
**Libyan Academy for Postgraduate Studies**

**School of Applied Sciences and Engineering**

**Division: Information Technology**

**Advanced programming**

**A project Entitled:**

# (Smart Parking System)

**Course Code : ITE610**

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## The introduction

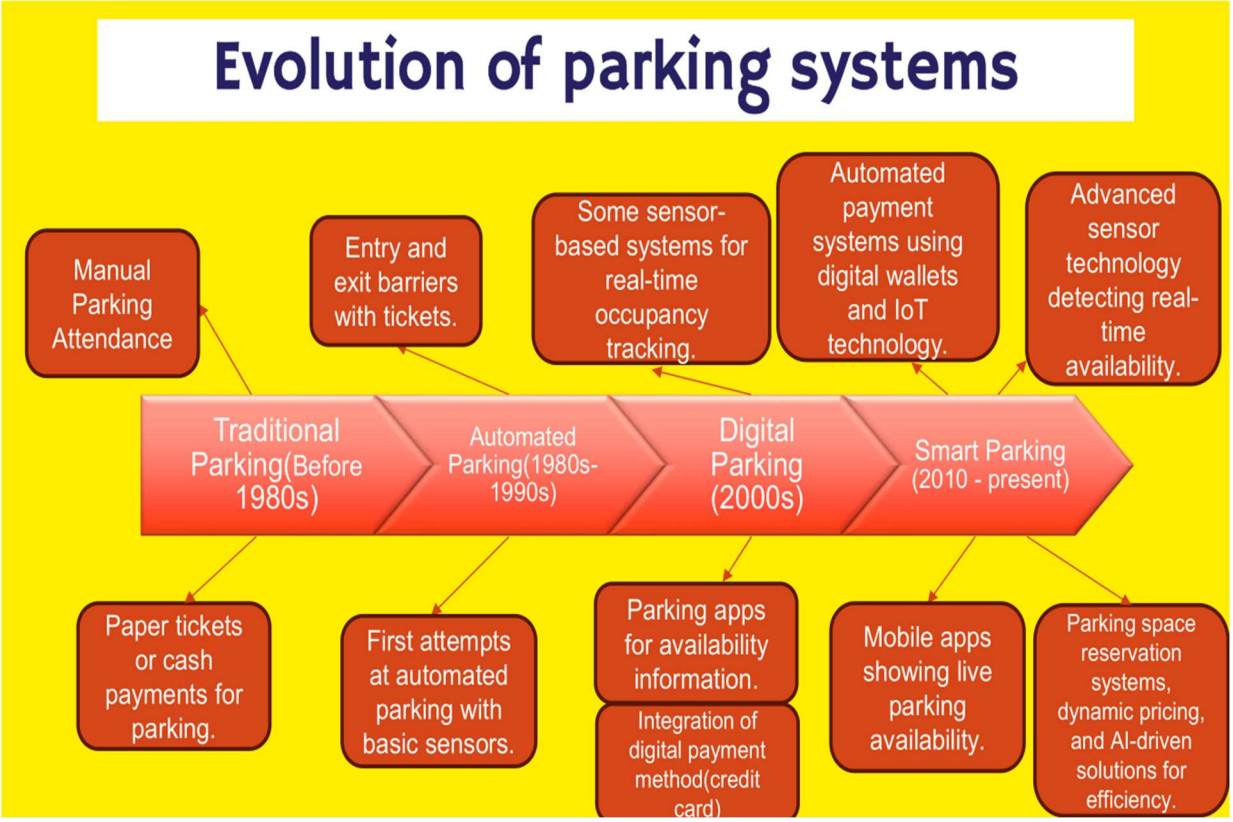
**Nowadays the major problem in urban cities is detecting parking space for vehicles.**

**The vast accretion in number of vehicles on the road including uncontrolled parking space has produced parking related problems. Therefore, it is necessary to grow a smart parking system. The car parking information system notify the**

**drivers about the accessibility of parking slots on distinct parking locations, so my project will solve this problem using Packet Tracer which simulates the integration of IoT devices monitor and manage parking spaces efficiently.**

**It involves sensors to detect parking availability, a server to process data, and a user interface for real-time updates. This system enhances urban mobility by reducing search time for parking spaces and optimizing the use of available resources.**

## Evolution of parking systems:




## The problem with traditional parking:

**1-Limited Availability:** Traditional parking systems struggle to meet increasing demand.

**2-Time-Consuming Search:** Drivers waste time searching for open spots in crowded areas.

**3-High Costs**: **Parking fees can be expensive, especially in urban environments.**

## Benefits of a Smart Parking System:

**1-Reduced Congestion**: **By optimizing parking space utilization, smart parking alleviates traffic congestion**.

**2-Improved Efficiency**: **Drivers save time and money by quickly finding available parking spots**.

**3-Enhanced Security**: **Smart parking systems enhance security by monitoring parking areas and providing real-time alerts.**

### Key Components of a Smart Parking System:

- **Sensors**: **Sensors detect and monitor parking space availability**.

● **Cameras**:**Cameras capture images to verify space availability and enhance security**.

● **Network**: **A reliable network connects components and transmits data for real-time updates**.

● **Mobile Apps**: **Mobile apps provide drivers with parking information and payment options**.

◄**The smart vehicle stations system project, which was established years ago, needs development in light of the requirements that arise in congestion and overcrowding of vehicles, especially in citie**s.

◄**Therefore, I developed this project to suit these needs, as the smart vehicle station system was developed by providing it with the Internet and mobile phone applications. Which helps the user get a designated place for him at the station.**

## The project needs some additions or improvements to develop it :

1-Record the entry and exit times for each parking lot.

2-Registration and calculation of fees specified by the Station.

3-Addition of parking cost calculation based on time.

4-A list to display the cars parked at the parking station, in addition to displaying the time and price for each car and displaying the total price and time for the cars.

5-A list to display the cars that have checked out of the parking station, along with the price and time of each car.

## The source of the problem and when the problem was announced:

## Project source: GitHub

◄ https://github.com/zxllxz2/smat

3 years ago

◄https://github.com/vishnubv944/smartParkingSystm

3 years ago

◄ ttps://github.com/SoftServeInc/smartparking

6 years ago

## *Used tools :*

◄Language C++

◄https://www.programiz.com/cpp-programming/online-compiler/

◄canva.com

◄GitHub ◄ Power Point

# Conclusion :

**Smart parking solutions are transforming urban mobility, leading to more efficient and convenient parking experiences. By embracing technology, cities can create a better parking experience for everyone.**

# Future Trends in Smart Parking :

**1- AI *:* AI will play a crucial role in optimizing parking operations.**

***2- A*utonomous Parking: Self-driving vehicles will further automate the parking process.**

***3-*** **Smart City Integration: Smart parking systems will be integrated with other city infrastructure.**