SOFTWARE REQUIREMENT SPECIFICATION (SRS)

VITAL EDUACTION PYT LTD

This document is a detail specification of software requirements for a web application to Vital Education Private Limited. It enlists all the requirements, design principles and software analysis for the institute along with task specification details.

This document is developed by students of Federation University, Australia as a final year project. The project team consist of four members (Master of Information Technology). The following pages proceeds with requirements details. Thank you

PROJECT TEAM MEMBERS

Raja Sekhar Masina (30124524)

Anil Rai (30129276)

Bobby Sri Harsha Sajja (30129790)

Ashok Kumar Najani (30129695)

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INTRODUCTION

Vital education Pvt Ltd is an emerging institute which conduct short term courses in Melbourne, Victoria. They consist a team of aspiring personals who want to contribute quality education which is very useful to today's world. This institute is running their courses in manual processes which is very difficult to manage especially when there is overflow students. Since this institute runs short term courses, it is tough to manage all the aspects manually. Moreover, they are running courses in multiple locations so this institute faces problems while concurrently running same courses.

We have come up with an excellent idea to solve this problem by implementing their system in a web base application. Our application integrate all the manual features of the institute like current courses, future courses, payment system, result handling, certification distribution etc. So that students can access their courses via mobile phone, laptop or desktop computers. In addition to that, this system will also be able to help admin to manage his/her tasks. For example, they can add or delete courses in our application, they can modify the course contents, they can track student progresses, update progresses, put remarks on student performances etc.

All the functionalities will be accomplished within one web application so that there will be no any confusion while operating this system. All the contents of web application will be securely store in system database so that any change done by admin will remain store automatically in the database. This feature of our software helps to secure data while operating the system. Our application displays very user friendly GUIs which will help its users to navigate through the webpage with much ease. It also provides suggestions to the users while searching for something. Hence, we are very confident that this application will be of great help to users.

On the Admin side, we will be creating a separate interface called admin panel which is specifically for administrative purposes. Here, admin can add/delete, activate/deactivate, update, and change the whole looks of the site. Admin will be having very authenticated user id and password which can only give access to this system. This will help to keep the data secure. Admin will have facilities to update all the table of our database so he/she should be very careful while operating the system.

We are really glad to work on this project since it is a real industry project. We have poured all our dedications to make this project successful. However, as we are still in the process of learning, there might be some shortcomings, we will try to resolve it step by step till the end of this project.

INDUVIDUAL ROLES AND RESPONSIBILITIES

Raja Sekhar Masina: Programmer and Team Lead

Responsibilities:

-Plan and Design UI/UX components

-Implement server side scripting

-Design and develop MySQL database

-Coordinate and allocate necessary resources to the team members

Anil Rai: Frontend Developer

Responsibilities:

-Plan and Design UI/UX components

-Develop front end user interface

-Implement client side scripting

-Conduct application usability tests

Bobby Sri Harsha Sajja: System Analyst

Responsibilities:

-Analyze the project requirements

-Identify the feasible solutions

-Document all the changes to the system

Ashok Kumar Najani: Quality Assurance and Software Tester

Responsibilities:

-Monitor the quality of the outcomes

-Test the application to identify the bugs

-System maintenance

CLIENT CONTRACT

Project Proposal Form
ICT Students *'Capstone'* Project

Federation UNIVERSITY·AUSTRALIA

********** GROUP DETAILS **********	
Group Name:	A
Team Members Name, ID & Email Address:	RAJA SEKHAR MASINA, 30124524 rajsekhar300@gmail.com
Team Members Signature & Date:	M.RajSekhar 06/08/15

********** CLIENT DETAILS **********	
Client Name:	RAVISH GOYAL FOR VITAL EDUCATION
Email Address:	XPAUSTRALIA@GMAIL.COM
Contact Numbers (e.g. Mobile, Office, Fax etc.):	
Postal Address (Optional)	
Please select your profile (Community Group / Club / Business / Company / Person / Other Organisation etc.):	XP CONSULTING PTY LTD.
Client's Signature & Date:	06/08/2015

********** PROJECT DETAILS **********	
Project Title:	PROJECT VITAL EDUCATION
Project Requirements (Brief, but understandable at the initial stage):	Webpage implementation, LMS integration payment systems
Project Description (Brief, but understandable at the initial stage):	Developing a web based system for certified training courses
Type of Project:	Web Application
Platform (Hardware, Software, Technologies etc.):	HTML, CSS, JAVASCRIPT, PHP, MYSQLI
Required Proprietary Hardware, Software, Technologies etc. (if any):	

PURPOSE OF THE PROJECT

This project aims to meet all the requirements specified by our client. Our client want a web based application to manage their students' activities. They also want to handle financial transaction through this application. They need a system which can make their works easy and fast by exploiting internet technology.

In order to meet our client's expectations, we have been working voraciously in all aspects of the project. It is in rigorous progress till now. For facilitating students with their subject matters, we have decided to integrate an open software package i.e. Moodle to our system. This package will allow students to view subject materials, upload assignments, and download assignment specifications etc. students can also contact with their tutors/lecturers via email through our system. Our system will be helping to book a course that is currently being run in the institute.

Normal people can browse through our website and book a course. Before booking our course, they should register to the system providing some credentials like name of user, address, phone number, emails etc. After they register, all these details will be stored in system database and they can book their interested course. Once they click **Book** system will lead them to PayPal for transaction. The system is integrated with PayPal for payment. Once the user pay the fee, our system will send an email to the user and admin about confirmation of enrolment in the particular course. Our system also send an SMS to the user if he/she provide phone number to our system.

This project provide a very user friendly interface to users. It also facilitates admin to manage his/her tasks in many aspects.

SCOPE OF PROJECT

This project is specifically designed only for vital education Pvt Ltd. This institute have some specific requirements which might not be useful to other systems. Our project will include the following functionalities by the end of the project time frame.

GOALS AND OBJECTIVES

The following points dictates goals and objectives of our project.

- A system with authenticated login; user should have valid id and password to get in the application
- User can surf around the webpage and find useful courses.
- A separate gateway with higher privileges to admin who can modify whole contents of the application. He will be able to change course details, slide carousel, updates student details etc.
- A fully functional navigation panels for users.

- An integrated Moodle system for education purposes to the enrolled students.
- New user can register to book a course, after fee is paid, he/she will be an enrolled student.
- Enrolled student will get facilities to use the system by logging in.
- Enrolled student can login to Moodle with same id and password.
- System should recognize the users and give specific privileges accordingly.
- System should keep record of all the students even after their graduation and if they want to reenroll, our system should recognize them and give automatic entry just by activating the user.
- Admin can block users if he/she want and this blocking should stop that particular user from accessing to all the system entities. For example Moodle.
- Tutors should have higher privileges than students, admin should have the highest features. Admin can block tutors and students. Tutor can see assignment, download them, mark them, upload them and remark them. Student can see their grades, email to tutors etc.
- All the users should be able to logout. It should disconnect the users from the system then.

PROJECT ASSUMPTIONS

The following points dictates project assumptions to our project.

- The project requirements are precise and accurate.
- The interface designed by our team will be liked by our client.
- The system we developed will be compatible to the new system that will be developed till 2020.
- The application will be extendable or modifiable to make it compatible for later technology.
- The application will be robust and rigid to the threads in internet.
- It will be resistible to online viruses, warms, Trojans etc.
- The time we allocated will be just enough for our project to be completed.
- The system will be easy to maintain it in future.
- All the browsers like Google Chrome, Firefox, and Internet Explorer will accept all the features that we implemented in our website.
- All the components of our application will function properly and consistently for our client as it should be.
- The database will not be corrupted and fail while working.
- Admin will not misuse the system as he/she has higher privileges.

PROJECT CONSTRAINTS

There will be some pit hole in any project. There will be two type of constraints mainly, namely: business constraints and technical constraints. Our project accounts some constraints which are discussed below.

BUSINESS CONSTRAINTS

This type of constraints deals with budget, time and product quality. It should satisfy customers' expectations. Some of the business constraints for our project will be:

- Time limit for the project is very tight. It means that to complete this project in given time is really hard.
- The team members cannot contribute to the project with equal energy all the time. There will be some inequality among team members 'contribution.
- Not all team member have same level of knowledge and understandings.
- Due to very short time frame, we might have to compromise about quality of the product.

TECHNICAL CONSTRAINTS

- Use of programming language to develop an application always is not so easy. There might be unexpected errors.
- It is hard to troubleshoot the errors since we are developing the application in normal editor.
- Difficulties to produce high quality JavaScript design in this short time.
- We cannot rely on the current technology. It might have to be change in just few years.
- Difficulty in integrating Moodle system to our system.
- One task is related with other task, so if one task we could not solved might stop us from doing other task. It ultimately affects all the project development life cycle.
- This type of constraints mainly occur in coding.
- Our system may not be platform independent. It is not upon our knowledge for now
- We could not implement mobile apps for vital education even though, we have plan to implement it in the first phase of planning. It is because of time constraints.
- Video conferencing cannot be fully function to our system. It will be left as future enhancement plan. If the client want us to implement it in future, we can do it. But for now, we could not do it because of time constraints.

ACCEPTANCE CRITERIA

Our team and client have accepted those constraints and limitation which will not be possible to be dealt in this short period of time. It will be kept for further enhancement plan for the application. It is great to renovate the system by implementing all these features to the application which will make the system fully functional and also extend functionality to the users. Some of the features to be extended are:

- Use virtual system for real time communication.
- Video conferencing system.
- Online chatrooms.
- Integrating social media sites which can be used in multithreaded manner.
- Separated storage system for user's data and work; cloud computing etc.

PROJECT DEVELOPMENT METHODOLOGY

After hours of research and brainstorming, we have decided to use extreme programming (XP) to do this project. This project is a medium sized project with limited time, so we decided to use XP since it is very suitable for short term projects with small or medium sized projects.

Extreme Programming (XP) is a software development methodology which is used to develop a quality product in short time duration. It has features like simplicity, communication, customer involvement, feedbacks from customer, pair programming etc. It use a test driven development (TDD) approach. In this type of development approach, refactoring is very important. First, we develop a prototype and show our customer then get feedback from customer; after then we again develop another system by implementing all the suggestions from customers and again we show it to our customers and get feedbacks. We keep on doing this process until and unless customers are happy with our product. This feature of XP makes the product develop fast and with good quality.

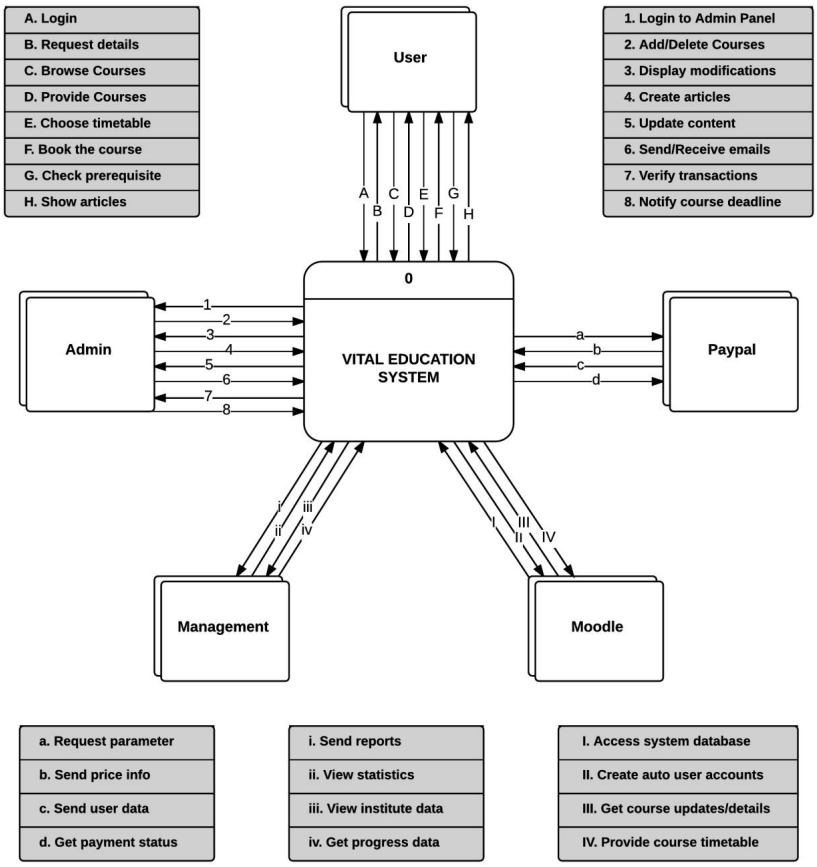
WHY WE CHOOSE XP?

The following points provide reason for choosing XP to develop our application.

- XP is light weight and fast development approach for small projects. We had short duration of time for developing whole application and make documentation of it and then implement it to our client.
- XP provide short term goals and meet that goal in short duration of time. It is again very much suitable for our project because we can set short term goals for our project and meet our client every week because we could meet our client on weekly basis.
- Pair programming is another important feature. Yes, we implemented this as well. Since in our team there were two students who wanted to code, so we implemented this feature as well.

SYSTEM WILL INTERACT WITH THE EXTERNAL ENVIRONMENT

The main system interacts with five external agents. They are Admin, Users, Management, Moodle and PayPal. Admin controls the whole system like adding, deleting or updating courses, posting articels in the blog, managing the UI, changing the webpage content etc. Management recieves the weekly reports and goes through the transcation history etc. Users are the major external agents of the system. They book courses, access moodle, navigate through webpages etc. Paypal is used to book the courses. Once the user selects a course, he/she will be directed to PayPal to make transaction. If transacion is successful, a Moodle account will be created for the new user. Moodle system database is connected with the Vital Education database through which the our users can access the Moodle courses. Users can view the course contents and related data in moodle.



REQUIREMENTS OF THE PROJECT

Requirements analysis plays a vital role in achieving success in any project. Our team spent a lot of time refining the user and client necessities and developed a detailed functional and non-functional requirements.

FUNCTIONAL REQUIREMENTS

Our functional requirements are developed based on three different perspectives. They are Admin, Enrolled User and Guest user.

GUEST USER

Register to the web system: The user can register to the Vital Education system by providing the required information like username, email, password etc.

Access Blog articles: Any guest user can access the blog and articles included in it.

Post Comment in Blog article: To post a comment, like or share the articles, the user should log in to the system

Make an enquiry: If the guest needs any additional information about the course, they can make an enquiry by sending an email to the corresponding staff.

Get the location map: An embedded google map should be provided to check the location and directions to the locations where the courses are being held.

ENROLLED USER

An enrolled user should be able to perform all the tasks that a guest user can do as well some additional functions which were listed below.

Login to the web system: The registered user can log in into the system by providing the valid username and password.

Reset Password: A forgot password option should be included in the login page to rest the password and the email will be sent to the address given at the time of registration.

Browse the webpage: Any user (Guest or Enrolled) can access the webpage and navigate through the system using the provided user interface.

Book a course: User can book a course by choosing one from the list of available courses and selecting the time table. To book a course, the user should be logged in to the system. If not, the system will redirect to the login page.

Choose Availability: Once the course is selected, the user can choose their preferable timing from the list of available timings.

Make PayPal Transaction: After choosing the course and availability, system should redirect the user to PayPal website with parameters like user id, course id and course price.

Auto generate Moodle account: The system should generate a Moodle account for the user as soon as the payment is successful.

Send account verification mail: The user should receive an email to verify the account and reset the Moodle password.

Access Moodle courses: The user should be able to access only the course that was enrolled in the Vital Education web system.

Send and receive emails: All the users can send as well as receive emails after logging in to the Moodle system.

Upload assignments: Moodle users can upload various file formats into Moodle system for their assignments.

ADMINISTRATOR

As per the client requirements, an admin panel is to be designed through which the admin can add, remove, change or update almost the whole GUI of the system as well as the system database which will reflect the main system with which the users interact.

Login to Admin Panel: Admin can login to the admin panel using the admin credentials. As per the client specifications, only one admin account will be created and anyone in the management panel will use the same credentials to login to the system.

Add/Delete courses: Admin can add and delete the courses into the database through admin panel. Adding a course involves providing all the details of the course in the given fields.

Update courses: Admin can modify the available courses according to the management requirements. A frequent updating of time table is required since the availability of the trainer changes.

Activate/Deactivate courses: Courses can be either activated or deactivated by changing the status of the course which will reflect the changes in the live system. A deactivated course will not be visible in the live system.

Reset Password: If a user cannot reset the password for any reason, the admin should be able to access the user table and reset the password for the user.

GUI modification: Admin will be provided with a GUI that is similar to the live system where he/she can change the web elements like course description, pictures etc.

Delete/Block users: Admin should be able to block or delete a user from the database.

Send and receive emails: Admin can send and receive emails through the admin panel.

Assign tutor: Assigning tutors to the course can be done in the course updating page where the admin can get the list of tutors from which he/she can choose one.

Change user access permission: User access in the Moodle depends upon the level of permissions they have. Admin can change the access level of the users in the Moodle admin panel.

FORWARD AND BACKWARD TRACTABILITY MATRIX

Project Name		Vital Education				
Project Manager		Raja Sekhar Masina				
Project Description		Developing a Web system for Vital Education Pty Ltd for conducting short term courses which involves an admin panel and Moodle.				
ID	**Action**	**Functional requirements**	**Status**	**Test case number**	**Priority**	**Comments**
ADMINISTRATOR						
FWD01	Login to Admin Panel	RQ01	Completed	TCF01	High	
FWD02	GUI modification	RQ02	Partially Implemented	TCF02	Med	Implemented partially
FWD03	Assign tutor	RQ03	Incomplete	TCF03	High	Assigning in process
BCK01	Activate/Deactivate courses	RQ04	Completed	TCB01	Med	
BCK02	Send and receive emails	RQ05	Incomplete	TCB02	Med	Should be implemented
BCK03	Delete/Block users	RQ06	Completed	TCB03	Med	
BCK04	Update courses	RQ07	Completed	TCB04	High	
BCK05	Add/Delete courses	RQ08	Completed	TCB05	High	
BCK06	Reset Password	RQ09	Incomplete	TCB06	Med	Not yet done
BCK07	Change user access permission	RQ10	Incomplete	TCB07	Med	Not developed yet
ENROLLED USER						
FWD04	Login to the web system	RQ11	Completed	TCF04	High	
FWD05	Upload assignments	RQ12	Incomplete	TCF05	Med	Has to be installed
FWD06	Browse the webpage	RQ13	Completed	TCF06	High	
FWD07	Book a course	RQ14	Partially Implemented	TCF07	High	Partially Completed
FWD08	Choose Availability	RQ15	Partially Implemented	TCF08	High	Partially Completed
FWD09	Make PayPal Transaction	RQ16	Incomplete	TCF09	High	Not yet implemented
FWD10	Access Moodle courses	RQ17	Completed	TCF10	Med	
BCK08	Auto generate Moodle account	RQ18	Incomplete	TCB08	Med	Not yet completed
BCK09	Send account verification mail	RQ19	Incomplete	TCB09	Med	Yet to implement
GUEST USER						
FWD11	Register to the web system	RQ20	Completed	TCF11	High	
FWD12	Access Blog articles	RQ21	Completed	TCF12	Med	
FWD13	Post Comment in Blog article	RQ22	Completed	TCF13	Med	
FWD14	Make an enquiry	RQ23	Completed	TCF14	Med	
FWD15	Get the location map	RQ24	Completed	TCF15	Med	

USE CASE SCENARIOS

REGISTER TO THE SYSTEM

The below Use Case Scenario describes about how a new user registers into the Vital Education Web System.

Use case name	Register to the system
Primary actor	User
Supporting actor(s)	Vital Education System
Summary	Any guest user can register to the system by selecting the registration option available in the webpage
Pre-Conditions	Navigate to the registration page Provide necessary details
Flow of events	Select the register now button Fill all the necessary fields Confirm password Answer the human identification question Hit the register button Open email and confirm the account by clicking the link in the received mail
Exceptions	User email id already given Username already taken Server issues
Post-Conditions	Create a new user in the database Send an automated email

BOOK A COURSE

This is a Use Case Scenario that describes how a user books a course.

Use case name	Book a course
Primary actor	User
Supporting actor(s)	PayPal System
Summary	User can book a course by selecting one from the list of courses and available timing. The user will be redirected to PayPal page where they need to provide required credentials to make the transaction and enroll to the course.
Pre-Conditions	Course is to be in active state Timing should be available for the selected course PayPal system is available
Flow of events	User selects the course User chooses an available timing PayPal button is to be clicked System redirects to PayPal Login to PayPal account Complete online transaction
Exceptions	PayPal system is down Lack of sufficient balance No PayPal account
Post-Conditions	Receive an automated email Auto create a Moodle user account

NON-FUNCTIONAL REQUIREMENTS

Non-Functional requirements are compulsory in any project to improve the user experience and security of the system. In this project, we came up with a wide set of non-functional requirements based on the users of the system.

USER EXPERIENCE ENHANCEMENTS

UI Look and Feel: The website is being developed in a way that the system can fit itself in any screen size. To make the webpage in such a fluidic way, our team had chosen Bootstrap framework which comes with advanced responsive features.

Security: To maintain the system secure, access privileges are defined based on the type of user which makes the system unaffected to outsider attacks. System injections are being blocked by encrypting the data and using prepared statements. All the passwords are hashed using salt technology to make sure no user account could be compromised.

Usability: We designed the GUI in a way that any sort of user can easily navigate through the pages and access any information easily.

Quick Responsiveness: To make the webpage quicker, we made a lot of optimizations to the code and reduced the loading time.

Availability: A better web hosting service is to chosen to host the webpage which keeps the system online all the time.

Flexibility and Maintainability: The admin panel is implemented in a way that the administrator can change almost the whole web UI from the panel which makes it more flexible and easy to maintain.

LIMITATIONS

- As per the client requirements, all the data being presented in the website should be retrieved from the database which limits the look and feel of the user interface.
- Using the Moodle database restricts our team from adding or changing the Moodle environment similar to the Vital Education web system.
- As security is a major concern in the present day, we took a lot of security measures that limits us from improving the way the user interacts or navigates in the system.
- Since faster responsiveness is an enhancement we considered to implement, it limits us from adding a lot of graphic content and visual elements.

CONSTRAINTS

- Project deadline is a major hurdle that restricts the team from thinking out of boundaries to produce a more innovative solution.

- Working with limited resources available like workforce or external technology can be considered as a constraint for the team in successfully completing this project.

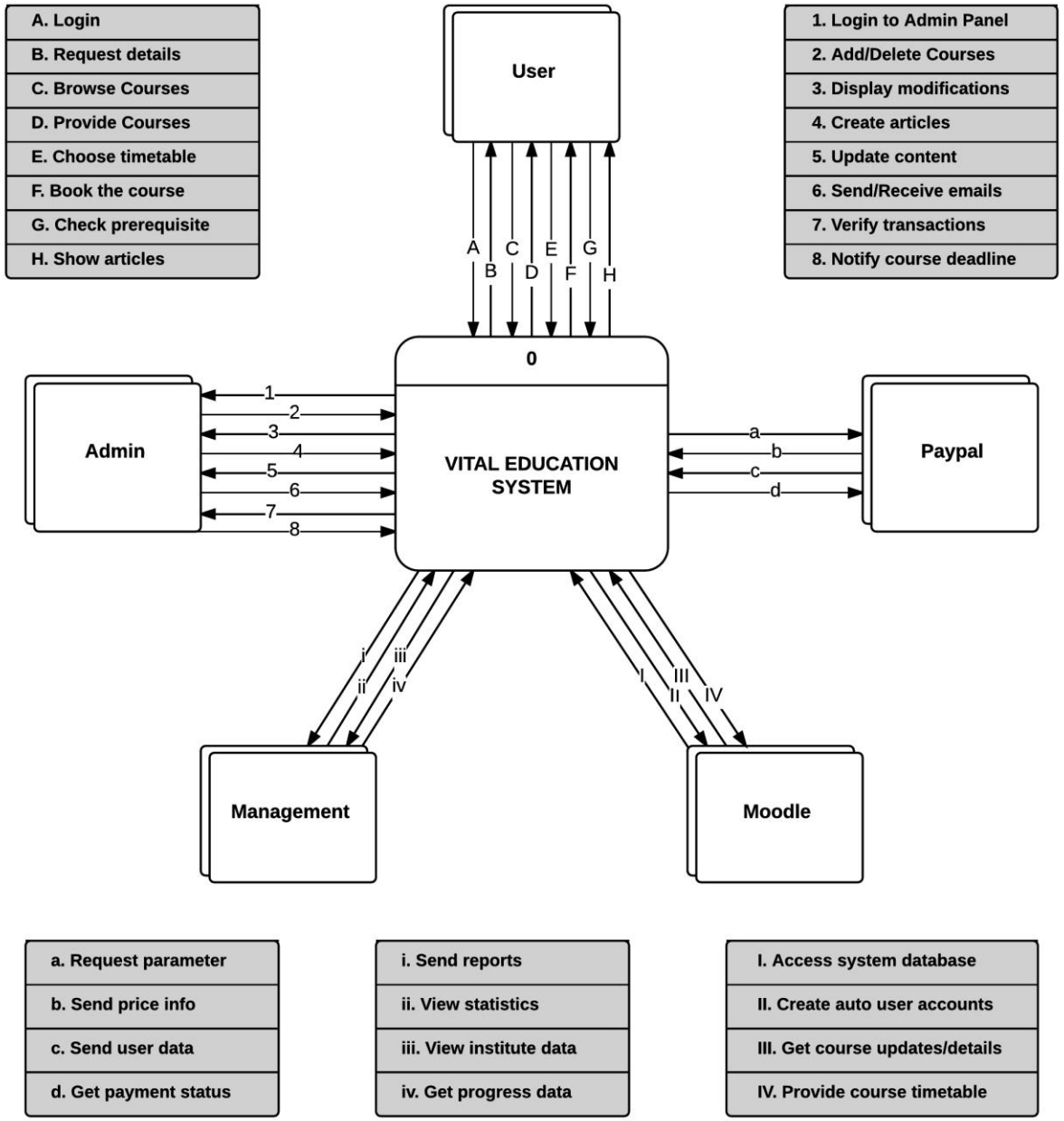
- Bootstrap is a relatively new technology for the whole team. Working with this framework while learning is a huge constraint for the team.

- Implementing a system that will sustain for a long duration.

- Delays in any of the milestones might mount some pressure upon the team members for upcoming milestones.

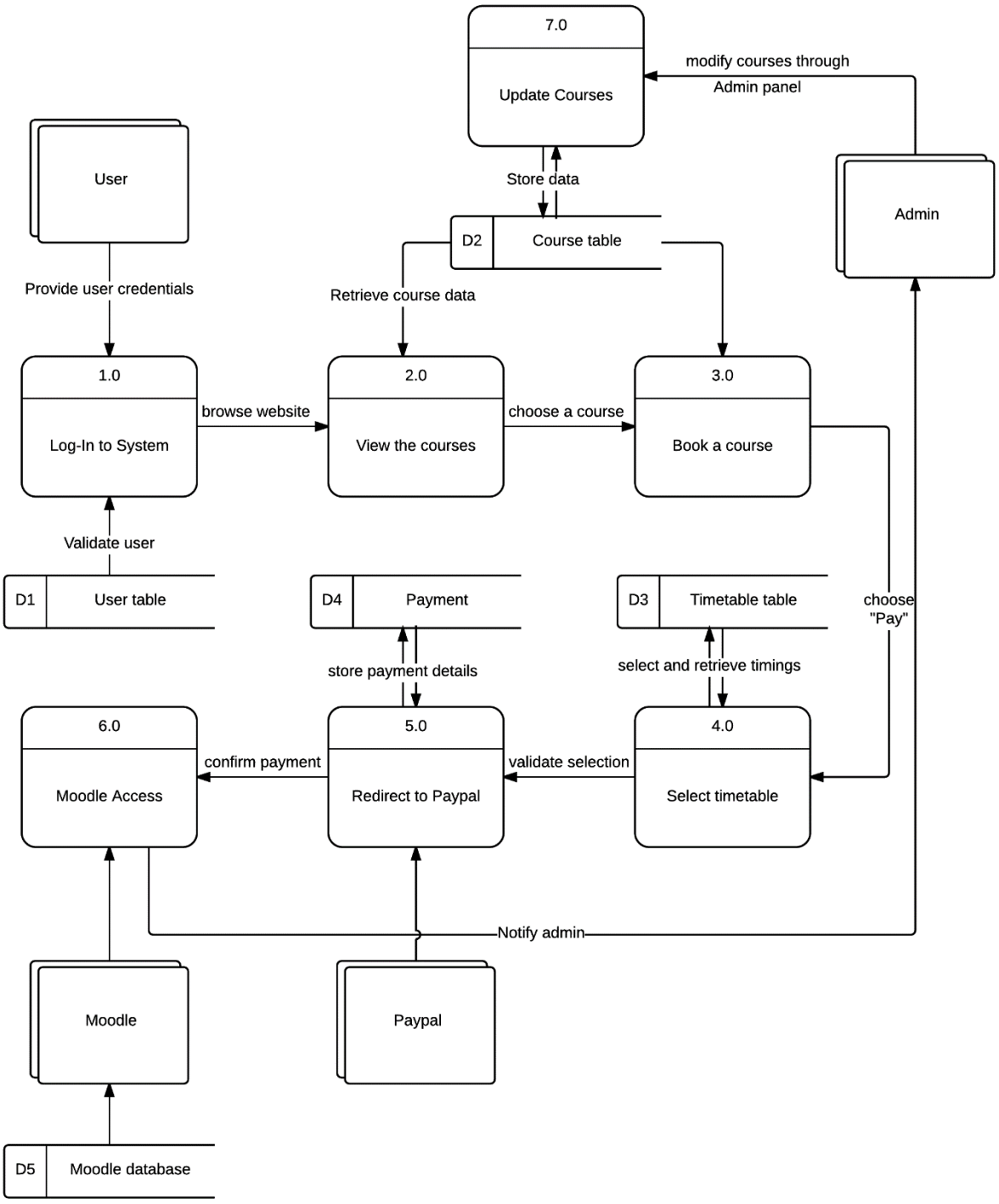
ANALYSIS

CONTEXT DIAGRAM

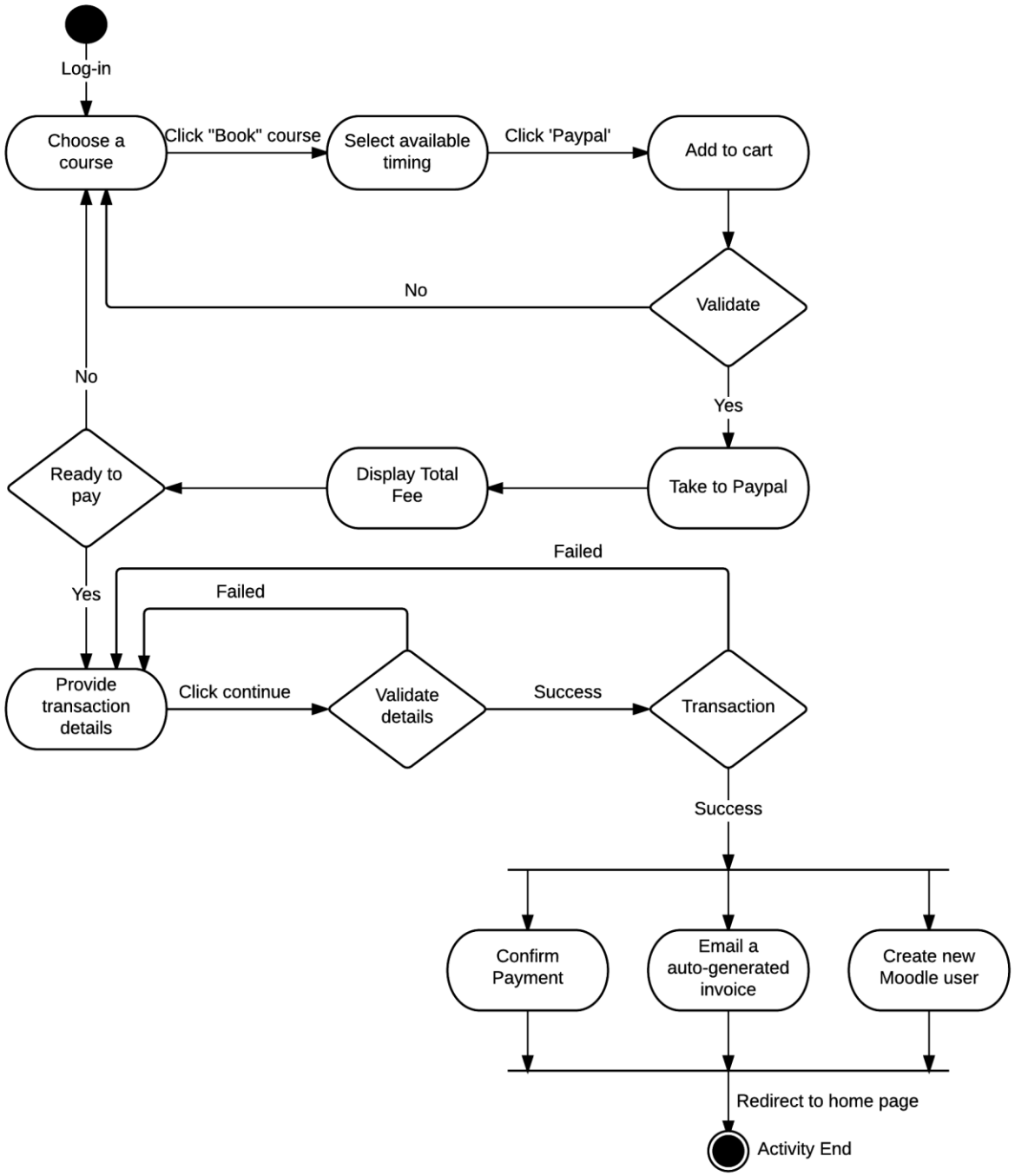


USE CASE DIAGRAM

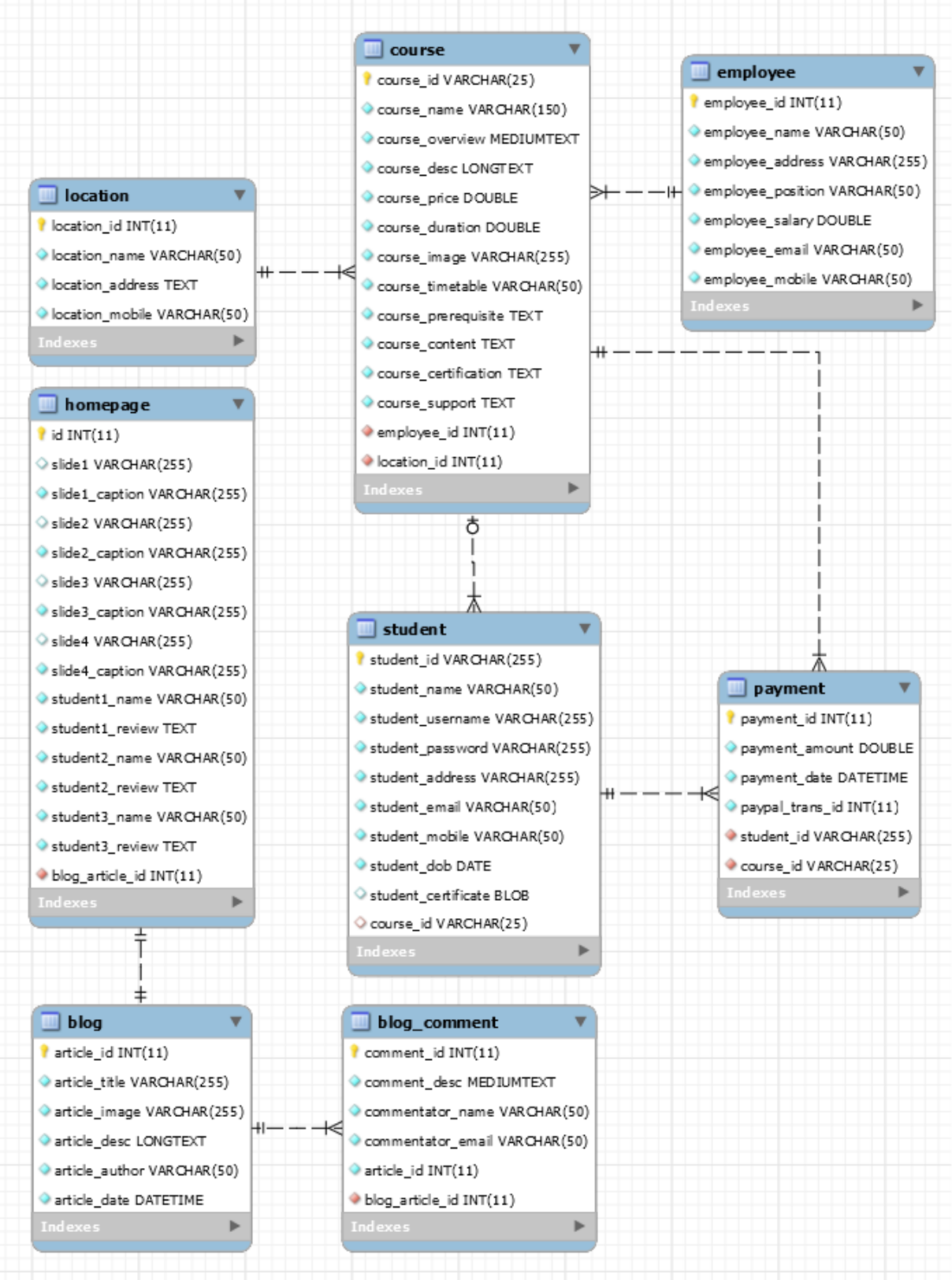
DATA FLOW DIAGRAM (LEVEL 0)



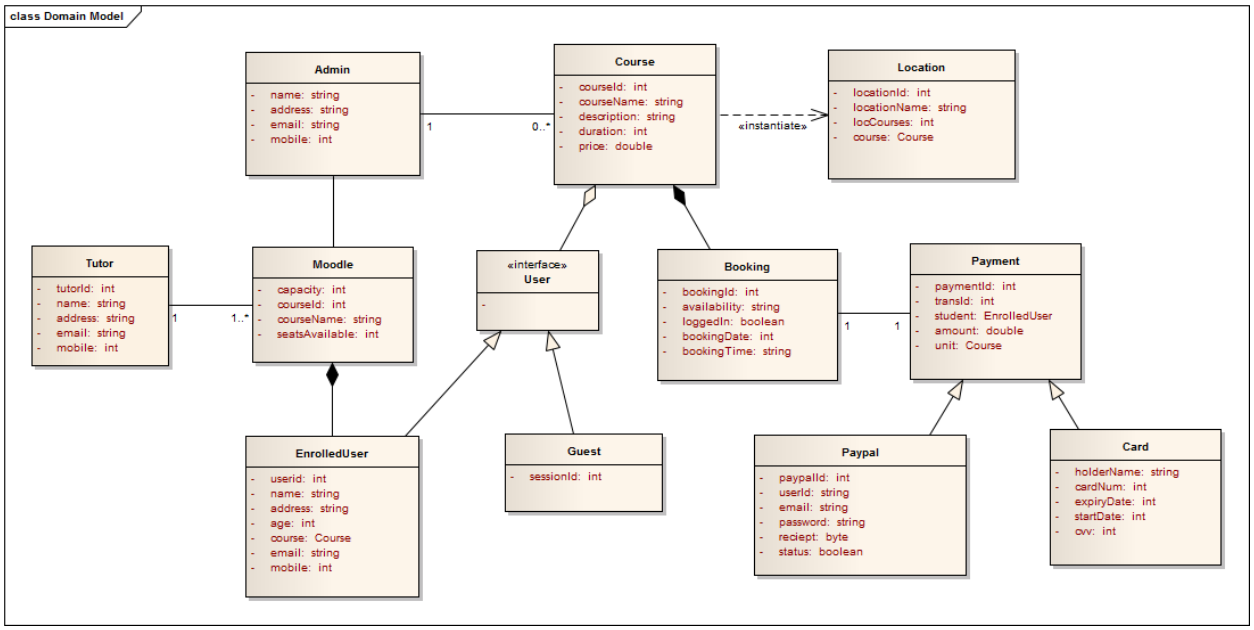
ACTIVITY DIAGRAM



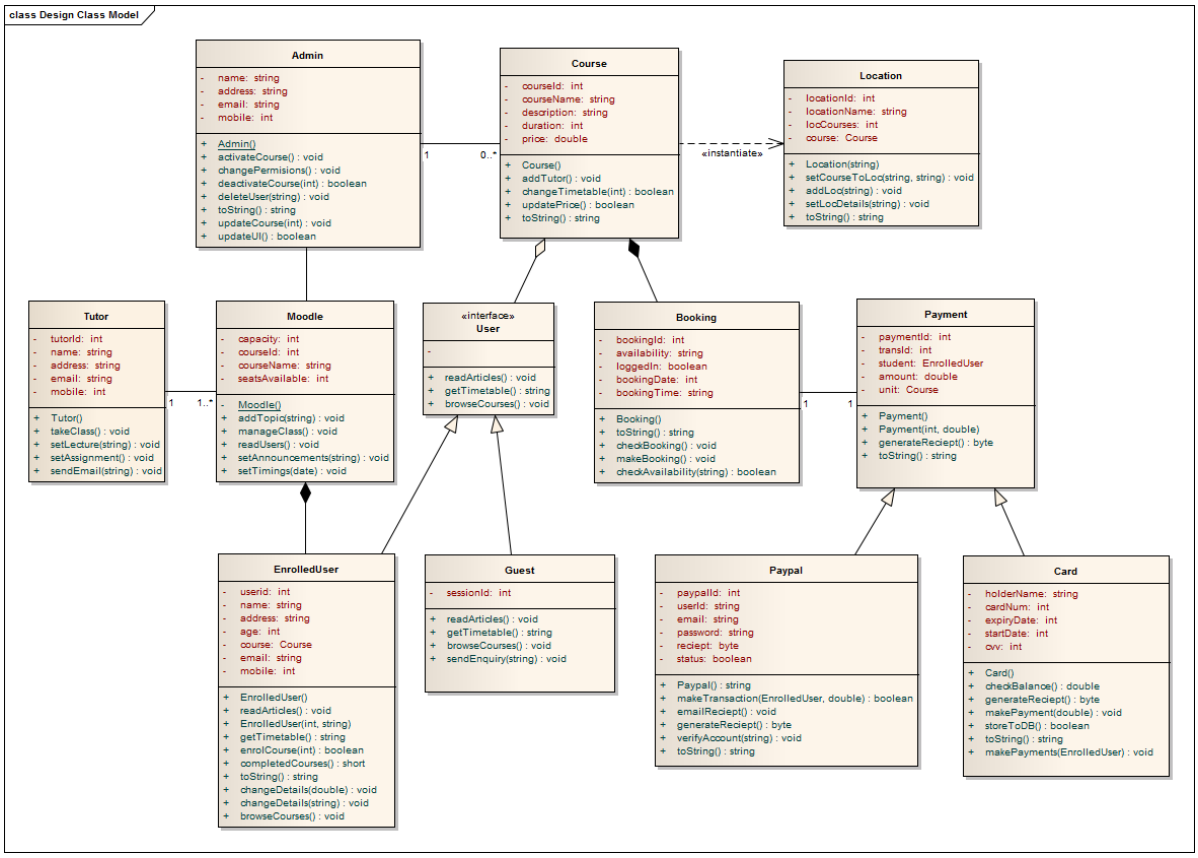
ENTITY RELATIONSHIP DIAGRAM



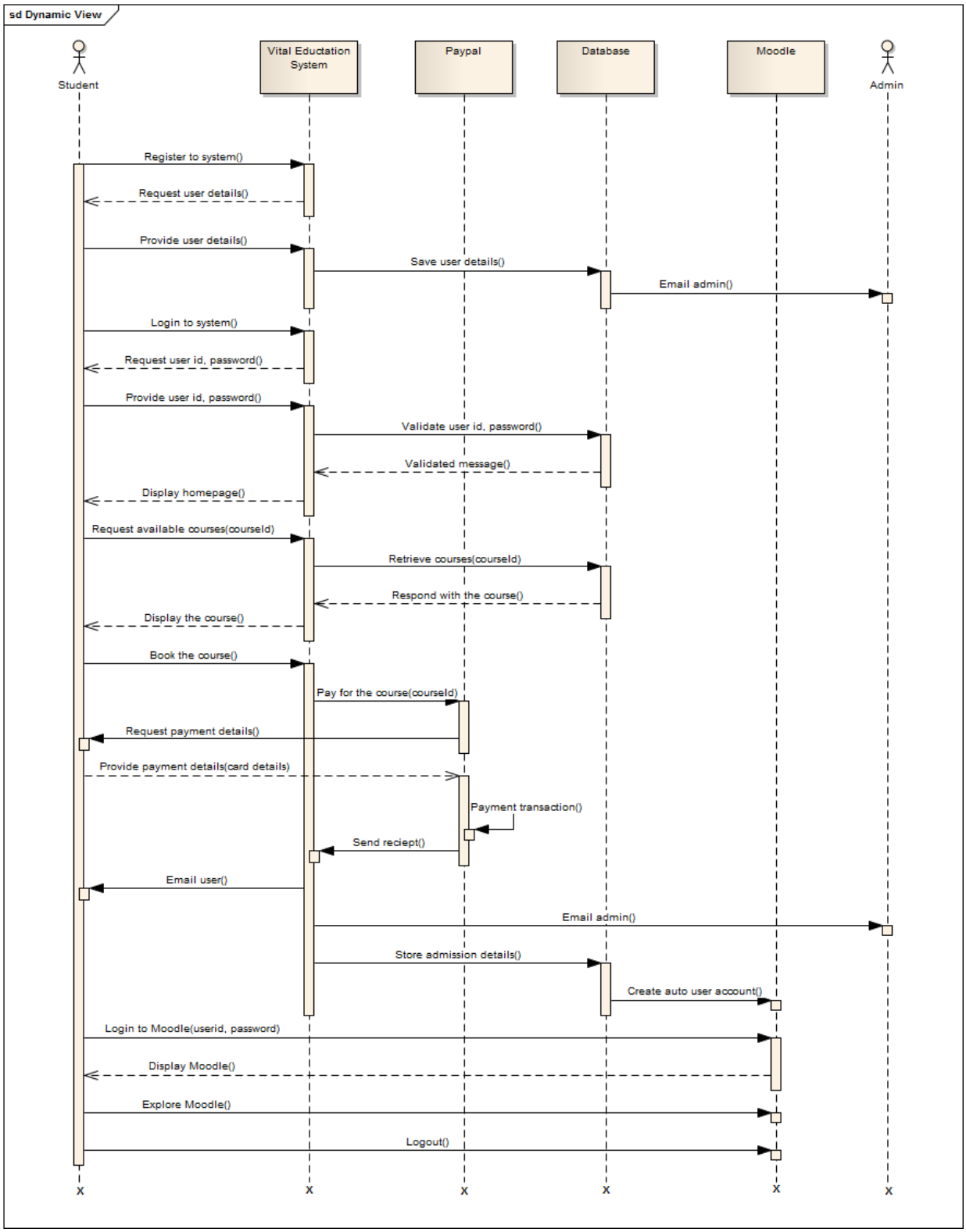
DOMAIN MODEL CLASS DIAGRAM



DESIGN MODEL CLASS DIAGRAM



SEQUENCE DIAGRAM



ANALYSIS DESCRIPTION OF DATA

DATA DICTIONARY

Data dictionary is defined as set of information about the data structure, data format and content of database. It is used to describe the relationship between the entities of the database. Specifically, data dictionary consist of all the files enlisted in database. Not only that, it also contains all the records in a file and names and types of each field.

Our system consists of many tables which are co-related to the same application. So, it is meaningful to present one data dictionary to represent the overall features of our data base. The following table represents a typical data dictionary to our database.

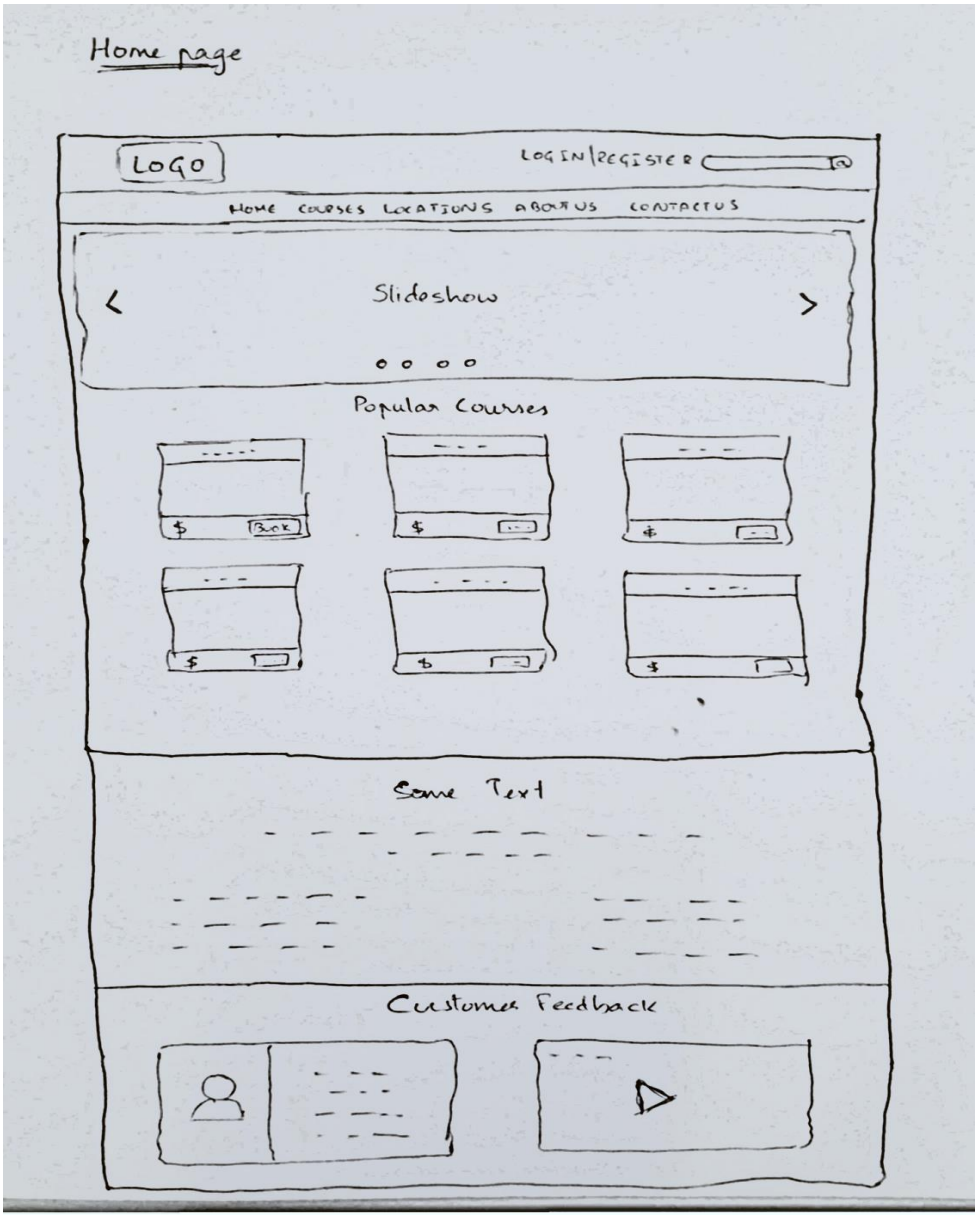
	A	B	C	D	E	F	G	H	I
1	table name	attribute name	contents	type	format	range	required	pk or fk	fk referenced table
2									
3	users	user_id	User's unique ID number	char(6)	999999	100000-999999	Y	PK	
4		user_fname	User's first name	vchar(20)	Xxxxxx		Y		
5		user_lname	User's last name	vchar(20)	Xxxxxx		Y		
6		user_email	User's email address	vchar(50)			Y		
7		user_phone_num	User's mobile phone number	char(10)	9999999999	0000000000-9999999999	N		
8									
9	books	book_id	A book's unique ID number	char(6)	999999	100000-999999	Y		
10		book_title	The title of the book	vchar(100)			Y		
11		book_author	The author(s) of the book	vchar(50)			Y		
12									
13	books_liked	user_id	A user's unique ID number	char(6)	999999	100000-999999	Y		
14		book_id	ID number of the books that a user has liked	char(6)	999999	100000-999999	Y		
15									
16	books_read	user_id	A user's unique ID number	char(6)	999999	100000-999999	Y		
17		book_id	ID number of the books that a user has read	char(6)	999999	100000-999999	Y		
18									
19	wishlist	user_id	A user's unique ID number	char(6)	999999	100000-999999	Y		
20		book_id	ID number of the books that a user wants to read	char(6)	999999	100000-999999	Y		
21									
22	friends_list	user1	A user's unique ID number	char(6)	999999	100000-999999	Y		
23		user2	Another user's unique ID number	char(6)	999999	100000-999999	Y		

USER INTERFACES

SYSTEM MOCKUPS

HOME SCREEN

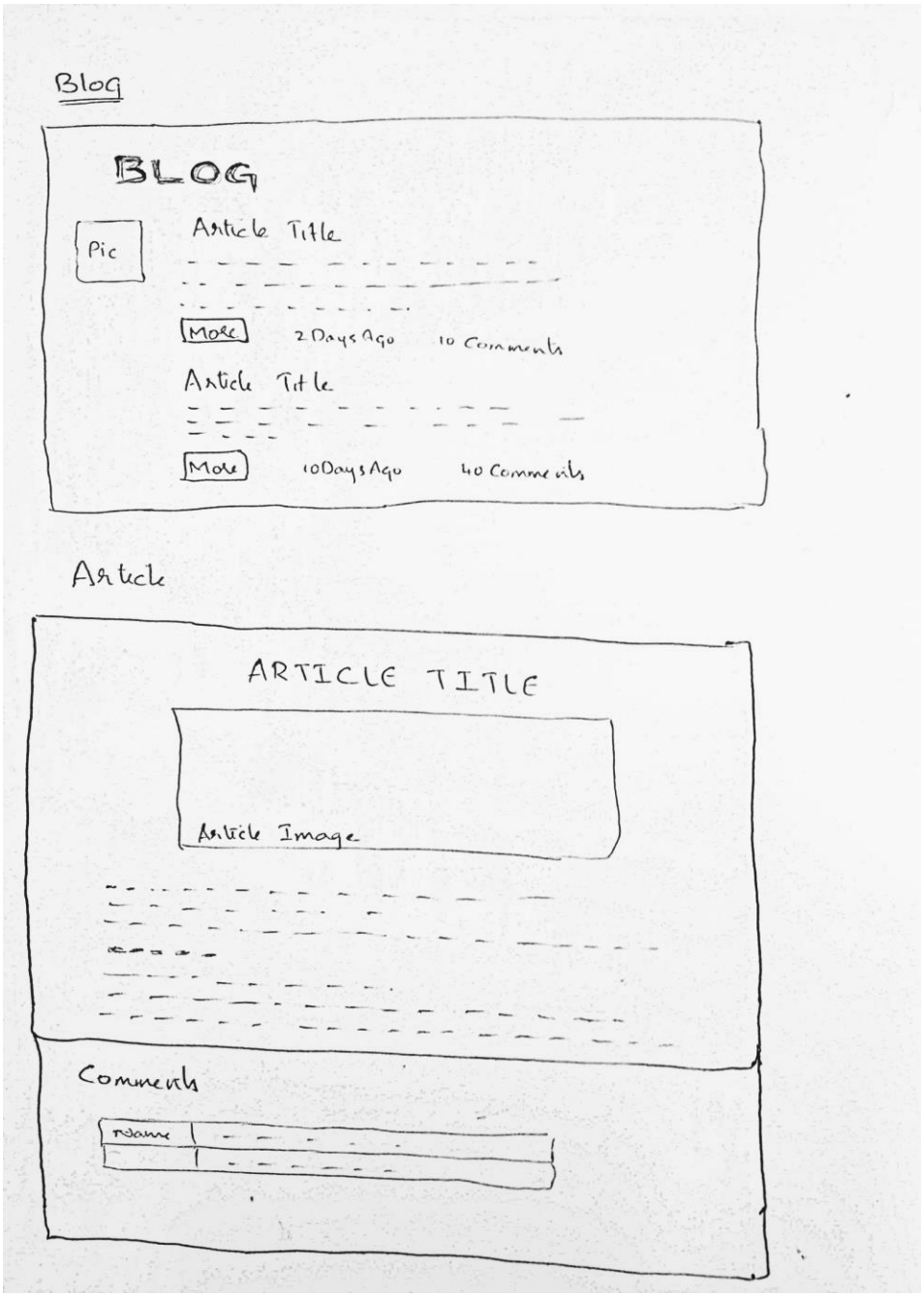
Home screen consists of a carousel which includes four pictures that shows the latest additions to the website. A navigation bar is included above carousel which can be used to navigate through out the webpage. It includes popular courses list with a short description. Next block contains student feedbacks and a video about the institute. Bottom of the page comprises of some quick links.



BLOG ARTICLES

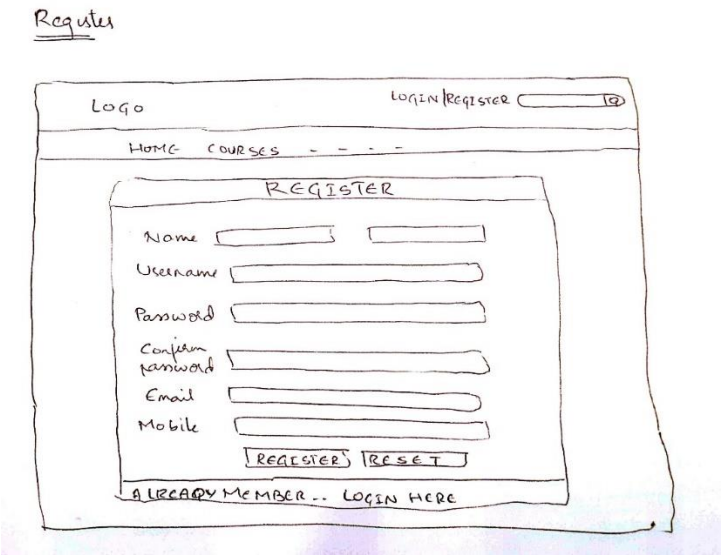
The Blog page contains all the list of articles with a little overview about the topic. A read more button is included which when clicked, takes the user to the article page. Blog page contains the number of comments and date when the article was posted.

Article page contains a wide length picture and the whole article content. At the bottom, all the comments are listed with an option to add new comment.



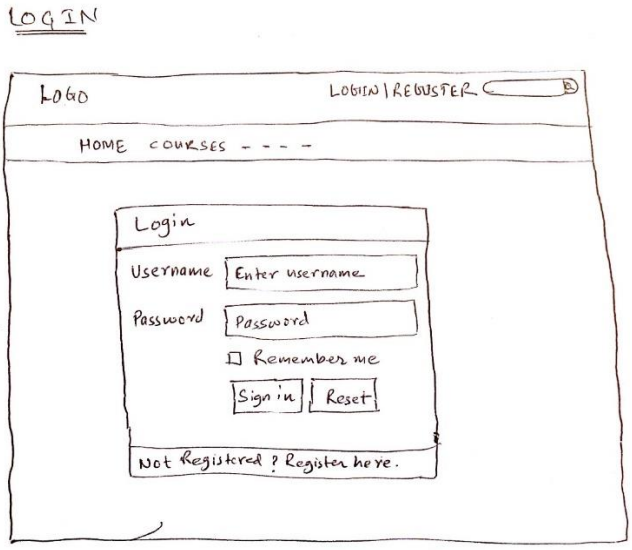
REGISTRATION PAGE

Registration page consists of a form which includes all the necessary fields the new user needs to fill in order to register to the web site. The system makes a validation of all the entries before sending the information to the database.



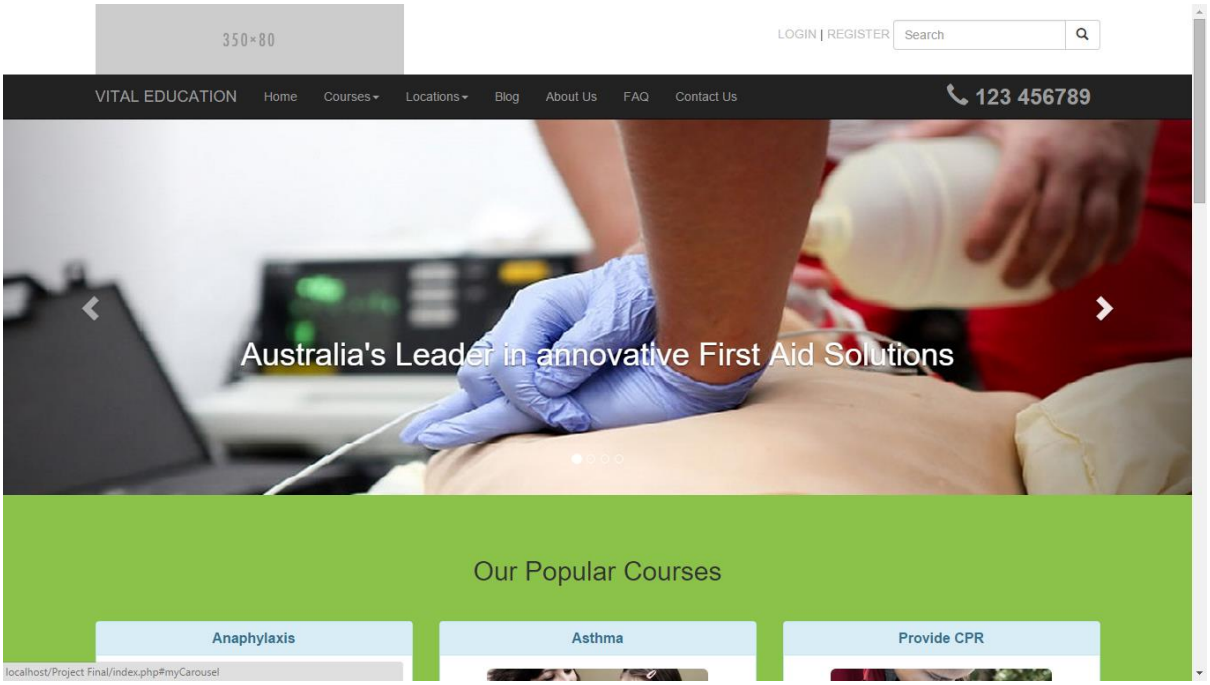
LOGIN PAGE

Login Page consists of a form which includes two fields to enter username and password. Once the user enters username and password, the data will be sent to database for verification and if the verification is successful, the user will be logged in to the system.

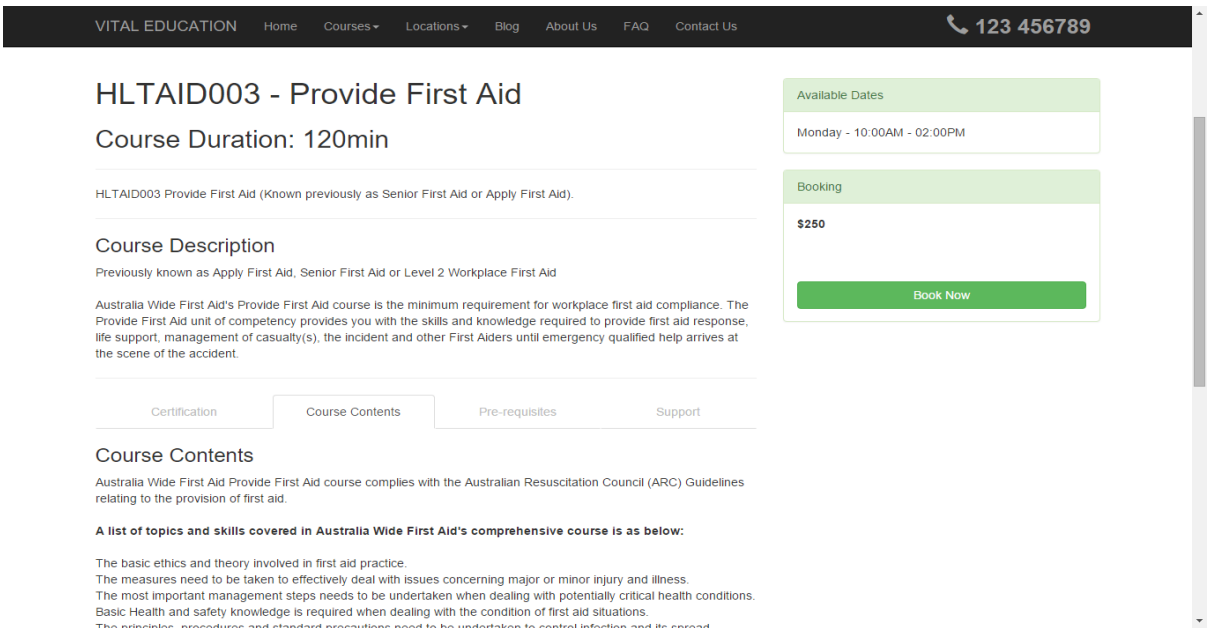


SOME WEBPAGE DESIGN PROTOTYPES

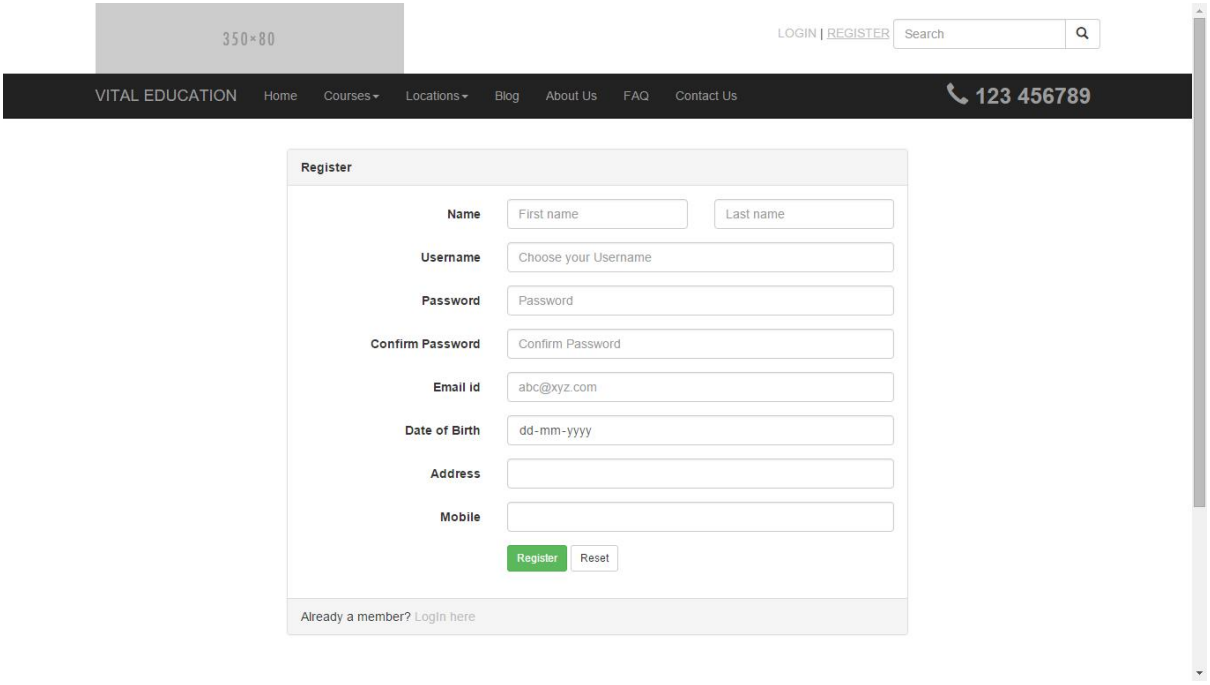
HOME PAGE



COURSE PAGE



REGISTRATION PAGE



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