VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama", Belagavi-590018

File Structure

Mini Project Report

On

"VEHICLE PARKING MANAGEMENT SYSTEM"

Submitted in partial fulfillment of the requirement of VI semester File Structures Laboratory

Submitted by,

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DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

DAYANANDA SAGAR ACADEMY OF TECHNOLOGY AND MANAGEMENT

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2022-23

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Certificate

This is to certify that the mini-project work entitled ***"VEHICLE PARKING MANAGEMENT SYSTEM"*** is carried out by **SWAROOP PATIL (1DT20IS102) and VED KORLAHALLI (1DT20IS113)** in partial fulfillment for the requirement of VI semester File Structure Laboratory in **Information Science and Engineering** of the **Visvesvaraya Technological University, Belagavi** during the year 2022-2023. It is certified that all the corrections/ suggestions indicated for the given internal assessment have been incorporated in the report. This report has been approved as it satisfies the academic requirements with respect to the mini-project work.

Signature of the Guide

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ABSTRACT

The Vehicle Parking Management System (VPMS) is a C++ program that utilizes file handling concepts to create a user-friendly solution for managing vehicle parking. The system allows users to park their cars, choose the duration of parking in hours, calculates costs on an hourly basis, search for their car, and remove their car from the parking area.

The software provides a simple and intuitive interface for users to register their vehicles and select the desired parking duration. The system calculates the parking charges based on the hourly rate and the number of hours chosen by the user. This automated billing process eliminates manual calculations and ensures accurate and transparent cost calculations.

To enhance user convenience, the software incorporates a search functionality that enables users to locate their parked vehicles easily. Users can enter relevant details such as license plate number or assigned parking spot, and the system quickly retrieves the corresponding information, reducing the time and effort required to find a parked car.

Additionally, the VPMS allows users to remove their cars from the parking area when they are ready to leave. By selecting the appropriate option in the system, the user's parking information is updated, and the parking spot becomes available for others to use. This feature ensures efficient space utilization and minimizes parking congestion.

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CHAPTER 4

IMPLEMENTATION

4.1 INTRODUCTION TO PROGRAMMING TOOLS

C++ is a general-purpose programming language that was developed as an extension of the C programming language. It was created by Bjarne Stroustrup at Bell Laboratories in the early 1980s with the aim of adding object-oriented programming features to C. The name "C++" reflects this extension, as the "++" symbol represents the increment operator in C.

C++ combines the features of both high-level and low-level languages, offering a balance between performance and abstraction. It supports various programming paradigms, including procedural, object-oriented, and generic programming, making it versatile and suitable for a wide range of applications.

Main Components/Highlights of C++

- **Object-Oriented Programming (OOP)**: C++ supports the principles of object-oriented programming, including encapsulation, inheritance, and polymorphism.
- **Templates**: Templates in C++ enable generic programming, where algorithms and data structures can be written in a way that is independent of specific data types.
- **Standard Template Library (STL)**: The STL is a collection of template classes and functions that provide common data structures and algorithms.
- **Multi-paradigm Support**: C++ supports multiple programming paradigms, including procedural, object-oriented, and generic programming.
- **Portability**: C++ code can be compiled and executed on various platforms and operating systems, making it highly portable.

Characteristics of C++:

a. **Expressive Language**: Python can perform complex tasks using a few lines of code.
b. **Interpreted Language:** It means the Python program is executed one line at a time.
c. **Free and Open Space:** It has a large community across the world that is dedicatedly working towards make new python modules and functions. Anyone can contribute to the Python community.

e) Supports step-by-step dialogs
f) Integrated development tools

The graphical user interface (GUI)is a form of user interface that allows users to interact with electronic devices through graphical icons and visual indicators such as secondary notation, instead of text-based user interfaces, typed command labels or text navigation. GUIs were introduced in reaction to the perceived steep learning curve of command line interfaces (CLIs), which require commands to be typed on a computer keyboard.

4.2 FILE STRUCTURE CONCEPT USED

Index: A structure containing a set of entries, each consisting of a key field and a reference field, which is used to locate records in a data file.

Key Field: The part of an index which contains keys.

Reference Field: The part of an index which contains information to locate records.

Indexing works by indirection.

Primary Indexing concept uses two types of files to store data. They are:

• Index file

• Record file

A Simple Index for Entry-Sequenced Files

An index in which the entries are a key ordered linear list.

• Simple indexing can be useful when the entire index can be held in memory.

• Changes (additions and deletions) require both the index and the data file to be changed.

• Updates affect the index if the key field is changed, or if the record is moved.

• An update which moves a record can be handled as a deletion followed by an addition.