Department of Science & Technology
Government of Rajasthan Jaipur
Student Project Programme (2023)

Project Name

Dynamic Parking Using RFID with Android Application

Arya College of Engineering & Information Technology

SP-42, RIICO Industrial Area, Delhi Road, Kukas, Jaipur - 302028

Submitted By Students:

Shivani Yadav (8th Sem 4th year)
Anshika Gupta (8th Sem 4th year)
Sumant Kumar (8th Sem 4th year)
Vishal Sharma (8th Sem 4th year)
Aditya Shukla (8th Sem 4th year)

Project guide:

Dr. Vishal Shrivastava
(Professor)

Form A

Form No....
(For official use only)

Application Format of Student Project Program

1. Title of the Project- **Dynamic Parking Using RFID with Android Application**
2. Discipline/ Subject Area**: Engineering**
3. Region (Regional Office area of jurisdiction: -Ajmer/Kota/Jodhpur/Bikaner/Udaipur):**Ajmer**
4. Designation & Address of the Person, in whose name, Demand Draft/Bankers Cheque of grant is to be sent. (Head of Institution/Director/Registrar/ Comptroller/ **Principal**/Dean) Tick the relevant)

Prof. (Dr.) Arun Kumar Arya

(Principal)

Arya College of Engineering & I.T.

SP-42, RIICO Industrial Area, Delhi Road, Kukas, Jaipur - 302028

5. Name & Class/Year of the Students (indicate clearly the semester in case of semester system):

S.No.	Name of the Students	Class/Year	Semester
1.	Shivani Yadav	IV	VIII
2.	Vishal Sharma	IV	VIII
3.	Aditya Shukla	IV	VIII
4.	Anshika Gupta	IV	VIII
5.	Sumant Kumar	IV	VIII

6. Whether belongs to SC/ST. (attach certified for Group Leader)

S.No.	Name of the Students	Role	Category (Gen/Sc/St)	Proof Attached (Yes/No)
1.	**Shivani Yadav**	**Frontend developer**	**OBC**	**No**
2.	**Anshika Gupta**	**Hardware process**	**GENERAL**	**No**
3.	**Sumant Kumar**	**Cloud developer**	**OBC**	**No**
4.	**Vishal Sharma**	**Data manage and hardware process**	**GENERAL**	**No**
5.	**Aditya Shukla**	**Application developer**	**GENERAL**	**No**

7. Address of the Students (Institutional & Correspondence Address with E-mail ID & Fax, Mobile No.)

a. Address of the Students:

S.No.	Name of the Students	Correspondence Address	Email	Mobile No.
1.	Shivani Yadav	212, Sirsi Road, Jaipur	shibuyadav209@gmail.com	9660008012
2.	Anshika Gupta	B-355,JantaColony, Jaipur	anshikag0810@gmail.com	8209604652
3.	Sumant Kumar	GurukulResidency, Kukas	ksumant7542@gmail.com	7542054266
4.	Vishal Sharma	Arya college of engineering and it , Jaipur	vs906000@gmail.com	8859291348
5.	Aditya Shukla	Shyam/ Nagar ,benaar road Jaipur	Adityashukla0612@gmail.com	8278658721

b. **Institutional Address:** Arya College of Engineering & I.T.

SP-42, RIICO Industrial Area, Delhi Road, Kukas, Jaipur – 302028

Email: principal@aryacollege.in

Fax:+91-1426-227177

Phone No: +91-141-2621967

8. Bank Account No. of one of the students of the Group**.**

S.No.	Name of the Student	Account No.	Bank and Branch	IFSC Code
1.	Aditya Shukla	8013268745	Kotak bank , sikar city	KKBK0003700

9. a) Name & Designation of the Supervisor/Guide : **Dr.Vishal Shrivastava (Professor)**

b) Institutional & Correspondence Address of the Guide with Telephone No. E-mail ID & Fax, Mobile No.

Arya College of Engineering & I.T.

SP-42, RIICO Industrial Area, Delhi Road, Kukas, Jaipur – 302028
Email: vishalshrivastava.cs@aryacollege.in
Fax: +91-1426-227177

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S.No.	Name of the Guide	Designation	Institutional Address	Correspondence Address	Mobile Number	E-Mail ID
1.	Dr. Vishal Shrivastava	Professor	SP-42, RIICO Industrial Area, Delhi Road, Kukas, Jaipur – 302028	SP-42, RIICO Industrial Area, Delhi Road, Kukas, Jaipur – 302028	9214052386	vishal500371@yahoo.co.in

10. Whether certified from Plan Department (attach document).* **Yes**

S.No.	Name of the Students	Fax. No.	Mobile Number	E-Mail ID	Signature

Signature of guide of the project

Form B

Form No....
(For official use only)

Title of the Project: Dynamic Parking Using RFID with Android Application

Project Summary

The Smart Parking System using RFID (Radio Frequency Identification) is a technology-based solution aimed at solving the problems associated with traditional parking systems. The system utilizes RFID technology to identify vehicles and track their movements in and out of the parking lot. The system comprises of several components, including RFID readers, RFID tags, and a centralized database to store and manage the data. RFID readers are installed at the entrance and exit of the parking lot to detect the presence of an RFID tag in a vehicle. The RFID tags, on the other hand, are attached to the windshield of the vehicles, providing a unique identifier for each vehicle. The system also includes a user-friendly interface, allowing drivers to easily find available parking spots, pay for their parking, and receive notifications about their parking status. The centralized database, which is connected to the RFID readers and the user interface, helps keep track of the available parking spots and the status of each vehicle in real-time. The implementation of a smart parking system using RFID technology provides numerous benefits, including improved efficiency, reduced congestion, enhanced security, and increased convenience for drivers. By reducing the time spent searching for a parking spot, the system can help alleviate traffic congestion and reduce carbon emissions. Additionally, the use of RFID technology helps prevent unauthorized access to the parking lot, ensuring the security of parked vehicles.

Technical details of the Projects:

The technical details of a smart parking system using RFID technology can be broken down into several key components:

1. RFID Readers: The RFID readers are installed at the entrance and exit of the parking lot and are responsible for detecting the presence of RFID tags in vehicles. They use radio waves to communicate with the RFID tags, capturing the unique identification number of each tag and transmitting it to the centralized database.
2. RFID Tags: The RFID tags are small, passive devices that are attached to the windshield of vehicles. They contain a microchip and an antenna that transmits the unique identification number of the tag when prompted by an RFID reader.
3. Centralized Database: The centralized database is a critical component of the smart parking system and is responsible for storing and managing all the data collected by the RFID readers. It keeps track of the available parking spots, the status of each vehicle, and the payment information of each user. The database can be accessed by the user interface to display real-time information to drivers.
4. User Interface: The user interface is the point of interaction between the driver and the smart parking system. It can be a web-based application or a mobile app that allows drivers to find available parking spots, pay for their parking, and receive notifications about their parking status. The user interface is connected to the centralized database, providing real-time information to drivers.
5. Payment Gateway: The payment gateway is responsible for processing the payment transactions initiated by drivers through the user interface. It can be integrated with various payment methods, such as credit/debit cards, digital wallets, or mobile payments.
6. Analytics and Reporting: The smart parking system can also include analytics and reporting capabilities that allow parking operators to gather insights into the usage patterns of the parking lot. This information can be used to optimize the management of parking resources and improve the overall efficiency of the system.

Overall, the smart parking system using RFID technology leverages the latest advancements in technology to provide a modern, efficient, and secure solution for managing parking resources. The system can be customized to meet the specific requirements of different parking scenarios and can be integrated with other systems, such as traffic management or security systems.

.**Origin of the proposal:**

The growing demand for more efficient and convenient parking solutions, coupled with advances in technology, has led to the widespread adoption of smart parking systems in cities around the world. Today, smart parking systems are used in a wide range of environments, from public parking lots to private parking garages, and are designed to provide drivers with an easier, faster, and more secure parking experience.

Definition of the problem:

In recent research in metropolitan cities the parking management problem can be viewed from several angles. High vehicle density on roads. This results in annoying issue for the drivers to park their vehicles as it is very difficult to find a parking slot. The drivers usually waste time and effort in finding parking space and end up parking their vehicles finding a space on streets. In worst case, people fail to find any parking space specially during peak hours and festive seasons.

Objectives:

The main objective of smart parking system is to help the people to book their slots and park their vehicle. Park assistance is provided to find the users parked vehicle from the parking slot through the application.

Work plan in stages:

- Stage 1: Undergo the process of requirement.
- Stage 2: Undergo the process design of software.This includes front end, backend process and database process in our software.
- Stage 3: Implementation of the project will be done it is a realization of a technical specification through computer programming and deployment.
- Stage 4: The integration, testing of the outcomes of the project will be done.
- Stage 5: In this stage, we will complete project report writing.

Methodology:

In this project we are using Arduino, proximity sensor, and servo motors. One proximity sensor is used at entry and exit gate to detect the car while two Proximity sensor are used to detect the parking slot availability. Servo motors are used to open and close the gates according to the sensor value.

Organization of work Element:

We will design software and hardware of this project in our college. After that, we will manage parking system efficiently in which we can save time, fuel and also traffic in our areas.

Proposed outcome/findings:

The implementation of a smart parking system can bring many benefits, including improved efficiency, reduced traffic congestion, increased safety, and enhanced sustainability.

Increased efficiency: Smart parking systems use advanced technologies such as sensors, cameras, and data analytics to optimize parking management and improve the overall parking experience. This leads to a reduction in parking time and an increase in parking efficiency.

Reduced traffic congestion: Smart parking systems help drivers find available parking spots quickly, reducing traffic congestion caused by drivers cruising for a parking spot.

Details of facilities to be provided by the Institution:

College will provide access to development facilities and labs with all required equipment with guidance of faculty in all fields of project development. The various testing, and server set up will be provided by the college on need basis during the entire period of development of this project. Study material will be made available to us on need basis for reference purpose and for getting technical information from the college Library.

Budget Estimates: Total Budget – **Rs.24, 000/-**

Title of Equipment	Title of Equipment Cost in Indian Rupees
Software Development	Rs.7,500/- approx.
Hardware	Rs.15,000/- approx.
Project Documentation, PPT:	Rs.200/- approx.
Consumable	Rs.500/- approx.
Report writing	Rs.1,000/- approx.
Contingency & other costs	Rs.2,000/- approx.
Grand Total	**Rs.26,200/-**

Utilization of the outcome of the project:

Advanced Technology that not only provide easy access to the parking spots but also help in saving valuable resources. Also, it helps in reducing traffic congestion and hence will ease travelling for other commuters in the city.