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FACULTY OF INFORMATION SCIENCES & HUMANITES
DEPARTMENT OF ARTIFICIAL INTELLIGENCE

Title: Report (OOP Project)

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Abstract

The Cyber Cafe Pro is a console based application designed to automate the operations of a cyber cafe. The system encompasses functionalities such as managing member entries, handling computer inventories, processing bookings, calculating charges, and renewing memberships. Developed using C++ and adhering to object oriented programming principles.

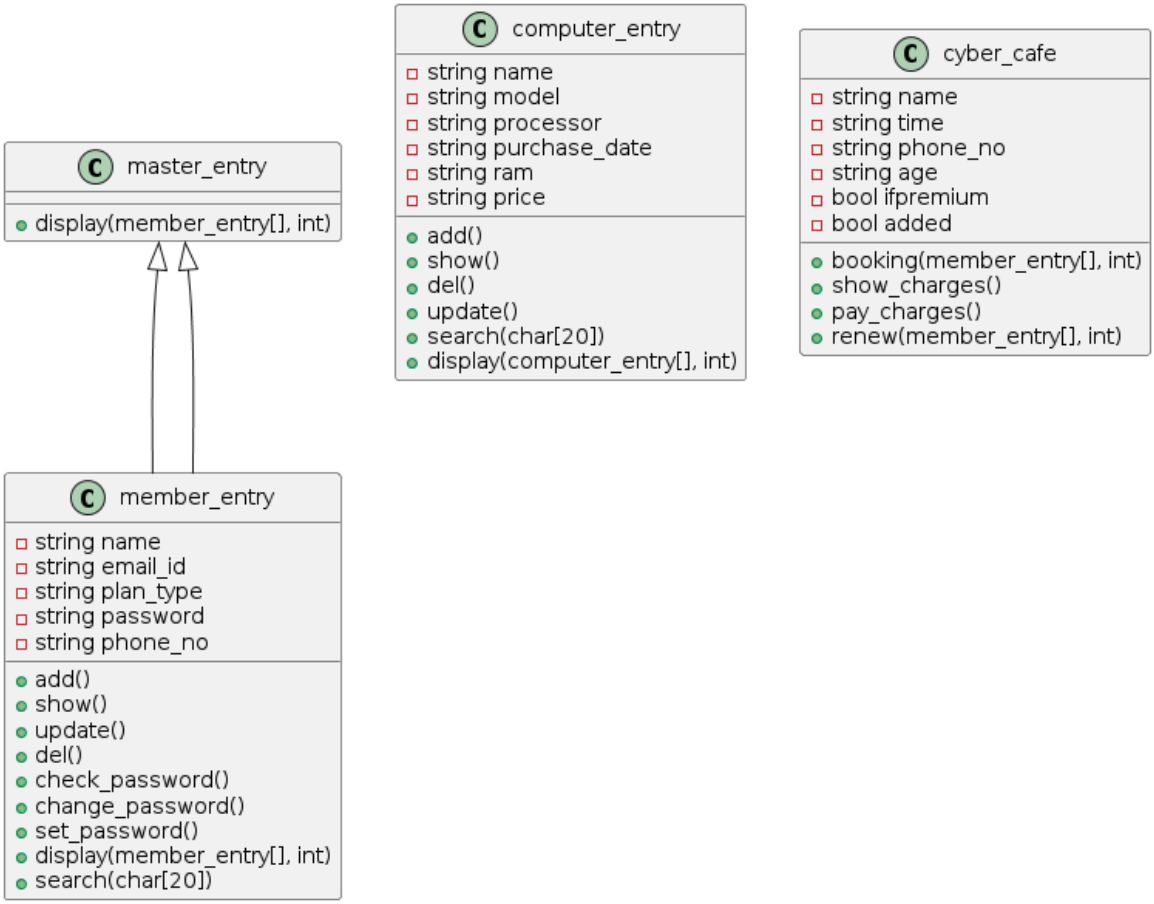
Introduction

Cyber cafes play a crucial role in providing internet access and computing resources to the public. Efficient management of such facilities is essential to ensure smooth operations and a seamless user experience. The Cyber Cafe Pro aims to address this need. By implementing C++ and object oriented programming principles, the project ensures that the system is not only functional but also easy to extend and maintain.

Design and Architecture

The system is designed using object oriented principles, focusing on encapsulation, inheritance, and polymorphism. The main classes are:

- master_entry: Manages the display of member entries.
- member_entry: Inherits from master_entry and handles member-related functionalities.
- computer_entry: Manages computer-related information.
- cyber_cafe: Manages the overall cafe operations, including bookings and plan renewals.



Implementation Details

Class Descriptions

- master_entry: Base class for displaying member entries.
- member_entry: Derived from master_entry, handles adding, updating, deleting, and displaying member information.
- computer_entry: Manages computer details including adding, updating, and deleting computer entries.
- cyber_cafe: Manages the overall operations such as booking, showing charges, and renewing memberships.

Methods and Responsibilities

- member_entry::add(): Adds a new member.
- member_entry::show(): Displays member information.
- member_entry::update(): Updates member details.
- member_entry::del(): Deletes a member.
- member_entry::check_password(): Verifies the member's password.

- computer_entry::add(): Adds a new computer entry.
- computer_entry::show(): Displays computer details.
- computer_entry::update(): Updates computer information.
- computer_entry::del(): Deletes a computer entry.
- cyber_cafe::booking(): Manages computer bookings for members.
- cyber_cafe::show_charges(): Displays the pricing plans.

cyber_cafe::renew(): Renews member plans.

Use of OOP Principles

Encapsulation: Member details are managed within the member_entry class.

Inheritance: member_entry inherits from master_entry.

Polymorphism: Methods like display() are overridden in derived classes.

Testing and Validation

- Methods in the member_entry class such as add(), update(), and del() were tested to ensure they correctly manipulate member data. The interaction between cyber_cafe and member_entry was tested to verify that bookings are processed correctly and member data is accurately updated. Scenarios such as a member booking a computer, renewing membership, and paying charges were tested to ensure the system's reliability and functionality.

- After each modification, the system was retested to ensure that previously functioning features remained intact and performed correctly.

Effectiveness

The project successfully met its objectives of managing member and computer entries, handling bookings, and processing plan renewals.

- The system efficiently manages the operations of a cyber cafe and ensures a user-friendly experience.
- Handling user input and ensuring data integrity were significant challenges.

Future Improvements

- Implementing advanced design patterns for better scalability.
- Adding a graphical user interface for improved user interaction.
- Enhancing security features for password management.

GitHub Link

https://github.com/sarimraza890/CyberCafePro.git

References

https://www.tutorialspoint.com/cplusplus/cpp_object_oriented.htm

https://beginnersbook.com/2017/08/cpp-oops-concepts