

Homework Assignment #3: Building an Abstract Data Model

Due Time/Date

2:20PM Thursday, April 6, 2023. Late submission will be penalized by 20% for each working day overdue.

Note

The purpose of this assignment is for you to exercise the basics of domain modeling, which are the steps you take to go systematically from the problem domain to the solution domain. We will focus on the data part, i.e., the construction of an abstract data model, that would form the basis of a more detailed design. You may discuss the problem with others, but copying answers is strictly forbidden.

How to Submit

Please use a word processor or scan hand-written answers to produce a single PDF file. Name your file according to this pattern: “r117250xx-hw3”. Add the PDF file to your remote individual repository on the Git server for this course. The remote repository should be named “hw3”.

Problem Description

Construct an abstract data model for the new room-booking system of a large hotel that has to meet the following requirements:

- The hotel has several thousands of rooms, classified into several types, including single, double, suite, etc., which might change slightly over time.
- Every room has a unique number and may be remodeled into a different type.
- According to statistics, nearly all past customers prefer non-smoking rooms and many does not like rooms with pet lingering smell; these tendencies are expected to continue.
- Rooms are priced according to their types and days of the week normally, but the rates may vary for holidays.
- A customer making reservations must leave her/his full name and email address or phone number.
- A customer may reserve several rooms, each for multiple days.
- For promotional purposes, the hotel decides to implement a membership program; members may enjoy discounted room rates.

You should avoid many-to-many relationships; otherwise, you must provide a verbal explanation for including such relationships. Please use the UML as much as possible when describing the model. State the assumptions, if any, you make for your construction.