ICS220 - Assignment 2: Soft...

You have no upcoming classes today and nothing due.

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Assignment due Saturday, March 30, 2024 by 11:00pm

Scenario:

Consider the following problem statement:

The Louvre Museum requires a software application to enhance the visitor experience and internal operations. The key requirements for the software application are, but not limited to, the following:

1. **Artwork Management: **The system should maintain a comprehensive catalog of the museum's artworks, artifacts, and exhibitions. Each item in the collection should have detailed information such as title, artist, date of creation, historical significance, and exhibition location. The locations are of the following: permanent galleries, exhibition halls, and outdoor spaces.

Submit

Your submission has not yet submitted or finalized.

Submit

2. **Visitor Management: **The system should facilitate the management of visitor information: ticket purchases and visitor demographics. Visitors can purchase tickets online or in-person for various exhibitions, tours, and special events that the museum offers. Exhibitions are held for a duration of time and in a particular location in the museum, which is mentioned on the purchased tickets. Tours are facilitated on a selected date for a group of 15 to 40 visitors with a guide, and the details are mentioned on the ticket. Special events are organized for purposes such as fundraising, musical concerts, or light shows, and the location and duration are mentioned on the tickets.

3. **Ticketing and Pricing: **The system should support flexible pricing options for different visitor categories. Adults between the ages of 18 to 60 pay 63 AED. Additionally, the system applies a 5% value-added tax (VAT) on the final ticket price. However, children below 18, teachers and students of an institute, and seniors (above 60) are given a free ticket upon presenting their national ID cards. Groups receive a 50% discount on the ticket's original price. Special Events have individual ticket prices

The Louvre Museum website Abu Dhabi:
https://www.louvreabudhabi.ae/en/uae

Requirements

1. Design a UML class diagram representing the concepts and relationships in the scenario. Ensure using the inheritance or different

types of association relationships where necessary. You may make assumptions about attributes (with proper access specified) and concepts not explicitly mentioned in the problem statement. A clear description of the relationships and assumptions must be included. The minimum number of required classes is six (6), and students are expected to display knowledge of different types of relationships.

2. Write Python code to implement your UML class diagram. Separate the classes into different files to ensure good modularity.

3. Ensure that test cases are defined to showcase the program features. Write all test cases in a separate file from where the classes are written. Examples of test cases may include but are not limited to the following:

a. The addition of new art to the museum.

b. The opening of a new exhibition or event at the museum.

c. The purchase of tickets by an individual or tour group for an event.

d. The display of payment receipts for purchasing (one or more) tickets. The final bill should be presented to the customer upon completion of the purchase.

4. Ensure your UML diagram and the Python code are well-documented and structured.

Submission

1. Submit a report (single PDF file) that has the following sections:

a. UML Class Diagram and Description

b. Python classes (copy-paste the code, NOT an image of the code)

--- The code must be well documented with good coding standards followed.

c. Github repository link, with the access made public:

--- Ensure that you include the gradual progress of your work in the Github repository.

--- The repository would indicate the cumulative progress of your work in the assignment.

d. Summary of learnings

Assignment Information

Weight:
25%

Learning Outcomes Added

#LO1_OOAD: Analyze and design software that map real-world entities and relationships using Unified Modelling Language (UML) notations.

#LO2_OOProgramming: Create working object-oriented programs in a computer language that are well- structured, error free, and can solve computational problems.

#LO4_SWDocumentation: Communicate with a clear and precise style that is suited to an appropriate audience to produce well-documented code, design documents, and presentations that are readable and understandable.