IT314: Software Engineering
Lab Session II - Course Project Kick-Off

Needs of student Information system:

1) **Make system more easy and accessible:**
   Information of students is simple to look for and modify. Students have a single point of access to their data.
2) **Reduce human error:**
   The percentage of students to be calculated may contain human calculation error and typos so we can reduce that with this system.
3) **Security:**
   Provides data integrity, privacy and secure environment for a large number of students data Facilitating the management of student information by administrators.
4) **Reduce ambiguous data:**
   Redundancy of the information can be reduced and managing student data easily and efficiently without ambiguity.
5) **Centralized administration for information management:**
   Administrators and faculties can manage and edit the academic records and performance of any student. Parents get a notification of fees payment and also attendance.
6) **Provide alerts for general events:**
   The system delivers notification for the results announcement date, registration deadline, fees alert, and other events using the user's registered email or phone number.
7) **Portability:**
   With the login details students, faculties, administrators and parents can access and edit the system with an internet connection from anywhere.
8) **Reduce time and complexity:**
   Saves time and cost by centralizing the data and reducing workload.

Features:

1. **Student Records Management:** The ability to store and manage student's demographic information, contact information, and academic records and all the general information of the student.
2. **Class Scheduling:** A tool for scheduling classes, assigning rooms to the students.
3. **Personal Details Tracking:** Students can see his/her personal details and can request for updates to their details. Updated details will be reflected once admin verifies and updates data in the database.
4. **Grade Tracking**: This system has functionality of tracking student grades, calculating CGPA and student's result are uploaded
5. **Attendance Tracking:** This system has functionality of tracking student attendance and absences.
6. **Report Generation:** The ability to generate various reports, including transcripts, report cards.
7. **Communication And notification:** A platform for communication between, Faculty, students and parents, via email, messaging, and notifications or a dropbox on the website.
8. **Fees Management**: A tool for managing all fee payments, generating invoices, and tracking Fees payments.
9. **Student Portals(All the students features would be viewed/generated):** A secure portal for students to access their personal information, grades, and other academic records.
10. **Online Registration:** A system for online student registration, including the payment of fees, enrollment in classes, add/drop after the course submission deadline, workflow approval by the administrator, registration for extra and backlog courses.
11. **Hostel registration:** Registered students of the institute can request for a hostel facility.
12. **SMS/Email Notification:** Email/SMS notifications are sent to the parents regarding their student's performance.

Functional requirements:

1. Actor: Admin

- **Admin Login:**Data can be added, updated, or deleted by logged-in members of the administration department. If users can't log in, an error message will appear and the user will be asked to try again.
- **Add/ Delete/ Update student record:** Administrators can update new student information and remove information about a specific student by using their roll number. Additionally, update any requested information about students and courses.
- **Broadcast alert:** Admin can use this functionality to send any broad announcement.

2. Actor: Student

- **Student Login:** Students who have been registered and validated by the administration can view information about their personal information, courses they are enrolled in, grade cards and history , fees receipt and status, attendance etc.
- **Personal Details:** Students can see his/her personal detail and status and can request for updates to their details. Updated details will be reflected once admin verifies and updates data in the database.
- **Hostel registration:** Institute students can request for a hostel facility.
- **Course Enrollment/ Semester Registration:** Students can register for new semesters and courses for specific time duration allocated by the administration department.
- **Fees Receipt:** Registered students can see current and previous fees receipt and its status(paid/pending).
- **Grade card:** Registered students can see current and previous grade sheets.
- **Attendance:** Student can see attendance of his/her current and previous enrolled course.

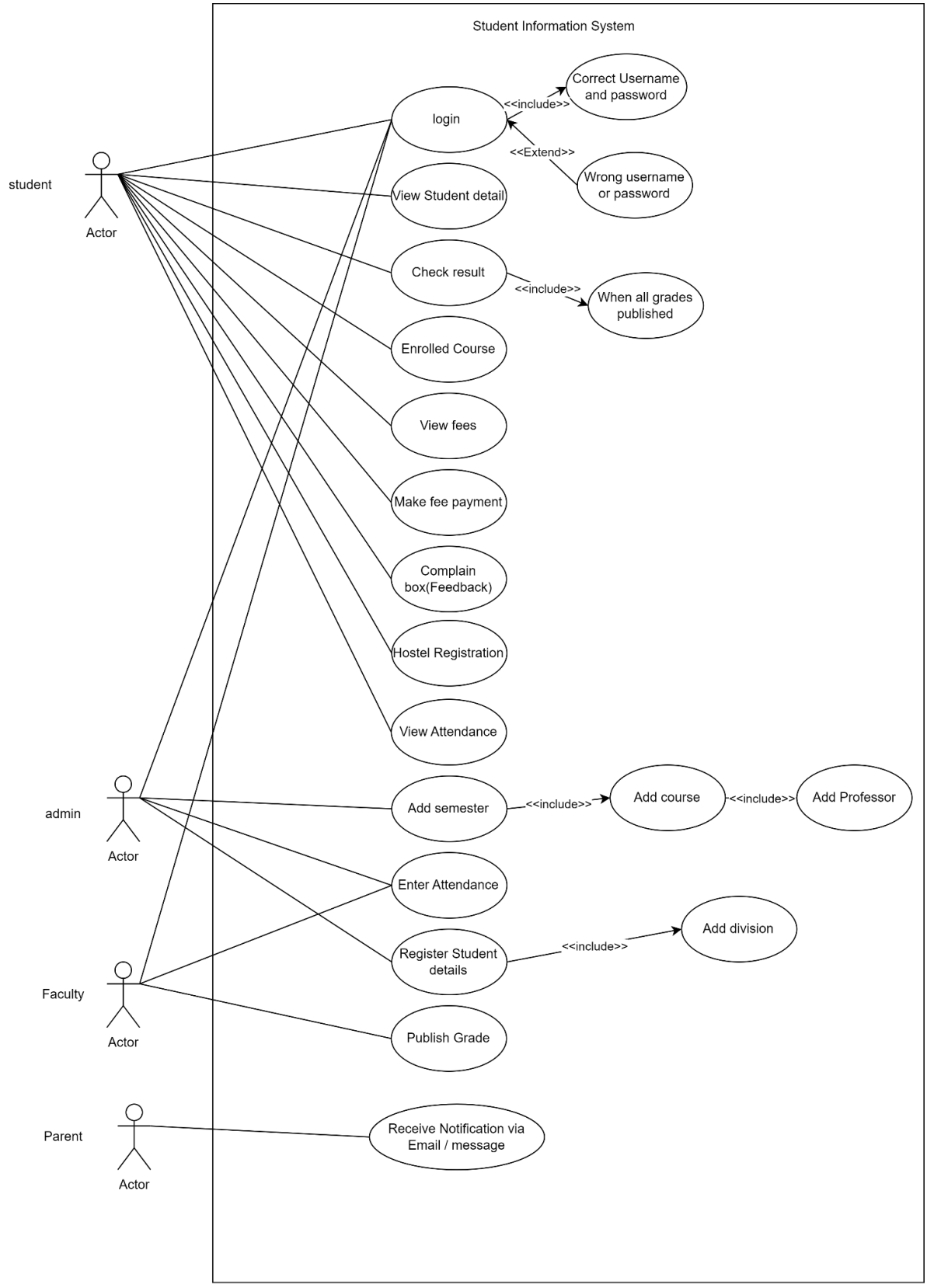
3. **Actor: Faculty**

- **Faculty login:** Registered faculty can see details of the students enrolled in their particular courses, attendance updation, grades updation.
- **Attendance management:** Faculty and administration can maintain/access attendance of any student in their course.
- **Grade Updation:** Registered faculty can update the grade sheet of the students once administration grants permit.

Non Functional requirements:

1) **Performance** - System should be able to manage traffic of at least 800 users at the same time. The system should respond quickly to user requests and have fast processing times,minimum delay, even during peak usage times.
2) **Scalability** - The system should be able to accommodate future students and have features such as adding new students/faculty/admin, add courses and other data fields.
3) **Security** - The system should be secured with different levels of security for different users.
4) **User friendly** - The system should have a friendly user interface and the system is very interactive.
5) **Reliability** - The system should be dependable and available when needed, with minimal downtime and disruptions.
6) **Maintainability**: The system should be easily maintainable rapidly and can be restored after any failure.
7) **Portability**: The SIS should be accessible from anywhere. System can be accessible from outside the institute also.
8) **Availability**: The system must be available 24/7.
9) **Compatibility:** System should be compatible with other software such as accounting, fees-payment.
10) **Usability:** As the system is easy to handle and navigate in the most expected way with no delays.
11) **Database Consistency**

Use-Case Diagram:



Process Model:

SCRUM is a popular Agile methodology that can be used in the development of a student information system (SIS). There are several reasons why SCRUM may be a good fit for an SIS project:

Adaptability:
SCRUM is designed to be flexible and adaptable, which is important for an SIS project where the requirements may change over time.This model is allowed to make changes over time in SIS because we need to make changes over time.

Collaboration: SCRUM Provide collaboration between team members, including developers, and Users. This is important for SIS because for this Project we need group work and also we need that every person has enough information about the project.

Incremental delivery: SCRUM is an iterative approach to software. So we can make a small prototype model and after testing if we need to add some features so we can make that change with this model and we can repeat that process.

Prioritization: According to the requirements of the project, SCRUM allows the prioritizing of tasks and features, ensuring that the most crucial features are delivered first. This is important for a SIS project because it enables the educational institution to use the system and profit from its features as soon as possible.

Transparency: It offers transparency into the development process, enabling frequent updates on the status of the project. This is important for a SIS project because it assures that all the collaborators are aware of the status and can offer suggestions and feedback.

In summary , SCRUM is a good model for an SIS project because it is adaptable, emphasizes collaboration, allows for incremental delivery, prioritizes tasks, and provides transparency.