CICS ACADEMIC ATTENDANCE PORTAL – SYSTEM OVERVIEW

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Overview

The CICS Academic Attendance Portal is a console-based Java program designed for 2nd Year IT students. It allows students to log their attendance per subject, while professors can view and filter attendance records. The system demonstrates strict OOP principles and is built to showcase encapsulation, inheritance, polymorphism, and abstraction using a structured, modular approach. The application also implements error handling and formatted input validation.

Users can:

Students can:

- **Choose a Subject:** Select the specific class they are attending (like "Discrete Math" or "OOP") from a numbered list.
- **Time In:** Type their name, section, and arrival time (e.g., "08:00 AM") to mark themselves as present.
- **Time Out:** Update their record by typing their name and the time they are leaving (e.g., "10:00 AM").
- **Check Their History:** Search for their own name to see if their attendance was saved correctly.

Professors can:

- **Log In:** Enter a secret password (`cics2025`) to access the teacher's menu.
- **View the Whole List:** Select a subject to see a complete list of every student who attended that class.
- **Check for Absences:** Easily see if a student is still in class or forgot to sign out by looking for "N/A" in the list.

Data Storage Currently, all entries are stored in **Volatile Memory (RAM)** using a `Student[]` array. *Note: Data resets when the application closes.*

System Purpose

The goal of this system is to stop using paper attendance sheets and use a computer instead. It helps students quickly record the exact time they enter the class and when they go home. A big part of the goal is to keep the list clean by forcing everyone to type their names in capital letters. This stops the teacher from struggling to read bad handwriting. It also keeps the records safe so that the attendance list never gets lost.zThe teacher can easily check who is in class just by typing a simple password. Overall, it is meant to make daily attendance faster and perfectly organized.

Features

For the Student

- **Log Time In:** You can record the exact time you arrive at class.
- **Log Time Out:** You can record the time you leave so the teacher knows you stayed for the whole class.
- **Personal History:** You can search for your own name to double-check that your attendance was saved correctly.
- **Format Checker:** The system stops you from making mistakes by forcing you to type in **CAPITAL LETTERS**.

For the Professor

- **Password Protection:** The teacher's menu is locked with a password (`cics2025`) so students cannot mess with the records.
- **Class View:** The teacher can see a full list of every student who attended a specific subject.
- **Missing Log Detection:** The teacher can easily see "N/A" next to a name if a student forgot to sign out.

Project Structure

```
src/
└── attendance/
    ├── Main.java
    ├── SchoolMember.java
    ├── Student.java
    ├── Professor.java
    └── AttendanceActions.java
```

- **Main.java** - Entry point of the program. Handles the main menu and user selection.
- **SchoolMember.java** - The Abstract Base Class (Blueprint) defining name and role.
- **Student.java** - Handles specific student logic (Section, Time In/Out) and logging.
- **Professor.java** - Handles admin logic, password security, and viewing all records.

- **AttendanceActions.java** - An Interface defining the required rules (Time In/Out methods).

Encapsulation Encapsulation was applied by making variables like `name`, `section`, and `timeInRecord` **private** inside the `Student` class. These can only be accessed or changed using public methods (Getters).

This protects the data from being messed up by other parts of the program.

Abstraction Abstraction was implemented using the `SchoolMember` **abstract class**. It defines that every user has a name, but it doesn't say *how* they use the portal. It also uses the `AttendanceActions` **interface** to force the Student class to have `timeIn()` and `timeOut()` methods.

This hides the complex details and just shows what the object does.

Inheritance Inheritance is the core structure. `Student` and `Professor` both **extend** (inherit from) `SchoolMember`.

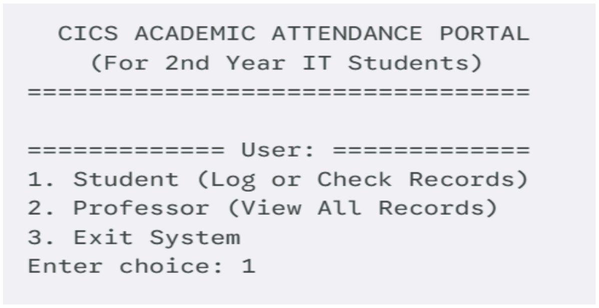
This means we didn't have to write the code for "Name" and "Role" twice. They both got it automatically from the parent class.

Polymorphism The method `showPortal()` demonstrates polymorphism. Both the Student and Professor have this method, but they behave differently.

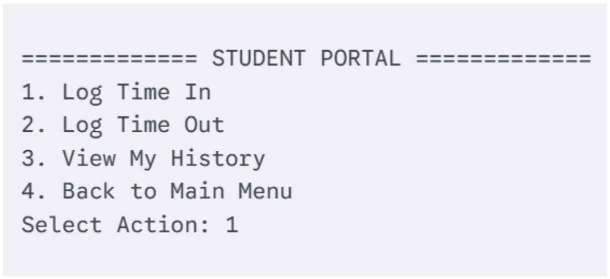
- If the user is a **Student**, `showPortal` shows the logging menu.
- If the user is a **Professor**, `showPortal` shows the viewing list.

The main program calls the same method name, but the result changes based on who is using it.

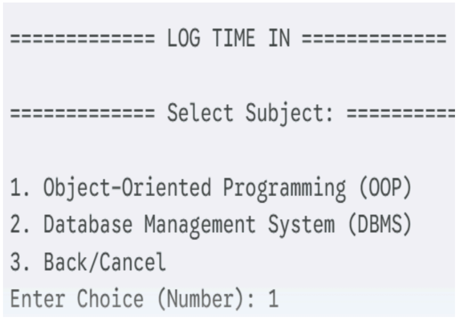
Example Output



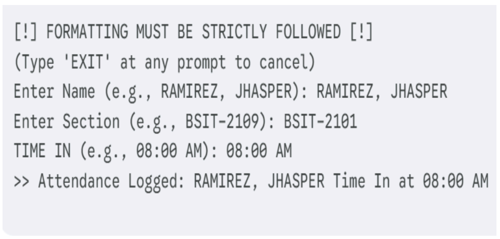
```
   CICS ACADEMIC ATTENDANCE PORTAL
      (For 2nd Year IT Students)
==================================

============= User: =============
1. Student (Log or Check Records)
2. Professor (View All Records)
3. Exit System
Enter choice: 1
```



```
============= STUDENT PORTAL =============
1. Log Time In
2. Log Time Out
3. View My History
4. Back to Main Menu
Select Action: 1
```

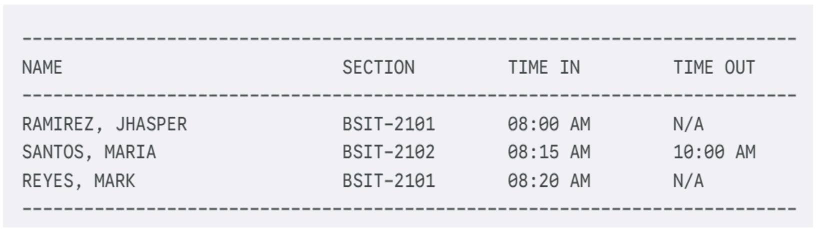


```
============= LOG TIME IN =============

============= Select Subject: ==========

1. Object-Oriented Programming (OOP)
2. Database Management System (DBMS)
3. Back/Cancel
Enter Choice (Number): 1
```



```
[!] FORMATTING MUST BE STRICTLY FOLLOWED [!]
(Type 'EXIT' at any prompt to cancel)
Enter Name (e.g., RAMIREZ, JHASPER): RAMIREZ, JHASPER
Enter Section (e.g., BSIT-2109): BSIT-2101
TIME IN (e.g., 08:00 AM): 08:00 AM
>> Attendance Logged: RAMIREZ, JHASPER Time In at 08:00 AM
```

Database View (Console)



```
---------------------------------------------------------------------------
NAME                           SECTION         TIME IN         TIME OUT
---------------------------------------------------------------------------
RAMIREZ, JHASPER               BSIT-2101       08:00 AM        N/A
SANTOS, MARIA                  BSIT-2102       08:15 AM        10:00 AM
REYES, MARK                    BSIT-2101       08:20 AM        N/A
---------------------------------------------------------------------------
```