Software Requirements Specification

For

**ONLINE STUDENT ATTENDANCE SYSTEM**

**28th June 2018**

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**Revision History**

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| --- | --- | --- | --- |
| **Name** | **Date** | **details** | **Version** |
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# Introduction

## Purpose

## The Online Student Attendance System is intended to provide complete solutions for students, faculty as well as parents through a single get way using the internet as the sole medium. It will help in maintaining the daily attendance of students and provide them with online study materials and assignments. The purpose of this document is to present a detailed description of the Online Student Attendance System. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli. This document is intended for both the stakeholders and the developers of the system.

## Document Conventions

The System name is highlighted all over the document with bolded letters as well as underlined as well. Irrespective of that there is no specific convention provide. Every requirement statement has its own priority.

## Intended Audience and Reading Suggestions

This document is intended to provide a clear picture of the system for the users i.e. faculty, parents and student, testers and documentation writers. And the SRS document got divided into sections which are classified as the scope of the project, the overall description about the system, the system features, external interface requirements as well as the non functional requirements.

## Project Scope

Online Student Attendance System is a website developed for maintaining the attendance of students on a daily basis. Here, the faculty who is in charge of a particular subject will be responsible for uploading the attendance in the database. Every teacher is given a separate username and password based on the subjects they handle. Report can be generated automatically at the end of session or in between the session. A defaulter list can be generated from the system (<75% attendance). It will also provide an interface for parents, guardians and students to communicate which is missing in existing systems. Parents can view the attendance as well as check the feedback given by the teachers of students. This system will also help students receive online study material and receive email notifications from the department.

## Reference

Books:

* Fundamentals of Software Engineering- Rajib Mall

Websites:

* [www.google.com](http://www.google.com)
* [www.w3schools.com](http://www.w3schools.com)

# Overall Description

The Overall Description section, of this document gives an overview of the functionality of the product. It describes the informal requirements and is used to establish a context for the technical requirements specification in the next heading.

The Product feature, Operating Environment, Design and Implementation Constraints, of this document is written primarily for the developers and describes the details of the functionality of the product. This system will be completely web-based, linking to **Online Student Attendance System** and the remote web server from a standard web browser. An Internet connection is necessary to access the system.

## Product Perspective

* Online Student Attendance System is a self contained system. It is aimed towards the students, faculty and parents who want to track the daily performance and attendance of their child. This project envisages bridging the gap between the faculty, and parents. The web portal should be user-friendly, ‘quick to learn’ and reliable for the above purpose. It is not a stand-alone product and depends on the availability of Eclipse software. It should run on Windows based platform.

**Product Features**

* It is easy to use the product with all the information provided in the form of links.
* The system provides an interface for parents and faculty to communicate.
* Through this system students can get access to online study materials.
* Faculty can upload assignments on site which can be downloaded by the students.
* Parents can view student attendance and the feedback given by the teachers.
* Students can also receive email notifications from the department.

## User Classes and Characteristics

The user classes will be Student, Parent, Administrator, and Faculty.

## Operating Environment

## Technologies to be used

## Programming languages:

* **JAVA EE**: Java Enterprise Edition is a programming platform— part of the Java Platform-for developing and running distributed multi-tier architecture Java applications, based largely on modular software components running on an application server.
* **HTML**: Hyper Text Markup is the predominant markup language for web pages. It provides a means to describe the structure of text-based information in a document and to supplement that text with interactive forms, embedded images, and other objects.
* **JavaScript**: A client side scripting language used to create dynamic web content and user interface.
* Tools & Development Environment:
* **Apache Tomcat 9.0 Server**: Apache Tomcat is a Servlet container developed by the Apache Software Foundation (ASF). Tomcat implements the Java Servlet and the JavaServer Pages (JSP) specifications from Sun Microsystems, and provides a "pure Java" HTTP web server environment for Java code to run.

* **Eclipse IDE** is an [integrated development environment](https://en.wikipedia.org/wiki/Integrated_development_environment) (IDE) used in [computer programming](https://en.wikipedia.org/wiki/Computer_programming), and is the most widely used Java IDE.[[6]](https://en.wikipedia.org/wiki/Eclipse_(software)#cite_note-6) It contains a base [workspace](https://en.wikipedia.org/wiki/Workspace) and an extensible [plug-in](https://en.wikipedia.org/wiki/Plug-in_(computing)) system for customizing the environment. Eclipse is written mostly in [Java](https://en.wikipedia.org/wiki/Java_(programming_language)) and its primary use is for developing Java applications

## Design and Implementation Constraints

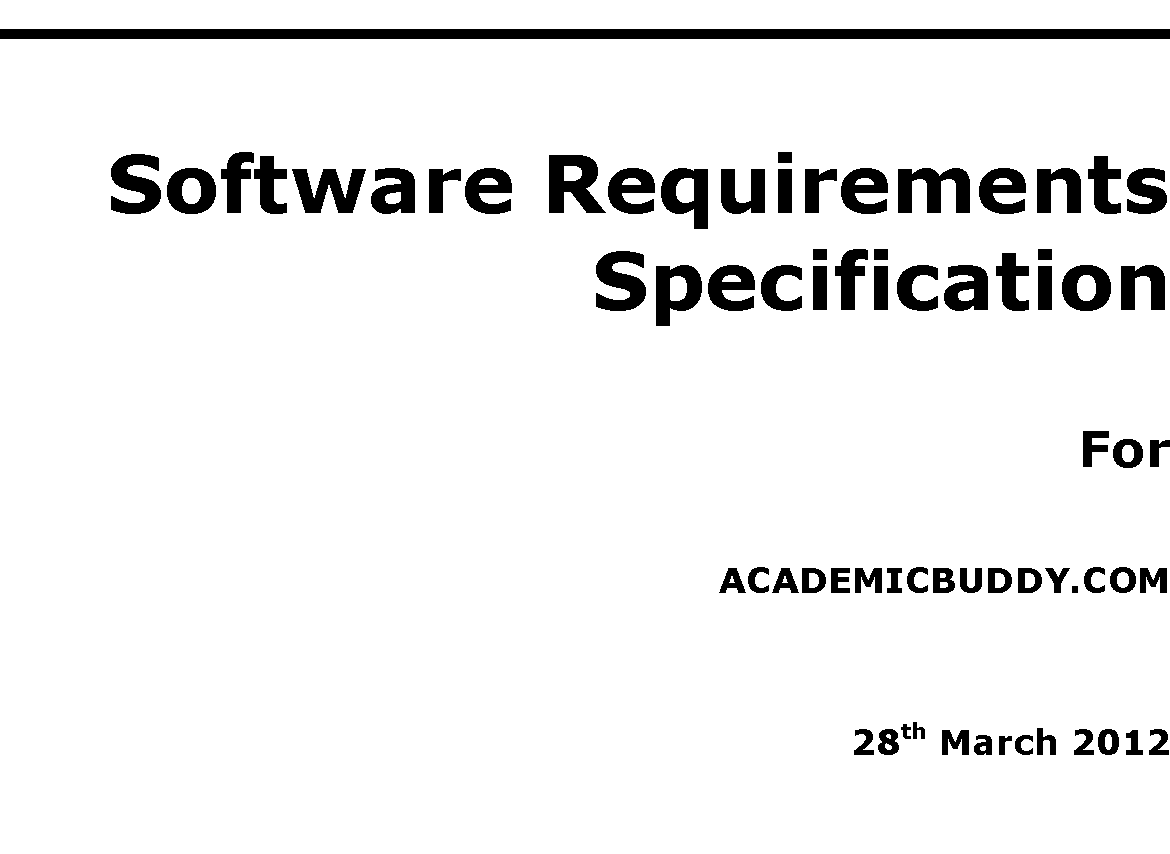
* There is no maintainability of back up so availability will get affected.
* Limited to HTTP/HTTPS Protocols.
* No multilingual support.
* User do not have any rights to edit any data in the system.

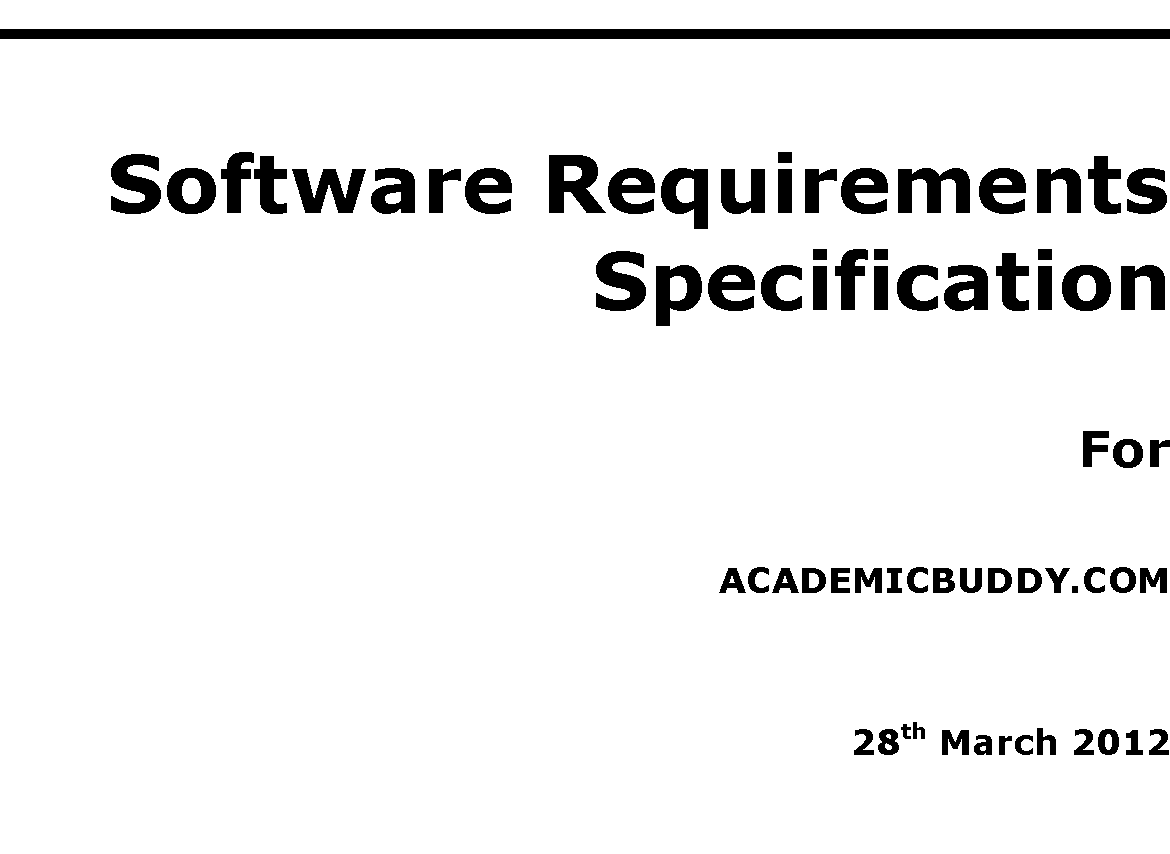
## User Documentation

* The user should be familiar with the Online study related terminology like Downloading/Using mail-account/Uploading/Chatting etc.
* The user should be familiar with the Internet.

## Assumptions and Dependencies

* The details related to the faculty, student, parent provided online.
* Administrator is created in the system already.
* Roles and tasks are predefined.
* Roles and responsibilities are already established.

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# System Features

**Registering New Users in the Database:-**

3.1.1 Description and Priority

This feature will enable the new user whether he is a student/learner, teacher or parent, will enable him to enter his/her basic information in the database, so that the generation of profile for them may be done.

3.1.2 Stimulus/Response Sequences

This form will consist of basic fields such as Name, Username, E-mail Id. There are two buttons: Register and Reset. Register will submit the data to the database at the server tier, and as expected Reset will reset the input values of all the fields.

3.1.3 Functional Requirements

The most important requirement here is to input values in the database and store them there for future use. To implement the security and to ensure that no android is filling in the registration forms, the user has

to enter the id generated during registration . If any field is left to provide the data, the system will prompt the user by using the scripts and will not submit the data until corrections/data entries are made completely.

**Secure Login to the interface:-**

3.2.1 Description and Priority

This feature will enable the user to have a secure and simple login to the system. To avoid handling a large number of errors and exceptions this feature will enable the user to provide only a limited number of inputs having constraints upon them and if there are any errors the system will notify the user about them.

3.2.2 Stimulus/Response Sequences

It will consist of three basic fields Username, Password and Id. There are two buttons: Login and Forgot password. Login will submit the entered data for approval followed by access, and Forgot password button will change the details of the user.

3.2.3 Functional Requirements

The most important function is to only grant access to users that are listed in the database. The customer will provide the information on who will be allowed access. To implement the security, the web page must check the database to see if the Username, Password and Id are valid. If they are not, the user will receive an “Enter correct username, password and id” as a response.

**Searching for Tutors:-**

3.3.1 Description and Priority:

This feature will enable the user when he/she has successfully logged into the system or portal here to search for a tutor according to their needs and requirements. To avoid handling a large number of errors and exceptions this feature will enable the user to enter only a limited number of inputs having constraints upon them and if there are any errors the system will notify the user about them.

3.3.2 Stimulus/Response Sequences

This will consists of basic fields such as mode of study, mode of payment (online/offline). There are two buttons: Search Tutors. The Search Tutor button will search the database for the tutors who are available in that area (in case of offline mode of study).

3.3.3 Functional Requirements

The important function here is to suggest users a list of available tutors according to the provided information. The user will then upon his sole discretion will select a suitable tutor for him/her and will proceed to the payments to know more about the tutors (in case of offline mode of study) or to join them. If no suggestions are found then the system will return no records.

**Downloading of Online Study Materials and Assignments:-**

3.4.1 Description and Priority

This feature will enable the user (students/learners) to download the online tutorials available. These tutorials are available for download and may be accessed by making payments.

3.4.2 Stimulus/Response Sequences

The tutorials are categorized and are available for the download by the user, he/she has to select the tutorial, provide the payment information and download it.

3.4.3 Functional Requirements

The important function here is to receive and deliver payment information to the user so that he/she may download materials from the portals. If the payments are not received from the user then an error message is generated “Enter all details correctly.”

**Reviewing of results:-**

3.4.1 Description and Priority

This feature will enable the user tutor to comment on the current status of their students, of how they are performing in their study.

3.4.2 Stimulus/Response Sequences

The comments are given by the tutor on the profile of students/parents so that they may see their performance.

3.4.3 Functional Requirements

The important function here is to make comments and review them accordingly.

# External Interface Requirements

# User Interfaces

The user interface is screen shown on the browser. The Home screen of the Web-Portal is where faculty, students and parents can register and login. The portal screen acts as an interface to provide services to the user which are to be availed from the database.

# Hardware Interfaces

A minimum of 40GB of HDD, with Pentium IV processor, a minimum of 256MB of RAM so that a suitable OS (Windows XP ) may be installed, and a reliable internet connection is required for the client side/user side so that may be accessed easily.

## Software Interface

The system uses:

**JSP**: Java Server Pages. It is a technology that helps software developers serve dynamically generated web pages based on HTML, XML and other document types; uses java programming language.

**Servlet**: Java web-containers which holds actions to be performed; a Servlet a java programming language class used to extend the capabilities of servers that host applications access via a request response programming model.

**Struts**: Java Framework to be used to develop web applications, Eclipse IDE, Oracle 11g.

**Eclipse IDE:**  Eclipse IDE is a platform framework for Java desktop applications.

**Oracle 11g:** It is a object-Relational Database Management System. The Oracle DBMS can store and execute stored procedures and functions within itself.

**d. Communications Interfaces**

Internet connection and Browser are required in order for several functions to be executed such as downloading. The system uses the following browsers:-

## Mozilla Firefox

## Google Chrome

## Internet Explorer

# 5. Other Non-functional Requirements

## a. Performance Requirements

Some Performance requirements identified is listed below

* 1. The database must be support more than 100 student, faculty and parents record.
  2. Can support many user at the same time.
  3. High speed internet .

## b. Safety Requirements

The material uploaded or downloaded must be for the authentic user this can be provide by there-strict communications between some areas of the program (constraints) . Material should be accessed by intended user.

## c. Security Requirements

Some of the factors that are identified to protect the software from accidental or malicious access, use, modification, destruction, or disclosure are described below. Specific requirements in this are could include the need to:

* + - 1. Keep specific log or history data sets.
      2. Check data integrity for critical variables.
      3. Communication needs to be restricted when the application is validating the user .
      4. Providing Authentication.

## d. Software Quality Attributes

There are a number of attributes of software that can serve as requirements. It is important that required attributes should be specified so that their achievement can be objectively verified. The following terms provide a partial list of examples

**Portability**

Some of the attributes of software that relate to the ease of porting the software to other host machines and/or operating systems. This may include: Java is used to develop the product. So it is easiest to port the software in any environment.

**Maintainability**

The user will be able to reset all options and all stored user variables to default settings.

**Reliability**

Some of the attributes identified for the reliability is listed below:

1. All data storage for user variables will be committed to the database at the time of entry.

2. Data corruption is prevented by applying the possible backup procedures and techniques.

**Usability requirements**

Some of the usability requirements identified for this system are listed below:

* + - 1. A logical interface is essential to an easy to use system, speeding up common tasks.
      2. Error prevention is integral to the system and is provided in a number of formats from sanity checks to limiting free-text input.

**Availability:**

All cached data will be rebuilt during every startup. There is no recovery of user data if it is lost. Default values of system data will be assigned when necessary.

# Other Requirements

**Immediate Feedback:**

The System must try to answer all the queries of the user and it should provide immediate feedback after getting any request from the students/parents or tutors. The system must provide the illusion to the user that , they are in contact to administrator of the web-site.

**Increase the Quality of the Process:**

The system must increase the quality of the tution and the way of imparting knowledge by suggesting good tutors at reasonable price.

**Make the Interface Simple as Possible:**

The System must provide the simple and easy interface for beginners and also provide facilities for technical peoples who are using the system. The interface must be simple as possible.

**Reduced Time:**

To perform any task time is one of the important factors to consider. If the system not utilize properly time, than the entire aim of system is fails and the system is fails to reach its goal. So time take to process all these activities should be less but the output should be effective.

**Appendix A: Glossary**

|  |  |
| --- | --- |
| **Term** | **Definition** |
| Database | Collection of all the information monitored by this system. |
| Administrator | Is a person responsible for maintaining one or many websites. The duties of the webmaster may include ensuring that the web servers, hardware and software are operating correctly, designing the website, generating and revising web pages, replying to user comments, and examining traffic through the site. |
| HTML | Hypertext Transfer Protocol is a transaction oriented client/server protocol between a web browser & a Web Server |
| HTTPS | * Secure Hypertext Transfer Protocol is a HTTP over SSL (secure socket layer). |
| SRS(Software Requirements Specification) | A document that completely describes all of the functions of a proposed system and the constraints under which it must operate. For example, this document. |
| Stakeholder | Any person with an interest in the project who is not a developer. |
| User | Student or tutor or parent |
| IDE | An integrated development environment (also termed integrated design environment, integrated debugging environment or interactive development environment) is a [software application](http://en.wikipedia.org/wiki/Software_application) that provides comprehensive facilities to [computer programmers](http://en.wikipedia.org/wiki/Computer_programmer) for [software development](http://en.wikipedia.org/wiki/Software_development) |
| Email | Electronic mail, commonly known as email or e-mail, is a method of exchanging digital messages from an author to one or more recipients |

# Appendix B: Analysis Models

Under the analysis model, we analyze the system to check the following:

1. Whether it meets the requirements that guided its design and development;
2. Works as expected; and
3. Can be implemented with the same characteristics.

To perform these analyses of the model, the following testing is to be implemented:-

**Unit testing**: Unit testing, also known as component testing, refers to tests that verify the functionality of a specific section of code, usually at the function level. In an object-oriented environment, this is usually at the class level, and the minimal unit tests include the constructors and destructors.

**Integration testing**: Integration testing is any type of software testing that seeks to verify the interfaces between components against a software design. Software components may be integrated in an iterative way or all together ("big bang").

Integration testing works to expose defects in the interfaces and interaction between integrated components (modules). Progressively larger groups of tested software components corresponding to elements of the architectural design are integrated and tested until the software works as a system.

**System Testing**: system testing is done to ensure whether the system meet all the requirements stated in the SRS.

System testing is performed on the entire system in the context of a [Functional Requirement](http://en.wikipedia.org/wiki/Functional_requirements) Specification(s) (FRS) and/or a [System Requirement](http://en.wikipedia.org/wiki/Requirements_analysis) Specification (SRS). System testing tests not only the design, but also the behavior and even the believed expectations of the customer. It is also intended to test up to and beyond the bounds defined in the software/hardware requirements specification(s).

The system testing is categorized into three:

#### 

#### Alpha testing

Alpha testing is simulated or actual operational testing by potential users/customers or an independent test team at the developers' site. Alpha testing is often employed for off-the-shelf software as a form of internal acceptance testing, before the software goes to beta testing.

**Beta testing**

Beta testing comes after alpha testing and can be considered a form of external [user acceptance testing](http://en.wikipedia.org/wiki/User_acceptance_testing). Versions of the software, known as [beta versions](http://en.wikipedia.org/wiki/Beta_version), are released to a limited audience outside of the programming team. The software is released to groups of people so that further testing can ensure the product has few faults or [bugs](http://en.wikipedia.org/wiki/Computer_bug). Sometimes, beta versions are made available to the open public to increase the [feedback](http://en.wikipedia.org/wiki/Feedback#In_organizations) field to a maximal number of future users.

**Acceptance testing**

Acceptance testing performed by the customer, often in their lab environment on their own hardware, is known as [user acceptance testing](http://en.wikipedia.org/wiki/User_acceptance_testing) (UAT). Acceptance testing may be performed as part of the hand-off process between any two phases of development.

# Appendix C: Issues List

*The problems that might occur with the software product are:*

* It might occur that a student searches for a particular subject but the content is not available.
* During downloading materials an error might occur.
* No transaction is flawless. Transaction can break at multiple points during the process.
* The portal is dependent on web services. Though we make every effort to ensure that services are provided on time but there is no guarantee The problems that might occur are:
  + Some web pages are lost . The user is looking for a specific Web page but try as they might, they can't find it.
  + Web pages load slow or incorrectly. The user found the Web page he wanted but it took forever to load or things are jumping around on the page while loading.
  + **JavaScript Errors.**

Forms are completely broken. After clicking submit button, an error might occur.

* Big security vulnerability. Someone to steal your login information and hack into your account
* Broken Registration Process
* Site won't load. Websites are supposed to work fine whether you type in the "www" or not. But an error might occur.