VISITOR MANAGEMENT SYSTEM

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By

Mainak Biswas, Kunal Sikri, Kunal Gupta & Paridhi Yadav

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**TITLE**

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By,

Kunal Sikri, Kunal Gupta, Paridhi Yadav &Mainak Biswas

The supervisory committee certifies that this disquisition complies with Indian Institute Of Technology Indore’s rules and regulations and meets the accepted standards for the degree of

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**SUPERVISORY COMMITTEE:**

* Dr.Abhishek Shrivastava (Associate Proffessor)
* Mr.Rohit Agrawal (Teaching Assistant)

Approved By :

Dr.Abhishek Shrivastava : Mr.Rohit Agrawal :

Dated :

**ABSTRACT**

VMS also known as Visitor Management System is an interactive project which after considering the real life examples of an institute dealing with daily visitors. It is designed from scratch using JAVA and Python and using a server side language MySQL which is connected to the developer language JAVA using JDBC connector. The entire working of project is done on a local host which consists of the application using JAVA and Python involving the use of APACHE2/APACHE TOMCAT server and MySQL. The server side contains all the implementation related to setting up of database using MySQL, creating session models for joining different pages and other transactions to be performed. It is responsible for picking up information from the database and displaying it on the client side which comprises of a basic user interface built in JAVAFX as the software GUI.

Version: 0.1 Abstract: iii

8/11/16

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Version: 0.1 Acknowledgement: iv

8/11/16

**TABLE OF CONTENTS**

Abstract ………………………………………………………………………………. iii

Acknowledgements ...………………………………………………………………… iv

Chapter-1 : Introduction …………………………………………………………….... 1

* Motivation ………………………………………………………………... 1
* Aim Of The Software……………………………………………………... 2
* Paper Organization………………………………………………………... 2

Chapter-2 : Objectives ……………………………………………………………….. 2

2.1 Requirement Analysis…………………………………………………….. 3

2.1.1 Product Perspective……………………………………………... 4

2.1.1.1 User Interface & Characteristics………...…………….. 4

2.1.1.2 Hardware Interface……………………………………. 4

2.1.1.3 Software Interface……………………………………... 5

2.1.2 Constraints………………………………………………………. 5

2.1.3 Assumptions & Dependencies…………………………………... 5

2.1.4 Specific Requirements…………………………………………… 5

2.1.4.1 Functional Requirements ………………………………

2.1.4.2 Performance Requirements …………………………….

2.1.5 Design Constraint…………………………………………………

2.1.6 Software System Quality Attribute………………………………..

Chapter-3 : Implementation………………………………………………………………

3.1 Detailed Scope………………………………………………………………...

3.2 Static Decomposition & Dependency Description……………………………

3.2.1 High-Level Use Case Diagram………………………………………

3.2.2 Activity Diagram…………………………………………………….

3.3 VMS Interface ………………………………………………………………..

Chapter-4 : Conclusion / Future Work………………………………………………………

Chapter-5 : References……………………………………………………………………….

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**INTRODUCTION**

In this fast paced world, where everyone is squeezed for time, it is very difficult in an institute having large number of students and instructors to manage and have a smooth going and organized way of entertaining visitors. Logistically, visitor management system allows the security system of the institute to conventionally check and enrol each visitor efficiently inside the premises without the hassle of identity clashes and any other inconvinience.

It is therefore the task of institute administrators to optimally design a visitor management system where the security department could save their time. Although most of the institute work is computerized but the visitor management is still mostly done manually due to its technical difficulties. The manual scheduling of this system requires considerable time and efforts. The institute visitor management system is a constraint satisfaction problem in which we find an optimal solution that satisfies a given set of constraints.

We have formulated a method for developing effective and practical managing algorithm capable of handling both hard and soft constraints based on priorities. We primarily, focussed on developing algorithm, which is easy to implement without compromising on its effectiveness and performance.

**Motivation**

The motivation for designing this visitor management system is the keen observation of day to day problems faced by the security department, like the lack of info and medium among the teachers, students and the administration of the institute such that there is difficulty in the efficient process of teaching and studying by the teachers and students respectively. Moreover, we value the recent learning about the programming languages as well as seeing how powerful and dynamic they are when it comes to designing system and database based projects. Apart from helping computer science students understand the concepts of application designing, it would be very easy to incorporate the idea of programming techniques from the available visuals to understand how a piece of code appears on a user interface. The languages used to develop the project is extremely useful while working with the technologies at a workplace.

Version: 0.1 Introduction, Motivation: 1

8/11/16

**Aim Of The Software**

This software is designed to help students understand about software designing using programming languages from their basic capabilities in order to have a real industry based client and service provider environment. This application helps the student to understand basics about the appearance and how a complete working application can be built from scratch. It also allows students to understand the concept of GUI based application and using it to embed MySQL and other programming languages. Further, it gives insight about how the client-side language interacts with the server-side language and finally with the database. This application is a server based app so it involves the use of a particular institute server (in this case our localhost machines). The visitor management application is very versatile and can be enhanced by adding more functions and modified graphics for the use of institute security department.

**Paper Organization**

The rest of the documentation is divided into Objectives, Implementation and Testing. The objectives chapter lists the need for building the system. It provides use cases to help the business and technical users with their understanding. It also gives a detailed explanation for each use case to help with design and implementation, and outlines the constraints regarding the software. The Implementation chapter contains the detailed design of the system, including the Class Diagram, Activity Diagram, and Component Diagram. This chapter also includes a detailed explanation for each component as well as the interaction of the class and its components with each other when carrying out certain tasks, besides software’s mock screen shots.

**OBJECTIVES**

All the steps required in the software-analysis process related to this project (product function, user characteristics, functional and non-functional requirements, constraints, assumptions, and dependencies for the visitor management system are described in the following sections.

Version: 0.1 Aim Of The Software, Paper Organization, OBJECTIVES: 2

8/11/16

**Requirement Analysis**

The requirements analysis and gathering processes are critical for the success of any software engineering project. Requirements analysis in software engineering is a process that determines the tasks that are required to determine the needs and conditions to design a new product or to make modifications in any existing product/application. This process considers all the stakeholders’ conflicting requirements, and analyses the documentation and validation of the system. The requirements should be actionable, measurable, testable, and related to the defined needs of the system design. From the software-engineering perspective, requirements analysis is a three-step process.

1. Requirements Elicitation: Elicitation of requirements, also known as requirements gathering, includes the task of identifying various requirement types from stakeholders or from project documentation.

2. Requirements Analysis: Analysis of requirements determines if the gathered requirements are clear, complete, and consistent. The analysis also handles any ambiguous requirements that do not clearly state what needs to be implemented, which could create a loss of resources and time if identified later in the development or testing phase.

Requirement analysis requires identifying the stakeholders and taking their needs into account to help them understand the implications of designing the new system, along with what modules are worth implementing and which ones are more cost efficient, and then to create a software-requirement specification document. To clearly elicit the stakeholders’ requirements, different processes, such as developing a scenario or user stories, and identifying the use case which is being used for the project, can be utilized.

Stakeholder analysis says that, to clearly gather the requirements of the project, analysts first need to identify the stakeholders. Stakeholders are people or organizations that have a valid interest or use in the system. The steps to identify the stakeholders are as follows:

* Anyone who operates the system.
* Anyone who benefits from the system
* Anyone who is directly or indirectly involved in purchasing the system
* People or organizations opposed to the system
* Organizations responsible for the system design
* Organizations that regulate the financial or safety aspects of the system

Once the stakeholders are successfully identified, interviews are conducted through different processes; the needs and requirements of the system are identified, and a requirements specification document is prepared. The document is then discussed with the major stakeholders to identify any ambiguity with the requirements and understanding of the system.

3. Requirements Documentation: This step involves documenting the requirements in various forms, including summary lists, natural language documents, visual documents, use cases, user stories, or process specifications. A requirement specification document is categorized in different ways according to the stakeholders’ need, helping to create a clear contract between development and business. The following sections include the different categories of requirements specification document that are essential for designing this application: the functional requirements, constraints, system requirements, etc.

Version: 0.2 Requirement Analysis: 3

9/11/16

**Product Perspective**

The visitor management application is a web-based system. It can be accessed using a personal PC(in case of admin) and an enterprise PC.

**User Interface & Characteristics**

The two types of interface found in the visitor management system are as follows :

* User Interface : Officials of security department are able to view the home page of the visitor management system. The officials can carry a transaction based on deciding whether the visitor is a –
* New User
* Old User

The official also has options for “Checkout” and “Detail updating” of visitors adding to it he/she can also check the “Users not checked out”.

* Admin Interface : Along with other features the admin has super user rights to –
* Report viewing
* Log viewing
* Entering the details of new cards

**Hardware Interface**

The visitor management application shall provide minimum hardware requirements. The following hardware configurations are required for a PC using the visitor management

* Pentium Processor
* 32 MB of free hard drive space
* 128 MB of RAM
* 128 KBPS of minimum connection speed (for remote access)

Version: 0.2 Product Perspective, User Interface &Characteristics, Hardware Interface: 4

9/11/16

**Software Interface**

This section lists the requirements that are needed to run the system efficiently. The operating system needed for the system to run effectively, the interface to run the application, the driver for running Java web applications, the integrated development environment to develop the application, and the third-party tool used for editing purposes are as follows:

1. Operating System: Windows (Vista/Windows 7/8/8.1/10) or MAC OS or Linux

2. Web Brower: Internet Explorer (8.0 and above), Mozilla Firefox (3.0 and above), or Google Chrome

3.JAVA supporting PC.

**Constraints**

1. Hardware Limitations: The minimum hardware requirement for the system is 128 MB of Ram and a 32-MB hard-disc drive.

2. Accessibility: Initially, the software should be available as a desktop application for a small set of users to test.

3. Others: The application should be built using MySQL inscribed in JAVA and Python, and it should, initially, be accessible through the NetbeansIDE and later published on a server.

**Assumptions & Dependencies**

The assumptions and dependencies are as follows:

1. Users and the administrator are accustomed to the paper-based system and would require training to use the visitor management application.

2. The system is dependent on the availability of an APACHE2/APACHE TOMCAT Server to run.

3. We assume that system users adhere to the system’s minimum software and hardware requirements.

4. This system will use third-party software, and it is assumed that system users are familiar with the software.

Version: 1.2 Software Interface, Constraints, Assumptions & Dependencies: 5

10/11/16

**Specific Requirements**

This section contains details about all the software that is required for designers to create a system to satisfy the users’ requirements and for testers to test the given requirements. This section contains the interface description of each GUI for the different system users. These sections also give descriptions about all the system inputs, all the functions performed by the system, and all the system output (responses).The software designed :

* Should have a propostion of a barcode/biometric system of checking and registering.
* Should have an interactive GUI.
* Provision of embedded information.
* Issuing, renewal and cancelling of cards.
* Cloud based system.
* Interactive programming to link server and client.
* Provision of report and log viewing.
* Having a temporary card providing system.
* Efficient searching using different attributes.
* Efficient managing of backend database tables.
* Level based distribution of software.