Teaching Assignment
Group 26

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Phase I

***Abstract*—Resource management is very important in any industry such as business, university, and human resource management, and the more salient is doing effectively with greater throughput in the system. We are developing a platform where the system is proven to be an aid in time and teaching organization in the proper direction. Many people want to organize events that are directly or indirectly available for teaching. So, they will be able to organize the time on our system. For that, they need to provide some details of subject efficiency and interest as well as the availability of the time. After the schedule meant of any time on our platform, professor and program co-ordination will be allocated based on certain preferences and expertise in particular filed, interests, too. Events can be categorized according to the subject, acquired subject as well as program time-line. The number of participants though it depends on the availability of instructor and total subjects, who needed the allocation of faculty. Sometimes people are not able to organize in such a way that proves to be more effective from both the side, interest of instructor and subject with particular experience to the lecturer. By using this system, who builds allocation based on strategies results to be more time saving and easy to use for senior managerial staff for education firm.**

I. Introduction

We are providing a platform for university committee or higher positional staff who does the assignment for mapping between professor and course to teaching in particular term or time.duration. In addition to this, a university committee or higher positional staff organizer can edit information regarding the preference of tutor and time duration for which particular faculty can assist that subject based on availability without any conflict with any other professor timing Professor chooses interested subject to register and request for tutoring to coordination subject. Moreover, the university committee or higher positional staff is responsible to maintain the registration of subjects, availability, preference and program term.

II. Progress

A. Identifying the definition of problem

We started our first elaboration phase by arranging a first meeting.In the meeting we identify the problem of the definition by considering certain aspects like the people facing the problem.After identifying the problem, we find about the different solution we can apply for the problem.Each member gave their perspective and out of that the best solution was decided.

B. Creation of Artifacts of Inception

An artifact is one of many kinds of tangible by-products produced during the development of software or system.It includes various forms form of inception like vision and business case, Supplementary specification(Non functional Requirements),Functional Requirements etc.Artifacts are important in terms of project management perspective.[2]

C. Creation of Grasp Pattern

Grasp is a General Responsibility of Assigning Software Pattern[3].It is a procedure of assigning different responsibility to different modules.We identified the modules required for the system and assign them with different responsibility.

After identifying the requirements of the system and planning stage. We decided the technology for our system.We are using PhpMyAdmin database for storing the database of our system.Currently we hosting the database on local host[1].Database will have different tables having different values used in the system.For back end development of the system we will be using Java language using Eclipse Tool.Database will be connected with the Eclipse to use the data for operation.[5]

Currently we are finding algorithm for the preferences of the instructor.The algorithm is key part of the system in terms of preferences for the instructor to assign the courses.

III. Deliverables

Higher authorities will be able to log in and register. The system will be categorized according to the program list, subject, instructor, instructor preference, require a subject, subject instructor, and program timeline. The program list will be categorized according to total term and for which term willing to organize such as winter, summer, and fall. Instructor categorization having certain personal information about the instructor. Require subject demonstrated for which subject particular professor willing to teach for a particular term. Instructor preference based on the field of interest of an instructor for a particular subject to teach in university based

on priority. subject instructor contains the mapping between particular instructor and program timeline for which faculty assisting the subject. Program timeline having information about starting term and year regarding the term. The subject is the classification of subjects with the requirement of the instructor.

IV. Issues and Mitigation

Firstly, we did a group discussion for a role assignment for various designated area of development and discussed the different part of the software system. The first issue was to necessary features that will help to fulfill the concept and goal of a more effective and efficient system. This issue was mitigated by having interacting discussion between group members and writing all the clear objectives. After initiating the implementation, secondly, we faced some hurdles related to the password for particular user id where we were not able to fetch password because of a database failure, while login into the system. So we fix the database to carry the password associated with a particular email id. While creating modules of login and registration, we face the issue of NullPointerException, to encounter this problem modify the field of a null object. We needed to change the database of the system after consulting with Dr. Zaid Kobti and also according to the new requirements , we needed to alter the framework of the system.

V. Test Strategy

We would be following Test Driven Development approach as a testing strategy. According to this strategy, we are writing test cases first and then start development. Few scenarios will be handled in test cases and if it gets pass then that code will be used in development and then unit test cases will be executed with complex scenarios to verify the code works properly and as expected We would use test driven development which will use Junit test cases[4].The JUnit Platform serves as a foundation for launching testing frameworks on the JVM. It also defines the TestEngine API for developing a testing framework that runs on the platform. Furthermore, the platform provides a Console Launcher to launch the platform from the command line and a JUnit 4 based Runner for running any TestEngine on the platform in a JUnit 4 based environment. First-class support for the JUnit Platform also exists in popular IDEs (see IntelliJ IDEA, Eclipse.

VI. Product Documentation Draft

The product documentation draft defines the documenatation required during the development of softaware. The draft can contains functional requirements for the system, non-functional requirements for the system .

A. Functional Requirements

This draft includes the functional requirements of the system. Here are the functional requirements of our system.CRUD operation is the key functionality so drafting of CRUD operation for both admin and user is key feature.Other functionality is the security of the system for which documentation will be given to assure the authentication of the user.

B. Non-Functional Requirements

Non Functional Requirements involve regular maintenance of the Database.Database needs updation every time it is changed so it a key feature in non-functional requirements.Reliabilty and functionality of the system needs documentation so that the user can have knowledge about the system. Functionality

The main features of the system is that it will assign the course according to his preference and program. The system is capable to take preference of the instructor and also it will be updated if any instructor changes their preferences. In terms of security, the system is secured and it will only allow authenticated user to access the system.

1) Usability: The user will be able to access the system easily even if the user don't know much about technology or how to use the system. The user will also be provided documentation or help frames about the working of system

2) Reliability: The bugs in the system will automatically detected and it will be removed periodically. The system will be periodically checked after every failure. The mean time between failure will be calculated for the system.

3) Performance: The system will be available on every time except the maintenance period. There will be minimal usage of the local device resources The response time for every action will be calculated The accuracy of the system is a key part for the system so for that the system will be auto checking the action done

4) Supportability: The system will be available on every platform for example it can works on windows OS as well as Mac OS.

Phase II

ISSUES FACE IN DATABASE

In the first phase we were using PhpMyAdmin Database to store the database of the system.We were using the database availabe on the http://help.cs.uwindsor.ca/ to connect with the system.But we were not able to connect the database with the system.After consulting with Dr Ziad Kobti, we decided to change the hosting of Database from PhpMyAdmin.We than decide to host our system on localhost by using MySQL Workbench.We created the database of our system on MySQL Workbench and then connect the database with the system.

SYSTEM TEST

We perform different types of system test to verify that it meets specified requirements.We perform following systems test.

1) Security Test: Security Testing is a type of non-functional testing that uncovers vulnerabilities, loopholes and threats in a web application and focuses on preventing malicious attacks from hackers or intruders.
The main purpose of Security Testing is to identify all possible loopholes and weaknesses of the system which might result in a loss of information, revenue, repute at the hands of the employees or outsiders of the Organization. We use **Wireshark** tool for security testing.
How to perform this Security testing:
Password Encryption
In our web application, in order to protect user authenticity, the account's password needs to be encrypted. This can be implemented through using any hashing algorithm i.e. MD5 or SHA and then storing it in the db. When user tries to login, The entered string in password field will be encrypted using same hashing algorithm and then compared to encrypted password stored in db at server side.
Session Validation
After several minutes of inactivity the user will be logged out and the session will expire. And if user is already logged in and closes all windows without logging out. So, when user opens internal pages/links, then he/she will be redirected to the page rather than again logging in.
User Authorization and Authentication
Admin can control the user privilege and access. Whether a user can login or not can be controlled by admin by activating or inactivating a user account. Authentication can be handled at server side.
Data Transmission Handling
When user is logging in and data is being transmitted to the server, the security should be maintained against third-party access of data. Wireshark helps provide this type of security.

2) Configuration Test: Configuration Testing is a software testing where any software application is tested under multiple operating systems, resolution and screen sizes. And find out the optimal configurations that the system can work without any flaws or bugs.The main purpose is to make the web application stable in different web browsers and if possible in different platforms as well i.e. android
How and Where to use:. Different pages of our web application will be analyzed through webpagetest.org website, which works best for checking the compatibility in different web browsers. The inter platform compatibility can be checked by Google PageSpeed extension, which shows the percentage of how accurately page will perform in a mobile device.

3) Usability Test: Usability testing measures how easy to use and user-friendly a software system is. The main purpose of this testing is that how your application is easy to use for end-users and increase accessibility of your system.
How to perform this usability testing: In company it performed by recruiting 5 peoples from different category likes: expertise, age, gender etc. And, they use software and provide feedback of system. Therefore using same technique we decided that we will perform this test using 5 different peoples such as One is from computer stream, second will be from non-computer stream, third will be Male, fourth will be female and fifth will be expert in this job of assigning teachers who is currently doing this job.

PROGRESS

Creation of API

We created different APIs for performing operations on data from MySQL Workbench to insert, update, delete and read. It is implemented in JAVA and it's currently in local-host.

New User Registration

Admin can manually add new faculty and also, a faculty can register his self and it shows message in Admin dashboard.

CRUD operations on subjects

Admin has only access to perform this task. He can add new subjects, update existing subjects and delete selected subject from database. This all are done using API.

CRUD operations on instructors data

Only the admin can perform this task. He can add new instructor in existing instructor's list, update any instructor's details and delete any instructor details from database. Also, This all are done using API.

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