DESIGN AND CONSTRUCTION OF A BIDIRECTIONAL DIGITAL VISITOR COUNTER

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INTRODUCTION

1.1 Introduction to the project

Visitor counting is the measurement of the number of visitors entering and exiting conference rooms,sports venues,shopping malls,churches, etc. With the increase in the standard of living,there is need for developing circuits that would ease the complexity of life.This project can be used to count and display the number of visitors in a room.The counter being bidirectional means that it works two way,that means the counter will be increamented if a person enters the room and then it will be decreamented if a person exits the room.The LCD display which is placed outside the room will display this value.This system is helpful for counting the number of people in an auditorium to avoid congestion.Amicrocontroller is a reliable circuit that does the task of counting visitors in a room very accurately.The system will be showing both the number of visitors entering and those exiting the room on a 16x2 Alphanumeric LCD.The visitors' presence shall be detected by an IR sensor.The microcontrontroller shall recieve signals from the sensors and the signal shall be operated under the control software which is stored in ROM.Microcontroller 89s52 continuously monitors the infrared recievers and when any visitor passes through the IR Recievers,then the IR rays falling on the Reciever are obstructed,this obstruction is sensed by the microcontroller.

1.2 Background study

Over the years,the usuage of visitor counters has been very important interms of mornitoring and managing visitor traffic at some places such as in sports venues.Visitor counting technology dates back when a mechanical tally counter was introduced to replace the use of tally sticks.Atally

stick was an ancient memory aid device which was used to record and document numbers,qualntities,or even messages.The mechanical tally counter which replaced the tally stick was used to increamentally count something passing.They would count the number of people,animals or things that are quickly entering or exiting a location.As times went on a mechanical tally counter was replaced by an electronic tally counter.This used an LCD screen to display the count and a push button to advance the count.Some had also a button to decreament the count incase of miscount.Due to technological advancement,all those devices were replaced by various types of visitor counters which can automatically count the number of people entering and exiting rooms.

1.3 Problem statement

A primary method for counting the visitors involves hiring human auditors to stand and manually tally the number of visitors who pass by a certain location. But human-based data collection comes at great expense. With human handling the manual counting of visitors, there are tendencies of inefficiencies, misrepresentation, time wastage and unnecessary financial implications. With this in mind, it is imperative to develop and promote a digital visitor counter which will be bidirectional in nature and utilise the microcontroller. This will limit all human interferences to the barest and ensure that the task of keeping data on visitors' visit is less time-consuming, efficient and almost error free.

Ever since the establishment of retail business all around the world, the

Figure 1.1: The history of people counting

need for noting down the number of the target audience, their interests, and

market revenue has remained the same. This is due to the reason that a retail store runs on the benefits that they provide to the customers. However, not knowing the exact amount of the people, their concerns, and possible attractions, the management is unable to generate creative solutions for effective marketing. Therefore, the demand for investigating specific analytics based on accurate observations exists. As a result, firms rely on technology to fulfil this demand.Some of the disadvantages of conventional methods of people counting in business include:

1 An unclear estimation of the data entered in the system.

2 Indefinite profit, revenue, and inventory information.

3 Zero or slow progress due to the lack of efficient and smart solutions.

4 Unrecognized brand reputation [1].

Therefore with the construction of a bidirectionbal counter,business world would as well be saved from its challenges.

1.4 Scope of the study

This project primarily base on modeling of a microcontroller controlled bi-directional visitor counter system that will:

1 Count visitors which enter and leave the room and displays the total number of people inside the room on the LCD screen.

2 Implement two pairs of IR sensors

3 Decide the counting process,to either count up or down

4 Work in a room with single narrow entrace and exit

1.5 Aims and Objectives

The main objectives in this study include;

1 Designing a bi-directional visitor counter controlled by the microcontroller which will display its statistical output on an LCD screen.

2 Designing the controller base model that beeps a warning alarm when the capacity of the building is exceeded.

3 Ensuring that the project fulfill all requirements for the award of degree of Bachelor of Science with Education.

1.6 Project justification

In places tahat gather large numbers of people like currently churches visitor counting is very necessary as the number of people when known planning becomes very easy,in hopping malls, marketing professionals and recently, academic gatherings rely on visitor statistic to measure their organizational progress in terms of population make effective managerial and operational decisions and optimization of opportunities e.g. applying for financial aids etc. Over time, different counting procedures and counters have been employed, among which are beam counters, thermal counter, video counting etc. However, most of this counting systems are archaic, cannot meet up with the current demand for faster and more accurate statistics on visitors. Majorly, most counting procedures depends on human for over 70 percent of the operations thus introducing a sizable amount of errors arising from different procedural inefficiencies. In view of these and many more, the need for a digital visitor counter which is bi-directional is imperative as this will alleviate the challenges of human unnecessary interferences with visitors statistics, save time and money and at the same time giving an efficient output which can be relied upon in any circumstances except for system malfunctions

Chapter 2

LITERATURE REVIEW

Chapter 3

METHODOLOGY

Bibliography

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