Mobile Content Generator

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Software Requirements Specification

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1 INTRODUCTION

This documentation has aim to give people general information about E-Learning Web Tool namely Mobile Content Generator. This tool makes education easy and efficient for people who try to teach something to other people. This document is formed based on IEEE Standards for Software Requirements Specifications [1].

1.1 PROBLEM DEFINITION

People have tried variety education forms. They use school, university, special course and e-learning etc. In the past, the technology was not advanced. There was no Internet. Therefore, people had to come class and teacher who has profession of special course taught them. It was difficult to reach information. Then, Internet has discovered and computers have become advanced. People can reach lots of information on the Internet. This is really good improvement but not enough. There are some reasons that show why it is not enough. Firstly, time is important for people but transportation is also loss of time. Secondly, there is one person who knows this course perfectly but even bigger class has 200 people. This number seems bigger; however, it is known that there are more than one billion people all over the world. This professional person is not enough to teach everybody who wants to learn something about this field. Thirdly, money becomes problem. People spend lots of money on education. They are major problems as the best known. At this point, e-learning become as a solution for everybody.

People, who want to share information, have taken their course's videos and publish in the Internet. There exist lots of video streaming websites. On the other hand, information is really valuable things in the world. Therefore, people prepare their videos as programs to sell or share necessity people. What's more, people make their own websites to share their information. There emerges another problem such as there are lots of devices and everything is compatible with each other. For example, some language learning programs work on Windows but not Linux. Some websites are shown Firefox wonderfully but another browser Safari makes it nasty.

Put it differently, people do not want to these videos directly in video streaming website to publish for everybody. Making programs and preparing websites is also really difficult for people who do not have even an idea about computer programming. People would like to publish some videos or pictures and these can be shown in all platforms. These are major problems of our project.

1.2 PURPOSE

This document is the software requirements specification report of the project Mobile Content Generator. The purpose of this document is to explain all customer needs briefly, to create a common language for both developers and the customer, and to provide a basis for validation and verification. This document also aims to be a reference to developer side of

the project. Target group of this document is developers, testers, e-learning instructors and e-learners, namely, users.

1.3 SCOPE

Mobile Content Generator is a web-based application especially used for E-learning. Its general characteristics are adding e-learning material through instructors to system and handing them appropriately to learners without having any technical information about the system.

An instructor will be able to add videos, text and decide how learners can see the content among different templates. An instructor cannot create new template, he can only use predefined templates of the system. Learning material can only be uploaded via desktop computers. Authorizing learners to is instructor's duty. All the operations done by instructor do not require any technical skills.

Learners can reach learning materials which they are authorized to at any time with different platforms (i.e. Desktop computers, tablets, cell phones) continuously. When a learner exits from the system, he can continue the learning process from different platforms where he left. There will be also social features for learners such as giving points to materials, commenting which will be visible to other users and giving feedback about content to its instructor. Like instructors, learners do not need to have technical knowledge.

1.4 USER AND LITERATURE SURVEY

There are lots of products about E-learning in the market, for example, video streaming websites. Any people can upload his/her video this website and share everybody in all over the world. There is no privacy at this websites. These websites also are not supported from all platforms. In other words, this published video works on one browser but it does not work on another. They restrict people choice right. Moreover, there are lots of programs in the market. However, they are also not supported from all platforms. For example, Rosestone, which is one of the famous language learning programs, does not work on Linux. What' more, people make their web design to share information. There are lots of dummy websites in the Internet. This is correct that they share information with people but these websites are not stable and professional enough. When people try to follow these courses, there emerge lots of problems. For example, some of videos cannot be shown because of they are at different servers or these videos are not embedded to the code correctly.

This product will be used by people who would like more privacy, simplicity and compatibility, while they share information. For example, mathematician can prepare his/her e-learning area easily using this web tool. Then, s/he can give permission his/her students to follow this course. Even more than one thousand students can be taught. Another example, one company wants to give education about new technology to their employees. At this point, educating people is problematic. Without e-learning, there will be lots of time loss. Time loss means money loss nearly for all companies. On the other hand, privacy is really important for any companies. This company can use this web tool and create e-learning area. Employees can reach these lectures from anywhere. They learn this profession at home, on bus or even walking.

1.5 DEFINITIONS AND ABBREVIATIONS

E-Learning: The delivery of a learning, training or education program by electronic means. E-learning involves the use of a computer or electronic device (e.g. a mobile phone) in some way to provide training, educational or learning material [2].

Learner: The user authorized to reach the learning content but not authorized to change it.

Instructor: The user who can generate learning material and authorize e-learners to it.

MCG: Mobile Content Generator

SRS: Software Requirements Specification

1.6 REFERENCES

[1] *Software Engineering Standards Committee of the IEEE Computer Society*, IEEE Std 830-1998

[2] D. Stockley. (2011, Jan. 19). *What is E-Learning?* [Online]. Available: http://derekstockley.com.au/elearning-definition.html

[3] A. H. Doğru, "*Software Engineering Concepts*," in *Component Oriented Sofware Engineering,* 1st ed. Dallas, TheAtlas Publishing, 2006.

[4] Scacchi, W. "Process Models in Software Engineering", Irvine: University of California, 2001.

1.7 OVERVIEW

This document contains six additional chapters. In the next chapter we will give a general description of the system. Then the Specific Requirements follows in which detailed functional and non-functional requirements will be explained. The chapter after that is the Data Model and Description which will include information and data domain of the system and its organization. In the fifth chapter, we will describe behavioral model of the system. Then we will present our planning for the project and finish with conclusion.

2 OVERALL DESCRIPTION

In this section an overall description of MCG, its functional specifications and limitations are provided in detail.

2.1 PRODUCT PERSPECTIVE

Mobile Content Generator is basically an e-learning system with instructors who are adding courses and learners who are accessing these courses' contents. Instructors can add courses only by using desktop computers however; learners can access these courses via desktop computers or mobile devices like tablets and mobile phones.

MCG project will be an independent and self-contained project. It will not be a subsystem of an existing product. Its database will be in touch with Kaltura which is an open source video platform. Most basically, uploaded videos will be processes with Kaltura then they will be styled with CSS and served to users. Below is the basic overall system block diagram.

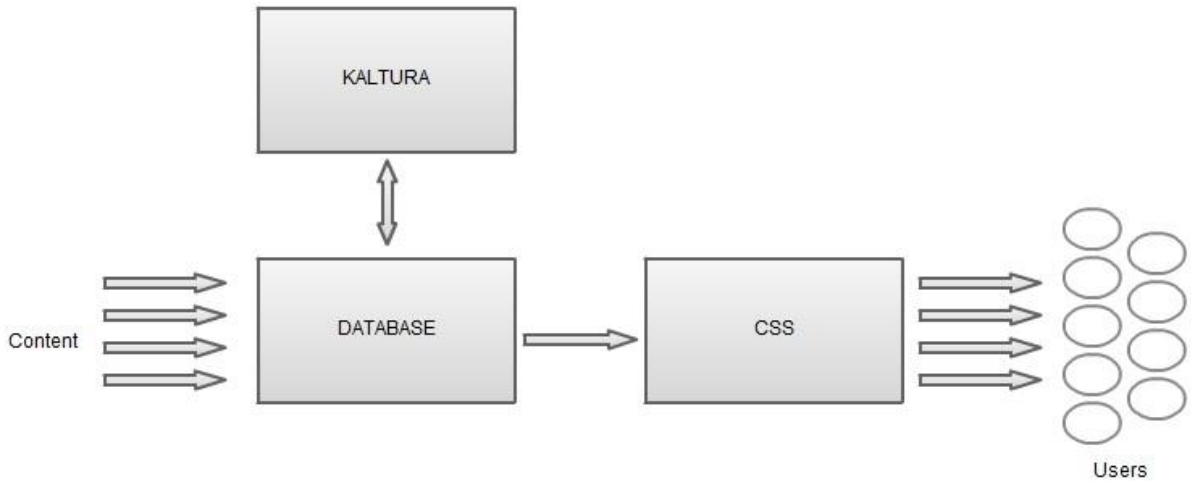


Fig1. Overall System Block Diagram

2.2 PRODUCT FUNCTIONS

Actors of our system are administrator, instructor and learner. Basically system administrator has rights to add instructor to system, adding, deleting or blocking instructors, deleting course, comment or page. Instructors are added to the system by administrators and can add and delete courses, chapters, pages and comments, change order of chapter and page. Also they choose the learners who can view the course material. Learners are the users of the system who view, comment and rate the pages and courses that the instructors added. Their main functions are shown by use case diagrams below.

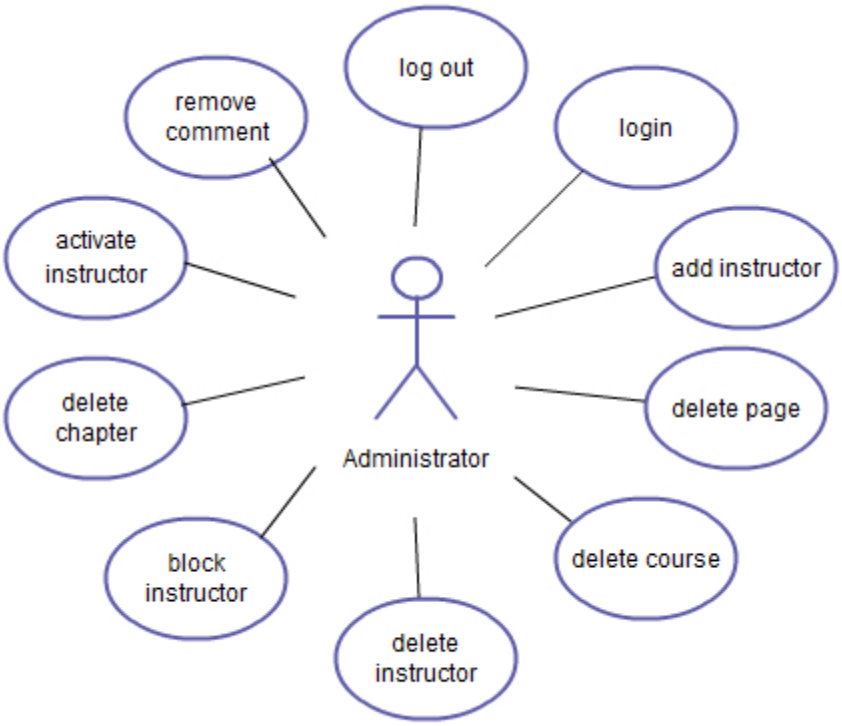


Fig2. Administration Use Case

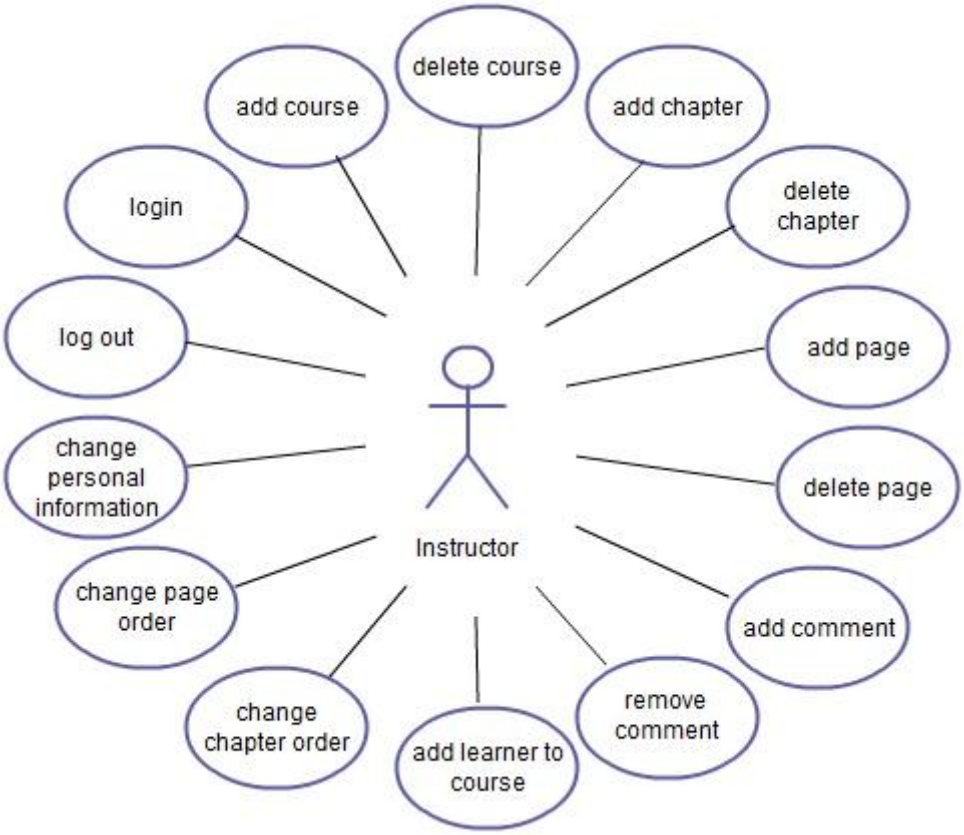


Fig3. Instruction Use Case

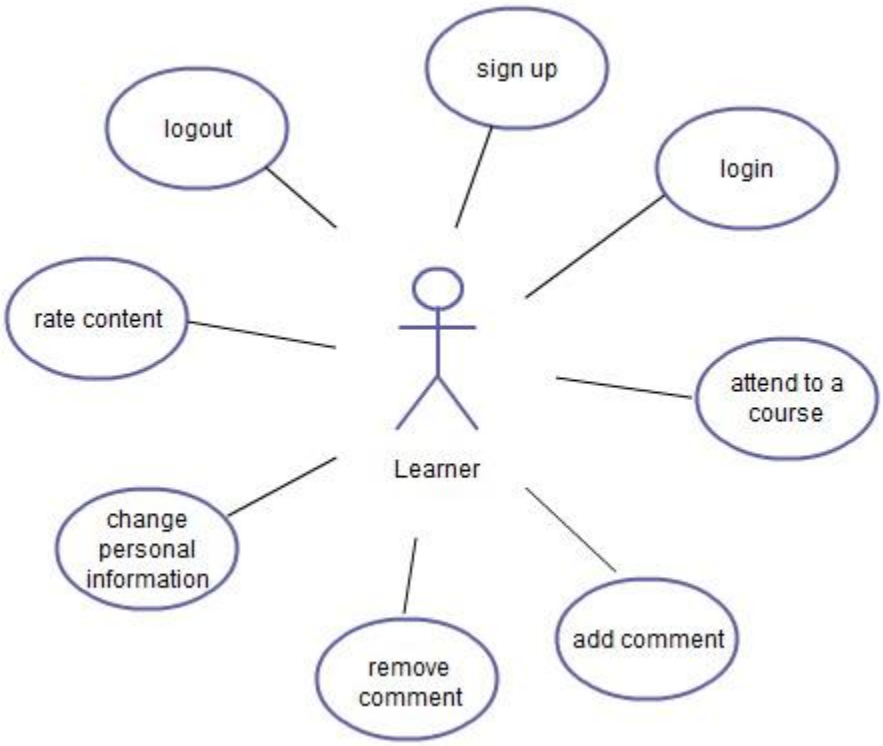


Fig4. Learner Use case

2.3 CONSTRAINTS, ASSUMPTIONS, DEPENDENCIES

Our system will have limited number of template pages for adding content. Also, instructors will only upload courses via desktop computers, not from mobile devices.

Safety and security are important requirements for our system. Only the registered users of the system are allowed to see the content, people other than registered users just see the sign up page of system. Moreover, instructors can only be added to the system by administrators, other users of the system are learners and cannot add or modify videos.

While uploading a video, an instructor can manage other items about courses, that is uploading a video does not interfere with instructor's other issues. However, at this part we assume that an instructor upload no more than one video at a time.

Users of the system only need a web browser and internet connection for using system.

3 SPECIFIC REQUIREMENTS

In this chapter, we would like to describe software requirements in detail. These will also include functional requirements and each of them will include a description of input-output for the system.

3.1 INTERFACE REQUIREMENTS

MCG has simple, uncomplicated interface for users. Home page of system has two parts as login for registered users and sign up for unregistered users. When users log in to the system, they will be directed to their own home page. All users have a logout button at the top right of each page.

3.1.1 ADMIN INTERFACE

At the home page of administrator there will be add instructor button, from where administrators will be able to enter information of a new instructor and add to system. With instructors' list button at the same page, administrators can see the list of instructors registered in the system with delete and block buttons near instructors' names. When an instructor is blocked, activate button near the instructor's name will be available. Administrators have rights to delete course, chapter or page in the same way as instructors, as described below in 3.1.2.

3.1.2 INSTRUCTOR INTERFACE

At the home page of instructor there will be add course button, which will enable the instructor to create a new course with specified properties. Also there will be course list button that will direct the instructor to the list of courses s/he created. When instructor clicks a course name, chapters in that course will be listed with an add chapter button at the top of the list. There will be an add learner button in a course which enables instructors to make learners in touch with instructor's courses. After clicking a course name, pages in that course will be listed with an add page button at the top of the list. There will be 'x' buttons near all items in the course, chapter, page lists that enables deleting course, chapter or page. Also near chapter and page lists there will be up and down arrows to change the order of the lists. In each page, below the contents there will be a text box for commenting. Moreover, at the home page a change personal information button which allows instructors changing their personal information like e-mail addresses.

3.1.3 LEARNER INTERFACE

At the home page of learner there will be courses list button for learners to attend a course. In a course there will be chapters, and in a chapter there will be pages list. In each page below contents there will be a comment box and rating stars for feedback. Moreover, at the home page a change personal information button which allows learners changing their personal information like e-mail addresses.

3.2 FUNCTIONAL REQUIREMENTS

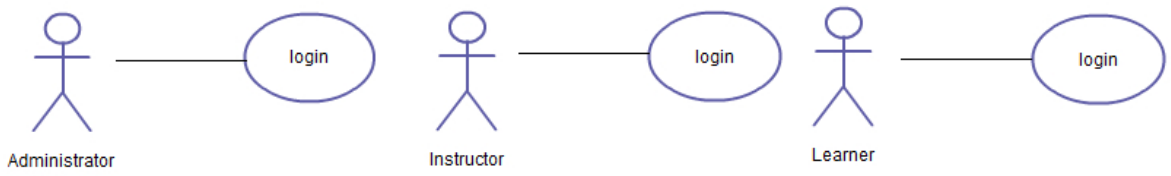
3.2.1 LOG IN TO THE SYSTEM

3.2.1.1 BACKGROUND INFORMATION

Every system user will have an account. All users including admin, instructor and learner should log in to the system in order to progress their processes.

3.2.1.2 ACTION/RESPONSE SEQUENCES

3.2.1.2.1 DIAGRAM



3.2.1.2.2 DESCRIPTION

Actors	Admin, Instructor, Learner
Goal in context	The purpose of this function is to enable a user to log in to his/her account.
Preconditions	User should be entered the login page.
Trigger	A user wants to log in to his/her account.

3.2.1.2.3 NORMAL FLOW OF EVENTS

1. User enters his/her user name into the username text box.
2. User enters His/her password into the password text box.
3. User clicks login button.
4. System takes user to main page depending to the role of him/her.

3.2.1.2.4 ALTERNATIVE FLOW OF EVENTS

1. User enters wrong password.
2. System appears a warning message about the inappropriate situation to user.

3.2.2 LOG OUT FROM THE ACCOUNT

3.2.2.1 BACKGROUND INFORMATION

User will always be able to log out from the account from any page in program. Logging out is important for safety of account.

3.2.2.2 ACTION/RESPONSE SEQUENCES

3.2.2.2.1 DIAGRAM

3.2.2.2.2 DESCRIPTION

Actors	Admin, Instructor, Learner
Goal in context	The purpose of this function is to enable a user to log out from his/her account.
Preconditions	User should be logged in to the system.
Trigger	User wants to log out from his/her account.

3.2.2.2.3 NORMAL FLOW OF EVENTS

1. User clicks log out button.
2. System closes user's session and takes user to the login page.

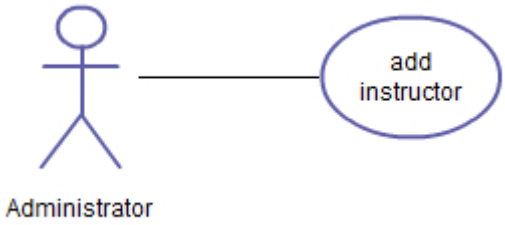
3.2.3 ADD INSTRUCTOR

3.2.3.1 BACKGROUND INFORMATION

Only admins will have right to add new instructor to the system. This function will prevent unauthorized instructor registers to the system.

3.2.3.2 ACTION/RESPONSE SEQUENCES

3.2.3.2.1 DIAGRAM



3.2.3.2.2 DESCRIPTION

Actors	Admin
Goal in context	The purpose of this function is to enable admin to add new instructor to the system.
Preconditions	Admin should be logged in to the system.
Trigger	Admin wants to add new instructor to the system.

3.2.3.2.3 NORMAL FLOW OF EVENTS

1. Admin clicks add new instruction button.
2. Admin enters all information of new instructor.
3. Admin clicks add button.
4. System adds new instructor to the system.

3.2.3.3 FUNCTIONAL REQUIREMENTS

REQ 1: System checks whether used e-mail address already exists in system or not. If it exists, system rejects the process and warns the admin.

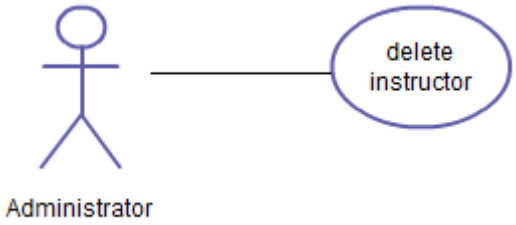
3.2.4 DELETE INSTRUCTOR

3.2.4.1 BACKGROUND INFORMATION

When an instructor is needed to delete for any reason, admin will delete his/her account permanently.

3.2.4.2 ACTION/RESPONSE SEQUENCES

3.2.4.2.1 DIAGRAM



3.2.4.2.2 DESCRIPTION

Actors	Admin
Goal in context	The purpose of this function is to enable admin to delete existing instructor's account.
Preconditions	Admin should be logged in to the system.
Trigger	Admin wants to delete an instructor account from the system.

3.2.4.2.3 NORMAL FLOW OF EVENTS

1. Admin clicks instructors list button located at the center of the page.
2. System shows all instructors list.
3. Admin clicks delete button that located near the instructor's name.
4. System appears a dialog to make admin confirm his/her request.
5. Admin confirms his/her request.
6. System deletes the instructor's account.

3.2.4.2.4 ALTERNATIVE FLOW OF EVENTS

1. Admin does not confirm his/her request.
2. System takes admin to the previous page.

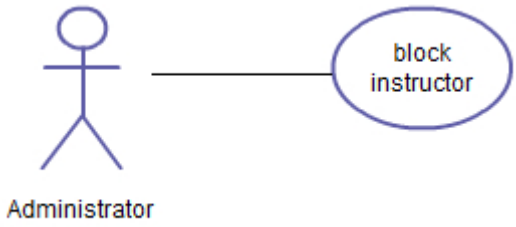
3.2.5 BLOCK INSTRUCTOR

3.2.5.1 BACKGROUND INFORMATION

When an instructor's account is needed to block temporarily, admin will perform this action.

3.2.5.2 ACTION/RESPONSE SEQUENCES

3.2.5.2.1 DIAGRAM



3.2.5.2.2 DESCRIPTION

Actors	Admin
Goal in context	The purpose of this function is to enable admin to block existing instructor's account.
Preconditions	Admin should be logged in to the system.
Trigger	Admin wants to block an instructor's account.

3.2.5.2.3 NORMAL FLOW OF EVENTS

1. Admin clicks instructors list button located at the center of the page.
2. System shows all instructors list.
3. Admin clicks block button that located near the instructor's name.
4. System appears a dialog to make admin confirm his/her request.
5. Admin confirms his/her request.
6. System blocks the instructor's account.

3.2.5.2.4 ALTERNATIVE FLOW OF EVENTS

1. Admin does not confirm his/her request.
2. System takes admin to the previous page.

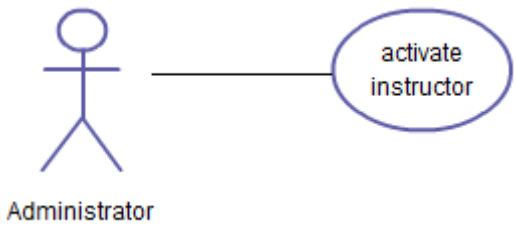
3.2.6 ACTIVATE INSTRUCTOR

3.2.6.1 BACKGROUND INFORMATION

When an instructor's account is not needed to block anymore, admin will activate his/her account.

3.2.6.2 ACTION/RESPONSE SEQUENCES

3.2.6.2.1 DIAGRAM



3.2.6.2.2 DESCRIPTION

Actors	Admin
Goal in context	The purpose of this function is to enable admin to activate instructor's blocked account.
Preconditions	Admin should be logged in to the system.
Trigger	Admin wants to activate instructor's blocked account.

3.2.6.2.3 NORMAL FLOW OF EVENTS

1. Admin clicks instructors list button located at the center of the page.
2. System shows all instructors list.
3. Admin clicks activate button that located near the instructor's name.
4. System activates the blocked account.

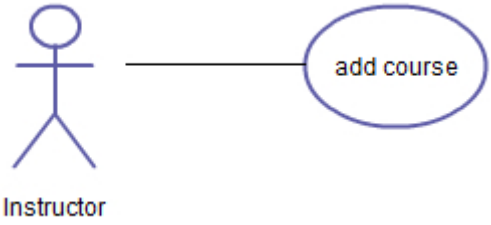
3.2.7 ADD COURSE

3.2.7.1 BACKGROUND INFORMATION

Course is root of all contents in system. It includes all related chapters.

3.2.7.2 ACTION/RESPONSE SEQUENCES

3.2.7.2.1 DIAGRAM



3.2.7.2.2 DESCRIPTION

Actors	Instructor
Goal in context	The purpose of this function is to enable instructor to add new course to the system. Then, the instructor will add chapters and pages to the course.
Preconditions	Instructor should be logged in to the system.
Trigger	Instructor wants to add new course to system.

3.2.7.2.3 NORMAL FLOW OF EVENTS

1. Instructor clicks add course button that is located at the top of the page.
2. Instructor enters general information of the course.
3. Instructor clicks add button.
4. System adds new course to the database.

3.2.7.2.4 ALTERNATIVE FLOW OF EVENTS

1. Instructor clicks cancel button.
2. System takes instructor to the previous page.

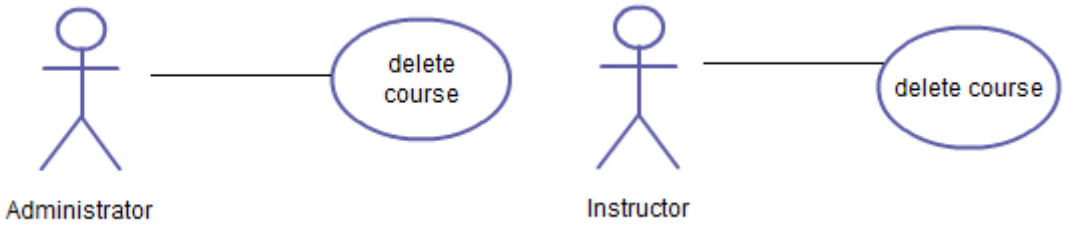
3.2.8 DELETE COURSE

3.2.8.1 BACKGROUND INFORMATION

When a course is not needed anymore, owner of the course or system admin will remove the course from the system. All content related to the course will be removed from the system.

3.2.8.2 ACTION/RESPONSE SEQUENCES

3.2.8.2.1 DIAGRAM



3.2.8.2.2 DESCRIPTION

Actors	Admin, Instructor
Goal in context	The purpose of this function is to enable Admin/Instructor to delete existing course from the system.
Preconditions	Admin/Instructor should be opened the course list and the course that is removed should be added to the system.
Trigger	Admin/Instructor wants to delete course from system.

3.2.8.2.3 NORMAL FLOW OF EVENTS

1. Admin/Instructor clicks "-" button that located near the course name.
2. System appears a confirmation dialog for Admin/Instructor to confirm his/her choice.
3. Admin/Instructor confirms his/her choice.
4. System removes the course and all related content from the database.

3.2.8.2.4 ALTERNATIVE FLOW OF EVENTS

1. Admin/Instructor does not confirm his/her choice.
2. System takes Admin/Instructor to the previous page.

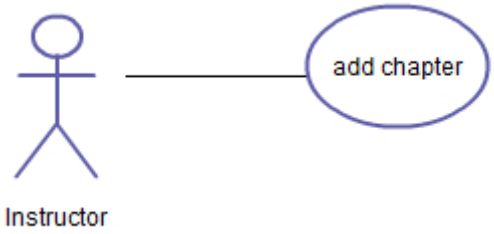
3.2.9 ADD CHAPTER

3.2.9.1 BACKGROUND INFORMATION

Chapter is second level of our education tree. All chapters will include pages of the courses.

3.2.9.2 ACTION/RESPONSE SEQUENCES

3.2.9.2.1 DIAGRAM



3.2.9.2.2 DESCRIPTION

Actors	Instructor
Goal in context	The purpose of this function is to enable Instructors to add new chapters to courses. A chapter will include pages.
Preconditions	Instructor should be logged into the system and the course in which the chapter located should be added before.
Trigger	Instructor wants to add a chapter to the course.

3.2.9.2.3 NORMAL FLOW OF EVENTS

1. Instructor selects course in which the chapter will be added.
2. System opens chapter list.
3. Instructor clicks add new chapter button.
4. System opens new chapter adding form.
5. Instructor enters general information of the chapter.

6. Instructor clicks add button.
7. System adds new chapter to the related course.

3.2.9.2.4 ALTERNATIVE FLOW OF EVENTS

1. Instructor clicks cancel button.
2. System takes instructor to the previous page.

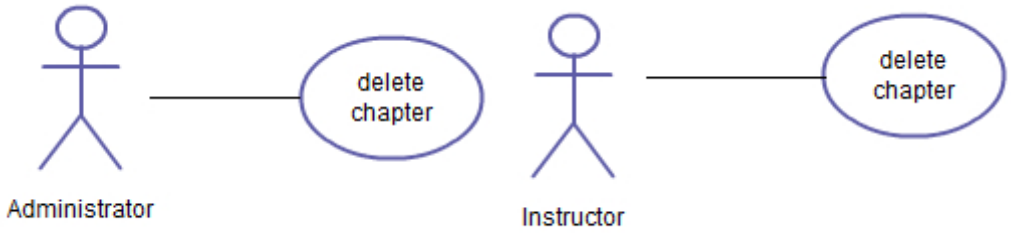
3.2.10 DELETE CHAPTER

3.2.10.1 BACKGROUND INFORMATION

When a chapter is not needed anymore, owner of the course or system admin will remove the chapter from the system. All pages related to the chapter will also be removed from the system.

3.2.10.2 ACTION/RESPONSE SEQUENCES

3.2.10.2.1 DIAGRAM



3.2.10.2.2 DESCRIPTION

Actors	Admin, Instructor
Goal in context	The purpose of this function is to enable Admin/Instructor to delete existing chapter from the system.
Preconditions	Admin/Instructor should be opened the chapter list and the chapter to be removed should be added to the system.
Trigger	Admin/Instructor wants to delete chapter from system.

3.2.10.2.3 NORMAL FLOW OF EVENTS

1. Admin/Instructor clicks "-" button that located near the chapter name.
2. System appears a confirmation dialog for Admin/Instructor to confirm his/her choice.
3. Admin/Instructor confirms his/her choice.
4. System removes the chapter and all related pages from the database.

3.2.10.2.4 ALTERNATIVE FLOW OF EVENTS

1. Admin/Instructor does not confirm his/her choice.
2. System takes Admin/Instructor to the previous page.

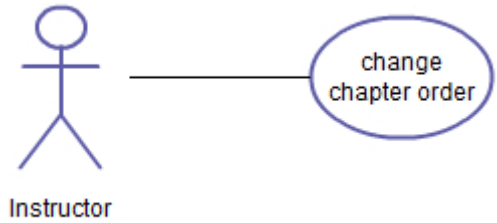
3.2.11 CHANGE CHAPTER ORDER

3.2.11.1 BACKGROUND INFORMATION

An Instructor will not need to add chapters sequentially. He/she will be able to add chapters in a mixed order and then arrange them by changing chapter order.

3.2.11.2 ACTION/RESPONSE SEQUENCES

3.2.11.2.1 DIAGRAM



3.2.11.2.2 DESCRIPTION

Actors	Instructor
Goal in context	The purpose of this function is to enable Instructors to change order of chapters.

Preconditions	Instructor should be logged into the system and there should be at least two chapters in the course.
Trigger	Instructor wants to change the order of chapters.

3.2.11.2.3 NORMAL FLOW OF EVENTS

1. Instructor clicks to the up/down button located near the name of the chapter.

2. System moves the chapter up/down.

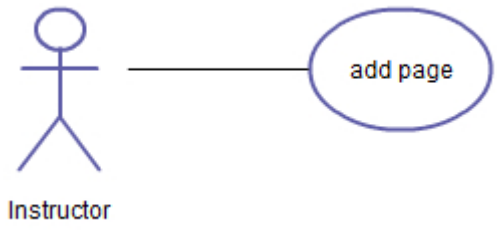
3.2.12 ADD PAGE

3.2.12.1 BACKGROUND INFORMATION

A page is the final level of our education tree. All informative contents like videos, texts or images will be in a page.

3.2.12.2 ACTION/RESPONSE SEQUENCES

3.2.12.2.1 DIAGRAM



3.2.12.2.2 DESCRIPTION

Actors	Instructor
Goal in context	The purpose of this function is to enable Instructors to add new pages to chapters. A page may contain video, text or image.
Preconditions	Instructor should be logged into the system and the chapter in which the page located should be added before.
Trigger	Instructor wants to add a page to the chapter.

3.2.12.2.3 NORMAL FLOW OF EVENTS

1. Instructor clicks add page button.
2. System brings new page adding form to the instructor.
3. Instructor chooses a template for the page.
4. Instructor adds appropriate contents according to the template.
5. Instructor clicks save button.
6. System adds new page.

3.2.12.2.4 ALTERNATIVE FLOW OF EVENTS

1. Instructor clicks cancel button.
2. System takes Instructor to the previous page.

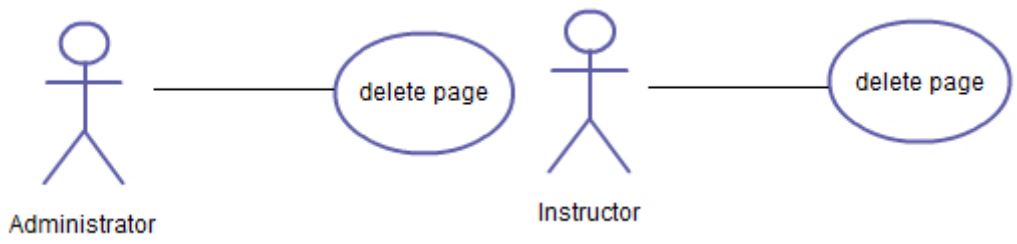
3.2.13 DELETE PAGE

3.2.13.1 BACKGROUND INFORMATION

When a page is not needed anymore, owner of the course or system admin will remove the chapter from the system. All contents related to the page will also be removed from the system.

3.2.13.2 ACTION/RESPONSE SEQUENCES

3.2.13.2.1 DIAGRAM



3.2.13.2.2 DESCRIPTION

Actors	Admin, Instructor
Goal in context	The purpose of this function is to enable Admin/Instructor to delete existing page from the system.
Preconditions	Admin/Instructor should be opened the page list and the page to be removed should be added to the system before.
Trigger	Admin/Instructor wants to delete page from system.

3.2.13.2.3 NORMAL FLOW OF EVENTS

1. Admin/Instructor clicks "-" button that located near the page number.
2. System appears a confirmation dialog for Admin/Instructor to confirm his/her choice.
3. Admin/Instructor confirms his/her choice.
4. System removes the page and all related contents from the database.

3.2.13.2.4 ALTERNATIVE FLOW OF EVENTS

1. Admin/Instructor does not confirm his/her choice.
2. System takes Admin/Instructor to the previous page.

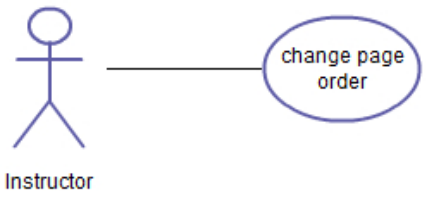
3.2.14 CHANGE PAGE ORDER

3.2.14.1 BACKGROUND INFORMATION

An Instructor will not need to add all pages sequentially. He/she will be able to add pages in a mixed order and then arrange them by changing page order.

3.2.14.2 ACTION/RESPONSE SEQUENCES

3.2.14.2.1 DIAGRAM



3.2.14.2.2 DESCRIPTION

Actors	Instructor
Goal in context	The purpose of this function is to enable Instructors to change order of pages.
Preconditions	Instructor should be logged into the system and there should be at least two pages in the chapter.
Trigger	Instructor wants to change the order of pages.

3.2.14.2.3 NORMAL FLOW OF EVENTS

1. Instructor clicks to the up/down button located near the number of the page.
2. System moves the page up/down.

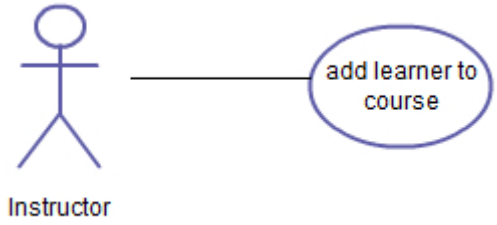
3.2.15 ADD LEARNER TO COURSE

3.2.15.1 BACKGROUND INFORMATION

When Instructor completes creating course, he/she will be able to add learners to the course. By doing so, learners will be able to see the course on their accounts and reach contents.

3.2.15.2 ACTION/RESPONSE SEQUENCES

3.2.15.2.1 DIAGRAM



3.2.15.2.2 DESCRIPTION

Actors	Instructor
Goal in context	The purpose of this function is to enable Instructors to add Learners to

	courses.
Preconditions	Instructor should be logged into the system.
Trigger	Instructor wants to add learners to course.

3.2.15.2.3 NORMAL FLOW OF EVENTS

1. Instructor clicks add learners button which is located near course name.
2. System brings learners list to the screen.
3. Instructor selects learners which will be added for the course.
4. Instructor clicks OK button.
5. System adds learners to course.

3.2.15.2.4 ALTERNATIVE FLOW OF EVENTS

1. Instructor clicks cancel button.
2. System takes instructor to the previous page.

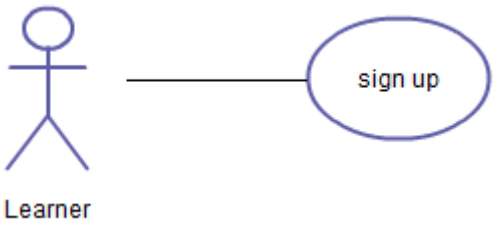
3.2.16 SIGN UP TO THE SYSTEM

3.2.16.1 BACKGROUND INFORMATION

Learners are final level users of the system. A learner will be able to attend courses which are assigned to them by instructors. Learners will register themselves to the system.

3.2.16.2 ACTION/RESPONSE SEQUENCES

3.2.16.2.1 DIAGRAM



3.2.16.2.2 DESCRIPTION

Actors	Learner
Goal in context	The purpose of this function is to enable Learners to register themselves to the system.
Preconditions	Learner should be entered the Learners home page.
Trigger	Learner wants to register himself/herself to the system.

3.2.16.2.3 NORMAL FLOW OF EVENTS

1. Learner clicks register button at the top of the page.
2. System brings new learner registration form to screen.
3. Learner fills the form and clicks submit button.
4. System checks T.C. Kimlik No. of the learner whether it is exist on the system or not.
5. System adds new Learner to the system.

3.2.16.2.4 ALTERNATIVE FLOW OF EVENTS

1. System rejects to add learner to the system due to the repetition of same T.C. Kimlik No.

3.2.16.3 FUNCTIONAL REQUIREMENTS

REQ 2: System checks whether used e-mail address already exists in system or not. If it exists, system rejects the process and warns the user.

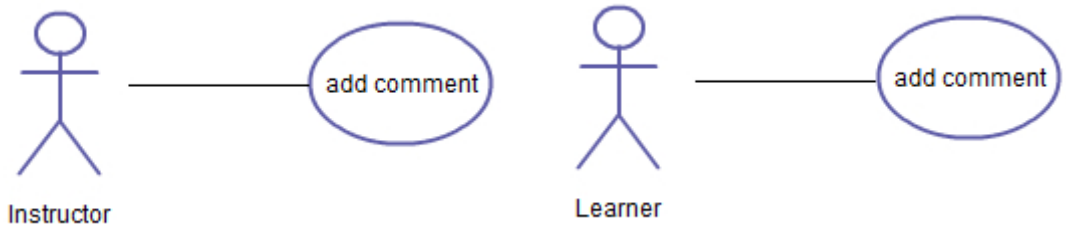
3.2.17 ADD COMMENT

3.2.17.1 BACKGROUND INFORMATION

Learners and Instructors will be able to comment courses, chapters and pages. These comments will be used like feedbacks and help improvement of contents.

3.2.17.2 ACTION/RESPONSE SEQUENCES

3.2.17.2.1 DIAGRAM



3.2.17.2.2 DESCRIPTION

Actors	Instructor, Learner
Goal in context	The purpose of this function is to enable Instructor/Learner to comment every course/chapter/page in system.
Preconditions	Instructor/Learner should be opened the course/chapter/page screen.
Trigger	Instructor/Learner wants to give comment to a course/chapter/page.

3.2.17.2.3 NORMAL FLOW OF EVENTS

1. Instructor/Learner adds his/her comment into the comment box which is located at the bottom of the page.
2. Instructor/Learner clicks send button.
3. System adds comment to the database.

3.2.17.3 FUNCTIONAL REQUIREMENTS

REQ 3: System checks whether the size of the comment text is above 500 characters or not. If it is longer than 500 characters, system rejects the process and warns the user.

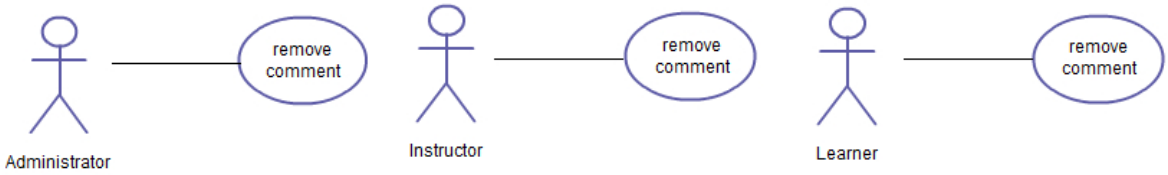
3.2.18 REMOVE COMMENT

3.2.18.1 BACKGROUND INFORMATION

Admin will have right to delete all comments in system, Instructors will have right to delete all comments in their courses (and every content related to them), and Learners will have right to delete only their own comments.

3.2.18.2 ACTION/RESPONSE SEQUENCES

3.2.18.2.1 DIAGRAM



3.2.18.2.2 DESCRIPTION

Actors	Admin, Instructor, Learner
Goal in context	The purpose of this function is to enable Admin/Instructor/Learner to delete a comment from the system.
Preconditions	Admin/Instructor/Learner should be opened the comment to be deleted.
Trigger	Admin/Instructor/Learner wants to delete comment from a course/chapter/page.

3.2.18.2.3 NORMAL FLOW OF EVENTS

1. Admin/Instructor/Learner clicks 'x' button that is located near comment.
2. System brings a confirmation page to Admin/Instructor/Learner.
3. Admin/Instructor/Learner confirms his/her choice.
4. System deletes comment from the system.

3.2.18.2.4 ALTERNATIVE FLOW OF EVENTS

1. Admin/Instructor/Learner does not confirm his/her choice.
2. System takes Admin/Instructor/Learner to the previous page.

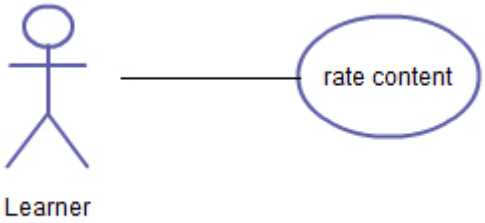
3.2.19 RATE CONTENT

3.2.19.1 BACKGROUND INFORMATION

Every Learner will be able to rate a course, chapter or a page. This feature will give reference to the Instructor to improve content.

3.2.19.2 ACTION/RESPONSE SEQUENCES

3.2.19.2.1 DIAGRAM



3.2.19.2.2 DESCRIPTION

Actors	Learner
Goal in context	The purpose of this function is to enable Learners to rate a course, chapter or a page.
Preconditions	Learner should be logged in to the system and opened the content screen to be rated.
Trigger	Learner wants to rate a content in the system.

3.2.19.2.3 NORMAL FLOW OF EVENTS

1. Learner clicks rate scale which is located at the bottom of the page according to his/her vote.
2. System saves the rating that is given.

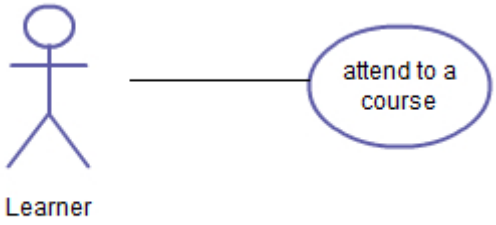
3.2.20 ATTEND TO A COURSE

3.2.20.1 BACKGROUND INFORMATION

Attending to a course is essential action that a Learner does. A Learner will be able to attend a course that is assigned to him/her before. Course flow will be sequential. This means a Learner will not be skip to further pages without completing existing page.

3.2.20.2 ACTION/RESPONSE SEQUENCES

3.2.20.2.1 DIAGRAM



3.2.20.2.2 DESCRIPTION

Actors	Learner
Goal in context	The purpose of this function is to enable Learners to attend courses that are assigned to him/her by instructors.
Preconditions	Learner should be logged in to the system and at least one course should be assigned to him/her.
Trigger	Learner wants to attend to a course.

3.2.20.2.3 NORMAL FLOW OF EVENTS

1. Learner selects course to be attended from the course list.
2. Learner selects first unprocessed content.
3. Learner continues watching pages sequentially.

3.2.20.2.4 ALTERNATIVE FLOW OF EVENTS

1. Learner selects a content that is watched before.
2. Learner continues watching pages sequentially.

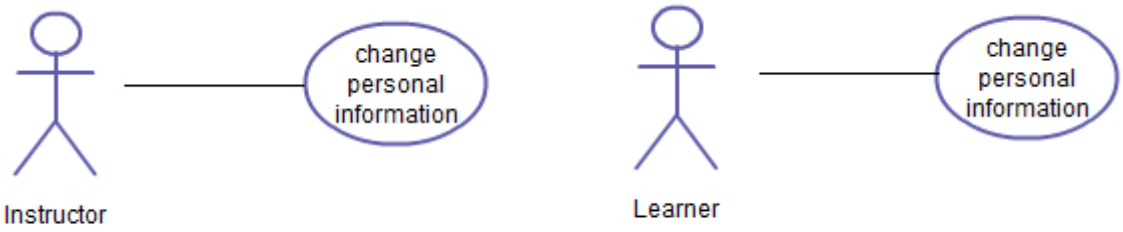
3.2.21 CHANGE PERSONAL INFORMATION

3.2.21.1 BACKGROUND INFORMATION

Learners and Instructors will be able to change their personal information.

3.2.21.2 ACTION/RESPONSE SEQUENCES

3.2.21.2.1 DIAGRAM



3.2.21.2.2 DESCRIPTION

Actors	Instructor, Learner
Goal in context	The purpose of this function is to enable Instructor/Learner to change his/her personal information.
Preconditions	Instructor/Learner should be logged in to the system.
Trigger	Instructor/Learner wants to change his/her personal information.

3.2.21.2.3 NORMAL FLOW OF EVENTS

1. Instructor/Learner clicks change account information button that is located at the top of the page.
2. System brings personal information of Instructor/Learner.
3. Instructor/Learner changes his/her personal information.
4. Instructor/Learner clicks save button.
5. System saves Instructor's/Learner's personal information.

3.2.21.2.3 NORMAL FLOW OF EVENTS

1. Instructor/Learner clicks cancel button.
2. System takes Instructor/Learner to the previous page.

3.2.21.3 FUNCTIONAL REQUIREMENTS

REQ 4: System checks whether all compulsory fields are filled or not. If not, system rejects the process and warns the user.

3.3 NON-FUNCTIONAL REQUIREMENTS

3.3.1 PERFORMANCE REQUIREMENTS

In the beginning, this application is web application. Therefore, there are some restrictions as a result of server computer, network connection and developers. Server computer should be fast and provide to open more sessions simultaneously. Network connection should be better to acquire information from server faster. Files size and number also affect the performance. Then they should be minimal. There is also another performance problem which is database. There are lots of query for database. Better optimization means better database works. Externally, "kaltura.com" has also performance effect on working process. This performance effect cannot be optimized or changed. There are two types of performance effects such as static performance and dynamic performance.

3.3.1.1 STATIC PERFORMANCE

Some of features depend on server performance. For example; number of computer which are connected to website, number of people can connect at the same time, called capacity of system features. Assuming that server has average performance, number of computer which connected to website will be 4000-5000. Making simultaneously connection number will be 90-100. Called capacity of system will be related RAM space and size of code. This size of code is directly related dynamic growing and developer's optimization. Therefore, assuming optimized code, approximately 4500 people each for a computer can call features unlimited.

3.3.1.2 DYNAMIC PERFORMANCE

Response time depends on code efficient, server performance and number of people who make operation on server. This response time will be less than one second when number of people who connect server is less than %60 of limit number. However, there will be another performance effect such as "kaltura.com". Website will acquire also video if this page contains any video. This makes response time between 2-3 second depending on "kaltura.com" response time. Since, this website prepares desired video as desired size and quality. There is also database query performance. Optimized database and fast server will make progress less than 0.01 second for a query for %70 of operations. If there are lots of operations on multiple tables, then this time will increase maximal under 0.1 second.

3.3.2 DESIGN CONSTRAINTS

This web application contains programming languages such as ASP.NET, CSS, HTML5, MSSQL, JAVA, JAVASCRIPT and JQUERY. There will no hardware constraints. This web application is cross platform. Any hardware, which can run HTML5, runs also this application. Therefore, mobile phones, desktop computers and tablet computers can show this application.

System will be realizable. Since, this system will just work on server and show on HTML5. System is portable. Since, this is web application and it will work on any servers. Also, it can be transported to other server easily. Security is also better. There is login screen. There is no other entrance way. Sign up form includes image verification to protect from spam. Instruction is created directly admin and inappropriate videos directly delete from admin. Server part is also secure by itself. There are user level permissions that they just follow the course content.

4 DATA MODEL AND DESCRIPTION

4.1 DATA DESCRIPTION

4.1.1 DATA OBJECTS

We determine our data objects. User is the main data object. User can add a new course, chapter and page so that they are also data objects. On the other hand, there are features of this web application such as announcement, rate, video, text, image, comment. They are also data objects. Template provides us cross platform ability. This is also data object.

4.1.2 RELATIONSHIPS

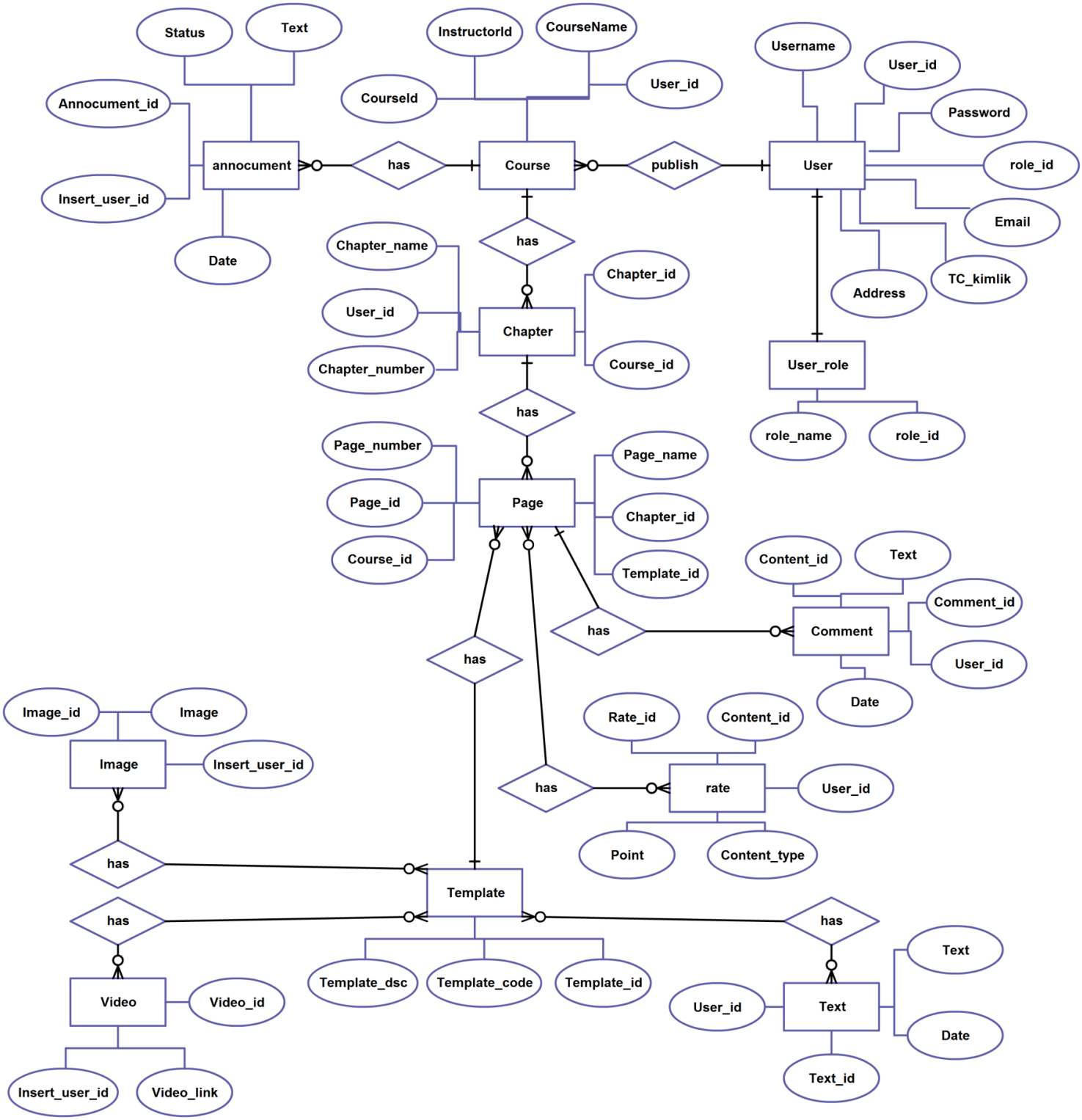


Fig5. ER Diagram

4.1.3 COMPLETE DATA MODEL

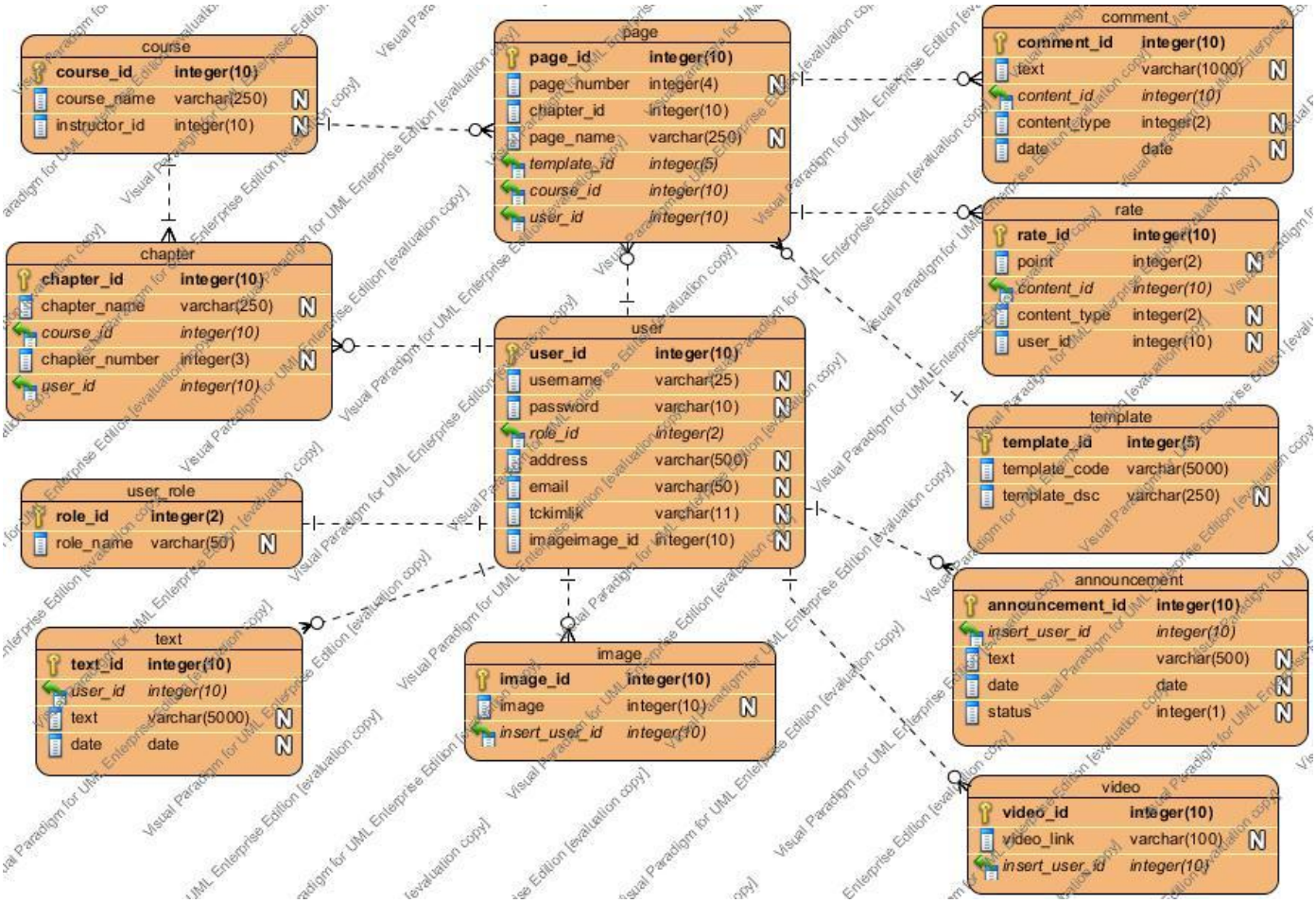


Fig6. Data Model Diagram

5 BEHAVIORAL MODEL AND DESCRIPTION

5.1 DESCRIPTION OF SOFTWARE BEHAVIOR

As indicated 2nd and 3rd sections, there are there types of user; Learner, Instructor, Admin. These users have different authorization and capabilities. Login mechanism is same for all users. They will choose their status as whom they want to login and submit valid password and ID. An additional function for Learner is signup. A Learner who is not registered must sign up and fill requested form. After his account is approved, he can login the system. Just after login, these users will be directed different pages. The behavior of the MCG is explained broadly in following subsections.

5.1.1 LEARNER

- Learner is directed to Learner screen which contains list of authorized courses to attend. He can select a course from this list. Being in this screen, he can logout at any time he wants.
- Selecting a course, now Learner is at selected Course's screen. He can rate the course and comment about it. Like previous page, Course pages contain list of chapters which Learner can choose one to continue.
- Chapter page is very similar to Course, Learner can rate and comments and select a page form Pages of the Chapter.
- At Page screen, Learner has three options; rating Page, commenting about is and attending to Course. As he chooses to attend to Course, he will be faced with Course material at selected page which can contain video, text, image or combination of them. When video is a part of content, if he watched it earlier, and logout at any point in the video, he can continue watching at that point. After finishing video, Learner can pass to next Page. When content is other than video, if there is declared minimum time limit for the Page, Learner must wait at current page for that time in order to pass next page.
- There is no platform restriction for Learner to perform all these actions.
- Learner can choose to go previous screen with back button.

5.1.2 INSTRUCTOR

- Instructor has more permissions and actions. He has similar screen order as Learner, however he has more options. In the first screen, there exists list of Courses. He can select one of them as well as creating a new Course. As he creates a Course, it appears at the Course list.
- After selecting a Course, Instructor will face with list of Chapters of Course, list of Learners registered to Course and comments done by Learners. He can reply a comment, or delete a comment. He can also change visibility of the Course to Learners and delete the Course. Instructor can also add new Learner to Course. When we come to Chapter list, Instructor can change order of Chapters, create a new Chapter and select one to go apply actions on is.
- At Chapter screen, Instructor is able to perform similar actions to actions at Course screen. He can delete a comment or reply to it. He is able to delete the chapter or change its visibility to Learners. There is a list of Pages belonging to the Chapter. With using this list, he can change Page ordering. Here are two options for next screen. When he chooses a Page from list and goes to Page screen. Another option is creating new Page than he is directed to Template screen.
- When Instructor is at Page screen, he can delete page or change its visibility. Selected comment can be deleted or replied by Instructor.
- At Template screen, first Instructor must select a template from already defined content templates (i.e. 1video-1text, 1text, 1image-1text…). Afterwards he should form the content; if template contains video or image, he should upload them. If template contains text, he must enter the text. At this point, he can manage restrictions about the Page; Learner cannot pass next page until video finished or until x seconds passed at the page.
- At any screen, Instructor can go back and logout.

- There exists one restriction for Instructor that he must login though a desktop computer to perform all these actions.

5.1.3 ADMIN

- Admin is the most privileged user. In admin screen there are list of courses and list of instructors.
- As choosing a Course from course list, he can delete it.
- When Admin chooses to list Instructors, we can delete or deactivate the account of selected Instructor. He can also add instructor to the MCG that is why there is no signup mechanism for Instructor. From deactivated Instructors, Admin can choose an Instructor to activate.
- Likewise Instructor, Admin should login to system through a desktop computer.

5.2 STATE TRANSITION DIAGRAM

In previous section, behavior of Mobile Content Generator is covered with respect to three types of user. This section contains state transition diagram of the whole system. The diagram is at the next page.

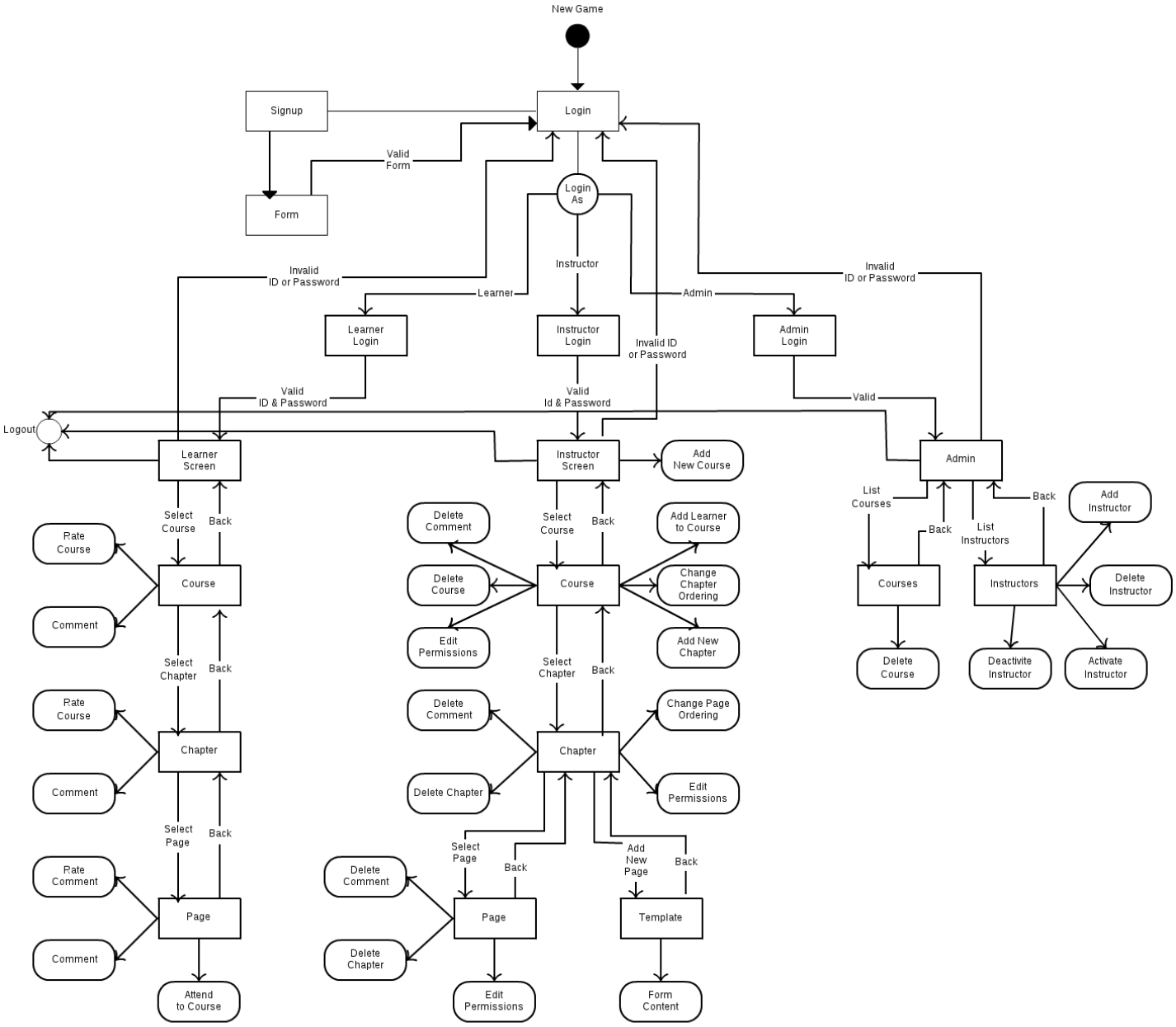


Fig7. State Transition Diagram

6 PLANNING

6.1 TEAM STRUCTURE

Our advisor from the sponsor company, e-nocta, is Emre Koştur with whom we discuss about our project process nearly once a week. However, we decided to have no hierarchy in the team since all our members have equal experience. Our plan is to divide duty of each member in each part of the project after discussing the task. As a result, each member will have information about each part of the project.

6.2 BASIC SCHEDULE

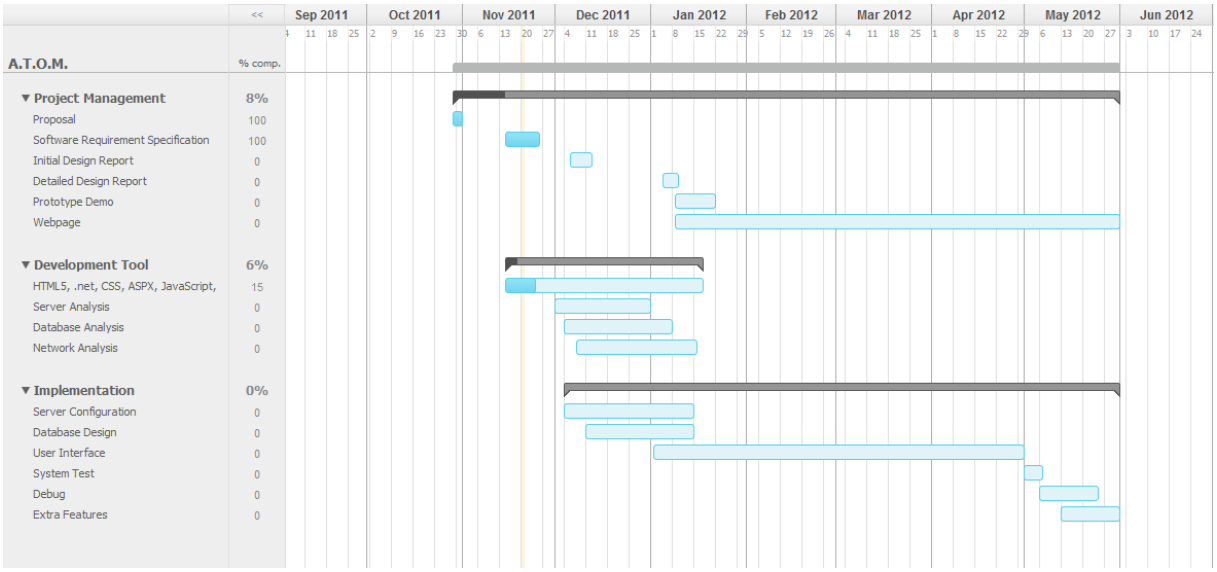


Fig8. Gantt Chart

6.3 PROCESS MODEL

Main model we will use in this project is Waterfall Lifecycle. First we have done research about market, already used software. According to Waterfall model, Requirements Analysis and Specification is second step. With this SRS report we came to end of second step and got started design process. Section 4 in this document states simple design of data. After design, as following Waterfall model we will continue with implementation. While we come near to end of implementation, we will deal with maintenance [3].

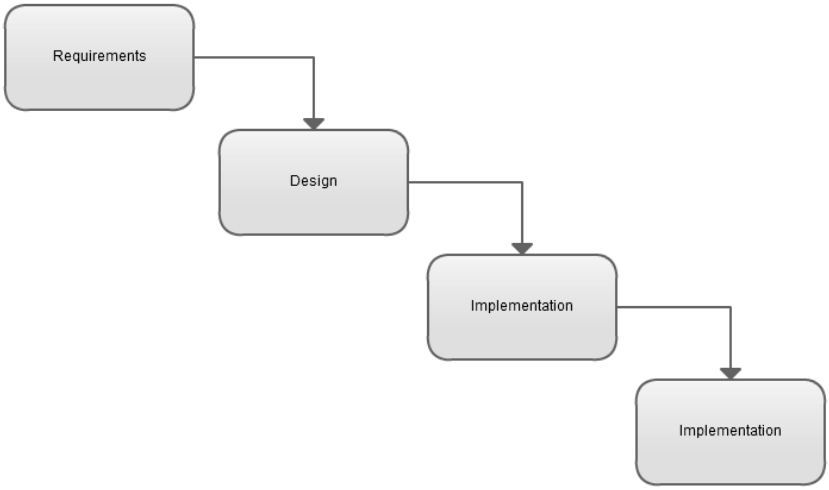


Fig9. Waterfall Lifecycle

Another model we adopt is Assembling Reusable Components which is compatible with the Traditional Lifecycle Model (Scacchi, 2001). Since MCG will be able to be used by e-nocta with several projects as a component, reusability is an important subject. This model enables that MCG can also be used for several purposes along with e-learning. As an instance of reusability, we are going to integrate existing software named Kaltura for video management.

7 CONCLUSION

This software requirements specification document gives information about the project, Mobile Content Generator, which is a web-based software that simplifies forming e-learning material for instructors and enables learners to reach the material through different platforms. At the beginning of this document, problem is defined and recent condition of the E-learning market is described. Afterwards, functionality of the application, interface requirements of the application, performance, attributes,and design constraints are clarified. In the overall description part, all of the functions that this application will perform is explained one by one for developers and for users. At the previous part, aproximate plan of the project is shown. This document will hopefully constitute the basis for design, development, and testing of the project.