Capturing Requirements Through Use-Cases

Examples

Subsystems

- Admission Subsystem
- Registration and Coursework Subsystem
- Fees and Scholarships Subsystem
- Exam Subsystem
- Hall Subsystem
- Library Subsystem
- HR Subsystem
- Salary, Leave and Holyday Subsystem
- Departmental Subsystem
- Etc.

Admission Subsystem Actors

- Applicant
- Examinee
- Accepted Student
- Question Setter
- Question Moderator
- Invigilator
- Examiner
- Exam Controller

- Exam Control Office Employee
- Registrar
- Accounts section employee
- Bank
- Health Complex employee
- Health Complex Doctor
- Time
- Others

Use-Cases for Admission Subsystem

Use-Case Name	Actors
Distribute Form	Applicant, Accounts section Employee
Submit Form	Applicant, Accounts section Employee
Sort	Exam Control office employee
Assign Question Setter	Exam Controller, Teacher
Assign Question Moderator	Exam Controller, Teacher
Assign Invigilator	Exam Controller, Teacher, Staff
Assign Examiner	Exam Controller, Teacher
Sit for exam	Examinee
Guard Exam	Invigilator

Use-Cases for Admission Subsystem

Use-Case Name	Actors
Set Question	Question Setter
Moderate Question	Question Moderator
Examine	Examiner
Prepare Result	Exam Control Office Employee
View Result	All
Give Choice	Accepted Students
Sort out choice	Exam Control Office Employee
Perform Medical Checkup	Accepted student, Med Officer, Med Employee
Select from Waiting List	Time, Exam Control Office Employee

Use-Cases for Registration and Coursework Subsystem

Use-Case Name	Actors
Pay Fee	Student, Registrar Office, Bank Teller, Hall Clerk
Register	Student, Adviser
Prepare Student List	Registrar Office
View Student List	Teacher, Lab Attendant, Exam Control Office

Use-Cases for Registration and Coursework Subsystem

Use-Case Name	Actors
Issue Instrument	Student, Lab Attendant
Return Instrument	Student, Lab Attendant
Post Notice	Teacher, Head
View Notice	Teacher, Student

Use-Cases for Registration and Coursework Subsystem

Use-Case Name	Actors
Assign Teacher	BUGS, Teacher
Prepare Routine	Routine Committee, BUGS
Send Routine	Routine Committee, Head
View Routine	Student, Teacher, Lab Attendant, Others
Attend Class	Student, Teacher
Take Class Test	Teacher
Sit for Class Test	Student
Update Class Test Marks	Teacher
View Class Test Marks	Student, Head

Use-Cases for Exam Subsystem

Use-Case Name	Actors
Assign Examiner	BUGS, Teacher
Assign Question Scrutinizer	BUGS
Assign Scrutinizer	BUGS
Set Question	Teacher
Scrutinize Question	Teacher, Head
Print Question	Exam Control Office
Set Schedule	Exam Control Office
View Schedule	Student, Teacher, Others
Propose change in schedule	Student, Teacher

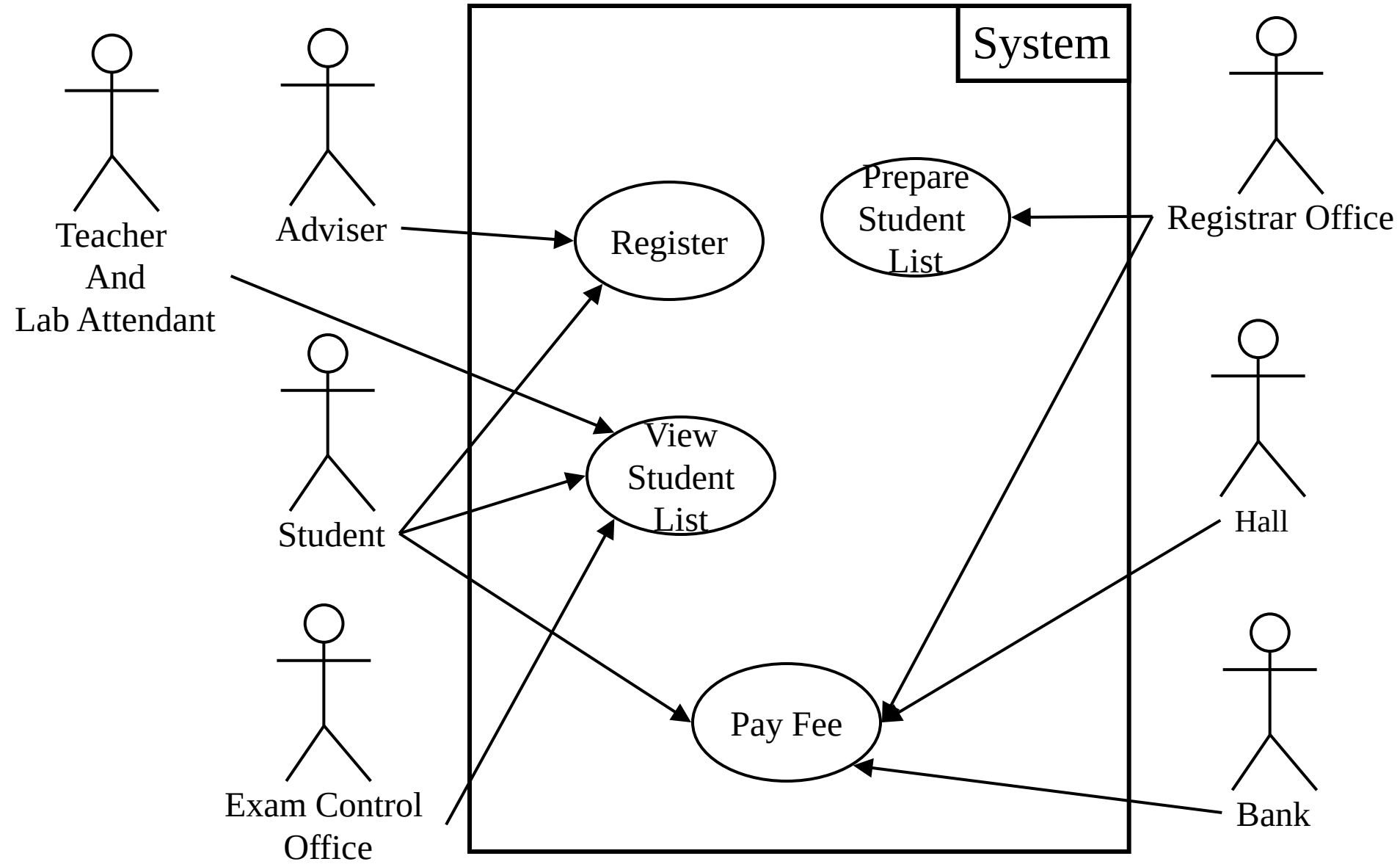
Use-Cases for Exam Subsystem

Use-Case Name	Actors
Update Schedule	Exam Control Office
Make Sit Plan	Exam Control Office
Prepare exam guard schedule	Exam Control Office, Teacher
Sit for Exam	Student
Guard Exam	Teacher, Exam Control Office
Mark Exam Papers	Teacher
Scrutinize	Teacher
Ask for Re-scrutiny	Student, Teacher, Head

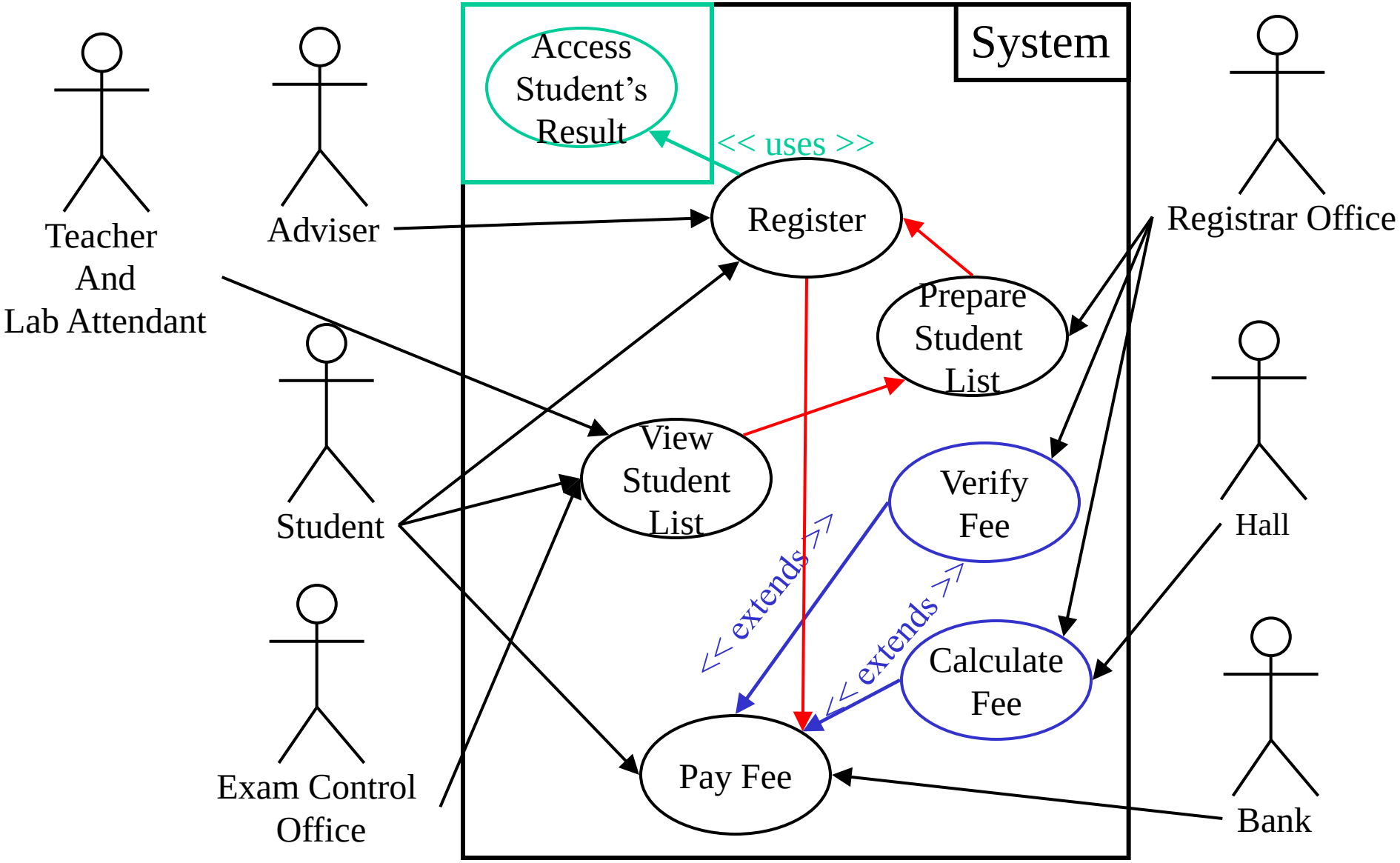
Use-Cases for Exam Subsystem

Use-Case Name	Actors
Prepare Grade-sheet	Teacher, Head, Exam Control Office
Update Grades	Exam Control Office
Print Result	Exam Control Office
Get Result	Student, Exam Control Office
Search Result	Teacher, Student
Send Result	Exam Control Office, Registrar Office, Parents

Use-Case Diagram for Registration Subsystem



Use-Case Diagram for Registration Subsystem (refined)



Sample Use Case Narrative

- **Name:** Prepare Grade-sheet
- **Priority:** High
- **Primary Actor:** Teacher, Scrutinizer
- **Secondary Actor:** Head, Exam Control Office
- **Precondition:** Exam papers have been checked and scrutinized
- **Trigger:** Grade-sheet form arrives from Exam Control Office

Sample Use Case Narrative

- **Typical Course of events**

User Action	System Response
Step 1: Teacher calculates the attendance marks for each student of that course	
Step 2: Teacher selects best three class test marks	
Step 3: Teacher calculates the total class test marks	
Step 4: Teacher enters the marks of attendance, class tests, section A and section B of a student	Step 5: System finds the total marks, the percentage of marks, the grade and grade point
Repeat step 4 and 5 until the actor does either of the following	

Sample Use Case Narrative

- **Typical Course of events**

User Action	System Response
Step 6.1: Log out	Step 7.1: Save the information and log out the user
Step 6.2: Forward to scrutinizer	Step 7.2: Save the information and forward to scrutinizer
Step 6.3 Save	Step 7.3: Save the information and go back to step 4

Sample Use Case Narrative

- **Alternate Course of events:**
  - Alt 7.2: If the grades of all the students are not entered yet, prompt the teacher to complete them, save the information and go back to step 4

- **Conclusion:** The scrutinizer is notified.
- **Post Condition:** The grades of all the students registered for that course have been calculated and are ready for scrutiny

Sample Use Case Narrative

- **Business Rules:**
  - Attendance Marks rule
    - 90%+ gets 30, … , below 60% gets 0
  - Weights
    - Attendance – 30
    - Class Test – 60
    - Section A – 105
    - Section B – 105
  - A student retaking a course can not get a grade above B

Finding Data (Take a narration)

- **Typical Course of events**

User Action	System Response
Step 1: Teacher calculates the attendance marks for each student of that course	
Step 2: Teacher selects best three class test marks	
Step 3: Teacher calculates the total class test marks	
Step 4: Teacher enters the marks of attendance, class tests, section A and section B of a student	Step 5: System finds the total marks, the percentage of marks, the grade and grade point
Repeat step 4 and 5 until the actor does either of the following	

Finding Data (Identify Nouns)

- **Typical Course of events**

User Action	System Response
Step 1: **Teacher** calculates the **attendance marks** for each **student** of that **course**	
Step 2: Teacher selects best three **class test** marks	
Step 3: Teacher calculates the total **class test marks**	
Step 4: Teacher enters the **marks of attendance, class tests, section A and section B of a student**	Step 5: System finds the **total marks, the percentage of marks, the grade and grade point**
Repeat step 4 and 5 until the actor does either of the following	

Finding Data (Refine the choice: Entity and Attributes)

- **Typical Course of events**

User Action	System Response
Step 1: **Teacher** calculates the **attendance marks** for each **student** of that **course**	
Step 2: Teacher selects best three **class test** marks	
Step 3: Teacher calculates the total **class test marks**	
Step 4: Teacher enters the **marks of attendance, class tests, section A and section B of a student**	Step 5: System finds the **total marks, the percentage of marks, the grade and grade point**
Repeat step 4 and 5 until the actor does either of the following	

Finding Data (Refine More: Identify redundancy)

- **Typical Course of events**

User Action	System Response
Step 1: **Teacher** calculates the **attendance marks** for each **student** of that **course**	
Step 2: Teacher selects best three **class test** marks	
Step 3: Teacher calculates the total **class test marks**	
Step 4: Teacher enters the **marks of attendance, class tests, section A and section B of a student**	Step 5: System finds the **total marks, the percentage of marks, the grade and grade point**
Repeat step 4 and 5 until the actor does either of the following	

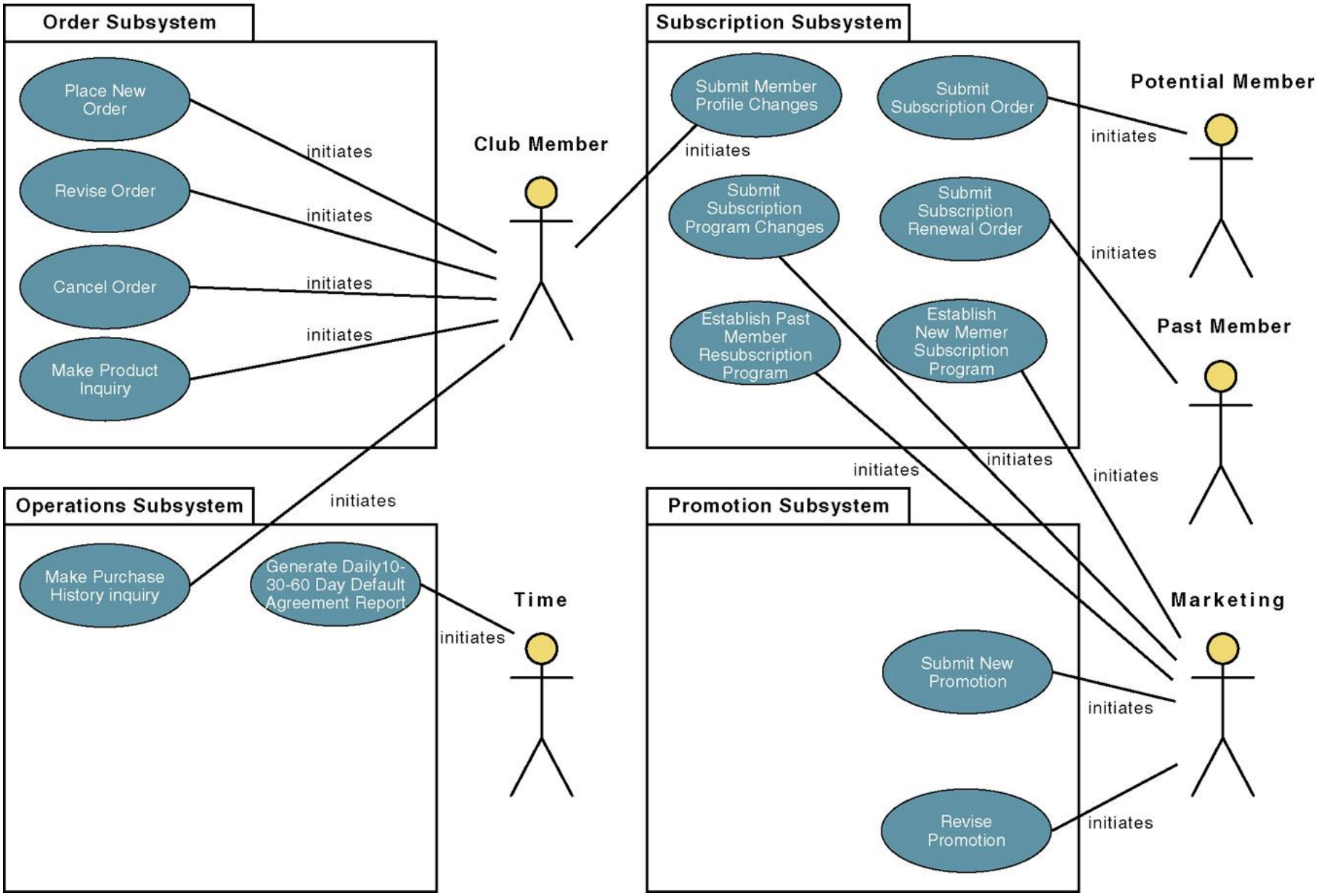
Other sources of data

- **Business Rules:**
  - Attendance Marks rule
    - 90%+ gets 30, … , below 60% gets 0
  - Weights
    - Attendance – 30
    - Class Test – 60
    - Section A – 105
    - Section B – 105
  - A student retaking a course can not get a grade above B
- **And from other fields as well**

The mapping rule must be in the database

Status Attribute Needed

Another example: Use-Case Model Diagram



Document Business Requirements Use-Case Narratives

- Document first at high level to quickly obtain an understanding of the events and magnitude of the system.
- Then expand to a fully-documented business requirement narrative.
  - Include the use case's typical course of events and its alternate courses.

Sample High-Level Version of a Use-Case Narrative

Member Services System

Author (s): ① **Date:** ②
Version: ③

Use-Case Name:	Place New Order ④	**Use-Case Type**
Use-Case ID:	MSS-BUC002.00 ⑥	**Business Requirements:** ☑ ⑤
Priority:	High ⑦	
Source:	Requirement — MSS-R1.00 ⑧	
Primary Business Actor:	Club member ⑨	
Other Participating Actors:	• Warehouse (external receiver) • Accounts Receivable (external server) ⑩	
Other Interested Stakeholders: ⑪	• Marketing — Interested in sales activity in order to plan new promotions. • Procurement — Interested in sales activity in order to replenish inventory. • Management — Interested in order activity in order to evaluate company performance and customer (member) satisfaction.	
Description: ⑫	This use case describes the event of a club member submitting a new order for SoundStage products. The member's demographic information as well as his or her account standing is validated. Once the products are verified as being in stock, a packing order is sent to the warehouse for it to prepare the shipment. For any product not in stock, a back order is created. On completion, the member will be sent an order confirmation.	

Sample Expanded Version of a Use-Case Narrative

Member Services System

Author (s): _____ **Date:** _____

Version:

Use-Case Name:	Place New Order	**Use-Case Type** **Business Requirements:** ☑
Use-Case ID:	MSS-BUC002.00	
Priority:	High	
Source:	Requirement — MSS-R1.00	
Primary Business Actor:	Club member	
Other Participating Actors:	• Warehouse (external receiver) • Accounts Receivable (external server)	
Other Interested Stakeholders:	• Marketing — Interested in sales activity in order to plan new promotions. • Procurement — Interested in sales activity in order to replenish inventory. • Management — Interested in order activity in order to evaluate company performance and customer (member) satisfaction.	
Description:	This use case describes the event of a club member submitting a new order for SoundStage products. The member's demographic information as well as his or her account standing is validated. Once the products are verified as being in stock, a packing order is sent to the warehouse for it to prepare the shipment. For any product not in stock, a back order is created. On completion, the member will be sent an order confirmation.	
Precondition: (1)	The party (individual or company) submitting the order must be a member.	
Trigger: (2)	This use case is initiated when a new order is submitted.	

continued

Sample Expanded Version of a Use-Case Narrative (cont)

Typical Course of Events: 3	Actor Action	System Response
	Step 1: The club member provides his or her demographic information as well as order and payment information.	**Step 2:** The system responds by verifying that all required information has been provided. **Step 3:** The system verifies the club member's demographic information against what has been previously recorded. **Step 4:** For each product ordered, the system validates the product identity. **Step 5:** For each product ordered, the system verifies the product availability. **Step 6:** For each available product, the system determines the price to be charged to the club member. **Step 7:** Once all ordered products are processed, the system determines the total cost of the order. **Step 8:** The system checks the status of the club member's account. **Step 9:** The system validates the club member's payment if provided. **Step 10:** The system records the order information and then releases the order to the appropriate distribution center (warehouse) to be filled. **Step 10:** Once the order is processed, the system generates an order confirmation and sends it to the club member.

continued

Sample Expanded Version of a Use-Case Narrative (cont)

Alternate Courses: 4	**Alt-Step 2:** The club member has not provided all the information necessary to process the order. The club member is notified of the discrepancy and prompted to resubmit. **Alt-Step 3:** If the club member information provided is different from what was previously recorded, verify what was recorded is current, then update the club member information accordingly. **Alt-Step 4:** If the product information the club member provided does not match any of SoundStage's products, notify the club member of the discrepancy and request clarification. **Alt-Step 5:** If the quantity ordered of the product is not available, a back order is created. **Alt-Step 8:** If the status of the club member's account is not in good standing, record the order information and place it in hold status. Notify the club member of the account status and the reason the order is being held. Terminate use case. **Alt-Step 9:** If the payment the club member provided (credit card) cannot be validated, notify the club member and request an alternative means of payment. If the club member cannot provide an alternate means, cancel the order and terminate the use case.
Conclusion: 5	This use case concludes when the club member receives a confirmation of the order.
Postcondition: 6	The order has been recorded and if the ordered products were available, they were released. For any product not available a back order has been created.
Business Rules: 7	• The club member responding to a promotion or a member using credits may affect the price of each ordered item. • Cash or checks will not be accepted with the orders. If provided, they will be returned to the club member. • The club member is billed for products only when they are shipped.
Implementation Constraints and Specifications: 8	• GUI to be provided for Member Services associate, and web screen to be provided for club member.
Assumptions: 9	Procurement will be notified of back orders by a daily report (separate use case).
Open Issues: 10	1. Need to determine how distribution centers are assigned.