

Share Knowledge Online

Software Requirements Specification

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1 Introduction

1.1 Purpose

The purpose of this web application is for students to conveniently share past exam papers, sample projects, essays and code, and discuss projects online.

The targeted audience for this website are third level students in Ireland. The aim of our project is to increase the potential of Irish students by providing a platform for online communication and sharing of knowledge. This knowledge is both explicit knowledge - sample coding, previous exam papers, and college notes – and tacit knowledge – project ideas and past experiences.

1.2 Project Scope

The scope of this project is to develop a visually attractive and interactive website that provides the following functionality in addition to storing data in a SQL database:

- Allows users to login
- Allows users to upload and download files
- Allows users to post comments on a forum

The aim of this project is to combine the document sharing functionality of sites like www.scribd.com with the knowledge communication functionality of sites like www.stackoverflow.com.

User will be able to register, search, upload and download documents.

1.3 Definitions, Acronyms, and Abbreviations

- SKO – Share Knowledge Online
- User – Potential college student using the website
- Tester – Recruited participant from the public to test the functionality of the website
- Admin – Team SKO member with administrative privileges

1.4 References

- <http://stackoverflow.com/>
- <http://www.scribd.com/>
- <https://github.com/nci-software-project/sko>
- <http://users11.jabry.com/shareknowledgeonline/>

2 Overall Description

Our web application will consist of a few simple pages stating who we are what the site is about. There will be a page where users can register and then login to access our online services.

Once logged in the user will be able to select the field of study they are interested in. From here they can download previous exam papers, sample projects, essays, college notes etc. Users can also upload their own study resources onto the site. The site operates on a 'Give before you take' ethos so users will have to upload resources before they can download other resources.

Another section of our website will host a learning forum which allow users to post questions they on such topics as project ideas, answers to essay questions, recommended references, answers to coding problems.

2.1 Product Perspective

2.1.1 Executive Perspective

From an executive perspective this project is not starting out as profit making business. At the moment it is a way to display the creators (Group 1) technical abilities and also to create an online community of students passionate about learning.

This web application is free to use. From the start there will be no cash coming in and out as this is starting as our college project. In the future we would like to mark/grade our users according to their quality of contribution, which will be done by other registered users.

We would like to use this grading system to be linked up to another database which will be then offered to potential employers. When positive points are added to discussions, this will add to other points from the same field of study. If you are contributing only in Java section you will get points to your Java knowledge. To expand your points you need to contribute and be positively marked in other field of science. We can then select a suitable candidate for proposed position and take commission if person gets hired. If we were to use this type of grading system however we would need to include a disclaimer that users would need to agree to which would allow us share projects etc. with potential employers. This would need to be looked at in further detail as privacy laws in Ireland are constantly changing.

At later stage we will open to advertisement for cash income. This will mainly contribute to support payment towards server and overall running of the web application.

2.1.2 Technical Perspective:

The Technical perspectives of this project are discussed in detail in the following sections of this document:

- Product Features
- Operating Environment
- System Features
- Hardware & Software Interface

2.1.3 End User Perspective:

We are expecting NCI students to form majority of our users in the first few weeks. This will expand to other colleges as there is no restriction to who can contribute. Our potential user can be anyone from anywhere - college students, professors, graduates and enthusiasts.

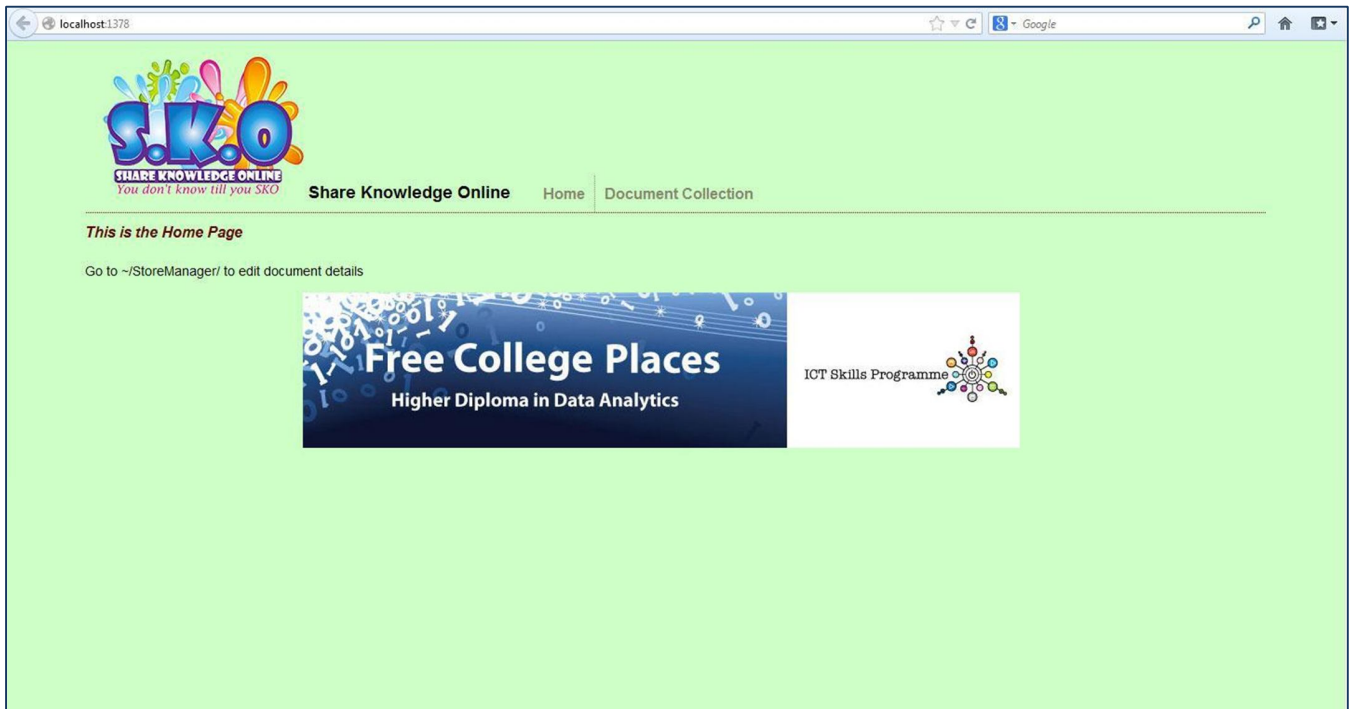
We predict the following benefits for end users using our web application:

- Access past exam papers, sample projects and code relating to their area of study
- View various study resources to help them in their own study
- View past exam papers, sample projects etc. relating to areas of study that they are not currently studying and thus would not have access to otherwise.
- Post questions and queries on aspects of their own studies.

2.1.4 Expected Classes of Users

This is discussed in detail in the section - **2.3 - User Classes and Characteristics.**

Mock-up of Home Page



2.2 Product Features

Create an account on Website - When the user opens the website he/she will have an option to create an account.

Log in to website - After a user has created an account they can now log in to the website. This allows them to view more pages, comment on the site's forum and utilise the site's upload /download functionality.

Select desired field of study - Once Logged in a user can select the area of study that they want to upload/download documents for.

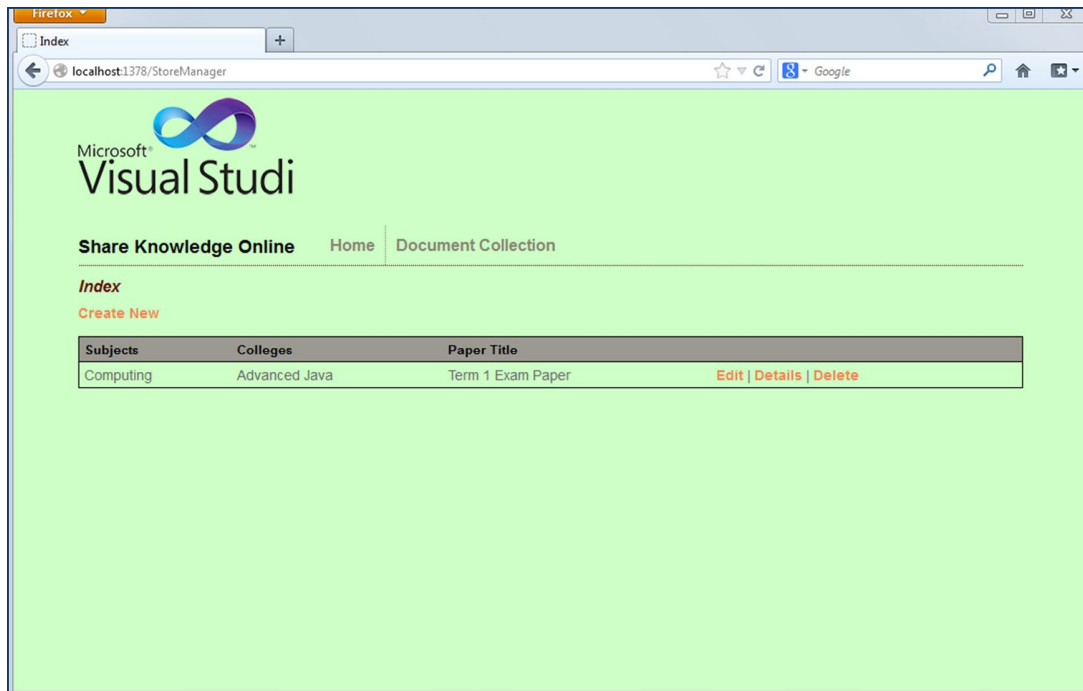
Upload document - The user selects a document from their local computer to upload to the website.

Download Document - The user selects a document from the website to download to their local computer.

View learning Forum- The user can view the website's learning forum. Here they can filter by topic and read up on previously submitted questions and answers.

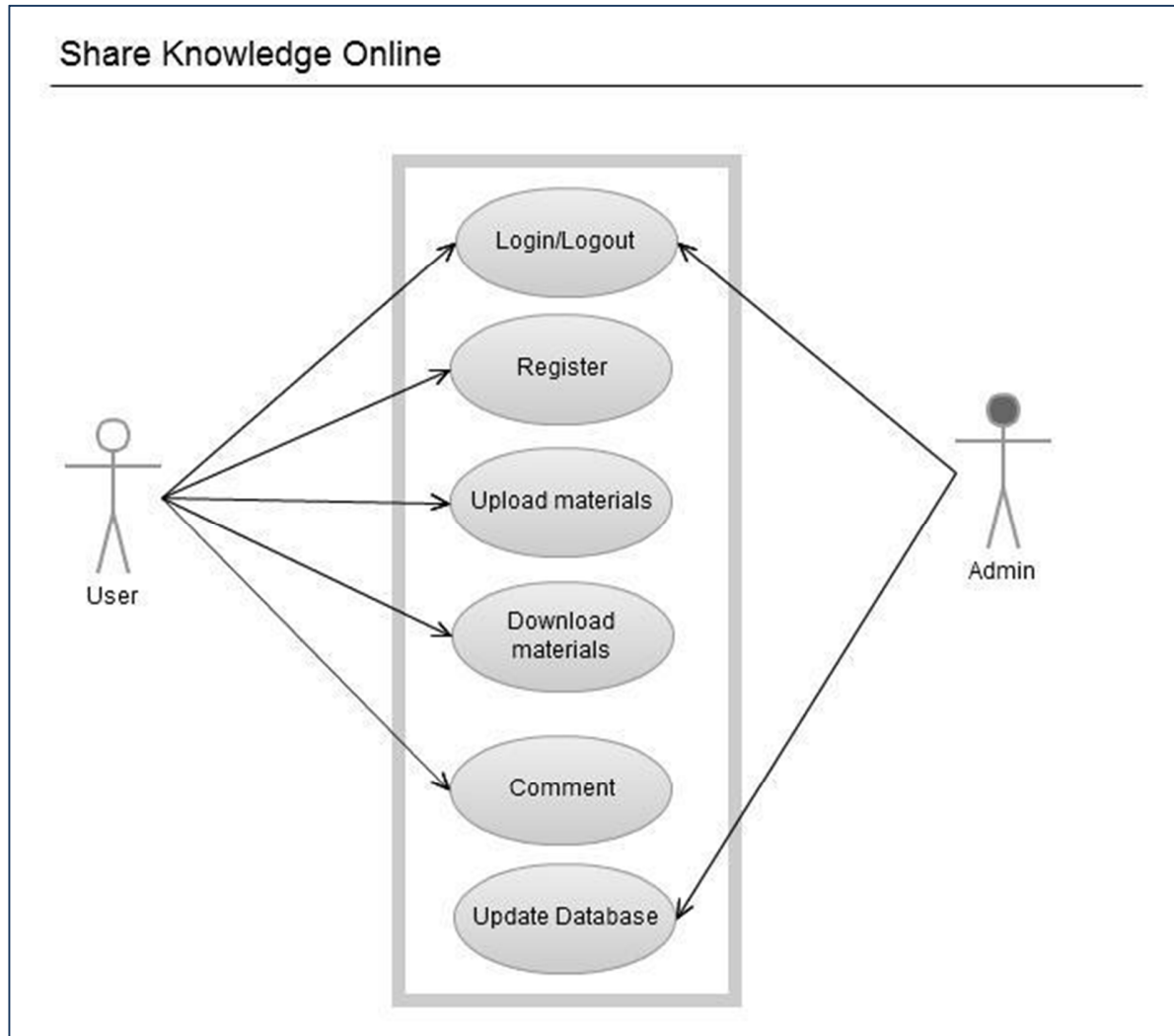
Post comments on learning forum- The user can post comments on the forum.

Mock-up of Document Upload Page



2.3 User Classes and Characteristics

2.3.1 Proposed Use Case



2.3.2 Use Case 1

Register for SKO.com

Actors

User

Scope

The scope of this use case is for the user to register for the web application SKO.

Description

This use case describes the process of the user opening the SKO.com website and choosing to register them as a user. Upon successful registration, users will have access to the main features of the SKO web application.

Flow Description

Precondition

The user is using a JavaScript enabled browser and has opened the website SKO.com.

Activation

The use case starts when the user clicks the button "Register for SKO.com".

Main flow

1. The user clicks the button "Register for SKO.com".
2. The user is redirected to a registration page
3. The user enters their name, email, college, main area of study
4. The user ticks a disclaimer button which states they will not use the web application for any illegal purposes or for plagiarism.
5. The user fills in a captcha.
6. The user clicks the "Submit Form" button
7. The user is sent and automatic email confirming their successful registration.

Alternate flow

- 1 The user enters an invalid email address and clicks the "submit" button
- 2 The form is not sent.
- 3 A message box appears notifying the user that they need to enter a valid email address.
- 4 The user enters a valid email address.
- 5 The user clicks the "Submit Form" button
- 6 The user is sent and automatic email confirming their successful registration.

Exceptional flow

The user does not tick (agree to) the disclaimer

- 1 The user clicks the button "Register for SKO.com".
- 2 The user is redirected to a registration page
- 3 The user enters their name, email, college, main area of study
- 4 The does not tick a disclaimer button which states they will not use the web application for any illegal purposes or for plagiarism.
- 5 The user fills in a captcha.
- 6 The user clicks the "Submit Form" button
- 7 A message box appears notifying the user that in order to successfully register they need to agree to the disclaimer.

Termination

The use case terminates once a user is successfully registered.

Post condition

Having successfully completed the registration steps, the user is sent an automatic email confirming their registration.

2.3.3 Use Case 2

Update Database

Actors

Admin

Scope

The scope of this use case is for the admin to modify the SKO database.

Description

This use case describes the process by which the admin logs in the sko database and choose to alter the database.

Flow Description**Precondition**

The user has been previously register as an administrator and has access to the database.

Activation

The admin logs in successfully to the web-front end.

Main flow

- 1 The admin can view the database and all relations between tables
- 2 The admin queries the table
- 3 The admin finds the record to be updated
- 4 The admin alters the record.

Alternate flow

1. The admin can view the database and all relations between tables
2. The admin changes the design of tables (to fit requirements)
3. The admin saves the new design

Exceptional flow

No Exceptional flow

Termination

The use case terminates once the admin has logged out.

Post condition

No Post condition

2.4 Operating Environment

This website will be created with to work on the three most popular browsers – Internet Explorer, Firefox and Google Chrome.

2.5 User Documentation

The website will feature a help page which will contain documentation on how to use the site.

A walk through video will be created that will step through the process of uploading and downloading documents. This will be accessible on the home page of the site in the form of a URL.

Testing documentation will be created to assist the testing process.

3 System Features

3.1 System Features

- Web based front end accessible from PCs, tablets and smart-phones.
- Written in MVC 3 C# with .NET framework 4 and SQL Server Compact 4.0.
- CSS stylesheet to update the site's look and feel easily
- Error messages when wrong information is typed in when uploading a document.
- Website income through college banner ads. Information on the advertise section.
- Q&A section with java script.
- A forum where users can discuss projects.

3.2 User features

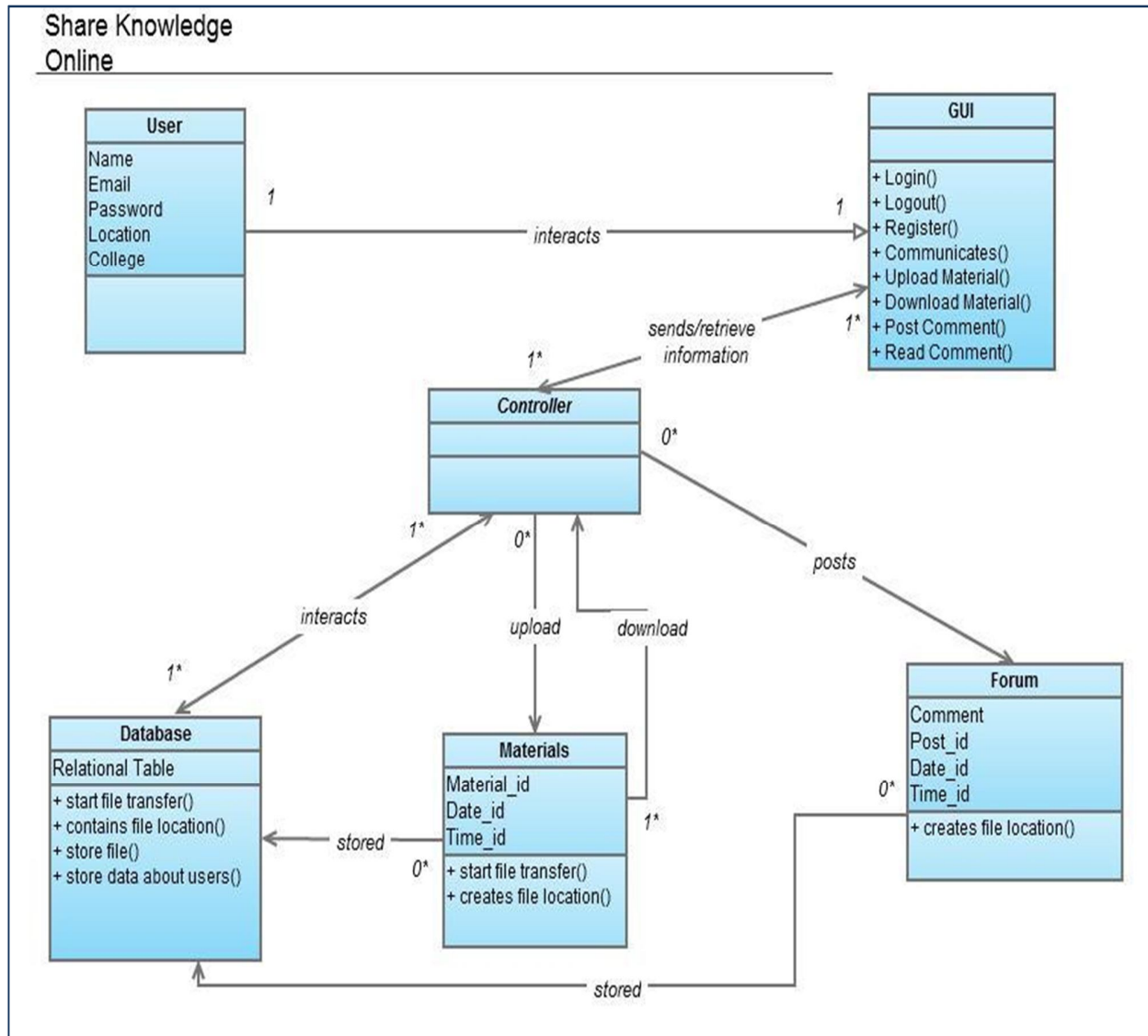
- User has to register before being able to download or upload a document
- Users, once logged in, can +1 on document of other users. The more +1 a user have, the more documents they can download.
- Users can comment on documents through a Facebook interface.
- Users can comment and discuss on projects in the Forum.

3.3 Administrative features

- Administrators can log into a web front-end and update document titles and remove documents if needed.
- Admin optional limit on file size and type.
- Admin can update and remove users.

4 External Interface Requirements

4.1 System Architecture



4.2 User Interfaces

The user must register in order to gain access to the web application by providing name, address email and other details and finally create a password. The registration form will be creating in asp.net form and all collected details will be saved into our data base created using SQL.

Once registered, the user will be redirected to the home page. Users will be able to use the search functionality to query the database in order to retrieve materials. Users will also be able to upload materials and make them available for other users to download and use.

Users can post or read comments. Every comment submitted will be saved into database. Users can be login and logout anytime as long as registration has been successful. Except for materials and details, timestamp will be saved at the same time a file is created in the database.
(See mock up design in section 2.2)

4.3 Hardware Interfaces

The web application will not require any specific hardware interfaces apart from a computer, smartphone or tablets which is connected to the Internet. The web application will contain all basic information's explaining how to use SKO. The web application will be stored onto a free online server which is asp compatible. (Server name and asp compatible server)

4.4 Software Interfaces

- SKO will be compatible with all major web browsers. This includes Mozilla Firefox, Google Chrome, Safari, Opera and Microsoft's Internet Explorer.
- Programming language to create database is SQL which will be query in order to save all collected materials and details.
- ASP will be used to connect with the database.
- ASP and HTML to create the web application.

4.5 Communications Interfaces

TCP/IP will be the main communication protocol between the member's computers to our web servers. TCP/IP means - Transmission Control Protocol/Internet Protocol. Both of these protocols work with each other. IP works in the layer 3 and TCP works in the Layer 4 of the OSI model. TCP/IP is a connection orientated/best effort delivery process, which means that it guarantees packet delivery.

For the front end we will use an application layer protocol called HTTP, which stands for hypertext transfer protocol. It works well with TCP/IP. For example, a person wants to connect to our website, that person's web browser initiates a request for <http://www.sko.iie> to our web server(s) using TCP/IP. Once our server(s) gets the request it returns with a response of www.sko.iie with an OK status. HTTP protocol uses the TCP port 80 to communicate. For our secure webpage's we will use HTTPS for security (e.g. changing your email address or password in your profile section).

4.6 Cloud Computing

Once the web application reaches 100 active users, files uploaded will be hosted onto the cloud with a much larger capacity for storage than the webserver. In this case, we will be moving to [S3.Amazonaws.com](https://s3.amazonaws.com). It will allow a faster upload/download speed which is required in order to increase user experience and reduce all problems concerning constant server/system maintenance.

5 Other Non-functional Requirements

5.1 Performance Requirements

Fast response from the website - quick load of information from Database to GUI. Aim is to get flawless response while searching for document. We will aim for the response time lower than 1s. To time our response we will use Google Chrome's Developer Tools. We will achieve our time target by regular checks that server is not running out of memory or that there aren't other tasks running in the peak time. Other technique we will use are debugging and profiling tool such as Xdebug which analyses a local copy of our website and can even visually show where bottlenecks are occurring. We will regularly run tools to make the database tables smaller and more efficient.

5.2 Safety Requirements

All users that wish to download any documents understand that any document is a potential risk and it is their own responsibility to have their own anti-virus, firewall and other up-to-date security features installed on their own computer.

5.3 Security Requirements

Files and documents used by our website are work of its own contributors (students, enthusiasts, professors etc.) and express their own opinions, findings and judgements. All materials should be referenced to appropriate source and are for individual use only. Our website is not to be responsible for any of the uploaded documents. User should register and use password that contains Upper letters, numbers and other characters to maximise security.