

House heating system

Consists of a coal central furnace, central pump and radiators in each room. Furnace provides hot water which is pumped to radiators. Each radiator is controlled by a device that maintains desired temperature, allowing two separate presets - for night and day. The central furnace has to maintain proper water temperature, so that the water returning from radiators is not too cool (this would indicate all heat is dissipated and probably more is needed). The furnace has to have alert modes for situations when (1) coal is low, (2) system is overheating.

Provide:

1. use case diagrams for interaction with furnace and radiators
2. class diagram for the system
3. activity or state machine diagrams for the furnace and radiator controllers
4. deployment diagram

Ticket booking and sale

Web system allowing users to book and buy flight tickets. The central server contains a database of available flights and a web server application. Users can surf to the web page, browse and search through available flights, and available places - within selected flight. The user can book a flight, prior to booking registration is needed (login, e-mail, password, name and surname, address are required). The ticket has to be bought at least one week before the flight, if not the reservation is cancelled. Within last week before the flight the tickets can only be bought, not booked. The customers can pay by credit card, wire transfer, PayPal.

Provide:

1. use case diagram for user interaction
2. class diagram for the system
3. activity or state machine diagram for the booking-buying process
4. deployment diagram for the system

Internet forum

A system to handle Internet discussions. Four classes of users are present: (1) system administrator, (2) forum moderator, (3) forum user, (4) guest. Guests can browse and search forums. Forum users can do what guests can and also add new posts to the threads and add new threads. Forum moderators can do what users can and also remove posts and lock threads, but only for the forums they moderate. System administrators can do what moderators can (for all forums) and also add or remove new forums and assign moderators to forums. To become a forum user, the guest has to register. The forums and user details are stored in a database, with a backup server. They are served through a web server. The web interface relies on two libraries - one for providing graphical interface of the forum, another one for core forums functionality

Provide:

1. use case diagram
2. class diagram
3. component diagram
4. deployment diagram

Computer jigsaw puzzle

A game of jigsaw puzzle. The user can (1) select puzzle, (2) play game, (3) save game, (4) load game, (5) provide own picture for creating tiles. While playing the user can pick tiles from the repository and place them on the board (by moving to a desired place and clicking mouse button). The game informs user by colouring the tile green or red whether the tile fits in a particular place.

The scoring mechanism is based on the number of picks, failed attempts to place, and time. The user can connect to the Internet server to place her/his best scores and see the top scores.

Provide:

1. use case diagram
2. class diagram
3. activity or state machine diagram for gameplay
4. deployment diagram

Wholesale store management system

System managing items in the store. Access to the system have only registered users. The data are stored in the database. The user can (1) add or remove new categories of items, (2) add or remove items in categories (change number of items), (3) change price per item, (4) add customers (name, customer number, address), (5) create invoices which result in deleting an appropriate number of items from the store, calculating the total price based on the number of items and their prices and printing the invoice with the name and address of the customer on it. Administrator can add or remove registered users.

Provide:

1. use case diagram
2. class diagram
3. activity diagram for adding and removing categories and items and creating invoice
4. component diagram