Category | Contain the category information |
| Role | Contain the user role information. |
| User | Contain the user information. |

Table 1 - Conceptual diagram data dictionary