Software Requirements Specification

For

Online Training Application

Version 1.0 approved

Prepared by................

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1. Introduction

1.1 Purpose

This document provides an overview of the entire Software Requirement Specification with environmental characteristics, goal of implementation, functional requirements, non-functional requirements as well as behavioural description of the product. The aim of this document is to gather, analyse and give an in-depth insight of the complete **Online Training Application** by defining the problem statement in detail. It also concentrates on the behavioural description of the system. The detailed requirements of the **Online Training Application** are provided in this document. The SRS is intended for users and owners and of course developers of **Online Training Application**.

1.2 Overview

The Rest of the document examines the comprehensive specification of Online Training Application. Section 2 of the SRS present the implementation of Strategies, guidelines to be followed, development process goes under how many phases? What will be the input to that phase? And what would be the expected output?, why it is necessary to go through these phases?. Section 3 is an answer to the question such as what is Online Training Application? What are the functions? Which functions make this product useful and different from other?, while as, why this product is necessary to be developed?, and ultimately who is going to use this system?. Section 4 is a detail discussion of requirements of functions of perspective users. Next, section is going to deal with the boundary or limitation and constraint within which product must perform well. Final Section is a concise study of the behaviour of system.

1.3 Environmental Characteristics

1.3.1 Hardware

Server Side:

Cloud based live streaming server, with basic configuration for running web application such as apache server is necessary for deploying and testing of this system.

Client Side:

Computer with speaker, microphone and webcam facility.

1.3.2 Software

Server:

Operational system: Unix/Linux

Web Server: Apache

Programming language: PHP

Database: MySQL

Client:

Operational system: Unix/Linux /Windows

Software: Any kind of web browser with JavaScript and HTML 5.0 support

1.3.3 People

Interfaces of product like this should be so easy that any person with limited skills of internet, web browser and computer can use this application for their learning purpose.

2. Goals of Implementation

- Follow the guiding principles established for the project.

- Maximize the opportunities and usage of the new system by search engine friendly scripts.

- Develop a comprehensive timeline; and develop work flow and decision making to insure that milestone dates are met and the project is completed within the established timeline.

- Develop and follow decision making structure will insure that required decisions are made within the designated time frame in order to keep the project on time and on budget.

- Manage implementation costs to stay within the established project budget.

- Develop and follow strategies that will result in an orderly and efficient transfer of system knowledge to users.

Glance of model which is going to be followed during the development phase, it is an answer of these questions:

1. Development process goes under how many phases?
2. Why it is necessary to go through these phases?
3. What will be the input and output to that phase?
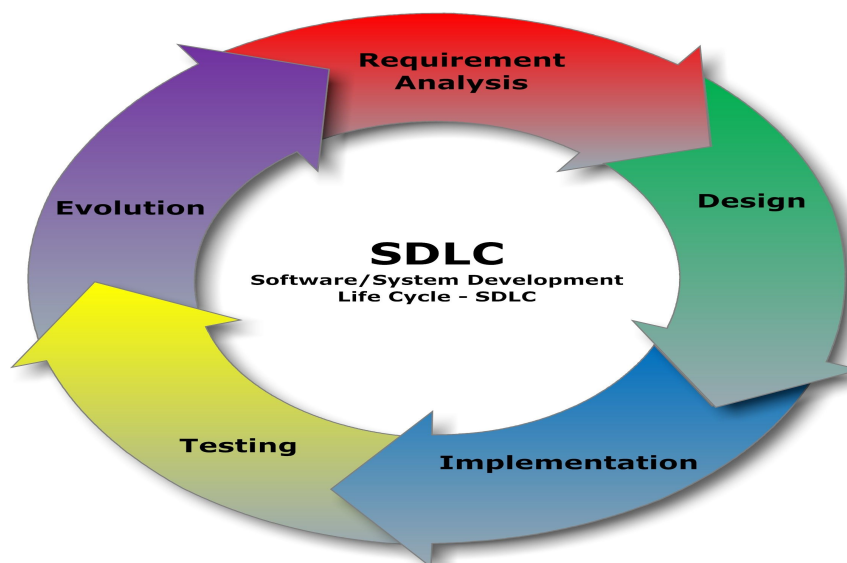
Block diagram of phase and their sequence

This application development will have requirement analysis, design, implementation or coding, testing and evolution phases. Where requirement analysis deals with the gathering of requirement of the application, why application is needed, who is using the system, design section is divided into again two sub-section high level design and detail design, both encapsulates user interface requirement, data structure design, process interaction design and algorithm design. Next phase is mapping of design document into software product by implementing algorithm and configuration methods developed during design phase. Then testing phase start with partially developed codes of application and in evolution phase deployment of application is occurred and some form of maintenance work goes under this phases.

Following this model of software development recues the complexity of software, so developers and client agencies find it productive because it concentrate on one task at a time.

3. Overall Description

3.1 Product Perspective

The benefits of technology should reach to the maximum extent. Online Training Application is a portal for trainers and trainee. This product has the capability to be used as a corporate training tool to the online learning platform. Application helps trainer to use their ability to maximum extent by providing them a virtual interface where they can manage their classroom, prepare their course content, distribute among trainee or students. Application helps Students to learn at comfortable time and location with a feeling of actual classroom without being in dedicated class. It gives user an opportunity to learn in their own time.
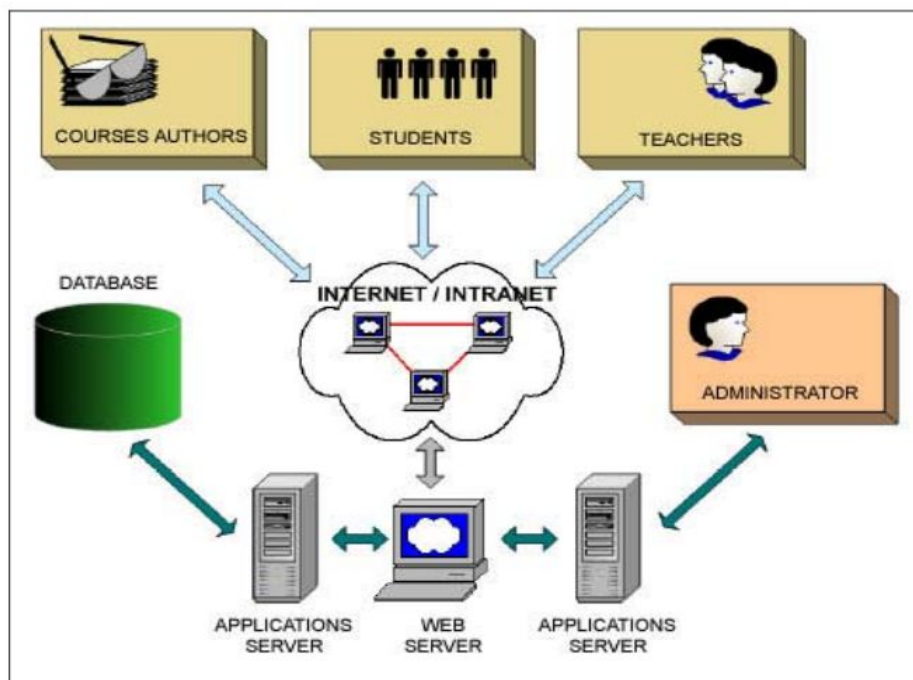
Structure Diagram of Online Training Application depicts elaborated behaviour different component of system. Have a look on it
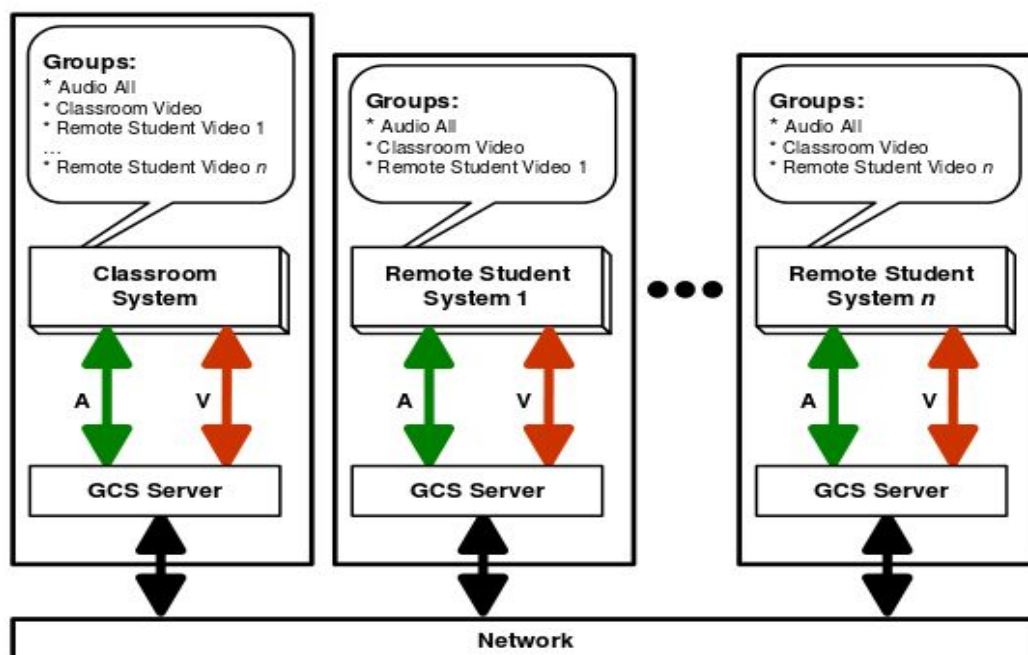
3.2 Product Functions

The main purpose of the Online Training Application is to apply a new learning method called Virtual learning or E-Learning. Thus, it should include all the traditional training methodologies such as choose a course, being register for a class, appear for class in virtual class room, should raise a questions, and use of advance technologies like live streaming, audio – visual communication between trainer and trainee. Some advance feature other than above is mentioned below:

- Registration module for trainee and trainer.

- Login section for each type of users

- Dashboard for every users, with associated functions

- Section of news, FAQ, information and administration of those announcements.

- Output an HTML file with video frame, slide frame and a table of contents of course material. This HTML page must be viewable in all popular browsers.

- Provide buttons for forwarding and rewinding the video.

- The users should be able to click on some arbitrary link in the table of contents and start the video corresponding to that cue point.

- Organize Test and quiz

- Manage course and study material of that courses

- Record video and play it later.

3.3 User Classes and Characteristics

There are essentially three classes of users for Online Training Application, first one is the learner we call it for trainee or student. Who will come to this portal to choose a course, attend a live class, appear for a test, view and download course content. Second one is the trainer who is allowed to conduct a live class, share whiteboard and screen, upload a course content, notes, assignments and other educational material. Last and most import user is administrator who is allowed to control learning activities by the functions like trainer management, schedule training, assign course and trainer, manage classroom and course.

4. Functional Requirements

Requirement with collared in Green in table is available for all type of users. Requirement with collared in cyan will available for administrator and trainer. Requirement with no any colour will available for only that type of users

4.1 User Class Administrator

An Administrator is a super user who can create any other type of users. In addition to this an administrator will have the ability to create Trainer and Trainee users. This user also has the facility to add, edit and delete courses. Each function of the administrator has been explained in detail in the table below.

Sl. No.	Short Description	Description in Detail
4.1.1	User management module	The user management module will allow administrators and trainers to perform all user management functions like approval of students, trainers, learning courses, access filters and help manage them. User Management functions is explained in detail below.
4.1.1.1	Create User	The system will allow creation of three types of users as mentioned above. Only administrators and teachers will be allowed to create users. As Administrators are super users, he/she will be allowed to create users of any type. Teachers will only be allowed to create students for his/her own learning course hat he/she is managing. When a user is created, he/she will be activated by default. If need be, the administrator or teacher will be given the option to deactivate the user. Deactivation will disallow the user to logon to the learning portal. External users will not be allowed to log on to the learning portal.
4.1.1.2	Modify User	This option will allow administrators, teachers to modify user profiles. As mentioned above, administrators can modify the profile of any user but teachers will be allowed to modify the profiles of only those users (students) that belong to his learning course. For instance, TeacherA will not be allowed to modify the profile of a TeacherB user and vice versa. Also teachers and administrators will be able to view the user details.
4.1.1.3	Delete User	It will be possible to delete only teacher/student user from the system. Once a user is deleted from the system, he/she will not be able to login to the learning portal. If a deleted user needs to be given access to the portal, he/she will need to be recreated. Only teachers and administrators will be allowed to delete/disable users. An administrator will be allowed to delete/disable any user while the teacher user will be allowed to delete those users that belong to his course.
4.1.1.4	Search Users	The system should allow administrator/teacher user to search for other users. The search string from the Graphical User Interface (GUI) will be collected and

Sl. No.	Short Description	Description in Detail
		matched against the user name. The system should allow the users to search users within existing accounts. If the user name is not known, the system should allow a generic search and list all the users. There will be a search filter that will let users set their search criteria. A user will be allowed to search for the following types of users. • Active Users • Disabled Users • All Users
4.1.2	Authentication	After a user submits his credentials at the login page the credentials will be collected and validated against security repository, which is store on database. If user is found to be matching, the user will be allowed access to the learning portal. The authentication module will not allow disabled/deleted users and expired users to log on to the portal.
4.1.2.1	Authorization	Administrators/Teachers will be allowed to see the link for uploading static documents and generation of learning courses. Public users will not have access to any of these special links.
4.1.2.2	Password Policies	When a user is created, he/she will be assigned with a default password. A password policy is one in which the system does not allow the user to create a password that is less than 6 characters long and the password should be a mix of alpha numeric characters. Only characters and numbers will be accepted.
4.1.2.3	Session Expiration	Only one instance of user will be allowed to login with the same userid. If a user with login id XYZ is currently logged on and another user tries to log on with the same userid i.e. XYZ, the session for the first user should expire and the user will be requested to re-login.
4.1.2.4	Idle Timeout	Each time a user logs in, he/she will be associated with a user session. This session will have an idle time out period of 60 minutes. This means that if the user's browser is idle for 60 minutes or more, the session for the user will be expired and the user will be requested to re-authenticate himself/herself. The session time out value will be a configurable parameter.
4.1.2.5	Forgotten Password	All Users will be provided the "Forgotten Password" facility, which allows users to reset their own password once they are able to provide answers to the secret question that is challenged to them. The users' email ID will be used as user name. Once the users provide correct secret answer, a system- generated password will be mailed to their mail id.
4.1.3	Announcement	This function of module will work for trainer and trainee to get any kind of announcement from administrator side

Sl. No.	Short Description	Description in Detail
		and set any kind of announcement for trainee. For example, commencement of new classes and courses.
4.1.4.1	Create learning course	Learning courses are nothing but a collection of users who have the same level of security. Only Administrators can create learning course. An administrator will be allowed to create learning course but a teacher user will be allowed to create students only for his/her own learning course that he /she manages.
4.1.4.2	Delete learning course	The system will allow deletion of learning courses. When a learning course is deleted, all the students and teachers will be deleted from the learning course they belong to.
4.1.4.3	Modify learning course	It will be possible to modify the learning course description. Only teachers and administrators will be given this functionality. As mentioned above, only Administrators will be allowed to create learning courses.
4.1.5	Manage Schedule	This function of user will allow user to schedule a live class and assign a class to trainer.

Processing logic of above function point will be described in the detail design document.

4.2 User Class Trainer

A trainer is an second type of user of this application. Some trainers will be given the option of managing multiple student groups but most of them will manage only one student group. He/She will be a pseudo administrator with ability to create, edit or disable the users belonging to his learning course. Each function of the Trainer has been explained in detail in the table below.

Sl. No.	Short Description	Description in Detail
4.2.1	Live Classroom	User will allowed to conduct a live classroom and also enrol student scheduled by administrator
4.2.2	Manage course Content	The course content management module will allow trainers to upload, activate or deactivate all course related document like assignment, notes etc. Obviously with add, update and delete features.
4.2.3	Manage Test	This module will allow trainer to prepare set of questions and answer to organize a test and produce a result based on answers. This module will also have the add, update and delete functions.
4.2.4	Manage Quiz	This module will allow trainer to conduct a quiz based on some set of questions and make their training more effective in live classroom.

4.3 User Class Trainee

Trainee is a user with least privileges among the users. Trainee users belong to their learning course and will have access to the assigned content. Each function of the Trainee has been explained in

detail in the table below.

Sl. No.	Short Description	Description in Detail
1	Course Enrolment	This module will allow a trainer to request for enrolment in course choose by him.
2	Test Participation	This module will allow user to take participation in test organized by administrator or trainer. View scores.
3	Quiz Participation	This module will allow user to take participation in quiz organized by administrator or trainer. View scores.
4	Join Live Class	This module will allow user to take advantage of virtual learning by webcam, microphone and distance learning without reaching to the classroom.
5	Announcement	This is a module of viewing announcement set by trainer of administrator
6	Course Content	This module will allow trainee to view course content, lecture note and syllabus prepared by trainer and administrator
7	Previous classes	This module will allow trainer to view earlier record classes and their Couse material.

5. Non-Functional Requirements

This software should perform the same way irrespective to its Operating System environments. Time taken for importing files and publishing the multimedia presentation should be minimum.

Safety Requirements:

This requirement does not apply for our software as this is can't pose a threat in no way.

Security Requirements:

As all the operations are to be done within a single system security is not an issue for this software.

Quality requirements:

Quality has a number of attributes some of the important attributes for this software are

Portability: As this software is to work on multiple platforms portability is an essential attribute and we ensure this by using PHP as our programming language.

Testability: As a basic characteristic the software needs to be testable to ensure correctness.

5.1 External Interfaces

We need to take in consideration that our system will interact with external devices like microphone camera, so interaction with their driver will be necessary.

5.2 User Interfaces

To make this application useful for maximum reach of user we have create very user friendly interfaces so that any kind of user with very less skill of computer can use this system.

5.3 Software Interfaces

Interface with the camera and microphone driver with JavaScript to enable communication between cloud based streaming server and training module.
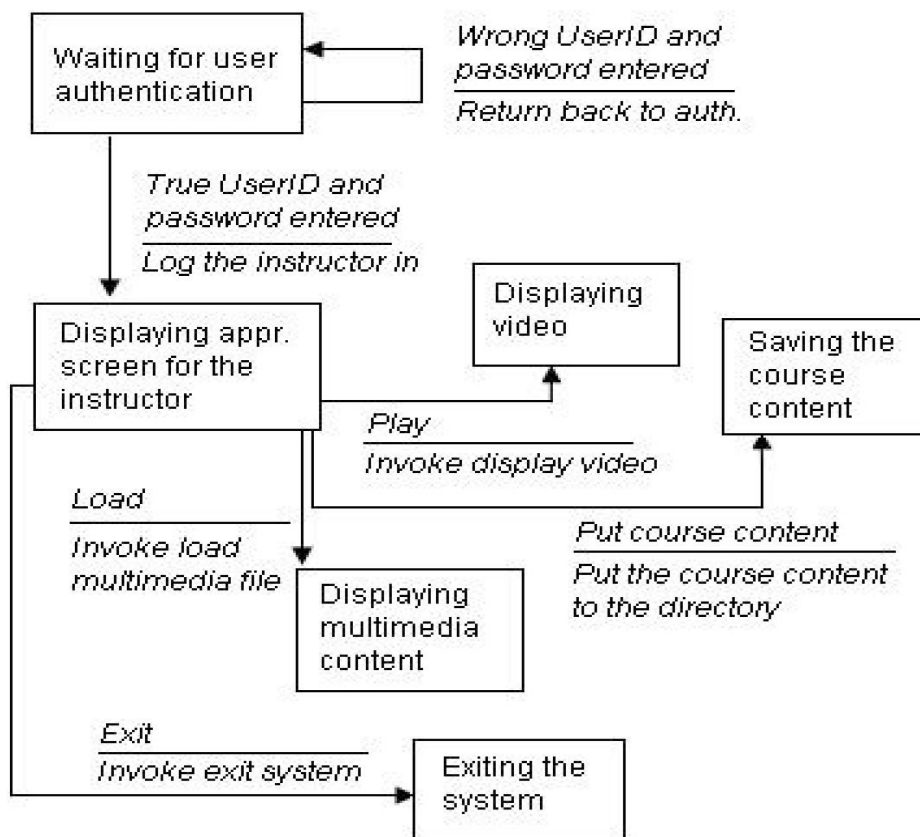
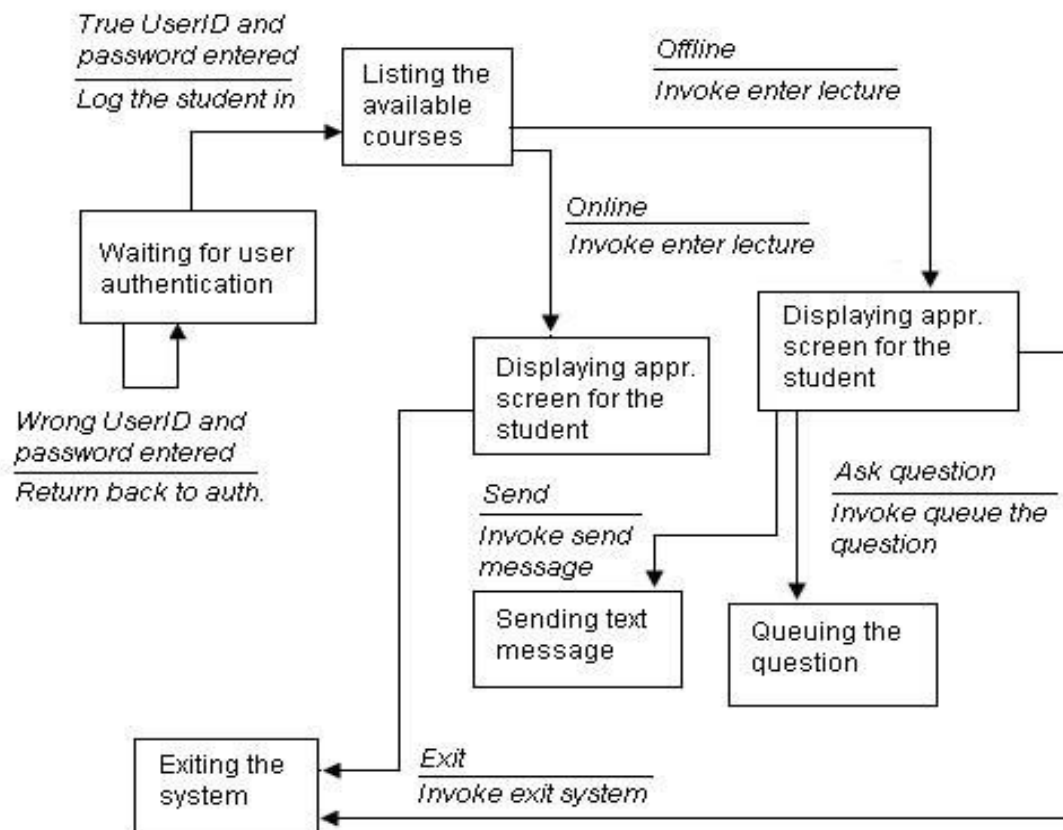# 6. Behavioural Description
6.1 Architectural Design
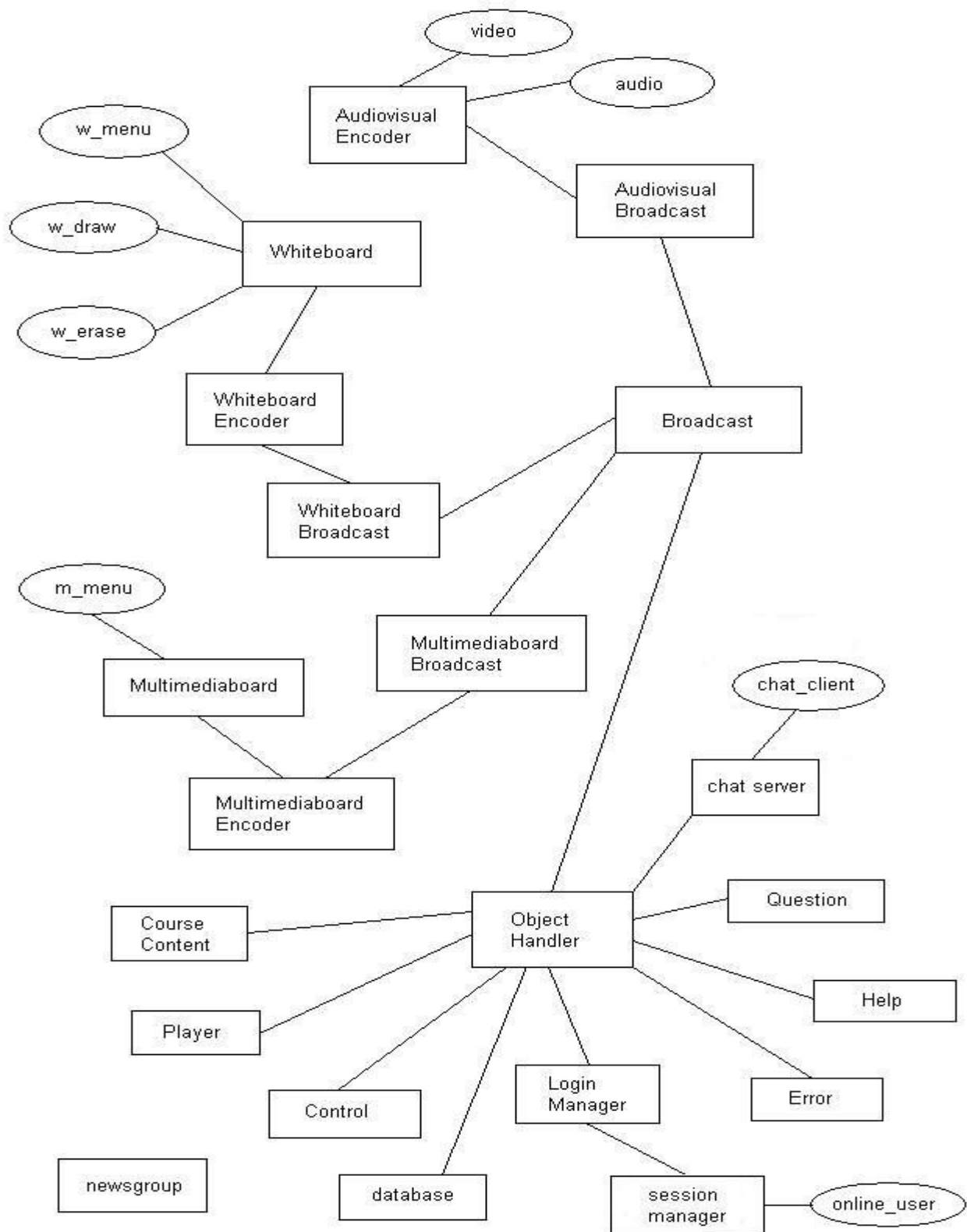
6.2 State Transition Diagram
6.2.1 Transition Diagram of Trainer

6.2.2 Transition Diagram of Trainee

6.2.3 Server Data Flow Diagram