Online Payment and Attendance System

Database Project Report

Group-05

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A project submitted to Dr. Rudra Pratap Deb Nath, Associate Professor, Department of Computer Science and Engineering, Chittagong University (CU) in partial fulfillment of the requirements for the Database Systems Lab course. The project is not submitted to any other organization at the same time.

Table 1: Details of Group-05

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Abstract

This project report is mainly focused on the online payment and attendance system of the University of Chittagong. In the university, numerous students pay all the university fees through bank drafts to the university's accounts in a specific bank branch which doesn't facilitate online systems. This analog payment system is not efficient enough especially during periods of examinations when most of the students are to pay examination fees. This process is characterized by long queues, too much waiting by the students, and congestion at banks where payments are made. On the other hand, manually attendance-taking still exists here which is excessively time-consuming. It was upon such background that we embarked on the project to develop an alternative system that enables online payment & attendance by students and their sponsors. Using this system every student will be comfortable with the online payment procedures. Also, it will save a lot of time by taking attendance online. The system was implemented using a JavaScript-based framework named "React" including Cascading Style Sheets for frontend and "ExpressJs" for backend, Apache web server, MySQL database server. System testing and validation were also done by allowing users of the system to interact with it using test data. Currently, the system is only limited to the payment and attendance system. In the future, this system can be expanded with various online systems like No Objection Certificate (NOC), Student Management System, Employee Management System, and so on. The result of the project is an online payment and attendance system for the University of Chittagong that provides relief of the long endured problems of the current modes of payment at the university as well as a time-consuming manual attendance system.

1 Introduction

One of the major benefits of using technologies is that it costs less time and instance in most of the cases to perform the same operation than with analog process. Conventionally we still perform all the official tasks through paper work. It not only consumes more time, but also makes students dependent on authority and on specific time period set by the authority. Also, there are always chances of being unsuccessful to complete the process with or without wrong information. In addition, taking attendance manually is also a time-consuming method. Our goal is to develop an application that aims to shift these two process into a digital platform which will obviously be able to perform the given tasks in the shortest time possible with no paper work. The system should be able to let the students get the liberty from the tormenting limitations of the administration and also to let the authority to make their responsibility easier. It goes without saying that the application would be a user-friendly application to both students and authority.

This document objectifies a recording of a strategic and creative process focused on clearly outlining issues, goals as well as overview of the application representing the narrative from the beginning to the end. Any person willing to use as well as develop the system would be able to do so by the help of this documentation.

The objective of this course is to develop a database application system by applying the theories, methodologies, tools, and technologies we learnt in CSE 413 that is Database System course.

1.1 Background and Motivation

Write the background and motivation of project. What is the current state of the problem? What are the problems currently faced by the stack holders? What is your approach to solve/address the problems? Write the significance of your solution.

1.2 Problem Statement

Precisely state your problem statement, i.e., what is the problem and what you are going to address. Technically mention the entity types or relationships in the statement

1.3 System Definition

Also write a system definition: A concise description of a computerized system (that you are about to develop) expressed in natural language

A system definition example of a Conference planning system

"A computerized system used to control the ICCIT conference by registering participants and their payments to organizers using invoicing and other reporting methods. Controlling should be easy to learn, as ICCIT conferences use unpaid and untrained labor."

1.4 System Development Process

Write the system development process. Try to use a figure to describe the process. In brief, the steps are 1) Requirement gathering and analysis, 2) Database modeling: conceptual modeling, logical modeling, and normalization, 3) System architecture, 4) Implementation, and 5) Validation. Briefly describe each step. Remember the output of a step is the input of the immediate next step. Write that each step of the system development process will be a separate section of this document.

1.5 Organization

Write the organization of the document here. For example: Section 1 gives the overview of the project, Section 2 describes how the project and the resources are managed. .....Finally, the conclusion and the pointers to the future work are outlined in Section 11.

2 Project Management

Describe how the projects are resources are organized and managed in details, the roles of each members, used tools (Github, Trello ect.). See the scrum method.

3 Requirement Gathering and analysis

Explain how you gather the requirements of your problem: documentation, interviewing, survey, discussion, etc. Who are the stack-holders of your system?

4 Conceptual Modelling

Conceptually model your database using an E-R diagram. Use the legends in your diagram. Write how you find the entity types, relationships, and attributes from Section 3

5 Logical Modelling

Write a short description of Relation model. Write a how you convert your E-R model in Relational model

6 Normalization

From your Relational model, find the functional dependencies of each relation schema and show that they are normalized upto 3NF or BCNF.

7 System Architecture

Describe the architecture of your system using a figure: Describe how each component of the architecture communicate.

8 Implementation

Give some code snippet of each component you outlined in your System architecture. Some DDL query example. Use the listing environment for writing code. Listing 1 shows an SQL query.

```
select distinct name
from instructor
where salary > some( select salary
                        from instructor
                        where dept_name='CSE');
```

Listing 1: A SQL query example

9 Validation

Show that users are satisfied with your product. You can also give a user manual here describing how to use your system (process of completion of different tasks using your system) You can use some matrices (time, cost, resource etc.) to compare your system with the previous system.

10 Software Deployment

Describe how to install and configure your system so that a non-technical user can use your system.

11 Conclusion and Future Work

Write the conclusion of your project: what was the problem? what the developed solution offers, Significance of the project, limitations of the project and future work.

12 Bibliography

To add bibliography in your document, use the following steps:

1. First create a .bib file in the same directory where your .tex file is (in our case, the file name is references.bib). Also place the bibliography style file in the same directory. In our case, we are using the ios1.bst style file. We include the following commands in the .tex file for the style file and bib file:
   `\bibliographystyle{ios1}`
   `\bibliography{references}`

2. Import the BibTeX of your book or paper from Google Scholar or other sources into your .bib file. An example of BibTex is shown in Listings 2.

```
@article{kopka1995guide,
  title={A Guide to $\{$$\backslash$LaTeX$\}$--Document},
  author={Kopka, H and Daly, PW},
  year={1995},
  publisher={Citeseer}
}
```

Listing 2: A BibTeX example

3. Then, use the name of the BibTex (in Listing 2, the name is kopka1995guide) in the text of your .tex document where you want to refer it.

4. After saving your .tex document, execute the PDFLaTeX option one time; then execute the BibTeX option; then again execute the PDFLaTeX option for twice; finally, execute the QuickBuild option. Now your document refer the corresponding book or paper.