**Smart Trolley System using RFID**

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS OF THE DEGREE OF

**BACHELOR OF ENGINEERING**

IN

**INFORMATION TECHNOLOGY**

BY

**Swaraj Jinagouda**

**Chris Gonsalves**

**Pratik Bhadane**

UNDER THE GUIDANCE OF

Fr. Dr. John Rose S.J

(Department of Information Technology)



**INFORMATION TECHNOLOGY DEPARTMENT**

**XAVIER INSTITUTE OF ENGINEERING**

**UNIVERSITY OF MUMBAI**

**2022 – 2023**

**Institute Vision**

To nurture the joy of excellence in a world of high technology.

**Institute Mission**

To strive to match global standards in technical education by interaction with industry, continuous staff training and development of quality of life.

**Department Vision**

To nurture the joy of excellence in the world of Information Technology.

**Department Mission**

M1: To develop the critical thinking ability of students by promoting interactive learning.

M2: To bridge the gap between industry and institute and give students the kind of exposure to the industrial requirements in current trends of developing technology.

M3: To promote learning and research methods and make them excel in the field of their study by becoming responsible while dealing with social concerns.

M4: To encourage students to pursue higher studies and provide them awareness on various career opportunities that are available.

**Program Education Objective (PEO)**

**After 3-5 years of graduation, Information Technology Engineering Graduates will be**

PEO1: employed as IT professionals, and shall engage themselves in learning, understanding, and applying newly developed ideas and technologies as their field of study evolves.

PEO2: competent to use the learnt knowledge successfully in the diversified sectors of industry, academia, research and work effectively in a multidisciplinary environment.

PEO3: aware of professional ethics and create a sense of social responsibility in building the nation/society.

**Program Specific outcome (PSO)**

PSO1: Demonstrate the ability to analyze and visualize the business domain and formulate appropriate information technology solutions.

PSO2: Apply various technologies like Intelligent Systems, Data Mining, IOT, Cloud and Analytics, Computer and Network Security etc. for innovative solutions to real time problems.

**Program Outcomes (PO)**

Engineering Graduates will be able to

PO1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

PO3: Design/Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions for complex problems.

PO5: Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project Management and Finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long Learning: Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

**XAVIER INSTITUTE OF ENGINEERING**

**MAHIM CAUSEWAY, MAHIM, MUMBAI - 400016.**

**CERTIFICATE**

This to certify that

Swaraj Jinagouda (27)

Chris Gonsalves (21)

Pratik Bhadane (06)

Have satisfactorily carried out the MINI-PROJECT work titled “**Smart Trolley System using RFID”** in partial fulfillment of the degree of Bachelor of Engineering as laid down by the University of Mumbai during the academic year 2022-2023.

**Internal Examiner / Guide External Examiner**

**Date:**

**Place: MAHIM, MUMBAI**

**DECLARATION**

I declare that this written submission represents my ideas in my own words and where others’ ideas or words have been included, I have adequately cited and referenced the original sources.

I also declare that I have adhered to all the principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission.

I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which thus have not been properly cited or from whom proper permission have not been taken when needed.

Swaraj Jinagouda (27) -------------------------------

Chris Gonsalves (21) -------------------------------

Pratik Bhadane (06) -------------------------------

Date:

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**Acknowledgement**

We would like to thank Fr. Dr. John Rose S.J (Director of XIE) for providing us with such an environment so as to achieve goals of our project and supporting us constantly.

We express our sincere gratitude to our Honorable Principal **Dr. Y. D. Venkatesh** for facilities and encouragement provided to us.

We would like to place on record our deep sense of gratitude to Prof. Meena Ugale, Head of Dept Of Information Technology, Xavier Institute of Engineering, Mahim, Mumbai, for her generous guidance help and useful suggestions.

With deep sense of gratitude, we acknowledge the guidance of our project guide **Fr. Dr. John Rose S.J**. The time-to-time assistance and encouragement by her has played an important role in the development of our project.

We would also like to thank our entire Information Technology staffs who have willingly cooperated with us in resolving our queries and providing us all the required facilities on time.

Swaraj Jinagouda -----------------------------

Chris Gonsalves -----------------------------

Pratik Bhadane -----------------------------

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**CLASS**: BE-IT **SEM**: VII

**COURSE CODE**: ITL 702 **COURSE NAME**: Internet of Everything Lab **AY**: 2022-2023 **SUB IN-CHARGE :** Fr. Dr. John Rose S J

**Lab Objectives:**

The Lab experiments aims:

1. To learn different types of sensors.
2. To design the problem solution as per the requirement analysis done using sensors.
3. To study the basic concepts of programming/sensors/ emulators.
4. To design and implement the mini project intended solution for project based learning.
5. To build and test the mini project successfully.
6. To improve the team building, communication and management skills of the students.

**Bloom’s Taxonomy Levels:**

|  |  |
| --- | --- |
| **1 = Remembering,**  **2= Understanding,**  **3 = Applying,** | **4 = Analyzing,**  **5 = Evaluating,**  **6 = Creating** |

**Lab Outcomes:**

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Lab Outcomes** | **Bloom’s Taxonomy** |
| On successful completion, of course, learner/student will be able to: | | |
| 1 | Identify the requirements for the real world problems. | L1,L2 |
| 2 | Conduct a survey of several available literatures in the preferred field of study. | L1,L2 |
| 3 | Study and enhance software/ hardware skills. | L1,L2 |
| 4 | Demonstrate and build the project successfully by hardware/sensor requirements, coding, emulating and testing. | L1,L2,L3 |
| 5 | To report and present the findings of the study conducted in the preferred domain. | L1,L2,L3,L4 |
| 6 | Demonstrate an ability to work in teams and manage the conduct of the research study | L1,L2,L3,L4 |

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**Group No**: 18

**Class:** BE IT **Sem:** VII **A.Y:** 2022-2023

**Course Name:** Internet of Everything Lab

**Name & Roll No:**

1) Swaraj Jinagouda – 27

2) Chris Gonsalves – 21

3) Pratik Bhadane - 06

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| **Mini Project** | | | | | | |
| **LO1: Identify the requirements for the real world problems.**  **LO2: Conduct a survey of several available literatures in the preferred field of study.**  **LO3: Study and enhance software/ hardware skills.**  **LO4: Demonstrate and build the project successfully by hardware/sensor requirements, coding, emulating and testing.**  **LO5: To report and present the findings of the study conducted in the preferred domain.**  **LO6: Demonstrate an ability to work in teams and manage the conduct of the research study** | | | | | | |
| **Rubrics For Mini Project Work** | | | | | | |
| **Roll No.** | **Name of the Student** | **Problem Statement (05)** | **Creativity &**  **Quality of Work done (04)** | **Punctuality &**  **lab ethics (02)** | **Performance/ Presentation (04)** | **Total (15)** |
| 27 | Swaraj Jinagouda |  |  |  |  |  |
| 21 | Chris Gonsalves |  |  |  |  |  |
| 06 | Pratik Bhadane |  |  |  |  |  |

Fr. Dr. John Rose S J

SUB IN-CHARGE

**Lab Outcomes:**

|  |  |  |
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| **Sr. No.** | **Lab Outcomes** | **Bloom’s Taxonomy** |
| On successful completion, of course, learner/student will be able to: | | |
| 1 | Identify the requirements for the real world problems. | L1,L2 |
| 2 | Conduct a survey of several available literatures in the preferred field of study. | L1,L2 |
| 3 | Study and enhance software/ hardware skills. | L1,L2 |
| 4 | Demonstrate and build the project successfully by hardware/sensor requirements, coding, emulating and testing. | L1,L2,L3 |
| 5 | To report and present the findings of the study conducted in the preferred domain. | L1,L2,L3,L4 |
| 6 | Demonstrate an ability to work in teams and manage the conduct of the research study | L1,L2,L3,L4 |

# LO-PO-PSO MAPPING

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|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| LO1 | 3 | 3 | 2 | 3 | - | - | - | 3 | - | 2 | - | - |  |  |
| LO2 | - | - | - | 3 | - | 2 | - | 3 | 2 | 3 | - | - |  |  |
| LO3 | 3 | - | - | 2 | 3 | - | - | 3 | - | - | - | - |  |  |
| LO4 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 3 | 2 | 3 | 3 | 3 |  |  |
| LO5 | 3 | - | - | - | - | - | - | 3 | 3 | 3 | 3 | 2 |  |  |
| LO6 | 3 |  |  | - | - | - | - | 3 | 2 | 3 | 2 | 2 |  |  |

**Smart Trolley System using RFID - PO/PSO Mapping**

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|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 |
| **Smart Trolley System using RFID** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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**Department of Information Technology**

Class: BE IT Sem: VII A.Y :2022-2023

Course Name: Internet of Everything Lab

Group No.

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| **Chapter 1: Introduction to IoE** | | | | | | |
| ITL702.1. Identify the requirements for the real world problems. | | | | | | |
| **Rubrics for Laboratory work** | | | | | | |
| **Roll No.** | **Name of the Student** | **Knowledge / Understanding (5)** | **Contents (4)** | **Presentation (4)** | **Punctuality & Lab ethics (2)** | **Total (15)** |
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**CHAPTER 1**

**INTRODUCTION TO IoE**

Write introduction of IoE and IoT (fond size-12) at least 2 paragraph.

**History of IoE**

Write two paragraphs on history of IoE

* 1. **Working of IoE** ( fond size-12)

Write working of IoE with its architecture (block diagrams) (put figure number in the format of **Fig.1.1.a:name of figure**)

1.2 **REAL WORLD PROBLEMS AND THEIR IoT SOLUTIONS** ( fond size-12)

Write some problems and solutions eg: security

1.3 **APPLICATIONS OF IoE** (fond size-12)

Write application with few introduction of each application. Add figures based on design

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| **Chapter 2: Introduction to (Your mini project)** | | | | | | |
| ITL702.2.Conduct a survey of several available literatures in the preferred field of study. | | | | | | |
| **Rubrics for Laboratory work** | | | | | | |
| **Roll No.** | **Name of the Student** | **Knowledge / Understanding (5)** | **Contents (4)** | **Presentation (4)** | **Punctuality & Lab ethics (2)** | **Total (15)** |
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**CHAPTER 2**

**INTRODUCTION TO (WRITE YOU PROJECT TITLE)**

**2.1 PROBLEM DEFINITION**

**2.2 AIM AND OBJECTIVES**

**2.3 SCOPE OF PROJECT**

**2.4 FEATURES OF THE PROJECT**

**Page no.**

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| **Chapter 3: Review of Literature** | | | | | | |
| ITL702.2.Conduct a survey of several available literatures in the preferred field of study. | | | | | | |
| **Rubrics for Laboratory work** | | | | | | |
| **Roll No.** | **Name of the Student** | **Knowledge / Understanding (5)** | **Contents (4)** | **Presentation (4)** | **Punctuality & Lab ethics (2)** | **Total (15)** |
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CHAPTER 3

REVIEW OF LITERARURE

Write literature review about your project

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Group No.

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| **Chapter 4: Implementation Methodology** | | | | | | |
| LO1: Identify the requirements for the real world problems.  LO2: Conduct a survey of several available literatures in the preferred field of study.  LO3: Study and enhance software/ hardware skills.  LO4: Demonstrate and build the project successfully by hardware/sensor requirements, coding, emulating and testing.  LO5: To report and present the findings of the study conducted in the preferred domain.  LO6: Demonstrate an ability to work in teams and manage the conduct of the research study | | | | | | |
| **Rubrics for Laboratory work** | | | | | | |
| **Roll No.** | **Name of the Student** | **Knowledge / Understanding (5)** | **Contents (4)** | **Presentation (4)** | **Punctuality & Lab ethics (2)** | **Total (15)** |
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**CHAPTER 4**

**Implementation Methodology**

4.1 Design

Block diagram/ Flowchart of proposed system

* 1. Hardware, Software Requirements.
  2. Diagram for the website(if applicable) REMOVE WATER MARKING
  3. Module Implementation(if applicable)
  4. Database Connectivity(if applicable)
  5. Code
  6. (All Procedure)

CONCLUSION AND FUTURE SCOPE

**CHAPTER 5**

**REFERENCES**

**APPENDIX**

**And Paper published**

**Attach paper published on this project**