

Team Undefined  
Requirements and Engineering Report  
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## Group Members

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## **Introduction**

### **a. Description of Problem**

Japanese professor Yoko Kano needs a web based software that allows Japanese English students and English Japanese students to communicate with each other. The system must support user logins through which the opposite native speakers can leave video audio and text messages for each other and respond. Ms. Kano also wants a quizzing/assessment component which records student responses to pre recorded video prompts by Ms. Kano. Student recordings and assessment responses as well as statistics about student usage, such as number of attempts, login dates and total talk time must be visible to teacher users. The site must be visually attractive. Other possible future features that may be added to take into account during design of the site include the addition of optional Japanese interface text, the addition of student to student video chat (must be recordable for teacher).

### **b. Project Scope & Objectives**

This project will contain a web based video mail communication system that will catalog input based on information from user accounts. All uploaded videos will be stored on a server which the instructor can access for review. Video playback of prompts and student recorded video and audio synced within a webpage. Planned implementation will use HTML, javascript, css, php, sql.

### **c. Success Criteria**

Visually attractive site allowing an easy-to-use interface for Japanese and English students to communicate with one another via pre recorded video and text messages. Website allows recorded teacher assessment through responses to video prompts. Also, allows the instructor to make, choose and randomize prompts as find and review all user uploaded content.

#### d. Purpose of Report

The purpose of this report is to give all team members a clear and concise vision of the purpose and the steps needed to complete this project.

### Software Project Plan

#### a. A list of all resources that will be needed for the product and their availability

Server- capable of handling the appropriate amount of users, available at all times

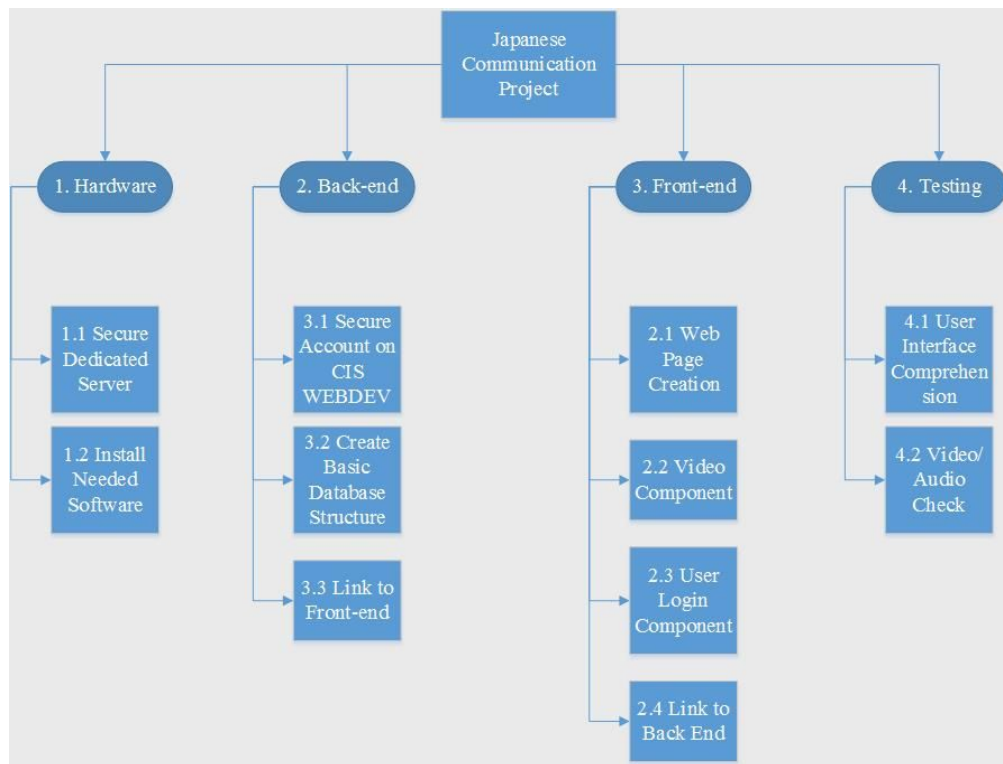
Computer- available for each developer at all times

Webcams- one for each user, available at times of recording

Microphone- one for each user, available at times of recording

Mac/Mobile devices - to test site on

#### b. A work breakdown structure that describes tasks is shown in Figure 1.



**Figure 1: A work breakdown structure of the Japanese Communication Project**

c. COCOMO II Model in Figure 2 and Figure 3 <sup>[1]</sup>

Software Development (Elaboration and Construction)

Effort = 6.7 Person-months

Schedule = 6.9 Months

Cost = \$50548

Total Equivalent Size = 1200 SLOC

Acquisition Phase Distribution

Phase	Effort (Person-months)	Schedule (Months)	Average Staff	Cost (Dollars)
<b>Inception</b>	0.4	0.9	0.5	\$3033
<b>Elaboration</b>	1.6	2.6	0.6	\$12132
<b>Construction</b>	5.1	4.3	1.2	\$38417
<b>Transition</b>	0.8	0.9	0.9	\$6066

*Table 1 <sup>[1]</sup>: first section of the COCOMO II model*

Software Effort Distribution for RUP/MBASE (Person-Months)

Phase/Activity	Inception	laboration	Construction	Transition
<b>Management</b>	0.1	0.2	0.5	0.1
<b>Environment/CM</b>	0.0	0.1	0.3	0.0
<b>Requirements</b>	0.2	0.3	0.4	0.0
<b>Design</b>	0.1	0.6	0.8	0.0
<b>Implementation</b>	0.0	0.2	1.7	0.2
<b>Assessment</b>	0.0	0.2	1.2	0.2
<b>Deployment</b>	0.0	0.0	0.2	0.2

*Table 2 <sup>[1]</sup>:second section of the COCOMO II model*

#### d. Project Schedule



Figure 2 : Project Schedule <sup>[2]</sup>

### e. Responsibility Matrix

Task	Daniel Baggott	Daniel Silveri	Darryl Papke	Matthew Canton
Project Description	X			X
Project Objectives				X
Success Criteria				X
Resource Estimation				X
Cost Estimation				X
Project Schedule	X			
Responsibility Matrix			X	
Risk Planning			X	
GANTT/PERT Chart	X			
Management/Technical Constraints			X	
Project Monitoring	X			
Use Case Diagram		X		
Activity Diagram				X
Requirements Class Models			X	
Data Dictionary			X	
Non-Functional Requirements		X		
Tools Used		X		
Bibliography		X		
Product Testing		X		
Quality Assurance		X		
Software Design			X	
Project Management	X			
Customer Relations	X			
Implementation	X	X	X	X

**Figure 3: Responsibility Matrix**



## f. Risk Plan

Risks	Category	Probability	Impact	RMMM
<b>Group Member Loss</b>	ST	10%	1	Mitigation: Keep all information related to the project open among team members to prevent loss of important details. Management: Redistribute responsibilities.
<b>Client Not Satisfied</b>	CL	40%	2	Mitigation: Give client updates on the project often. Management: Fix any issues that have been brought up by the client.
<b>Computer Breaks</b>	TE	15%	2	Mitigation: Keep important files on multiple machines. Management: Team member will buy new computer or use a school computer.
<b>Webcams Will Not Be Available for Testing</b>	TE	20%	2	Mitigation: Find a reliable source that has webcams available or computers already equipped with webcams.
<b>Project Size</b>	PS	40%	3	Mitigation: Discuss features that may be out of reach given our time constraint. Management: Cut features that would not be delivered to lessen upcoming work.
<b>Unable to Find Video Solution/ Save Solution</b>	TE	25%	2	Mitigation: Find solution early for saving/ video needs. Management: Meet with client for further instruction on needs

PS - Project Size Risk BU - Business Risk CL - Client Risk TE - Technology risk

ST - Staff Risk

Impact Values: 1 – Catastrophic 2 – Critical 3 – Marginal 4 – Negligible

***Table 3 : Risk Plan***

#### **g. Performance Issues**

The performance of the software will heavily depend on the internet connection of both users trying to video chat. If either user's internet connection is too slow, the video-chat part of the software will not be available. If extremely high demand times occurred video chat would suffer.

#### **Technical Constraints**

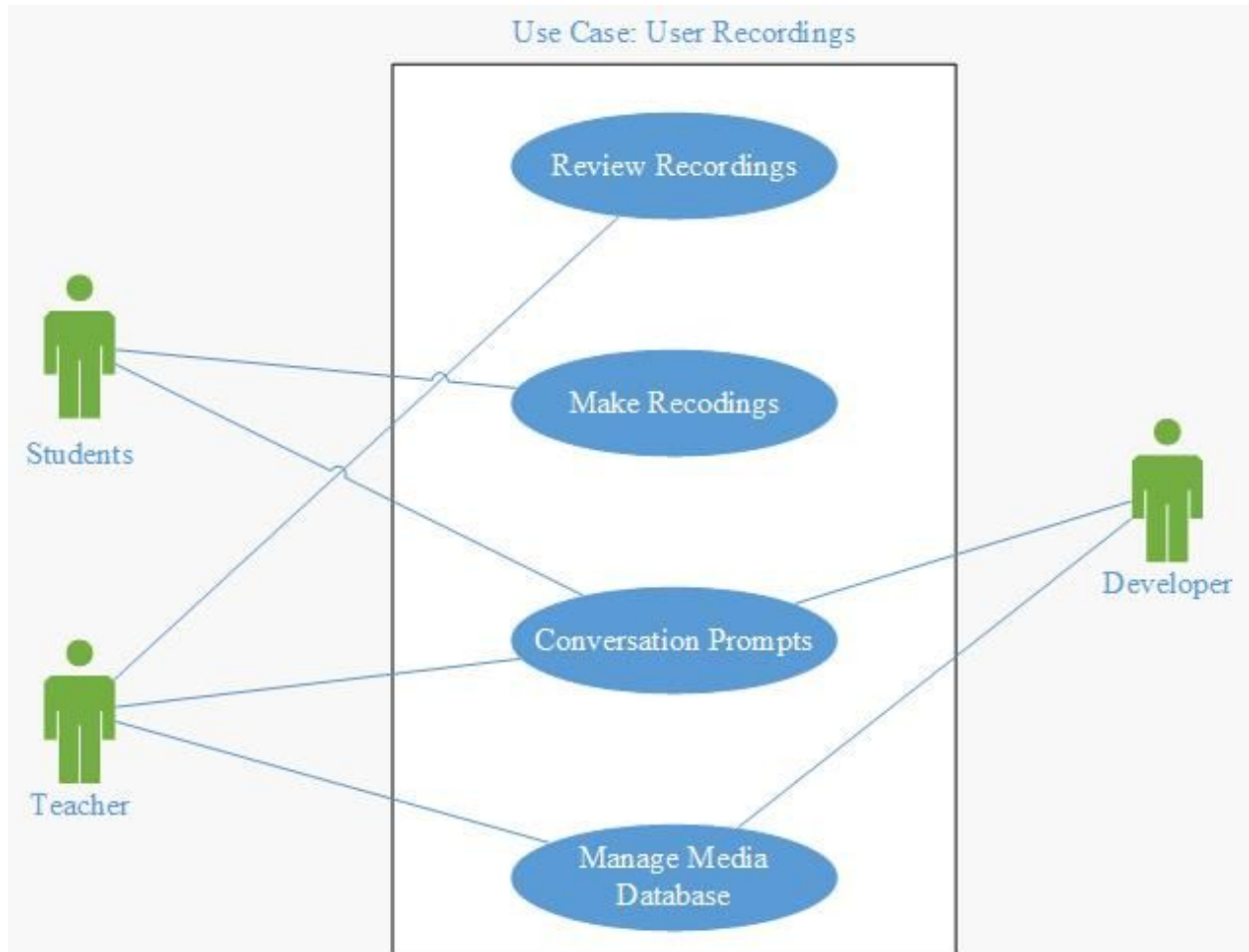
The availability of webcams to test the software is an important constraint that will be handled early to minimize future problems. All files will be kept in directory that can be accessed by each team member to ensure issues are discussed and resolved quickly. The shared documents will allow each member to view current progress and continue working easily. Bandwidth available at our test video server may limit the server more than its processing power during tests.

#### **h. Project monitoring and control mechanisms**

Version control for code, alert notifications for server events. By continuously checking the schedule and continuous reviews with the Japanese department we intend to monitor the project progress and course correct quickly.

## Requirements/Analysis Models

### a. Use Case Diagrams



*Figure 4 : Use case diagram for user recordings.*

## **Use Case Name: Students Upload a Conversation**

### **Stakeholder Interests:**

- **Students:** Need to upload conversations in response to the prompts
- **Teacher:** Wants to review student's uploaded conversations and add conversation prompts
- **Developer:** Needs to manage all conversation storage on media server.

### **Main Scenario**

1. Student logs on to account
2. Student chooses a conversation prompt that they would like to respond to
3. Student records their response via webcam and microphone
4. Recording is uploaded to media server
5. Student Logs out
6. Teacher chooses a recording to grade based on its accuracy to the prompt
7. Grade is posted to the student's account

### **Exceptions**

#### **EX1: Media Server is Full**

- a. student cannot upload recording
- b. developer is notified to free space

#### **EX2: Student Cannot Log into Account**

- a. student is prompted to reset password
- b. student logs into account with new password

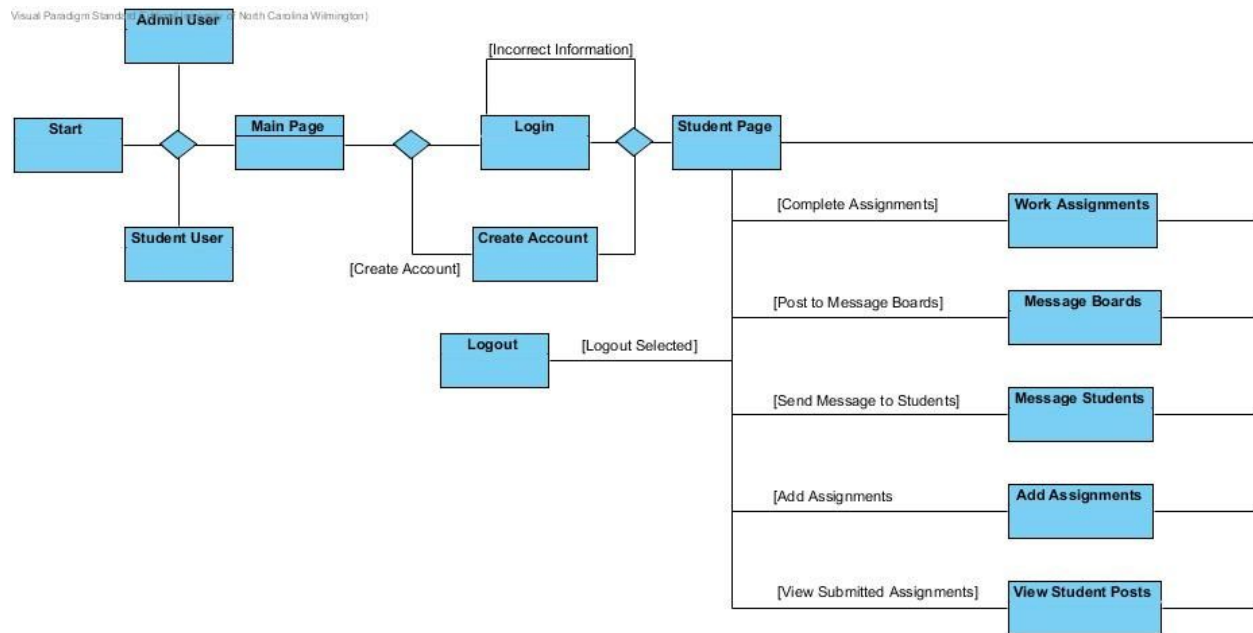
### **Non-Functional Requirements**

**NF1:** Student should be able to upload video within 2 minutes

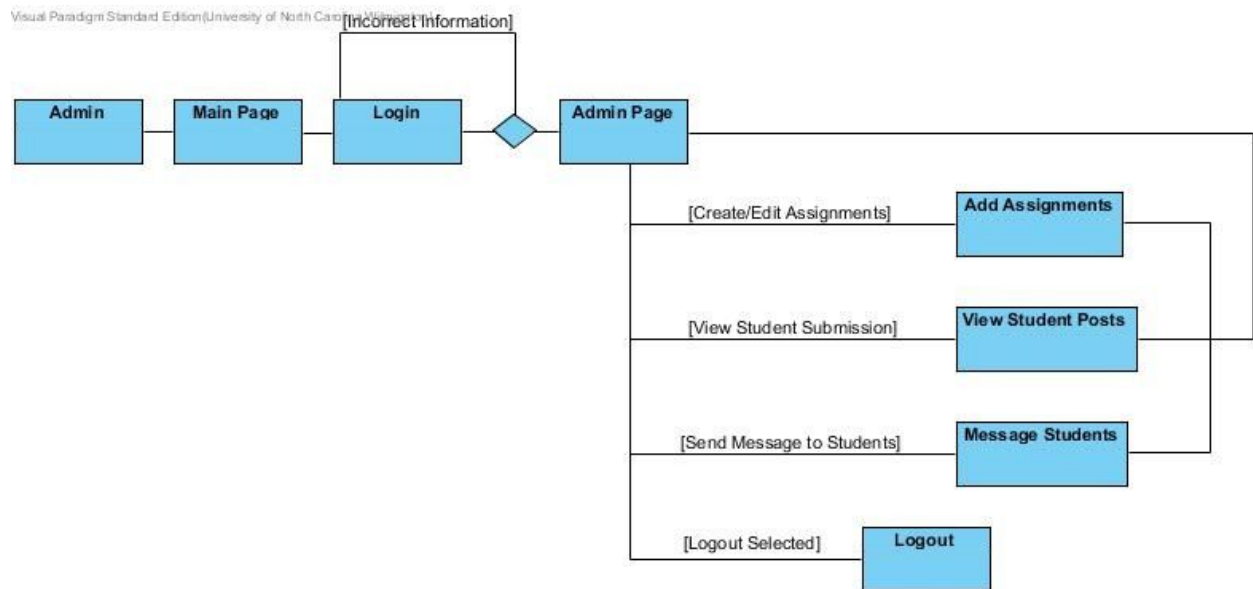
**NF2:** System should be able to handle 200 users

**NF3:** Student should be able to find a prompt within five seconds

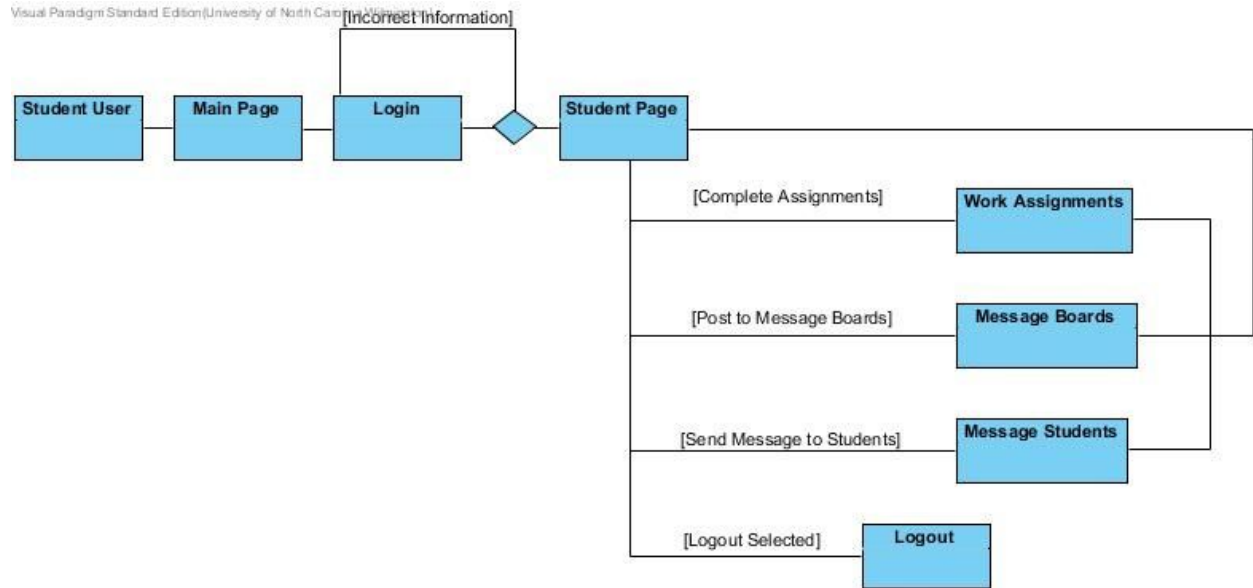
## b. Activity Diagrams



**Figure 5 : Overall Website Activity Diagram**

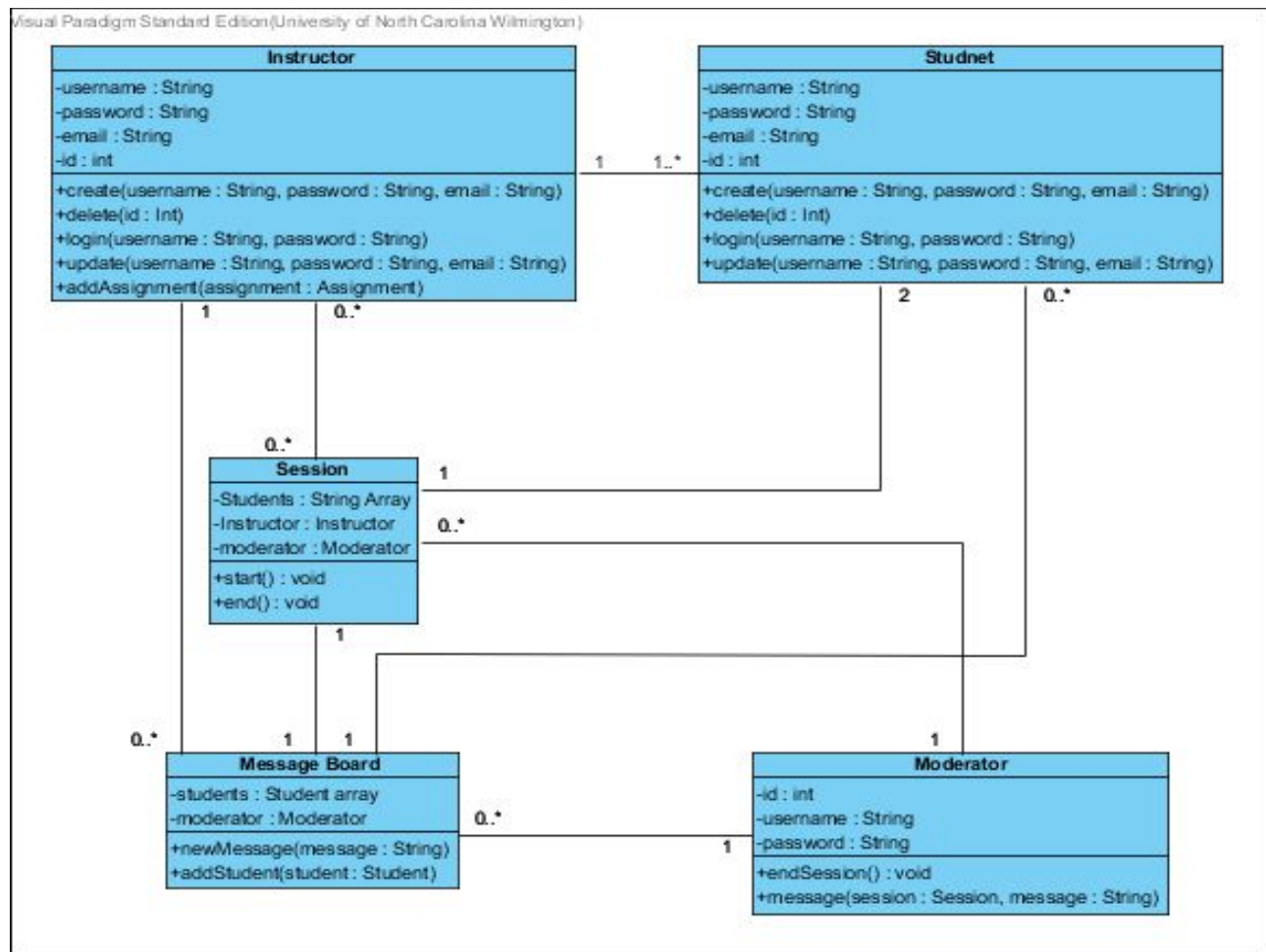


**Figure 6 : Admin Website Activity Diagram**



***Figure 7 : Student Website Activity Diagram***

### c. Class Diagram



*Figure 8 : Class Diagram*

#### **d.Data Dictionary**

**Teacher User** – A user who can create video prompts for video practice. This user can select a set of video prompts for a video practice set. Can review associated student users response video. A teacher user can review Student's video practice and text messages.

**Student User** – A user who can send text messages to opposite native language student users. This user can real time video chat with opposite native language student users. This user can respond to a video practice set creating a response video.

**Native Language** – The user's native language, Japanese or English.

**Login** – The ability to sign in to student or teacher user and gain access to appropriate functionality and associated stored content by user type and past interactions.

**Logout** – The ability to sign out and remove access to user association.

**MCU Server** – A multipoint control unit is a video conferencing server capable of recording and mixing live video streams.

**Dashboard** – A page accessed after login from which appropriate functionality and stored content can be accessed according to user type student or teacher.

**Video Prompt** – A teacher created video that allows students a response time which is recorded as a response video.

**Response Video** – The student user's recording of the response time after a video prompt. This video is tagged with the associated video prompt.

**Text Message** – A text message that can be sent to opposite native language speakers which is stored and can be accessed later. A two way chat.

**Video Chat** – A live two way video chat recorded by the server.

**Video Practice Set** – A set of video prompts which can be responded to by users creating response videos.

**Edit User Info** – The ability to edit user information such as Email and password.



#### **e. Non-Functional Requirements**

Our project is a website that will be used as an educational platform. This means that the website will need to be easy to use. This will be important to help the learning process, and not be a hinderous to the students. The website will also be used by non-native speaking English students, which increases the need for an easy to use and navigable website.

The next concern is security. This website will be used by multiple students, which means each student will have their own personal login username and password. There will also be an administrator, usually a teacher, that can moderate the website to ensure that everything is secure and problem accounts can be removed if necessary. General unsafe code practices in languages such as SQL will be avoided.

Our website will rely heavily on audio and video components. This puts a great of concern on the performance and efficiency of the website. Ensuring that the videos and audio run smoothly will greatly increase the student's ability to learn using the website.

#### **f. Tools used in the Requirements Process**

- Slack
- CSSE COCOMO II- Constructive Cost Model
- Google Docs
- Microsoft Visio 2013
- Web Browser
- Excel
- Visual Paradigm
- Gantt Project

## **Description of Analysis Process**

To start the process we met with the client, Ms Kano, to acquire a more detailed understanding of what she expected the product to be. Ms. Kano used a few existing tools to illustrate what she wanted the product's design and functionality to imitate. After this, we decided which parts of the project were to be split into distinct pieces of software in order to better manage its size. Upon incremental completion of the separate pieces, they will be combined into a cohesive product.

In deciding the phases of development, we ordered the pieces of software so that Ms. Kano could see regularly improved, usable, prototypes as we progressed in the project. By using a prototype system we can ensure that the client is constantly involved in the software's progression and receives an end product that is as close to their ideal conception as possible. Following the requirements format with the information collected we then analyzed our project for requirements including costs, potential pitfalls, and time estimation.

### Bibliography

- [1]R. Madachy, "COCOMO II - Constructive Cost Model", *Csse.usc.edu*, 2016. [Online].  
Available: <http://csse.usc.edu/tools/COCOMOII.php>. [Accessed: 17- Feb- 2016].
- [2] Ganttproject.biz, "GanttProject: free desktop project management app", 2016. [Online].  
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