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**School of Computing**

**SCIENCE AND ENGINEERING**

OBJECT ORIENTED PROGRAMMING

B. TECH CSE (Second Sem.2022-2023)

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**INTRODUCTION**

This project is designed to create a CODE that can manage the reservations of a bus company. The code will allow users to book bus tickets. The system will also provide a user-friendly interface for bus operators to manage their schedules, routes, and availability of seats.

The Bus Reservation System will be built using C++, which is a powerful programming language used for building complex software applications. C++ is well suited for this project because it allows for efficient memory management, performance optimization, and modular coding.

The Bus Reservation System will be able to handle multiple bus routes, buses, and passengers. The system will store information such as the bus schedule, bus route, seat availability, and passenger details. The system will allow users to search for available buses and reserve seats for a specific journey.

The project will be designed with an easy-to-use interface, making it accessible to all types of users. It will also be designed to handle errors and exceptions gracefully, ensuring that the system remains stable and reliable.

Overall, the Bus Reservation System project is an exciting and challenging project that will showcase your C++ programming skills. It will provide a real-world application that can be used in the transportation industry, and it will be an excellent addition to your programming portfolio.

**QUESTION. Develop Bus Reservation System by Implementing Class and Object with following modules**

**• Install The Bus Record**

**• Reservation**

**• Show The Bus Details**

**• Show All Buses Available**

**SOURCE CODE**

#include <iostream>

#include <string>

using namespace std;

// Define a Bus class to represent a single bus

class Bus {

public:

string name;

int capacity;

int seats\_reserved;

Bus(string name, int capacity) {

this->name = name;

this->capacity = capacity;

this->seats\_reserved = 0;

}

// This function will reserve the seat if there are seats available of the bus object

void reserve\_seat() {

if (seats\_reserved < capacity) {

seats\_reserved++;

cout << "Seat reserved successfully." << endl;

} else {

cout << "Bus is full. Seat reservation failed." << endl;

}

}

// This function will print the details of bus object

void show\_details() {

cout << "Bus Name: " << name << endl;

cout << "Capacity: " << capacity << endl;

cout << "Seats Reserved: " << seats\_reserved << endl;

cout << "Seats Available: " << capacity - seats\_reserved << endl;

}

};

// Define a BusReservationSystem class to manage a collection of buses

class BusReservationSystem {

public:

Bus \*buses[100];

int num\_buses;

BusReservationSystem() {

num\_buses = 0;

}

// This function is used to install buses in the array

void install\_bus() {

string name;

int capacity;

cout << "Enter the name of the bus: ";

cin >> name;

cout << "Enter the capacity of the bus: ";

cin >> capacity;

buses[num\_buses] = new Bus(name, capacity);

num\_buses++;

cout << "Bus installed successfully." << endl;

}

// This function will find the bus in the array and call the reserve seat function of the bus object

void reserve\_seat() {

string name;

cout << "Enter the name of the bus: ";

cin >> name;

for (int i = 0; i < num\_buses; i++) {

if (buses[i]->name == name) {

buses[i]->reserve\_seat();

return;

}

}

cout << "Bus not found." << endl;

}

// This function will find the bus in the array and call the show details function of the bus object

void show\_details() {

string name;

cout << "Enter the name of the bus: ";

cin >> name;

for (int i = 0; i < num\_buses; i++) {

if (buses[i]->name == name) {

buses[i]->show\_details();

return;

}

}

cout << "Bus not found." << endl;

}

// This function traverse the while array and call the show details function of all the bus objects in the array

void show\_all\_buses() {

for (int i = 0; i < num\_buses; i++) {

buses[i]->show\_details();

cout << endl;

}

}

};

// Main function to run the Bus Reservation System

int main() {

// This will create an object named system which will manage the reservation system

BusReservationSystem system;

int choice;

// This will continue to work until you exit using the specific command

while (true) {

cout << "Bus Reservation System" << endl;

cout << "----------------------" << endl;

cout << "1. Install Bus" << endl;

cout << "2. Reserve Seat" << endl;

cout << "3. Show Bus Details" << endl;

cout << "4. Show All Buses" << endl;

cout << "5. Exit" << endl;

cout << "Enter your choice: ";

cin >> choice;

switch (choice) {

case 1:

system.install\_bus();

break;

case 2:

system.reserve\_seat();

break;

case 3:

system.show\_details();

break;

case 4:

system.show\_all\_buses();

break;

case 5:

return 0;

}

}

return 0;

}