

San José State University
Department of Computer Engineering

CMPE/SE 131

Section 3

Software Engineering I

Spring 2017

Instructor: Ron Mak

Assignment #5

Assigned: Tuesday, March 14

Due: Friday, March 24 at 11:59 pm
Team assignment, **100 points** max

Design document

For this assignment, each team will write key parts of the initial draft of its **Design Document**. This is an engineering document for the developers, so it does not have to be understandable by your product's clients and users.

MVC architecture

The first part will describe your **model-view-controller architecture**. Your architecture can be a "drill down" of your conceptual design from Assignment #4. The Design Document tells how you will implement the major modules of your high-level architectural diagrams. Therefore, you need to describe what Ruby interfaces and classes you will develop, and which classes represent model objects, view objects, and controller objects.

Draw UML package and class diagrams to lay out your MVC architecture. You can draw one large diagram or several smaller diagrams. The class diagrams should show each class's name, important attributes (fields) and methods, and associations among the classes.

Don't worry that you won't get the attributes and methods completely right at this stage – you'll most likely revise your Design Document several times before the end of the semester.

Include one UML sequence diagram that shows how your objects will be used at run time. This can be related to one of the use cases you described in Assignment #3. Not all the objects you include in this assignment need to participate.

Data models

The second part of this initial design draft is the conceptual and logical data models for the model objects that your application will persist to the backend database.

Your **conceptual data model** should consist of **entity-relationship (ER) diagrams**. Your ER diagrams should show whether the relationships are one-to-one, one-to-many, or many-to-many. Don't worry that you won't get the entities and relationships completely right at this stage.

Create your **logical data model** by mapping your ER diagram into a **relational schema**. Your schema should clearly indicate, for each table, the primary key by underlining the key's name. Clearly indicate, in each table, which fields (if any) are foreign keys. Draw an arrow from each foreign key to the primary key of the target table. Your tables must be in second normal form.

Use ERDPlus (<https://erdplus.com/#/>) to draw your ER diagram and to generate your relational schema. Arrange the components of your diagrams to minimize crossed lines. You should be able to save your diagrams as PDF or image files.

What to turn in

As discussed above:

- MVC architecture description
- UML class diagrams and sequence diagram
- Conceptual data model in the form of an ER diagram
- Logical data model in the form of a relational schema

You can put everything into a single Word document or PDF, or they can remain separate files, in which case you should create a zip named after your team.

Submit your files to Canvas: **Assignment #5. Design Document**

Rubrics

Criteria	Max points
MVC architecture <ul style="list-style-type: none">• Description or diagram	15 <ul style="list-style-type: none">• 15
UML package and class diagram <ul style="list-style-type: none">• Model package and classes• View package and classes• Controller package and classes	45 <ul style="list-style-type: none">• 15• 15• 15
Database architecture <ul style="list-style-type: none">• Entity-relationship diagram• Relational schema mapped from ER diagram	40 <ul style="list-style-type: none">• 25• 15