BIT2008A/ITEC2000A: Multimedia Data Management
Fall 2022

Assignment 3

Python and Django

Question 1. Please explain what a design pattern is, then elaborate on the MTV design pattern used by Django. (10 points)

Question 2. Please explain the difference in debugging between a programming language that uses an interpreter and a compiler. (5 points)

Question 3. Name 4 collection data types in Python explaining their differences. (10 points)

Question 4. Please explain 4 pillars of object-oriented programming and their implementation in Python. (20 points)

Implementation

In this part, we create a bookkeeping application. Please make sure to implement the following steps: (55 points)

i. Create a Django project and make sure it uses PostgreSQL as the database.
ii. Add a main app to your project.
iii. Implement this schema in your app:
   - Book(title, author, publish_year, edition)
   - Member(name, address, phone_number)
   - Booking(member, book, expiration_date)

   It is up to you to choose the primary keys.
iv. Make it possible to create instances of your models inside the admin panel.
v. Implement following functionalities:
   - The root of your application should show a default welcome message via *HttpResponse*.
   - There should be three *ListView*s to list all of the records in each model.
   - Your booking template should have a button that redirects to a form.
   - Use *CreateView* to implement the form mentioned above that handles new bookings.
   - After the booking is done you should redirect the user to the list of bookings.
   - If a book or member is removed, the corresponding records in the booking table should be removed.
   - Imagine we have unlimited inventory for the books listed.
   - Each member should have at most one active booking.
   - Your app should not take invalid expiration_dates. That includes dates that are already gone, or expiration dates sooner than the existing booking for a member.
   - However, you should make it possible to extend an active booking.
   - Extended bookings should not take a new row, but you should update the expiration date of existing row.
   - You are not expected to implement other details about the business logic.

Description

1) The due date for this assignment is November 28th, 11:55 PM. Late submission policy can be found on the course outline.
2) You are expected to submit your solution for all of the assignments.
3) Please include your answer to the first part of the assignment (Q1 to Q4) in a PDF file. It can be handwritten, but make sure it is easily readable.
4) Please put your code implementation in a folder, without the database, cached, or migration files. Export your database to a script and name it *table.sql*.
5) Please upload your submission as Lastname_Firstname_StudentID.zip on Brightspace.