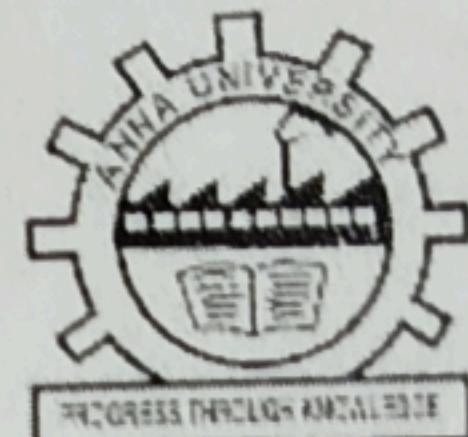


# IOT-BASED SMART WALLET PAYMENT SYSTEM USING STUDENT ID CARDS

INTERNET OF  
THINGS  
PROJECT  
Nov/Dec 2025

INTERNET OF THINGS PROJECT REPORT SUBMITTED IN  
PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE AWARD OF THE  
DEGREE OF BACHELOR OF ENGINEERING IN  
ELECTRONICS AND COMMUNICATION ENGINEERING  
OF THE ANNA UNIVERSITY



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## PROJECT WORK

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Submitted by

MOHAN PRASATH S – 722823106087

BATCH  
2023 – 2027

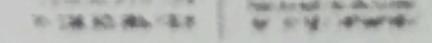
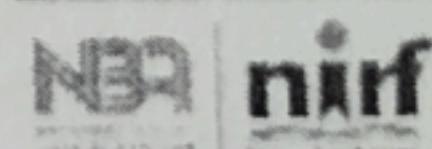
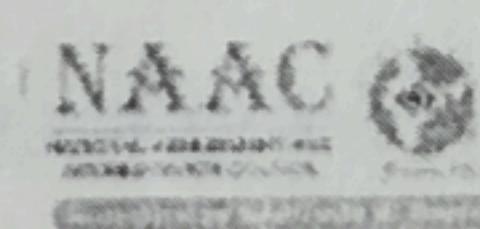


Sri Eshwar College of Engineering

(An Autonomous Institution)

Kinathukadavu (Tk), Coimbatore - 641 202, Tamil Nadu

Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai





## BONAFIDE CERTIFICATE

Certified that this Report titled "**IOT-BASED SMART WALLET PAYMENT SYSTEM USING STUDENT ID CARDS**" is the bonafide work of

**MOHAN PRASATH S**

**722823106087**

who carried out the project work under my supervision.

**SIGNATURE**

Dr. N. Shanmugasundaram, M.E., Ph.D.,

**PROFESSOR & HEAD**

Department of ECE,

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**SIGNATURE**

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**SUBJECT FACULTY**

Assistant Professor,

Department of ECE,

Sri Eshwar College of Engineering,

Coimbatore – 641 202.

Submitted for the **Autonomous Semester End Internet of Things Project Viva-**

Voce held on ..... 12/11/25 .....

**INTERNAL EXAMINER**

**EXTERNAL EXAMINER**



# Sri Eshwar

College of Engineering  
Coimbatore | Tamilnadu  
An Autonomous Institution  
Affiliated to Anna University, Chennai



## QUALITY POLICY

To establish a system of Quality Enhancement, which would on a continuous basis evaluate and enhance the quality of teaching – learning, research and extension activities of the institution, leading to improvements in all processes, enabling the institution to attain excellence.

## INSTITUTE VISION

To be recognized as a premier institution, grooming students into globally acknowledged engineering professionals.

## INSTITUTE MISSION

- Providing outcome and value based engineering education.
- Nurturing research and entrepreneurial culture.
- Enabling students to be industry ready and fulfil their career aspirations.
- Grooming students through behavioral and leadership training programs.

## DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

### DEPARTMENT VISION

To groom students into futuristic and globally competent Electronics and Communication engineering professionals.

### DEPARTMENT MISSION

- To impart quality education with moral and ethical values to develop competent engineers, leaders and successful entrepreneurs
- To establish state-of-art infrastructure and provide opportunities to update on emerging tools and technologies
- To empower the faculty towards excellence in teaching – learning, consultancy, research and development activities
- To foster socially relevant and industry-oriented innovation among students.

### PROGRAM EDUCATIONAL OBJECTIVES

**PEO1:** Pursue career in multinational organizations, research organizations and core industries, higher studies at premier institutions and establish start-ups.

**PEO2:** Acquire core competencies in Electronics and Communication Engineering and exposure to latest Electronic Design Automation (EDA) tools.

**PEO3:** Exhibit professional skills and collaborative work experience.

## PROGRAM OUTCOMES

**PO1: Engineering Knowledge:** Apply knowledge of mathematics, natural science, computing, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to develop to the solution of complex engineering problems.

**PO2: Problem Analysis:** Identify, formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions with consideration for sustainable development. (WK1 to WK4)

**PO3: Design/Development of Solutions:** Design creative solutions for complex engineering problems and design/develop systems/components/processes to meet identified needs with consideration for the public health and safety, whole-life cost, net zero carbon, culture, society and environment as required. (WK5)

**PO4: Conduct Investigations of Complex Problems:** Conduct investigations of complex engineering problems using research-based knowledge including design of experiments, modelling, analysis & interpretation of data to provide valid conclusions. (WK8).

**PO5: Engineering Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering & IT tools, including prediction and modelling recognizing their limitations to solve complex engineering problems. (WK2 and WK6)

**PO6: The Engineer and The World:** Analyze and evaluate societal and environmental aspects while solving complex engineering problems for its impact on sustainability with reference to economy, health, safety, legal framework, culture and environment. (WK1, WK5, and WK7).

**PO7: Ethics:** Apply ethical principles and commit to professional ethics, human values, diversity and inclusion; adhere to national & international laws. (WK9)

**PO8: Individual and Collaborative Team work:** Function effectively as an individual, and as a member or leader in diverse/multi-disciplinary teams.

**PO9: Communication:** Communicate effectively and inclusively within the engineering community and society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations considering cultural, language, and learning differences

**PO10: Project Management and Finance:** Apply knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, and to manage projects and in multidisciplinary environments.

**PO11: Life-Long Learning:** Recognize the need for, and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change. (WK8)

## PROGRAM SPECIFIC OUTCOMES

**PSO1:** Interpret and Design Electronic systems using Internet of Things, VLSI Technology and Efficient signal processing algorithms

**PSO2:** Apply knowledge to solve challenges in Communication Systems and Network

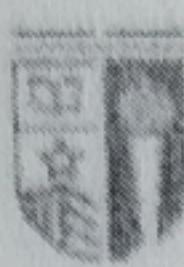
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## ABSTRACT

College campuses often face challenges such as long queues for payments, the inconvenience of carrying cash, and difficulty in tracking student expenses. To address these issues, this project introduces an IoT-based digital payment solution called “RFID Wallet System for Smart Campus Transactions.” The system integrates RFID technology with IoT and cloud services to enable secure, cashless, and real-time transactions across campus facilities like food courts, libraries, and stores. Each student’s RFID ID card is linked to a digital wallet managed through a unified web interface. When a student taps their card on the ESP32-based RFID reader (RC522), the system identifies the user, verifies the wallet balance, and processes payments instantly. All transaction details are securely stored in a MongoDB database and updated in real time on both student and admin dashboards through Socket.IO. Students can view their wallet balance and transaction history, while admins manage users, items, and reports. Integrated with Razorpay UPI for secure top-ups, the system ensures transparency, efficiency, and reliability in all operations. By combining IoT hardware, real-time web technologies, and digital payments, the project enhances campus convenience while reducing cash dependency. It aligns with the UN Sustainable Development Goal (SDG 9) – Industry, Innovation, and Infrastructure, and has achieved Technology Readiness Level 4 (TRL 4), demonstrating successful validation of components and integration in a laboratory environment.



**Annexure – I**

PROJECT TITLE	IOT-BASED SMART WALLET PAYMENT SYSTEM USING STUDENT ID CARDS
PROGRAM	B.E. ECE
STUDENT NAME	MOHAN PRASATH S
REGISTRATION NUMBER	722823106087
NAME OF THE SUPERVISOR AND DESIGNATION	Mr. M. Vivek Kumar, AP/ECE
NAME OF THE SDG GOALS MAPPED	INDUSTRY, INNOVATION, AND INFRASTRUCTURE
SDG GOAL NUMBER	SDG 9
NAME OF THE TRL LEVEL	TECHNOLOGY VALIDATED IN RELEVANT ENVIRONMENT
MENTION THE TRL LEVEL	TRL 4

POs & PSOs Mapping (Put a tick mark in the mapped PO's & PSO's):

Program Outcomes											Program Specific Outcomes	
PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
✓	✓	✓		✓						✓	✓	

Supervisor  
(Mr. M. Vivek Kumar, AP/ECE)



### Annexure - II

### VENUE AND EXPENDITURE STATEMENT FOR THE PROJECT WORK

Laboratory details where the project is carried out	Digital Lab, ECE
Software Details	<ul style="list-style-type: none"> <li>• MERN STACK – (MongoDB , ExpressJS , ReactJS, NodeJS)</li> <li>• GIT , GITHUB – Version Control</li> <li>• VERCEL, RENDER - Deployment</li> </ul>

### Details of the Component and Expenditure

No	Name of the Component	Qty	Price / Unit in (Rs.)	Amount (Rs.)
1	ESP 32 (MICROCONTROLLER)	1	330	330
2	RC522	1	100	100
3	RFID TAG	5	15	75
4	BREADBOARD	1	80	80
<b>Total</b>				<b>Rs. 585</b>

Signature of the student  
(MOHAN PRASATH S)

Supervisor  
Mr. M. Vivek Kumar, AP/ECE