# INDUSTRIAL ATTACHMENT MANAGEMENT SYSTEM

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A project report submitted in partial fulfillment of the requirements for the award of the degree of Bachelor of Science in Information and Communication Technology of Laikipia University FEBRUARY 2022 DECLARATION

This project report is my original work prepared with no other than the indicated sources, support, and has not been presented elsewhere for any other award.

Signature……………………… Date……………………...

EMILY WANYEKI

N16/3/0561/017

# CERTIFICATION

The undersigned certify that they have supervised and coordinated and hereby recommend for

*Acceptance of Laikipia University a project report entitled* ***Industrial attachment management system***

Signed…………………………… Date……………………..

LECTURER ALEX KIBET

Department of Computing and Informatics

Laikipia University

Signed…………………………… Date……………………..

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Department of Computing and Informatics

*Laikipia University* ***ABSTRACT***

Manual process need to be outdone for this system, manual process means, the student need to fill a paper form, and need to submit it by hand to the office. During the training, candidates need to keep update in the logbook about their daily routine of the training by writing it and paste any attachment in the logbook. Finally, progress of the training in the logbook will be examined by supervisor in company every week and by university supervisor at the end of the training by writing it in the logbook. Industrial Attachment Management System is a management system that handles the process of the industrial attachment by providing computerization of activities. Process focus in the system is selection of company, updating their logbooks, and registers the company supervisor in the system.

*DEDICATION*

Special dedication goes to our project supervisor for guidance he offered, to our fellow students who encouraged us and advised on some faults committed in the process.

Furthermore, I would also wish to direct my kind and honest dedication to the Laikipia University School of Information sciences and technology for the initiative they took in allocating this practical and experiencing process to see us apply theory part of the course.

Finally, dedication goes to the almighty God for the life, peace, good health and strength He accorded me from the start until completion of this small project.

*ACKNOWLEDGEMENT*

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Appreciation also goes to my fellow course mates for the kind of group-work and co- operation we engaged in during the course of the Project process.

Finally, appreciation to my friends/classmates IT group especially for the efforts and assistance in editing and making sure the report was printed in time.

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# CHAPTER ONE: INTRODUCTION

* 1. ***Introduction***

Attachment is the way to explore or expend the related knowledge and skills required in a real world situation and experience to enter into a particular career field. It’s basically for undergraduate student, this not only for gaining experience, but also expose them to find if they are totally interested in the field. All students must pass the entire subject they taken before they go for interns.

Manual process need to be done for this system, manual process means, the student or intern's candidate need to fill a paper form, and also need to submit it by hand to the office. During the training, candidates need to keep update in the logbook about their daily routine of the training by writing it and paste any attachment in the logbook. Finally, progress of the attachment in the logbook will be examined by supervisor in company every week, and by university supervisor at the end of the training by write it in the logbook. Applying a manual process may cause some disadvantages, because it requires them user to write it in a paper, instead of write it in computer. Error on filling in the form can be void if it is filling on computer. And the data can't directly use, but need to be rewritten before can be used, this way will have a lot of work on it. Other than that, problem of losing or misplacing the form can be avoid, or damaging the hardcopy form will not occur.

# Statement of the problem

Before going to the industrial attachment, student need to complete the registration process. The process then need to be done manually, which mean students, need to fill and complete in by writing it in the form. After receiving offer letter from company, students need to inform faculty's attachment coordinator for approving. Beside, when it comes to the day student came to internship place, they need to make a self-report manually by fill in the form in the logbook about details of company. While student undergoing the training, they need to write on the logbook about what they are doing every day in the logbook. Other than that, student performance also has to be marked by company's supervisor every week. The mark will be given in the logbook.

Furthermore, students need to buy the logbook and the logbook itself easily damage.

# Main aim objectives

IAMS has been developed to provide the following:

* + - *To computerize the whole process of the industrial attachment and make it accessible online hence allowing attachment eligibility checking, registration, visit schedule and monitoring of industrial attachment program.*
    - *Develop prototype of E-logbook system*

# Specific objectives

* + - *To co-ordinate the submission of assessments by supervisors*
    - *Receive system-generated message to prompt you to complete task.*
    - *Access timely information on assigned students*

# Research significance

The industrial attachment management system is the proposed system to solve and reduce the heavy workload for the industrial attachment supervisor. The significance of IAMS is to provide a better management solution for industrial attachment, reduce the workload for the industrial training and supporting the staff, simply communication and provide a clear guideline of the industrial attachment for students and company.

The students can access the site from anywhere anytime to access their industrial attachment guideline for industrial attachment report and the logbook. The company will get more information about the industrial training and help them understand more about the industrial attachment. This system will provide the information to help the company to find out what are industrial attachment objectives.

The system can generate documents (letters and reports) and enable students to key in their resume and application online. It also enables the company assessment to be done online.

# Scope of the project

Industrial attachment is a compulsory course that must be taken by all students, over the years it has been tedious finding a place of attachment for most of the students. This has created many concerns since either most of the students get attachment very late making them learn some few skills or in other cases, they totally do not get these opportunities. Through this online system, it provides an entire campus full featured program that tracks the students from the time of their initial interest through the successful completion of their attachment course. The Industrial attachment management system is designed to assist you in developing the most effective program, offering guidance to students looking for an attachment, monitoring those students who are currently in an attachment, administrating the many facets of an attachment program in one place and providing support to the faculty. The software is written to assist five different audiences: Students, Businesses, Attachment supervisors, university supervisor and director of the industry. Automated emails help keep the

Searchable database of internship offerings up-to-date and even remind students of upcoming assignments.

# Limitations of the study

Owing to the scope of this project as mentioned above, this project work is limited to students who are due for industrial training attachment in their various institutions mostly universities and some other higher citadel of learning. It is important to mention that time was a major constraints in the course of the fact-finding.

It is also wise to mention here that some information we need to work was not collected because of unwillingness of the board to reveal such information.

# Benefits and beneficiaries of the study

***Benefits***

***Comprehensive tools that match track and assess***

With all the tools available in IAMS, the process of project creation to selection to evaluation can be streamlined, freeing up the time consuming tasks of documentation. Resources can be shared, experiences can be logged. Critical issues can be rectified quickly protecting the students as well as the companies should any dispute arises.

# Access to a pool of young motivated individuals

Students are spoilt for choice when there are thousands of opportunities offered by different industries. To get noticed by potential students of high caliber, organizations

\can advertise their projects in IAMS. Who knows a talent is scouted when he clicks on the advertisement and applies for the project.

# An extensive repository that stores useful resources

Students applying for industrial attachments are able to go through the organizations’ profiles and determine the available projects that allow them to unleash their strengths and develop more skillsets. Organizations on the other hand can look for young talents and groom them to become driven individuals. IAMS also serves as a one-stop portal

For universities to manage the extensive amount of information posted by students and organizations.

# Beneficiaries of the study

The software is implemented to assist five different audiences: Students, university supervisors, industry supervisors.

# Features at a glance Academic Supervisors

1. ***Assign projects to students***

Projects can be assigned to students based on their choices or via a balloting system, should there be an overwhelming interest for a particular project.

# Track e-logbook

Academic supervisors can track the logbook of the students and access their performance as well as the suitability of the project placement.

# Mark submitted reports

Reports submitted by the students at the end of each project can be perused via the system.

# Post feedback

Suggestions for improvement can be posted to the students after the completion of the project for them to learn from experience.

# Students

1. ***Select projects of interest***

Students can browse through thousands of projects available in the system and they can narrow down their search based on their preferred industry. They can submit their resume and track the status of each application.

# Update e-logbook

Daily activities are difficult to document. With IAMS, students can update their logbook online and submit to their academic supervisors at a click of the mouse after the

Completion of the project.

# Submit reports

Reports can be submitted to the academic supervisors using the system without the need for manual documentation

.

# 4. Assess company

Students can assess their overall experience with the company they are assigned to and provide constructive feedback on improving the effectiveness of the project.

The academic supervisors can determine the success of the project and whether they should continue with the collaboration.

# Industrial Supervisors

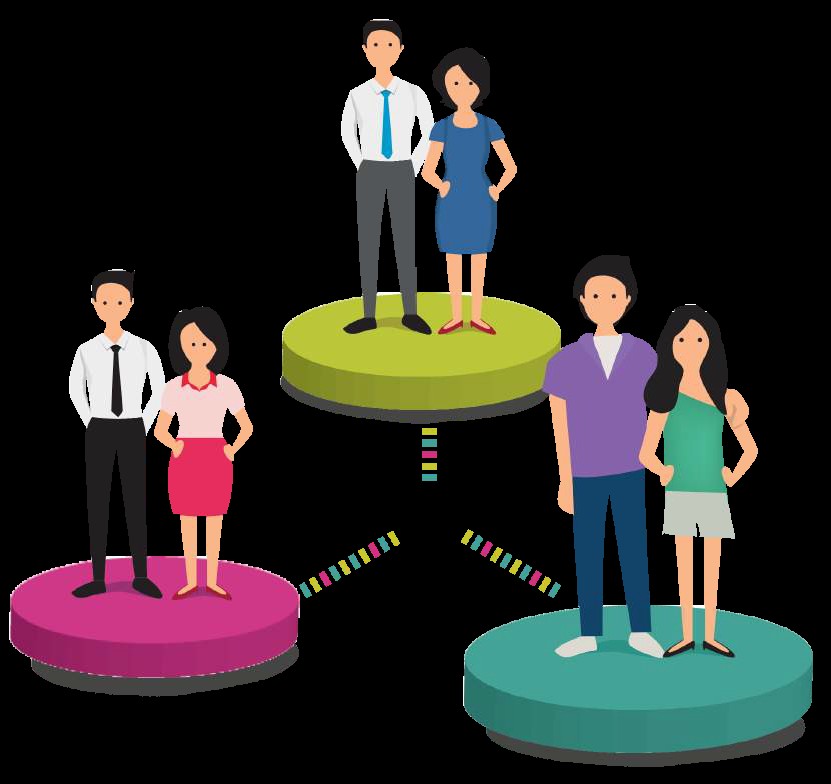
***1 Add & update projects***

The procedure of offering new projects is shortened when organizations submit their new projects via IAMS for approval by the universities or for students to start bidding. **2 Track e-logbook**

By tracking the e-logbook, industrial supervisors can determine if their offerings are well suitable for the students, and make improvements to enhance their experience.

ACADEMIC SUPERVISORS

STUDENTS



COMPANY SUPERVISORS

# Project justification

Industrial attachment management system provides ease to the intended users through its functional features. Its provides a computerized way of doing things, doing away with the manual paper work and also costly since you have also to travel finding the places to be attached to.

IAMS will ensure that not every student misses the compulsory attachment programs to enhance their practical skills making them more competent in the job market. The industrial attachment management system is designed to assist in developing the most effective program, offering guidance to students looking for an internship, monitoring those students who are currently in an internship, administrating the many facets of an internship program in one place and providing support to the faculty.

# CHAPTER TWO: LITERATURE REVIEW

* 1. ***Introduction***

This chapter is to explain about the reviews for this project. It is divided to two major parts:

System/present review and technique, method, equipment, as well technology review.

# Existing System Review

This section is to review the current system and the existing system that related to Industrial

Attachment system.

# Industrial Training Online Management System.

This system consists of 9 modules, i.e. security, job application, allocation, notification, feedback, maintenance, query, report and housekeeping. The project main purpose are to allow student send online resume, coordinator send reminder to collect survey form from student and so on.

# Industrial Training System (ITS)

Industrial Training Systems (ITS) is a web based application system, which is developed to manage the industrial training process. During industrial attachment, students will be

Placed at selected organizations for a predetermined duration of time in order for them to obtain exposure to the career world and for them to be able to relate what has been learned theoretically with the real application.

Modules that consist in the **ITS** are [3]:

* *Main Page*
* *User Profile Management*
* *Program Session Management*
* *User Management by System Admin/industrial Training Committee*
* *Student Pre-registration*
* *Company Management*
* *Placement and Letters Management*
* *Supervision*
* *Event Management Assessment*
* *Survey*

# Industrial Training System

This system is an application to manage the industrial training process. This is a manual system, where student need to buy a logbook, in the logbook candidate need to fill the form of self-report, and fill the log for everyday buy writing

**Or** attach it in every page. The supervisor of the company need to give **mark to** the student every week, by rate the log in the logbook.

# Comparison between all the existing systems.

Table 2.1 show the comparison of all existing system with the propose system. **Table 2.1:** Comparison between all three existing system

|  |  |  |  |
| --- | --- | --- | --- |
| ***Modules*** | ***Industrial system*** | ***ITS*** | ***Industrial training***  ***system*** |

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| ***Online system*** | *Yes* | *Yes* | *No* |
| ***Self-report on first day of training*** | *No* | *No* | *Yes* |
| ***Log for everyday*** | *No* | *No* | *Yes* |
| ***Giving mark base on log*** | *No* | *No* | *Yes* |
| ***Submitting report*** | *Yes* | *Yes* | *No* |

# Technique

This section will review on the current technique on the web application, programming language, framework, database language, web server and methodology.

# Web Applications

A web application is an application that is invoked with a web browser over the Internet. Web application development requires agility, the use of standard components, interoperability and close attention to user needs. Web Application is support user participation to add value to the application and collaborate with other users. It has brought new emphasis to the role of (unstructured) data in applications. Web prefetching is a technique that is commonly applied to reduce the access latency perceived by web user. This technique enables a web application to prefetch data from the server so that it is immediately available upon user actions. Web application must prefetch using accurate information in order to achieve reasonable performance that justifies the additional resources consumed (bandwidth, extra server load).

# Web browser

Web browser is a software application for retrieving presenting and traversing information resources on the World Wide Web.

# Google Chrome

Google chrome is compatible with Window XP, Vista, Windows 7 and windows 10. It is initially designed for speed and generally faster browsing from double clicking on the icon on desktop, we can potentially be browsing in less than a few seconds flat. Besides, it is a simple design with rather no clutter in the toolbar and includes an auto update

In addition, a built-in malware. This browser also support the HTML5, CSS3 and JS.

# Mozilla Firefox

Some of the features include tabbed browsing, integrated search box, add-ons and custom skins. Security wise includes anti-spyware, anti-virus, anti-phishing, popup blocker and private mode. Configurations are supported with Window Vista, XP and MAC. Also, support HTML5

# Internet Explorer

Internet Explorer 10 is the current version with more features than ever before including a neat tool that allows us to pin sites that we regularly visit and have access to them directly from the toolbar. Other features include a more powerful download manager, enhanced tabbed browsing, search using the address bar as opposed to an integrated search box and hardware acceleration to name just a few. It also support the HTMIL5,

The before version did not support it.

# Tools for making dynamic and interactive Web pages

There are many tools can be used to create dynamic and interactive web pages.

PHP, ASP.NET and JSP is the most popular programming tools for develop web pages.

# PHP

PHP is a powerful tool for making dynamic and interactive Web pages. It is the widely used, free and efficient. PHP and MySQL has been the main web development tool for it is free and open sources. They take PUP as the development language because: free, small size of project, strong supporting, good portability, simple grammar and rapid development.

# ASP.NET

ASP.NET is a web application framework developed and marketed by Microsoft to allow

Programmers to build dynamic Web sites, Web applications and Web services.

# JSP

Java Server Pages (JSP) technology provides a simplified, fast way to create dynamic web content. JSP technology enables rapid development of web-based applications that are server and platform independent.

# Comparison between all the tools.

|  |  |  |  |
| --- | --- | --- | --- |
|  | ***ASP.NET*** | ***PHP*** | ***JSP*** |
| ***Security*** | *Safety is good, there exist certain degree of security vulnerabilities* | ***PHP*** *is recognized safety performance* | *Safety is the highest* |
| ***Platform incompatibility*** | *Single platform* | *Multiplatform* | *Multiplatform* |
| ***Operating efficiency*** | *High* | *Higher* | *Highest* |
| ***Cost*** | *High* | *Free* | *High* |

* 1. ***Web server***

Web server can be define as either hardware (computer) or the computer software that use to deliver web content that can be accessed through the internet. Any computer can be use as web server by installing server software and connecting the machine to the Internet. There is several web server software application, including public domain software NCSA and Apache.

# Apache

Apache is a software foundation that create and provides a web servers software as an open source software. HTTP server, which is the most popular H1TP server in use today, is their main product. This service is very free. The advantages of apache is:

* *Apache has various useful features*
* *Apache server and API source code are open to public*
* *Run faster and consumes less system resource*
* *Can be run on various operating system*

# XAMPP

XAMPP is a free and open source cross-platform web server stack package. The main tools that contain in it are Apache HTTP Server, MySQL database and interprets for scripts written in PHP and Perl programming languages. XAMPP is an easy to install Apache distribution containing MySQL, PHP and Pen.

# METHODOLOGY

* 1. ***Introduction***

The entire development procedure for this system was based on Incremental model of software development since tests will be conducted at the end of each phase. The system was broken down into modules and subtasks. During the development process, the system went through the phases of feasibility study, requirements elicitation, requirements analysis, design, coding, verification and validation and implementation and support. Incremental model carries several advantages:

* + - *It is a simple and easy model to use.*
    - *Each phase would have specific deliverables.*
    - *Easy to understand and to use.*
    - *The model involves testing early in the life cycle.*
    - *Stabilizes requirements because it is developed up front like the waterfall model.*
* *This model works well for small projects.*

# System Requirements.

* + 1. *Software Requirement.*
       - *Operating System: Windows based and Linux*
       - *Server: Wimp Server*
       - *Browser : Mozilla Firefox/opera/internet explorer*
       - *Front-end :Dreamweaver/Adobe cs5/PHP 5.3*
       - *Back-end: MySQL Server 5.3.1*

# Hardware Requirement.

* + - * *Processor : Dual core and above*
      * *RAM : 512MB and above*
      * *Hard Disk Utilization : 40 GB and above*
      * *Input Devices : Mouse, Keyboard*
      * *Output Devices : Monitor, Printer, etc.*

# Requirements Specification.

This category contains two types of requirements:

* + - *Functional requirements – these are statements of services the system should provide or is expected to provide.*
    - *Non-functional requirements- These are constraints on the services or functions offered by the system.*

# Functional Requirements.

Some of the functional requirements include:

* + - * *Authentication*

The login is used to ensure that authorized people access the system

* + - * *Administrative functions*

(This include school administrators and the company /business administrators)

* + - * *Enable the supervisors award marks based on the e-logbook*
      * *Enable students data tracking*
      * *Authorization levels*

Permissions granted to the administrators are not similar to those for students and any other user.

# Non-Functional Requirements.

* ***Performance:***
  + *Performance requirements define acceptable response times for system functionality.*
* *The load time for user interface screens shall take no longer than five seconds.*
* *The log in information shall be verified within five seconds.*
* *Queries shall return results within five seconds.*

# Reliability:

* *Good validations for user inputs will be done.*
* *Avoid incorrect storage of records.*

# Security:

* *Encrypted Password.*
* *Administrator has more rights than the sub user.*

# Portability:

* *This Website opens in any personal computer supporting windows, Linux, Unit operating system.*

# Flexibility:

* *The system keeps on updating the data according to the transactions that takes place.*

# Maintainability:

* *During maintenance stage,*

# Timeliness:

* *The system carries out all the operations with consumptions of very less time.*

# Design constraints:

* *This system includes a web application and it runs in any Platform (Windows, Linux, UNIX, etc.).*
* *The system shall be developed using PHP and MySQL server database.*
* *System must have Windows OS installed on it.*
* *Database is secured by password*

# System Design.

* + 1. ***General overview***

System design is an integral part in any working software worth implementing. In this section, we shall look into the data aspect and component interface for ‘Industrial Attachment Management System’.

The system will generally interact with various entities from database server to Web server and will interact with users via Web clients. This is as shown below.

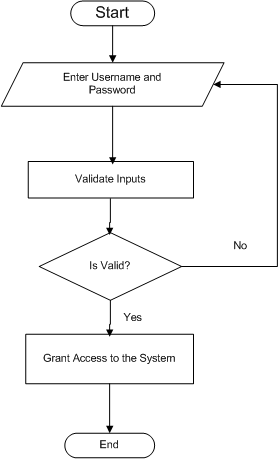
Three design levels that were applied in development of the system are

* *Architectural design*
* *Components design*
* *Database design*

# Architectural design

In this, design level, the basic structural framework that identifies the major components of a system and the communications between these components.

# Login Flowchart



* + 1. ***Database Design/table structure.***

The data for designing and implementing the schema of the database depends on the properties of pages and users.

The page data needed by the IAMS pages are title, header, body and several tabs to move around the web pages. The user data needed by the system are the user social security number or student id, user name, password, first name, last name and e-mail address. The role of a user is automatically determined by the system at the time of login authentication and the user is automatically redirected to the appropriate page. All the user data will be checked on the server side when the user is created. All information entered by a user will be checked and appropriate error messages will be flagged by the System.

Some of the important error messages flagged include password mismatch and missing required fields. A unique number identifies every record stored in the database and, that serves as a parameter to check Integrity constraints and maintain true data in the database.

# Database Schema Logical Model -Relational Schema

The conceptual model EER diagram maps into the following relational table design. In the following tables, fields with keys indicate the primary key.

Figure 3. Entities and Attributes

# Data Type and Details

The logical model establishes the following detailed design in MySQL database. The following tables describe data type, length, primary key, null or non-null keys, and extra information, such auto increment. The password field in the database is encrypted and it is shown in the web pages as some special character repeated as many times as the length of the actual password. Fields like company description and document description are of the type memo, which will allow unlimited characters in a single row.

Table 1. Structure of Table student

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Field* | *Type* | *null* | *key* | *default* | *extra* |
| *Ssn* | *Int(10)* | *No* | *PRI* |  |  |
| *faculty* | *Int(10)* | *No* |  |  |  |
| *phone* | *Int(10)* | *yes* |  |  |  |
| *Start-date* | *Varchar(10)* | *No* |  |  |  |
| *End-date* | *Varchar(10)* | *No* |  |  |  |
| *Company name* | *Varchar(30)* | *No* |  |  |  |
| *Supervisor* | *Varchar(20)* | *No* |  |  |  |

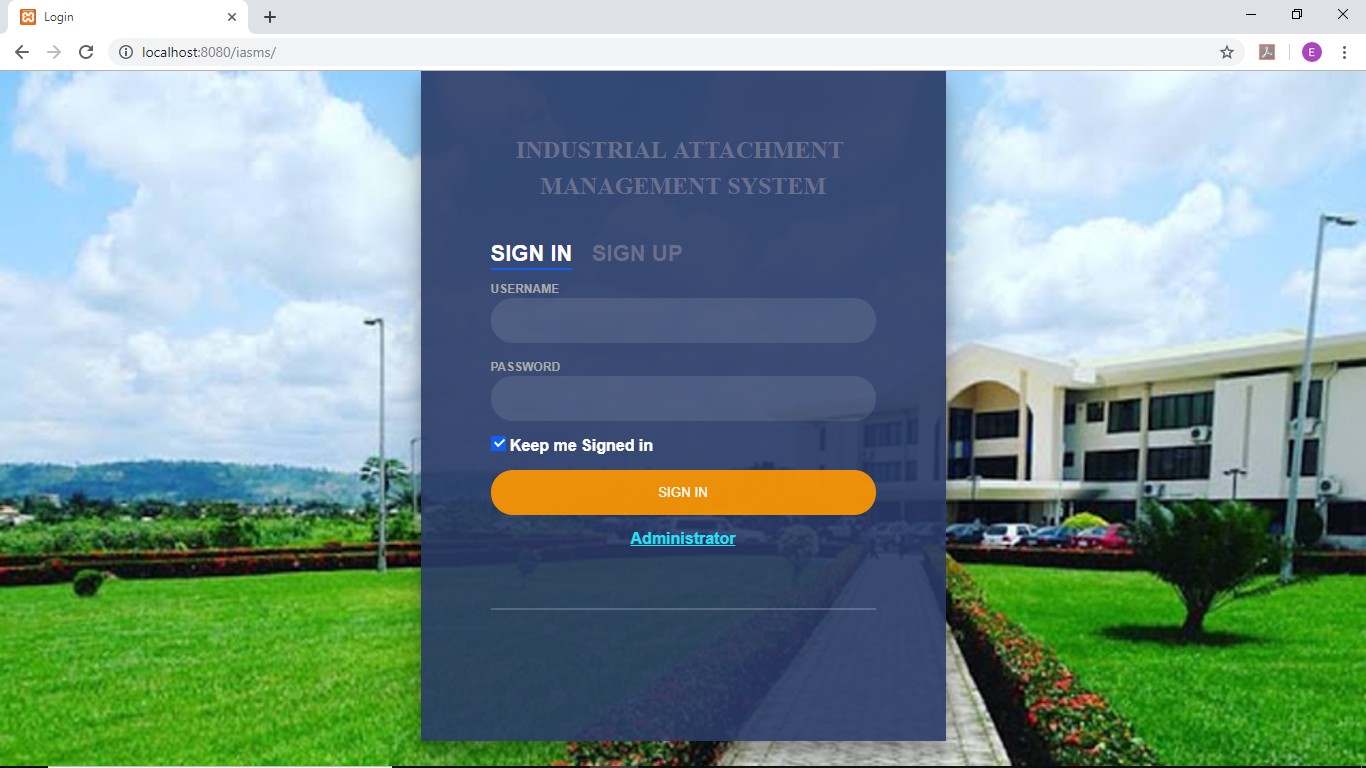
Table 2. Structure of Table Company

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *Field* | *Type* | *null* | *key* | *default* | *Extra* |
| *Id* | *Int(2)* |  |  |  |  |
| *Name* | *Varchar(30)* |  |  |  |  |
| *Memo* | *Varchar(20)* |  |  |  |  |

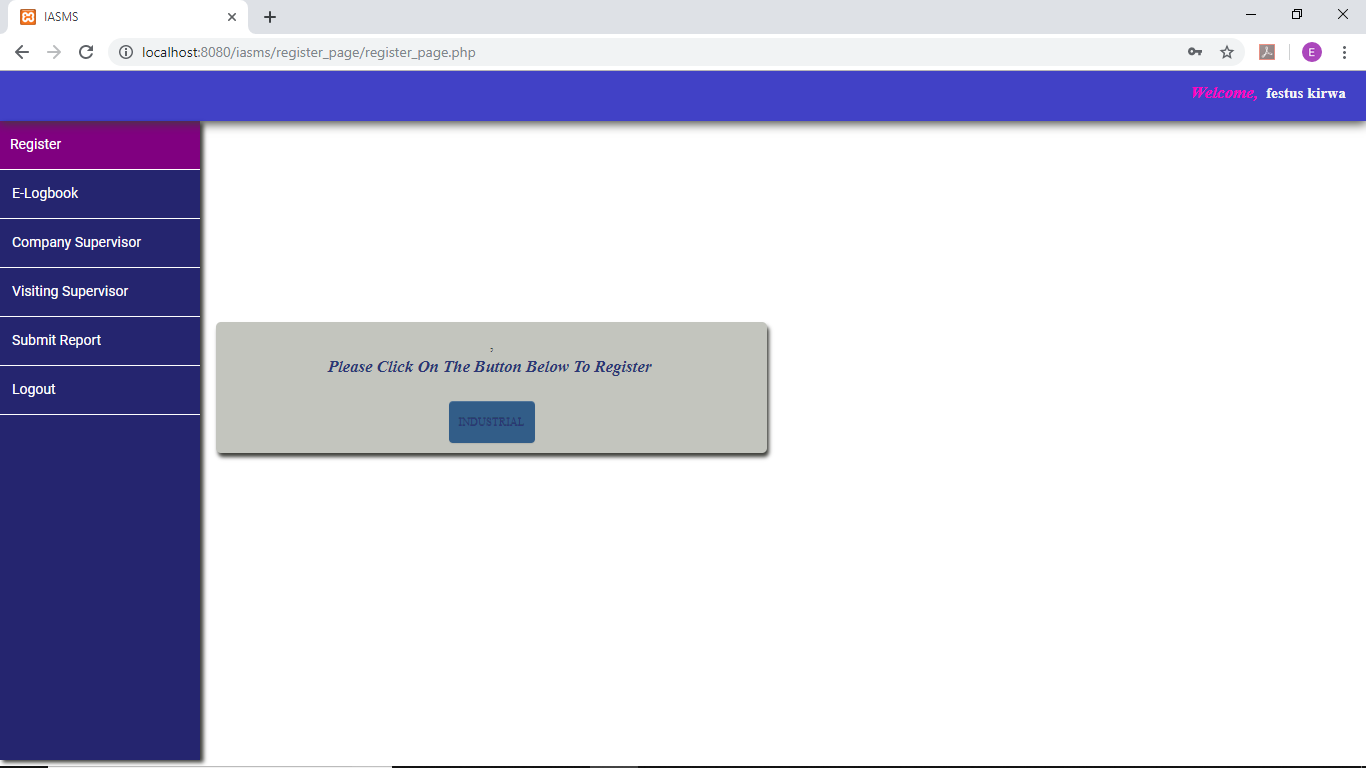
# System overview

* + 1. ***Login.***

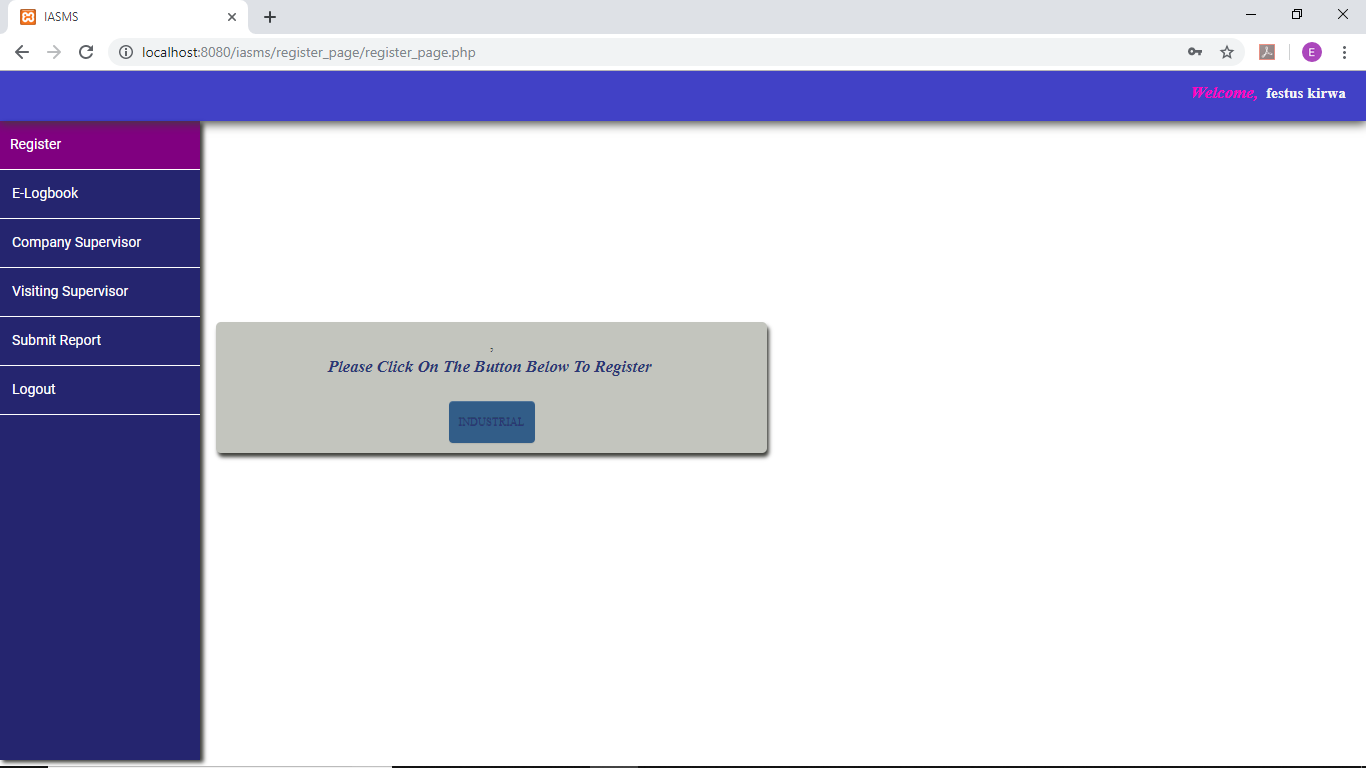
This screen shot shows system entry point from where users get access to the system when one clicks the **USER LOGIN HERE** button. The users have to provide his/her valid login credentials registered in the system by the administrator. See Figure 1.3 below.



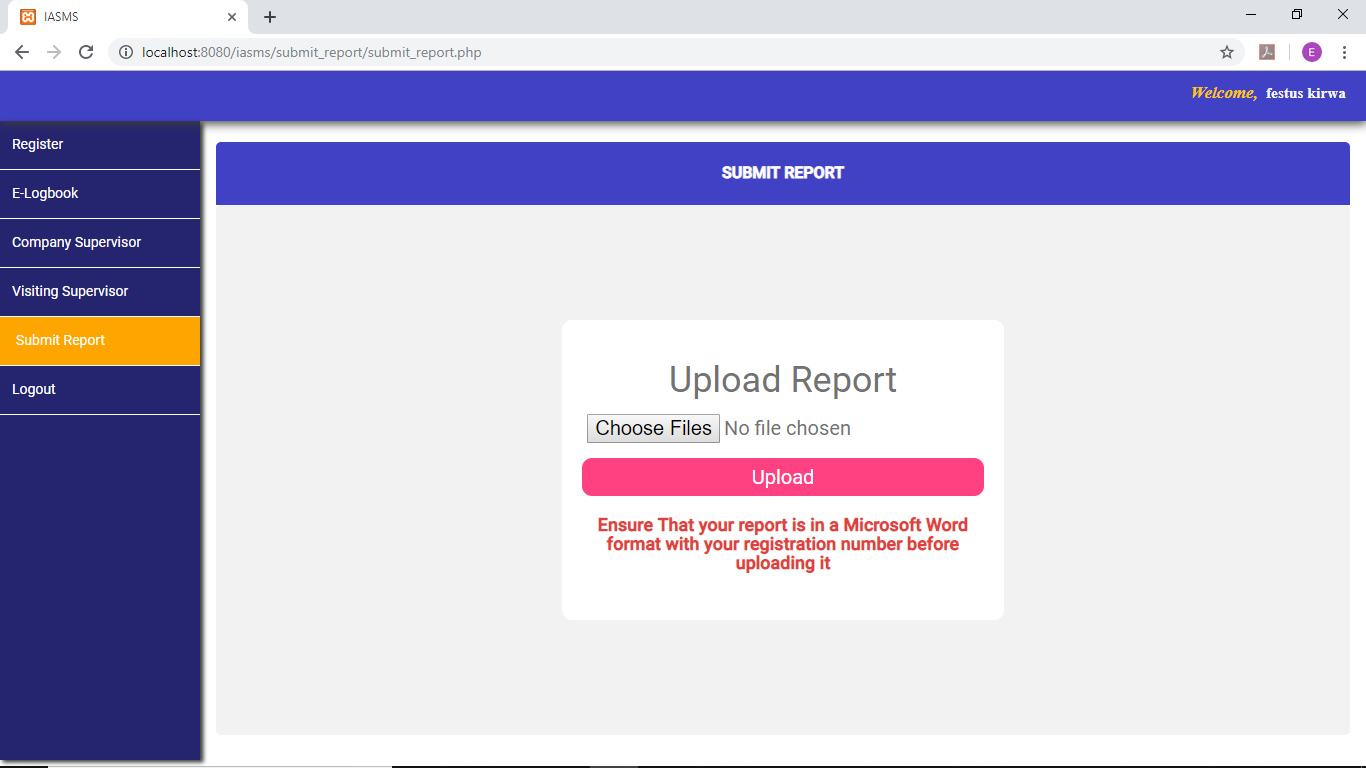
# Register page



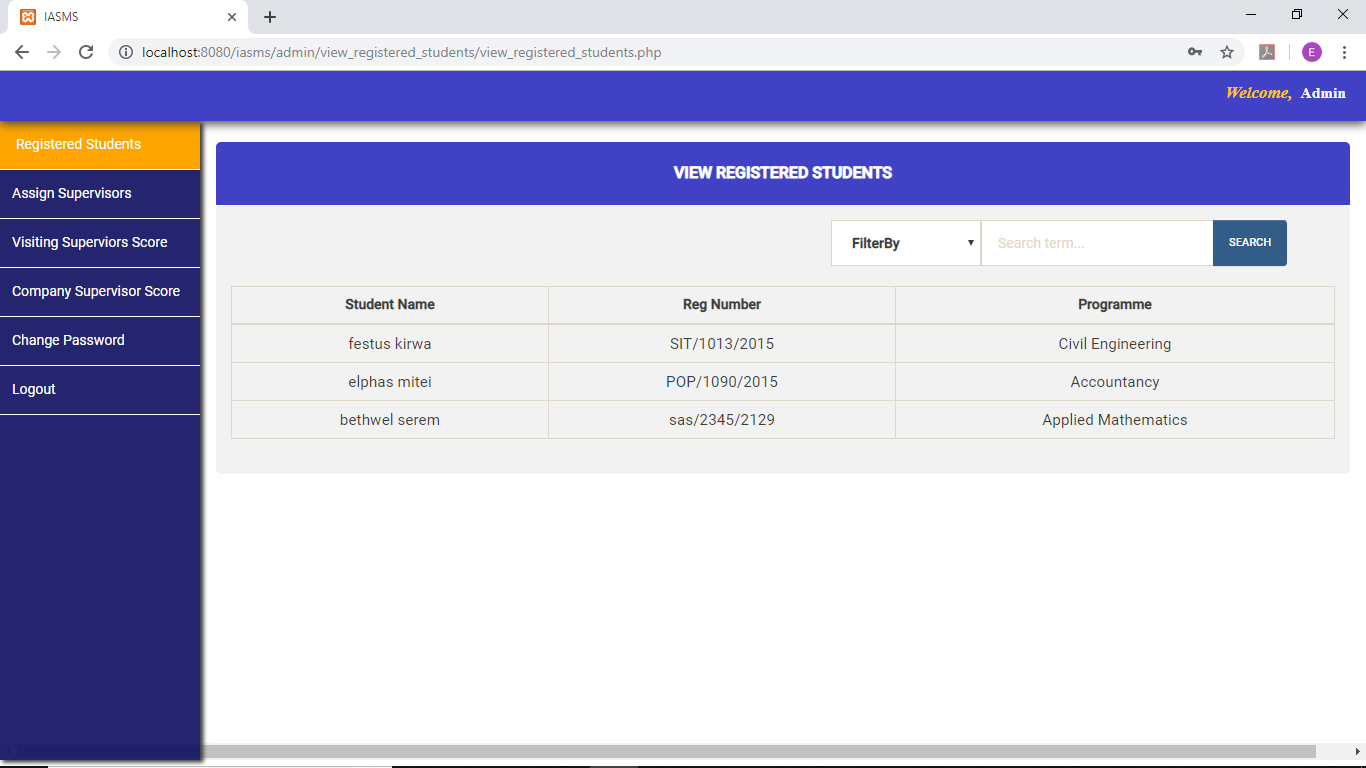
* + 1. ***E-log book page***



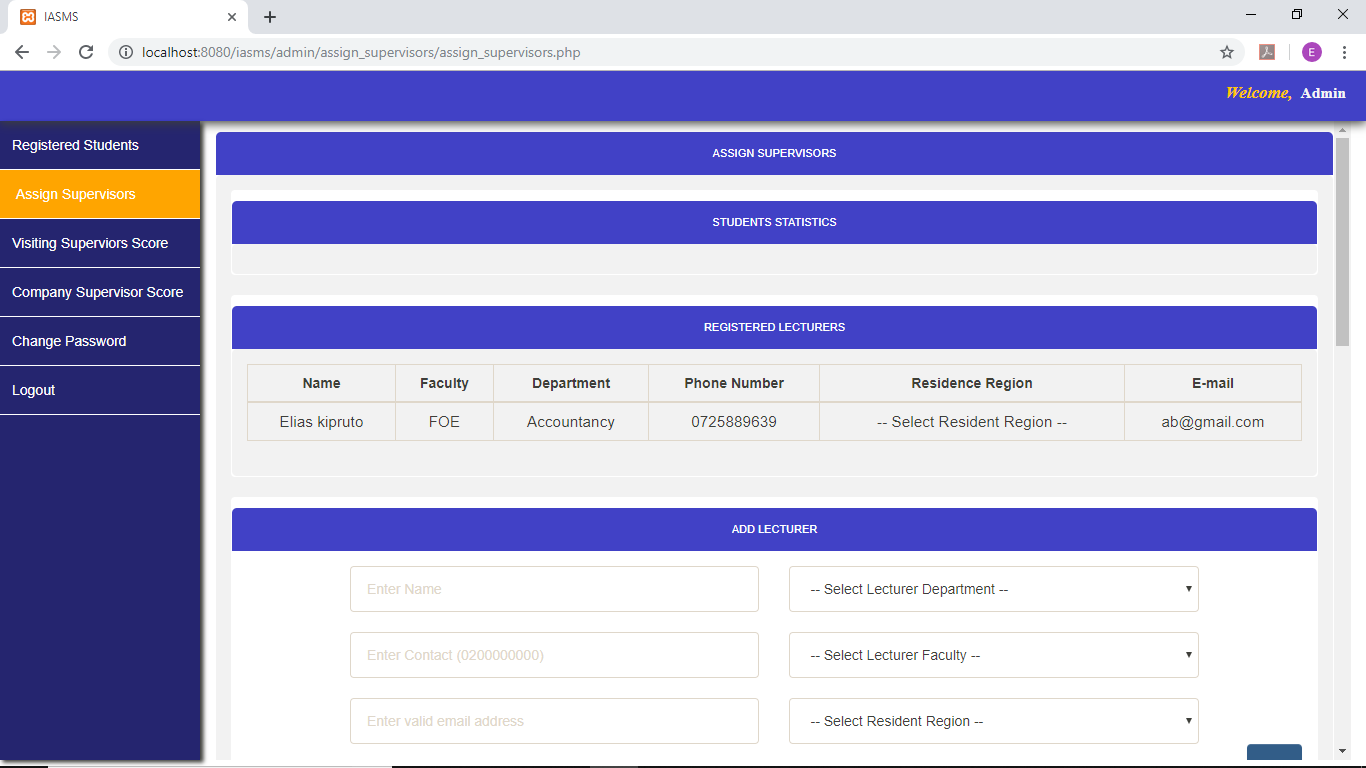
* + 1. ***Submit report page***



* + 1. ***Registered students page***



# Assign supervisors page



* 1. ***Research method***

Before online monitoring system is developed, a full understanding of the current workflow is required. Roles of the coordinator and students are identified based on the previous practice, which has been conducted manually. Hence, from this information, the flow of the activity is outlined to make sure all the procedures are covered by this system. System Development Life Cycle (SDLC) is used in the development of this system. Phase (1) Planning, (2) Analysis, (3) Design, (4) Implementation, and (5) Support and Maintenance measures through Waterfall model as a system development methodology. XAMP application is used to setup local-host server and MySQL is used for database applications.

# SYSTEM IMPLEMENTATION

* 1. ***Implementation, coding and testing.***
  2. ***Code Details.***

The purpose of code is to facilitate the identification, retrieval of the items and information. A code is an oriented collection of symbols design to provide unique identification of an entry or attribute. Code is built with manually exclusive features. Codes in all cases specify object which are physical or on performance characteristics. They are used to give optimal distraction and other information. Codes are used for identifying, accessing, storing and matching records. The codes insure that only one value of the code with a single meaning is correctly applied to give entity or attribute as described in various ways. Code can also be design in a manner easily understood and applied by the user.

# Coding Standard.

The standard used in the development of the system is Microsoft Programming standards. It includes naming conversions of variables, constants and objects, standardized formats or labeling and commenting code, spacing, formatting and indenting.

# Naming Convention

Function names and interface names will start with small letter. The function names will start with small letters and the first letter of each word in the function name will be in capital letter.

# Labels and Comments

Sufficient labels and comments are included in the description of it for the benefits if the developer and other programmers who might examine it later.

User Interface:

* + - * *For all the entry screen frames are used which will show the type of the user who is currently logged in and the menus.*
      * *Standard actions are used for standard actions.*
      * *Same font is related properties are used for similar screens.*

The method of implementation and the time scale to be adopted are found out initially. Next the system is tested properly and the users are trained in the new procedures.

# Testing Introduction.

Software Testing is the process of executing software in a controlled manner, in order to answer the question - Does the software behave as specified? Software testing is often used in association with the terms verification and validation. Validation is the checking or testing of items, includes software, for conformance and consistency with an associated specification. Software testing is just one kind of verification, which also uses techniques such as reviews, analysis, inspections, and walkthroughs. Validation is the process of checking that what has been specified is what the user actually wanted.

Validation:Are we doing the right job?

Verification:Are we doing the job right?

Software testing should not be confused with debugging. Debugging is the process of analyzing and localizing bugs when software does not behave as expected. Although the identification of some bugs will be obvious from playing with the software, a methodical approach to software testing is a much more thorough means for identifying bugs. Debugging is therefore an activity, which supports testing, but cannot replace testing.

Other activities, which are often associated with software testing, are static analysis and dynamic analysis. Static analysis investigates the source code of software, looking for problems and gathering metrics without actually executing the code. Dynamic analysis looks at the behavior of software while it is executing, to provide information such as execution traces, timing profiles, and test coverage information.

Testing is a set of activity that can be planned in advanced and conducted systematically. Testing begins at the module level and work towards the integration of entire computers based system. Nothing is complete without testing, as it vital success of the system testing objectives, there are several rules that can serve as testing objectives. They are

* *Testing is a process of executing a program with the intent of finding an error.*
* *A good test case is one that has high possibility of finding an undiscovered error.*
* *A successful test is one that uncovers an undiscovered error.*

If a testing is conducted successfully according to the objectives as stated above, it would uncovered errors in the software also testing demonstrate that the software function appear to be working according to the specification, that performance requirement appear to have been met.

There are three ways to test program.

* *For correctness*
* *For implementation efficiency*
* *For computational complexity*

Test for correctness are supposed to verify that a program does exactly what it was

Designed to do. This is much more difficult than it may at first appear, especially for large programs.

# Test plan.

A test plan implies a series of desired course of action to be followed in accomplishing various testing methods. The Test Plan acts as a blue print for the action that is to be followed. The software engineers create a computer program, its documentation and related data structures. The software developers is always responsible for testing the individual units of the programs, ensuring that each performs the function for which it was designed. There is an independent test group (ITG) which is to remove the inherent problems associated with letting the builder to test the thing that has been built. The specific objectives of testing should be stated in measurable terms. So that the mean time to failure, the cost to find and fix the defects, remaining defect density or frequency of occurrence and test work-hours per regression test all should be stated within the test plan.

The levels of testing include:

* *Unit testing*
* *Integration Testing*
* *Data validation Testing*
* *Output Testing*

# Unit testing.

Unit testing focuses verification effort on the smallest unit of software design – the software component or module. Using the component level design description as a guide, important control paths are tested to uncover errors within the boundary of the module. The relative complexity of tests and uncovered scope established for unit testing. The unit testing is white-box oriented, and step can be conducted in parallel for multiple components. The modular interface is tested to ensure that information properly flows into and out of the program unit under test. The local data structure is

Examined to ensure that data stored temporarily maintains its integrity during all steps in an algorithm’s execution. Boundary conditions are tested to ensure that all statements in a module have been executed at least once. Finally, all error handling paths are tested.

Tests of data flow across a module interface are required before any other test is initiated. If data do not enter and exit properly, all other tests are moot. Selective testing of execution paths is an essential task during the unit test. Good design dictates that error conditions be anticipated and error-handling paths set up to reroute or cleanly terminate processing when an error does occur. Boundary testing is the last task of unit testing step. Software often fails at its boundaries.

Unit testing was done in Sell-Soft System by treating each module as separate entity and testing each one of them with a wide spectrum of test inputs. Some flaws in the internal logic of the modules were found and were rectified.

# Integration testing.

Integration testing is systematic technique for constructing the program structure while at the same time conducting tests to uncover errors associated with interfacing. The objective is to take unit tested components and build a program structure that has been dictated by design. The entire program is tested as whole. Correction is difficult because isolation of causes is complicated by vast expanse of entire program. Once these errors are corrected, new ones appear and the process continues in a seemingly endless loop.

After unit testing in IAMS all the modules were integrated to test for any inconsistencies in the interfaces. Moreover, differences in program structures were removed and a unique program structure was evolved.

# Validation testing or system testing.

This is the final step in testing. In this, the entire system was tested as a whole with all forms, code, modules and class modules. This form of testing is popularly known as Black Box testing or System tests.

Black Box testing method focuses on the functional requirements of the software. That

Is, Black Box testing enables the software engineer to derive sets of input conditions that will fully exercise all functional requirements for a program.

Black Box testing attempts to find errors in the following categories; incorrect or missing functions, interface errors, errors in data structures or external data access, performance errors and initialization errors and termination errors.

# Output testing or user acceptance testing.

The system considered is tested for user acceptance; here it should satisfy the firm’s need. The software should keep in touch with perspective system; user at the time of developing and making changes whenever required. This is done with respect to the following points.

* *Input Screen Designs,*
* *Output Screen Designs,*

The above testing is done taking various kinds of test data. Preparation of test data plays a vital role in the system testing. After preparing the test data, the system under study is tested using that test data. While testing the system by which test data errors are again uncovered and corrected by using above testing steps and corrections are also noted for future use.

# Validation Checking:

At the culmination of integration testing, software is completely assembled as a package; interfacing errors have been uncovered and corrected, and a final series of software test-validation checks may begin. Validation can be defined in many ways, but a simple definition (Albeit Harsh) is that validation succeeds when software functions in

A manner that can be reasonably expected by a customer. Software validation is achieved through a series of black-box tests to be conducted and a test procedure defines specific test cases that will be used in attempt to uncover errors in conformity with requirements. Both the plan and procedure are designed to ensure that all functional requirements are satisfied; all performance requirements are achieved; documentation is correct and human –Engineered and other requirements are met. Once the application was made free of all logical and interface errors , inputting dummy data to ensure that the software developed satisfied all the requirements of the user did validation checks .However , the data was created with the intent of determining whether the system will process them correctly .

# SUMMARY, CONCLUSION AND RECOMMENATIONS

* 1. ***Summary***

IAMS provides a very good communication environment for the supervisors and the

Students who wish to register for an attachment. For the supervisors, IAMS offers a very good environment to monitor a student's progress and avoid unnecessary delays. For the students, IAMS provides a good environment that all the students can look at the shared information about companies. Students can read the attachment guidelines online and understand all that it takes to successfully complete an attachment. The system is very easy to use and any additional requirements can be easily added without affecting, the current information. This is what makes it so convenient to use. The administrator of the system has the privilege to back up the entire system with a click of a button. The session checked function on every page ensures that the user is authorized to view the contents of that page and thus prevents any malicious

# Conclusion

The successful implementation of this scheme will depend largely on provision of

Lecturers and facilities. Better practical aids, laboratories and equipment’s will assist in producing better students. It will also depend on a strong economy or the availability of fund to pay for the cost.

From this point of view the four months program is found to be an interesting and sweet one. When the knowledge must have been acquired, the student now develop the zeal to go acquire more information to help in developing his/her educational career and also skill and better future.

# Recommendation

Industrial attachment is a government policy aimed at boarding the learning ability of students, also help to equip them better on how to face challenge when they finally employed. There are some observations I have made and below are some recommendations.

1. *The school authority should enlighten the students on the benefits derived to willingly present themselves for the program, despite the limited period.*
2. *The supervisors from each school should check the students at their place of work once or twice before the completion.*
3. *Government on its part should make reasonable payment to students on completion of this program. This will help to reduce the financial burden on parents of those students. It will help encourage the students to participate fully.*

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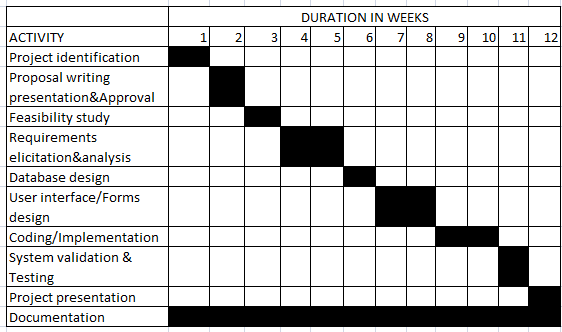
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# APPENDICES

* 1. ***Project Schedule:***



# Budget:

|  |  |  |
| --- | --- | --- |
| *NO* | *ITEM* | *AMOUNT* |
| *1* | *Personal computer* | *18,000* |
| *2* | *Stationaries and printing* | *1,000* |
| *3* | *Internet service* | *1500* |
| *4* | *Storage media* | *800* |

|  |  |  |
| --- | --- | --- |
| *5* | *Documentation* | *1,000* |
| *TOTAL;* |  | *22,000* |