CHAPTER 1

INTRODUCTION

1.1 Introduction

The technical problem that I have addressing in my project is figuring out a way to find the closest parking spot for a car. Quick, cheap, reliable, and efficient system design is at the heart of my project. The idea came about observing the inefficiency of current methods of parking enforcement (several peoples continuously roaming around the floors and checking parking spot).

There are many reasons why I can only build a full-scale model and not simulate a prototype. I don't have enough time, money, and manpower to fully implement a system like this in the real world. Also, access to proprietary navigation system code will be difficult for me to get. There is no standard navigation system in a car, so this system would have to be customized for each carmaker out there.

The risks involved for implementing a full-scale system would be so high that I would guarantee my selves failure. Therefore, I have decided that a simulation for a proof of concept design would be the best choice.

1.2 Objectives of Project

The goal of this project is to create a user-friendly and adaptable system that can be implemented in large, multi-level parking garages in order to alleviate parking hassles. The ultimate goal is that the ideas and planning demonstrated through this system can then be easily upgraded to an actual parking facility. The purpose of the Development of Smart Parking System is to eliminate the unnecessary frustration drivers experience as they waste priceless minutes circling parking garages looking for the optimal parking spot. In addition, traffic flow within the garage will be better regulated, creating a safer atmosphere for both drivers and pedestrians.

Parking garages equipped with the Development of Smart Parking System will have an interface at the entrance of the parking garage that allows the driver to choose their parking spot. A series of VB.NET interface in the floor of the garage will guide the parking attendance to help the driver chosen spot. Upon returning to the parking garage, a message will alert the driver to the location of his/her car and provide detailed directions to their spot.

1.2.1 Product Benefits

- Allows the driver to immediately locate the best parking spot available
- Eliminates the hassle of circling a garage in search of a parking spot
- Will remind forgetful drivers as to where their cars are located
- Regulates traffic flow to avoid driver and pedestrian accidents
- Faster location of illegally parked cars
- Ability to locate illegally parked cars from a further distance
- Save human resources and time

1.2.2 Product Features

- Auto tracking of moving vehicles
- Guidance for drivers and pedestrians
- Entrance and Return interfaces
- Timer showing amount of time illegally parked

1.3 Scope and Project Background

The scope of my project is to design and implement a functional of The Development of Parking System on a software system parking garage. The ultimate goal is that the ideas and planning demonstrated through this model system can then be easily upgraded to an actual parking facility.

As the system is to be implemented in large and busy parking garages, there are a number of performance specifications that have to be met to ensure the system operates correctly and efficiently. Most importantly, The Development of Smart Parking System interface must send and receive the appropriate information. The interface in turn, must be able to multi-task and have numerous threads running at the same time in order to track multiple cars throughout the garage. Then, next interface (parking spots) must be accurate enough to locate each car in the garage. Also, other interface must be triggered properly and be visible as the car approaches each section of the garage. In order to reliably park each car, these key performance specifications must be met.

1.3.1 Device Subprojects

My device consists of three subprojects.

1.3.1.1 VB.NET Interface

The Visual Basic.NET program receives information from the interface when a car is at the entrance of the garage. Once the program has been sent all necessary information, the screen will update. The chosen spot is then sent back to the interface and return directions are sent to the printer. My Visual Basic.NET program is organized by screen. Each screen has a series of functions that are called in order to allow the user to navigate chronologically throughout the interface.

1.3.1.2 Microsoft SQL Server Database

The Development of Smart Parking System use data in some form or fashion. Where I retrieve that data from depends on what my application is doing. A database application for this project is an application that retrieves and processes data from a database. I used Microsoft SQL Server providers and Providers for OLE DB providers for data access to ODBC data sources that is accomplished through a managed provider.

A database for CarNo, TimeIn, TimeOut and TotalAmount is an external program designed for the storage and retrieval of information. Communicating with databases is done through classes in the *System.Data* namespaces, which make up what is known in Visual Basic.Net as ADO.NET. ADO stands for Active Data Objects.

The Development of Smart Parking System application needs to store and retrieve data in a database. This application is known to be “data-centric” because they are designed primarily to retrieve, display, and store information.

To achieve maximum efficiency of my design, this application is configured in layers or tier: the display tier, the processing tier, and the database tier.

1.4 Problem Statement

Having experienced the frustration of needlessly circling large, multi-level parking garages, searching for an open spot and the additional irritation involved in locating that same spot upon return to the garage, I felt a solution was needed. After all, with urban populations on the rise across the country, cities have found the need to expand either outwards or upwards. And as seen by such buildings, it seems the preferred choice is upwards rather than outwards. This trend seems to have spread to parking garages as well.

In fact, the latest parking garages consist of as many as 20 floors of circular, winding roadways designed to confuse and intimidate the average driver. I believed I could use my engineering knowledge and modern technology to design a simple and feasible solution for this growing problem.

After complete all the software system with Microsoft SQL Server database, I must make sure this software can functionally run after connecting with Visual Basic.NET as an application that I called Smart Parking System.