EXERCISE-9

A college has more than thousand security persons, who are instructed to give duties at different places within the campus. Additionally, they also maintain a routine, which contains all information, such as Date, Duty Start Time, Duty End Time, and Place. Most importantly, all the places are covered by at least one security person. If a security person takes leave, manual entry is done against that person. Finally, at the end of a month, the security persons get paid for their duties, while considering the number of leaves as well. You can see that the manual calculation/operation is a heavy task for the security manager. Therefore, the objective is to build an Online security management system using class diagram through which entire security system within the campus can be controlled in an efficient manner

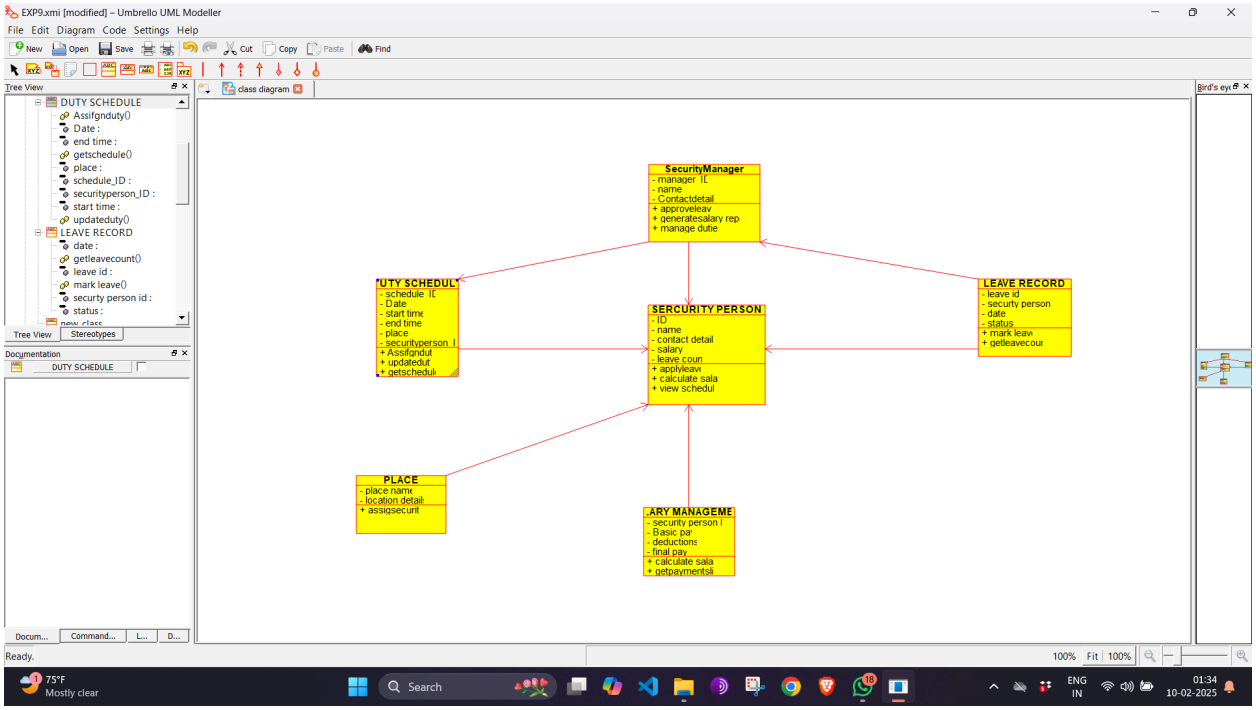
Aim:

To develop a **Class Diagram** for an **Online Security Management System** to efficiently manage security personnel, duty schedules, leave records, and salary calculations.

Procedure:

1. **Identify Main Classes** – Define key entities: **SecurityPerson, DutySchedule, LeaveRecord, Payment, and SecurityManager**.
2. **Define Attributes** – Assign relevant attributes such as **ID, Name, Duty Start Time, Duty End Time, Place, and Salary**.
3. **Define Methods** – Specify functionalities like **assignDuty(), applyLeave(), calculateSalary(), and generateReport()**.
4. **Establish Relationships** – Define associations between **SecurityPerson, DutySchedule, LeaveRecord, and Payment**.
5. **Identify Multiplicity** – Ensure that each **place** is covered by at least one security person.
6. **Use UML Notations** – Represent classes as **rectangles** with attributes and methods, and use **lines/arrows** to show relationships.
7. **Draw Class Diagram** – Use a **CASE tool** to position classes logically and illustrate their relationships.
8. **Review and Validate** – Check for **clarity, completeness, and correctness** in system structure and functionalities.

Class Diagram:



Result:

A **Class Diagram** for the **Online Security Management System** was successfully developed, illustrating security personnel assignments, leave management, duty schedules, and salary processing.