Hotel reservation system: Documentation of the project

CS 110: Introduction to Computer Science (Sec. D)

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Overview

The Hotel Booking System is a console-based Python application designed for managing hotel reservations. It offers functionalities such as user registration, login, viewing, creating, and canceling bookings. The system utilizes four datasets (`booking_data.csv`, `country_data.csv`, `guest_data.csv`, and `hotel_data.csv`) to manage various aspects of the booking process.

Main Flow

1. User Authentication (`operations/authentication.py`)

- Login: Users can log in using their email and password. Successful log-in redirects them to the guest menu.

- Registration: New users can register by providing their name, surname, age, email, and password. The system ensures that the email is unique and the password is at least 3 characters long.

2. Guest Menu and Operations (`view.py`)

- Review Active Bookings: Displays a list of active bookings associated with the user's email.

- Make Booking: Users can create a new booking by selecting a country (using the country code), a hotel (using hotel ID), check-in and check-out dates, number of adults and

children, and room type. The system checks that the check-out date is later than the check-in date.

- Cancel Booking: Users can cancel a booking by entering the booking ID.

3. Data Retrieval and Modification (`crud.py`)

- Data Retrieval: Functions to retrieve active bookings for a user.

- Data Modification: Functions to create new bookings and cancel existing bookings.

4. Validation Checks (`validation.py`)

- Room Type: Validates the room type against a predefined list.

- Country Code: Checks if the entered country code is valid.

- Check-in and Check-out Dates: Validates that the check-in date is before the check-out date.

5. Utility Functions (`utils/utils.py`)

- CSV to Dictionary Conversion: Converts CSV files to dictionaries for easy data manipulation.

- Writing Data to CSV: Updates CSV files with new or modified data.

Code Snippets and Function Descriptions

Authentication (`operations/authentication.py`)

- `login()`: This function prompts for the user's email and password, checks them against the stored records in `guest_data.csv`, and logs the user in if the credentials are valid. On successful login, it transfers control to the guest menu.

- `register()`: It collects new user details including name, surname, age, email, and password, ensures email uniqueness and minimum password length, and adds the new user to `guest_data.csv`.

Guest Menu and Booking Operations (`view.py`)

- `guest_menu(email)`: Displays options for the logged-in user to review active bookings, make a new booking, cancel a booking, or log out.

- `review_active_bookings(email)`: Retrieves and displays all active bookings linked to the user's email.

- `make_booking(guest_email)`: Facilitates the process of creating a new booking by selecting a country, hotel, check-in and check-out dates, and room details.

- `cancel_booking()`: Allows a user to cancel an existing booking by entering the relevant booking ID.

- `select_option(options, prompt)`: A utility function to present a list of options (like countries or hotels) and captures user selection.

CRUD Operations (`crud.py`)

- `get_active_bookings(guest_email, bookings_data)`: Fetches active bookings for a specific user email from the provided booking data.

- `create_booking(booking_data, bookings_filepath)`: Adds a new booking to the `booking_data.csv` file.

- `cancel_booking_helper(booking_id, bookings_filepath)`: Modifies the status of a booking to 'cancelled' in the booking_data.csv file based on the booking ID.

Validation Checks (`validation.py`)

- `check_room_type(room_type)`: Validates if the provided room type is among the accepted room types.

- `check_country_code(code)`: Verifies if the entered country code is in the list of valid country codes.

- `check_country_name(name)`: Checks if the provided country name is valid.

- `validate_check_in_out_dates(check_in, check_out)`: Ensures that the check-in date is before the check-out date.

Utility Functions (`utils/utils.py`)

- `csv_to_dict(filepath, key_field)`: Reads a CSV file and converts it into a dictionary, using the specified key field as the dictionary key.

- `transform_csv_to_dict(filepath, key_field)`: Similar to `csv_to_dict`, but used for transforming booking data into a dictionary.

- `write_dict_to_csv(filepath, data)`: Writes the modified data back to a CSV file.

- `user_csv_to_dict(filepath)`: Specific function for reading the guest data file and converting it into a dictionary.

Entry Point (`main.py`)

- `main()`: The starting point of the application, it displays the initial menu offering options to log in, register, or exit the system.

Additional Details

- Country and Hotel Selection: During booking, users should enter the country code (e.g., 380 for Italy) and hotel ID (e.g., 1 for 'Mariot Hotel Rome') for the destination.

- Date-Validation: The system checks that the check-out date is later than the check-in date.

- User Registration: Requires a unique email and a password of at least 3 characters.

Conclusion

This documentation provides an overview of the Hotel Booking System, detailing its functionalities, the logic behind its operations, and its code structure. It is designed to assist users in navigating and utilizing the application effectively.