

# Design Report for Web-Based System

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## Technologies:

Jdk 11.0.21 Tomcat 9.0.83 IDE:netbeans 20

## (uml at the end)

## Introduction:

The 'Pet Care' system aims to facilitate pet owners by providing a reliable platform where they can find hospitable care for their furry friends while they are away and pet keepers to keep the pets safe. This project serves as a practical ground to hone their skills in client and server technologies, including HTML, JavaScript, AJAX, JAVA Servlets, CSS, REST APIs, and JSP.

## Spark/RestAPIs:

### 1.PetsRESTAPI class

**Initialize API:** sets up an EditPetsTable instance for database operations.

**GET Requests:**

i)/pets: Retrieves all pets from the database.

ii) /owner/:owner\_id: Fetches pets belonging to a specified owner.

iii) /pets/:type/:breed: Gets pets filtered by type and breed, including additional filtering by weight range if specified.

**POST Request:**

i)/pet: Adds a new pet to the database using provided JSON data.

**PUT Request:**

i)/petWeight/:pet\_id/:weight: Updates the weight of a specific pet identified by its ID.

**DELETE Request:**

i) /petDeletion/:pet\_id: Deletes a pet from the database based on its ID.

### 2.AdminRESTAPI class

**Initialize API:** Initializes instances for EditPetOwnersTable, EditPetKeepersTable, EditBookingsTable, and EditPetsTable for various database operations.

#### **GET Requests:**

i)/PO: Retrieves all pet owners from the database.

ii)/PK: Fetches all full pet keepers' details.

iii)/profit: Calculates and returns the total profit and pet keepers' earnings from all finished bookings.

iv) /pets: Counts and returns the number of cats and dogs in the database.

#### **DELETE Requests:**

i) /PO/delete/:id: Deletes a pet owner from the database based on the provided ID and returns the updated list of pet owners.

ii)/PK/delete/:id: Removes a pet keeper from the database using the specified ID and returns the updated list of pet keepers.

### **3.PetKeeperRESTAPI class**

**Initialize API:** Sets up the API on port 4568 and initializes instances for EditBookingsTable, EditReviewsTable, and EditMessagesTable for database operations.

#### **GET Requests:**

i)/api/petKeepers: Retrieves all pet keepers from the database.

ii)/keeperAPI/:id: Provides detailed information for a specific pet keeper, including total finished bookings, total days of bookings, average review score, and review texts.

iii)/keeperAPI/booking/:id: Retrieves booking details for a specific pet keeper, focusing on requested or accepted bookings.

iv)/keeperAPI/chatgtp/:text: Returns a response from ChatGPT based on the provided text.

v)/keeperAPI/messages/:id: Retrieves all messages associated with a specific booking ID.

#### **PUT Request:**

vi)/keeperAPI/booking/:id/:status: Updates the status of a specific booking identified by ID.

#### **POST Request:**

i)/keeperAPI/messages/:id/send: Sends a new message related to a specific booking ID, with the sender set as "keeper".

### **4.PetOwnerRESTAPI class**

**Initialize API:** initializes instances for EditPetsTable, EditBookingsTable, EditPetKeepersTable, EditReviewsTable, EditPetOwnersTable, and EditMessagesTable for database operations.

#### **GET Requests:**

- i)/api/petOwners/:ownerId/availablePet:** Checks for an available pet for a specified pet owner.
- ii)/api/petOwners/:ownerId/hasActiveOrPendingBooking:** Determines if a pet owner has an active or pending booking.
- iii)/api/availablePetKeepers/:petType:** Retrieves a list of available pet keepers for a specified pet type.
- iv)/api/petOwners/:ownerId/petType:** Fetches the pet type owned by a specific pet owner.
- v)/ownerAPI/booking/:ownerId:** Retrieves all bookings associated with a particular pet owner.
- vi)/ownerAPI/reviews/:ownerId:** Gets all reviews written by a specific pet owner.
- vii)/api/checkReview/:bookingId:** Checks if a review exists for a specific booking.
- viii)/api/petOwnerLocation/:ownerId:** Fetches the location (latitude and longitude) of a pet owner.
- ix)api/messages/:id:** Retrieves all messages associated with a specific booking ID.

#### **POST Requests:**

- i)/api/addBooking:** Adds a new booking to the database.
- ii)/api/submitReview:** Submits a new review to the database.
- iii)/api/messages/:id/send:** Sends a new message related to a specific booking ID, with the sender set as "owner".

#### **PUT Request:**

- i)/api/finishBooking/:bookingId:** Marks a booking as finished in the database.

## **Main Methods And Classes:**

### **1.Class EditBookingsTable**

#### **Purpose:**

Manages the operations related to the 'bookings' table in the database, such as adding, retrieving, updating, and creating bookings.

#### **Functions:**

**JSON conversion functions: Convert Bookings objects to and from JSON.**

**getAllBookings():** Retrieves a list of all bookings from the database.

**takeAllPetKeepersBooking(String id):** Fetches all bookings associated with a specific pet keeper.

**databaseToBooking(int id):** Retrieves a specific booking from the database using its ID.

**updateBooking(int bookingID, String status):** Updates the status of a specific booking.

**createBookingTable():** Creates the 'bookings' table in the database.

**createNewBooking(Booking bor):** Adds a new booking record to the database. (using some extra functions to convert message to json)

**hasOwnerMadeRequest(String ownerId):** Checks if a pet owner has any active or pending booking requests.

**getBookingsForOwner(String ownerId):** Retrieves all bookings for a specific pet owner based on ownerid.

**getBookingById(String bookingId):** Fetch es a specific booking by its ID.

**updateBookingStatus(String bookingId, String status):** Updates the status of a booking based on its ID.

## **2.Class EditMessagesTable**

### **Purpose:**

Manages operations related to the 'messages' table in the database, including adding new messages, converting messages to/from JSON, and retrieving messages associated with bookings.

### **Functions:**

**JSON conversion functions: Convert Messages objects to and from JSON.**

**databaseToMessage(int booking\_id):** Retrieves a list of all messages associated with a specific booking ID from the database.

**createMessageTable():** Creates the 'messages' table in the database.

**createNewMessage(Message msg):** Adds a new message record to the database.

### 3. Class EditPetKeepersTable

#### **Purpose:**

Manages operations related to the 'petkeepers' table in the database, including adding, deleting, updating, and retrieving pet keeper records.

#### **Functions:**

JSON conversion functions: Convert Petkeepers objects to and from JSON.

`deletePetKeeper(String id)`: Deletes a pet keeper from the database using their ID.

`getAllFullPetKeepers()`: Retrieves a list of all pet keepers with full details from the database.

`updatePetKeeper(String username, String field, String value)`: Updates a specific field of a pet keeper's record.

`printPetKeeperDetails(String username, String password)`: Prints the details of a pet keeper based on username and password.

`databaseToPetKeepers(String username, String password)`: Retrieves a pet keeper from the database based on username and password.

`findUsernameToPetKeepers(String username)`: Finds a pet keeper based on their username.

`findEmailToPetKeepers(String email)`: Finds a pet keeper based on their email.

`getAvailableKeepers(String type)` : Retrieves a list of available pet keepers based on a specified type.

`getKeepers(String type)`: Retrieves a list of pet keepers who are specialized in a specific type of pet care.

### 4. Class EditPetOwnersTable

**Purpose:** Manages operations related to the 'petowners' table in the database, including adding, deleting, updating, and retrieving pet owner records.

#### **Functions:**

JSON conversion functions: Convert Petowners objects to and from JSON.

`deletePetOwner(String id)`: Deletes a pet owner from the database using their ID

**getAllPetOwners ():** Retrieves a list of all pet owners with full details from the database.

**updatePetOwner(String username, String personalpage):** Updates the personal page field of a pet owner's record based on their username.

**databaseToPetOwners(String username, String password):** Retrieves a pet owner from the database based on their username and password.

**findUsernameToPetOwners(String username):** Finds a pet owner based on their username.

**findEmailToPetOwners(String email):** Finds a pet owner based on their email.

**databasePetOwnerToJSON(String username, String password):** Converts a pet owner's data from the database to JSON format based on their username and password.

**createPetOwnersTable():** Creates the 'pet owners' table in the database.

**addNewPetOwner(PetOwner user):** Adds a new pet owner record to the database.

**getPetOwnerById(String ownerId):** Retrieves the details of a pet owner from the database using their owner ID.

## 5.Class EditPetsTable

**Purpose:** Handles operations for the 'pets' table in the database, including CRUD operations for pets, converting pets to/from JSON, and specific queries based on pet and owner data. Functions: JSON conversion functions: Convert Pet objects to and from JSON.

### Functions:

JSON conversion functions: Convert Pets objects to and from JSON.

**databaseToPets():** Retrieves all pets from the database.

**databaseToPets(String type):** Fetches pets of a specified type from the database.

**petOfOwner(String id):** Gets the pet(s) belonging to a specified owner.

**addPetFromJSON(String json):** Adds a pet to the database using JSON data.

**createPetsTable():** Creates the 'pets' table in the database.

**createNewPet(Pet bt):** Adds a new pet record to the database.

**updatePet(String id, String weight):** Updates the weight of a specific pet.

**deletePet(String id):** Deletes a pet from the database using its ID.

**getAvailablePetForOwner(String ownerId):** Finds an available pet for a specific owner, not involved in active bookings.

**getPetTypeByOwnerId(String ownerId):** Retrieves the type of pet for a specific owner.

## 6. Class EditReviewsTable

**Purpose:** Manages operations related to the 'reviews' table in the database, including adding new reviews, converting reviews to/from JSON, and retrieving reviews associated with pet owners and keepers.

### Functions:

**JSON conversion functions:** Convert Review objects to and from JSON.

**databaseToKeeperReviews(String keeper\_id):** Retrieves a list of reviews for a specific pet keeper from the database.

**createReviewTable():** Creates the 'reviews' table in the database.

**createNewReview(Review rev):** Adds a new review record to the database.

**getReviewsForOwner(String ownerId):** Retrieves all reviews associated with a specific pet owner.

**reviewExistsForBooking(String ownerId, String keeperId):** Checks if a review exists for a specific booking, based on owner and keeper IDs.

## Servlets:

### Register/login Servlets:

**GetPetOwner Servlet:**

**GET Method:** Handles retrieval of PetOwner details based on username, password, or email. It supports session-based access and returns pet owner information in JSON format.

**POST Method:** Manages two main operations: Logout functionality: Invalidates the session if the logout parameter is set. Adding a new PetOwner: Accepts pet owner details, creates a new PetOwner object, and adds it to the database.

**GetPetKeeper Servlet:**

**GET Method:** Retrieves PetKeeper details based on username, password, or email. Supports session validation and returns pet keeper information in JSON format.

**POST Method:** Handles two functionalities: Logout: Invalidates the session for a pet keeper. Adds or updates a PetKeeper: Based on the provided parameters, either a new PetKeeper is added or an existing one is updated in the database.

## Ajax requests:

### ajax.js

#### getPetKeepers() Function:

- This function performs an Ajax GET request to "http://localhost:4568/api/petKeepers".
- It fetches data about pet keepers and uses it to create a table on the webpage.

#### getPetKeeperUser() and getPetOwnerUser() Functions:

- Both functions make Ajax GET requests to 'GetPetKeeper?' + data and 'GetPetOwner?' + data respectively.
- They are used to check for the existence of a pet keeper or pet owner based on the provided username or email.

#### addPetOwner() and addPetKeeper() Functions:

- These functions perform Ajax POST requests to 'GetPetOwner?' + data and 'GetPetKeeper?' + data.
- They are used to add a new pet owner or pet keeper to the system, including their geolocation data.

#### getUser() Function:

- It sends an Ajax GET request to 'GetPetKeeper?' and then, depending on the response, to 'GetPetOwner?'.
- The function is used for user authentication, checking if the user is a pet keeper or pet owner.

#### loginUser() Function:

- This function calls getUser() internally to perform the Ajax operation for user login.
- It handles the login process and navigates to different pages based on user type.



#### **updateUser() Function:**

- It makes an Ajax POST request to 'GetPetKeeper?' + data.
- The function is used for updating user information.

#### **logoutUser() Function:**

- This function sends an Ajax POST request to 'GetPetKeeper?' + data.
- It handles user logout, clearing user data from local storage.

#### **checkLoggedIn() Function:**

- Sends an Ajax GET request to either 'GetPetOwner' or 'GetPetKeeper?' based on the user type.
- This function is used to check if the user is logged in and retrieve their data.

### **ajaxAdmin.js**

#### **getPO() Function:**

- Performs an Ajax GET request to "http://localhost:4560/adminAPI/PO".
- Retrieves data for pet owners and updates the HTML content.

#### **getPK() Function:**

- Sends an Ajax GET request to "http://localhost:4560/adminAPI/PK".
- Fetches data for pet keepers and updates the webpage.

#### **deletePO(id) Function:**

- Makes an Ajax DELETE request to "http://localhost:4560/adminAPI/PO/delete/"+id.
- Used for deleting a pet owner based on their ID.

#### **deletePK(id) Function:**

- Executes an Ajax DELETE request to "http://localhost:4560/adminAPI/PK/delete/"+id.
- Used for deleting a pet keeper based on their ID.

#### **getProfit() Function:**

- Sends an Ajax GET request to "http://localhost:4560/adminAPI/profit".
- Retrieves profit information.

#### **getPets() Function:**

- Performs an Ajax GET request to "http://localhost:4560/adminAPI/pets".
- Fetches the number of cats and dogs.

## ajaxPK.js

### getPKInfo() Function:

- Fetches pet keeper's information using a GET request to "http://localhost:4568/keeperAPI/" + user.
- Updates the status and review tables on the page with the data received.

### getBooking() Function:

- Retrieves booking information with a GET request to "http://localhost:4568/keeperAPI/booking/" + user.
- Populates the jobs table based on the response.

### setStatus(but\_name) Function:

- Sends a PUT request to "http://localhost:4568/keeperAPI/booking/" + book\_id + "/" + but\_name to update the booking status.
- Refreshes the jobs table after the request.

### askChatGPT() Function:

- Sends a GET request to "http://localhost:4568/keeperAPI/chatgtp/" + text to interact with a chatbot service (presumably ChatGPT).
- Updates the chat display with the user's query and the chatbot's response.

### getMessages() Function:

- Fetches messages related to a particular booking using a GET request to "http://localhost:4568/keeperAPI/messages/" + book\_id.
- Displays these messages in the owner's chat section.

### sendMessage() Function:

- Sends a POST request to "http://localhost:4568/keeperAPI/messages/" + book\_id + "/send" to submit a new message.
- Updates the chat display with new messages.

## ajaxPO.js

### getOwnerBookings():

- Makes a GET request to "http://localhost:4562/ownerAPI/booking/" + ownerId.
- Retrieves the booking details for the pet owner identified by ownerId.
- Updates the DOM with the bookings data received.

### getOwnerReviews():

- Sends a GET request to "http://localhost:4562/ownerAPI/reviews/"+ownerId.
- Fetches reviews associated with the pet owner.
- Populates the reviews table with the data received.

**getAvailablePetKeepersByType(petType):**

- Fetches available pet keepers based on the pet type (dog/cat) through a GET request to "http://localhost:4562/api/availablePetKeepers/"+encodeURIComponent(petType).
- Utilizes the pet owner's location to sort pet keepers by proximity.
- Displays available pet keepers in a table format.

**getPetOwnerLocation():**

- Obtains the location of the pet owner via a GET request to "http://localhost:4562/api/petOwnerLocation/"+encodeURIComponent(ownerId).
- Used for calculating distances to available pet keepers.

**sendRequest(keeperData):**

- Handles booking requests. The exact endpoint and method are not specified in the provided snippet, but it likely involves sending booking data to the server.

**hasNotRequested(callback):**

- Checks if the user has any active or pending booking requests.
- Makes a GET request to 'http://localhost:4562/api/petOwners/' + userId + '/hasActiveOrPendingBooking'.

**hasAvailablePet(callback):**

- Determines if the pet owner has pets available for booking.
- Sends a GET request to 'http://localhost:4562/api/petOwners/' + ownerId + '/availablePet'.

**addBookingRequest(bookingData):**

- Adds a new booking request.
- Utilizes a POST request to 'http://localhost:4562/api/addBooking', sending the bookingData.

**checkPetTypeAndFetchKeepers(ownerId, enteredPetType, callback):**

- Verifies the pet type and fetches pet keepers accordingly.
- Makes a GET request to 'http://localhost:4562/api/petOwners/\${ownerId}/petType'.

**getMessages():**

- Retrieves messages related to a booking.
- Uses a GET request to 'http://localhost:4562/api/messages/' + book\_id.

**sendMessages():**

- Sends a new message related to a booking.
- Involves a POST request to 'http://localhost:4562/api/messages/' + book\_id + "/send".

**finishBooking(bookingId):**

- Marks a booking as finished.
- Executes a PUT request to 'http://localhost:4562/api/finishBooking/' + bookingId.

## **ajaxRest.js**

**addPet():**

- Sends a GET request to "http://localhost:4567/petsAPI/pets".
- Retrieves a list of pets and displays them using createTableFromJSON.
- On failure, it displays an error message in the 'msg' element.

**addPet():**

- Makes a POST request to "http://localhost:4567/petsAPI/pet".
- Submits data for adding a new pet, collected from a form.
- On success or failure, displays the response or error message in the 'msg' element.

**getPetsTBW():**

- Sends a GET request to "http://localhost:4567/petsAPI/pets/"+type+"/"+breed+"?fromWeight="+fromWeight+"&toWeight="+toWeight.
- Fetches pets based on specified criteria (type, breed, weight range).
- Displays the results using createTableFromJSON or shows an error message.

**updatePetWeight():**

- Executes a PUT request to "http://localhost:4567/petsAPI/petWeight/"+name+"/"+weight.
- Updates the weight of a specified pet.
- Shows the response or error message in the 'msg' element.

**deletePet():**

- Makes a DELETE request to "http://localhost:4567/petsAPI/petDeletion/"+name.
- Deletes a pet based on the given identifier.
- Displays the server's response or an error message.

**checkOwner(indexOwner, indexSubmit):**

- Sends a GET request to "http://localhost:4567/petsAPI/owner/" + o\_v.
- Validates if an owner exists in the database.

- Based on the response, it enables or disables a submit button and shows/hides an error message.

## **Apis:**

Chatgpt and OpenStreetMaps APIs

## **JavaScript Libraries/HTML/JSP Used:**

Bootstrap (JavaScript Library) (<script

src="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.1/js/bootstrap.min.js"></script>)

Google Charts (JavaScript Library)

Custom JavaScript Files

## **CSS:**

Bootstrap (CSS Framework)

Inline CSS

Custom CSS Files

