10.

Given: Total no. of classes : 500 Avg no. of methods per class : 10
Total no. of test method : no. of classes x Avg no. of methods per class = 5000

Given : 85% method coverage. Test case per method to achieved 85% coverage
Total no. of test case = Total no. of methods x Test case per method = 50

Given : 0.5 defects per method.
Expected no of defects : Total no. of Methods x Defects per method = 2500

Given : Defect detection efficiency (DDE) = 70%.
Effected no. of defects and fixed. = Expected no. of defects x DDE
= 1750

Given : Expected no. of defects before testing expected number of defects detected and fixed
= 2500 - 1750 = 750

ANALYTICAL

- Requirement Analysis :

↳ Functional Requirements

↳ Student Enrollment
- Add new student
- Update
- Drop
- Generate

↳ Course Registration
- Add new courses
- Update
- Drop
- Update

↳ Grade Management :
- Record Grades
- Update Grades
- Generate
- Calculate CGPA

↳ User Management
- Admin login
- Student login
- Faculty Login

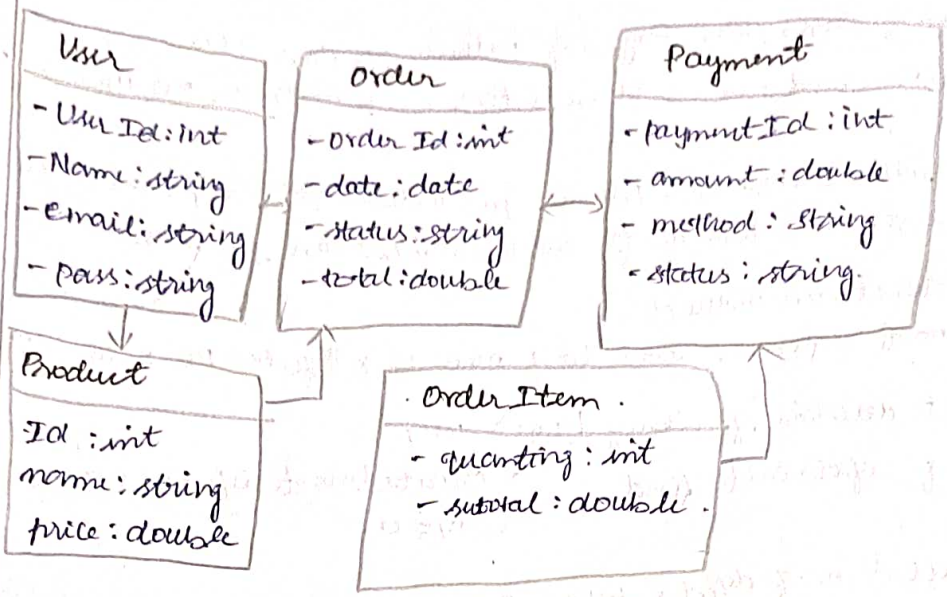
Non-Functional Requirements

↳ Performance ↳ Usability

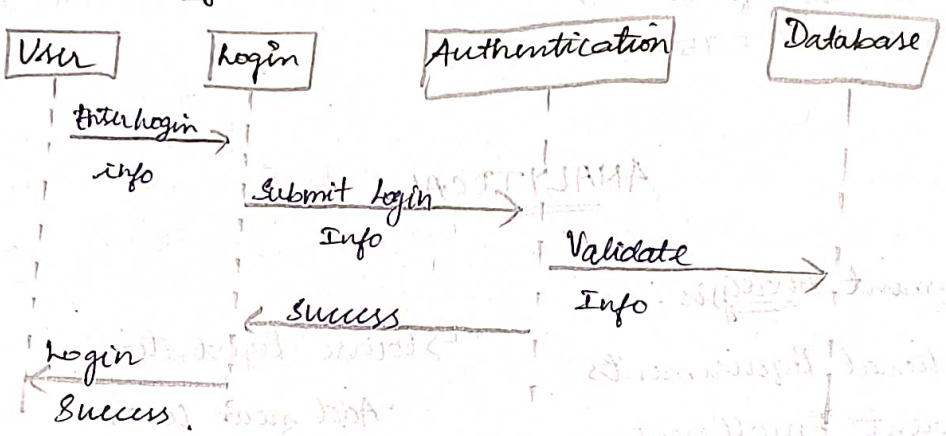
↳ Security ↳ Scalability

↳ Reliability ↳ Compliance

2. Class Diagram:



3. Sequence Diagram:



4. Testing Phase:

⇒ Functional testing
- Validate all functionalities
- Test edge cases
- Unusual scenarios

⇒ Performance Testing
- Load Testing
- Stress Testing
- Scalability Testing.

⇒ Security Testing:
- Penetration testing
- Data Encryption Testing
- Authentication Testing

⇒ Usability Testing
- User Friendly
- Feedback Adjustments

⇒ Integration Testing
- Test Interactions
- Third Party Integ

⇒ Regression Testing
- Bug Fixes
- Regular Updates

⇒ Compliance Testing.
- Regulations and standards
- Data Protection Laws

8.) Backup and Recovery Testing

⇒ User Acceptance (UIT).