IIITV-ICD

IIIT Vadodara - International Campus Diu

(Satellite Campus of IIIT Vadodara)

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User Help Book

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CHAPTER 1

Introduction

1. **Preamble**: This is a guide book to use the virtual lab of IIITV-ICD, made by group Fysic's Phive as a CS268 group project under the guidance of Dr. Varun Kumar.

2. **Group Members**: The group consists of five following members;

   2.1 202111030: GEVARIYA ARPAN

   2.2 202111031: GINIGE MANIKANTA

   2.3 202111032: GOVIND GARG

   2.4 202111033: GUNAL GUPTA

   2.5 202111034: HARSH SHARMA

3. **Simulators Available**: The following simulators are made by the group whose working is explained in following chapters;

   3.1 Coordinate System Converter

   3.2 Number System Converter

   3.3 Air Conditioning Unit Control

   3.4 A synchronous Modulo-10 gray code counter

CHAPTER 2

Login and Database

Log in;

- A student must have an IIITV-ICD student or user account.
- Once the user is logged in on the institute’s website he/she can directly access the virtual lab by using the link given on the institute's websiteI.
- The log in details will be directly redirected through firebase from the institute's website to virtual lab.
- A new user must first register with the institute to access the virtual lab.

Database;

- For the students of IIITV-ICD the homepage dashboard has a submission panel.
- Submission panel will redirect the student back to a submission page with the assignment made in the virtual lab.
- This is to help the students to directly submit the assignment from the virtual lab.
- This will also prevent the very common plagiarism among the students.

CHAPTER 3

Home Page Navigation

- This is a insight in using the home page of virtual lab of IIITV-ICD;

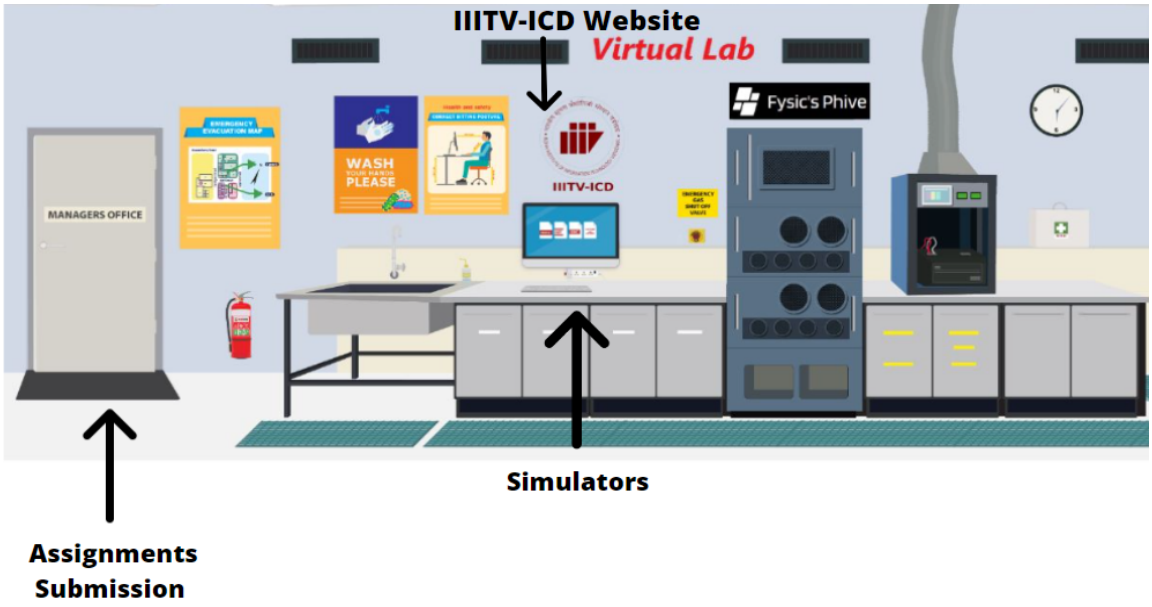

Fig 3.1: Home page

- This is a insight in using the simulators section dashboard of home page;

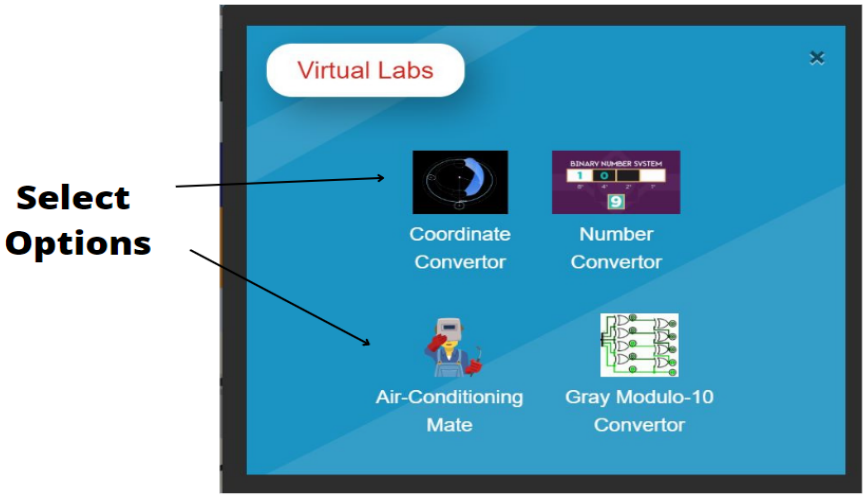

Fig 3.2: Simulators Section Dashboard

CHAPTER 4

Coordinate System Converter

- Coordinate System Converter can be useful in dealing with simulations that involve spatial data.
- By using the converter, they can easily convert between different coordinate systems, such as Cartesian coordinates (x, y, z) and polar coordinates (r, θ, φ).
- Real life application : simulations of fluid dynamics may use cylindrical coordinates (r, θ, z) to represent the motion of fluid particles. By using the converter, researchers can easily convert between different coordinate systems and visualize the results of their simulations in a way that is most meaningful to them.

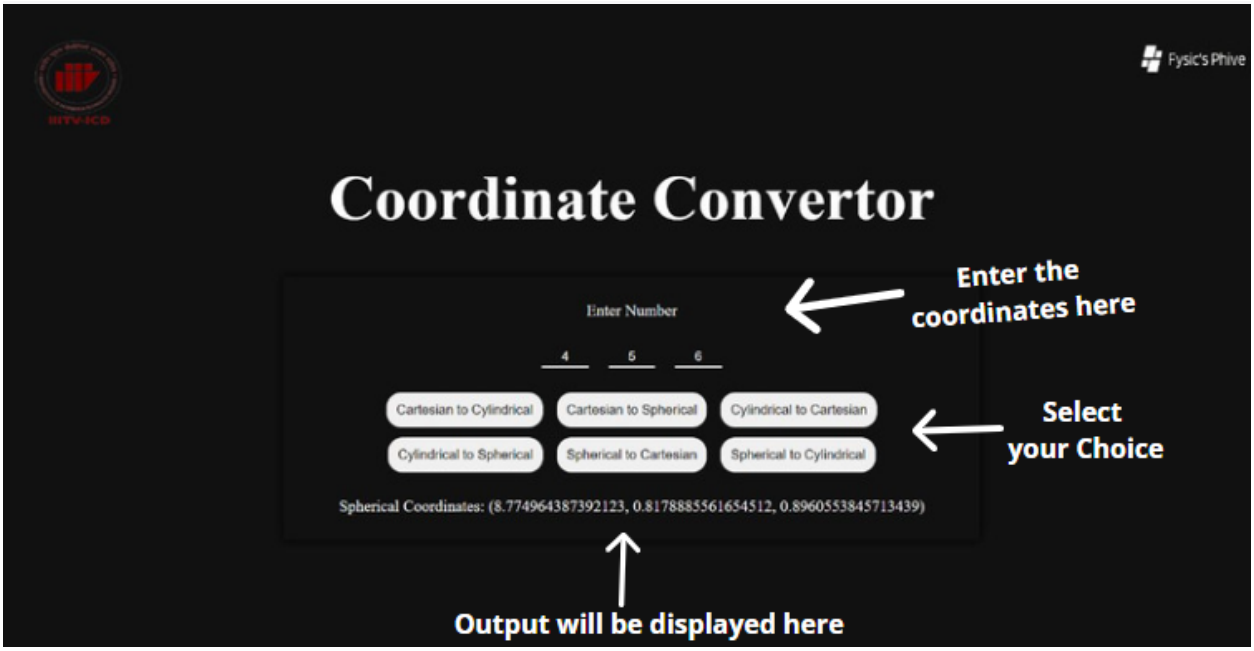

Fig 4.1: Coordinate Converter Dashboard

CHAPTER 5

Number System Converter

- Number System Converter is an online tool designed to convert numbers between different number systems, including decimal, hexadecimal, binary, and octal. This tool is particularly useful in digital logic design, where different number systems are used to represent values and signals.
- The converter allows users to input a number in any of the supported number systems and convert it to any of the other systems. For example, a user can input a decimal number and convert it to binary, hexadecimal, or octal. Similarly, a user can input a binary number and convert it to decimal, hexadecimal, or octal.

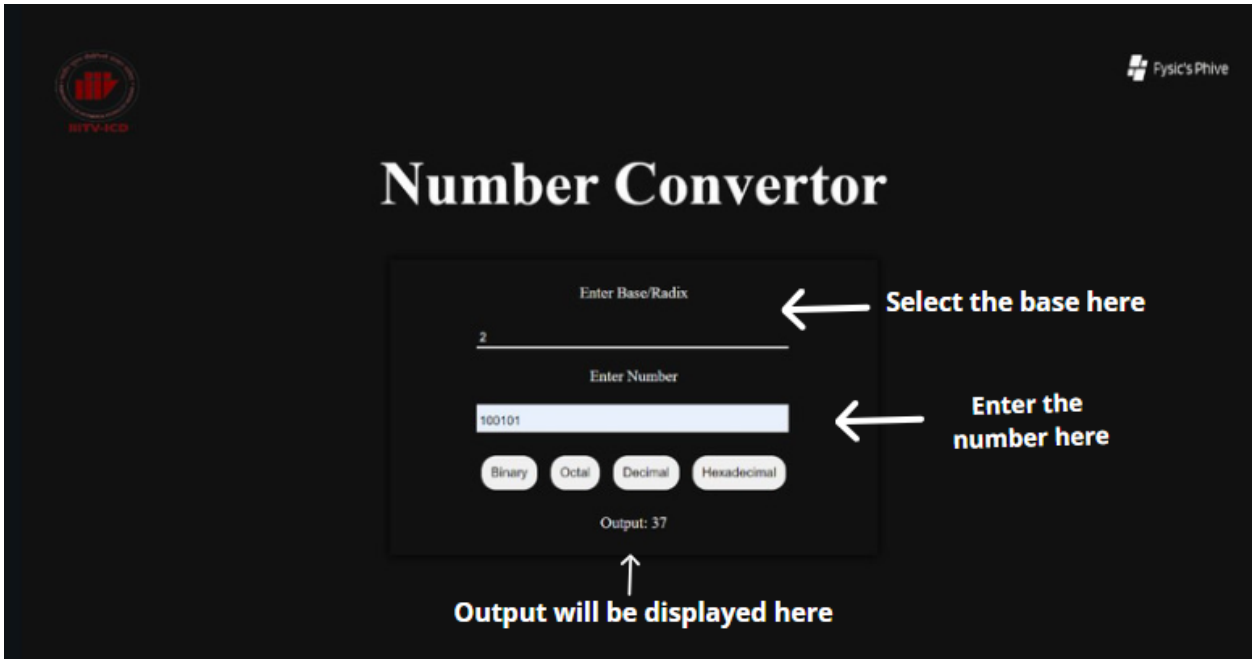

Fig 5.1: Number Converter

CHAPTER 6

Air Conditioning Unit Control

- Air Conditioning Unit Control is an online tool designed to help users determine if it is feasible to turn on an air conditioning unit based on certain environmental conditions. This tool can be particularly useful for homeowners, business owners, and facility managers who want to optimize their energy usage while maintaining a comfortable indoor environment.
- The tool takes into account several factors, including humidity, temperature, time of day, and day of the week. Users can input these values into the tool and receive an output that indicates whether it is feasible to turn on the air conditioning unit.
- For example, the tool may recommend that the air conditioning unit be turned on if the temperature is above a certain threshold, the humidity is above a certain threshold, and the time of day is within a certain range. This can help to ensure that the air conditioning unit is only used when necessary, which can help to save energy and reduce utility costs.

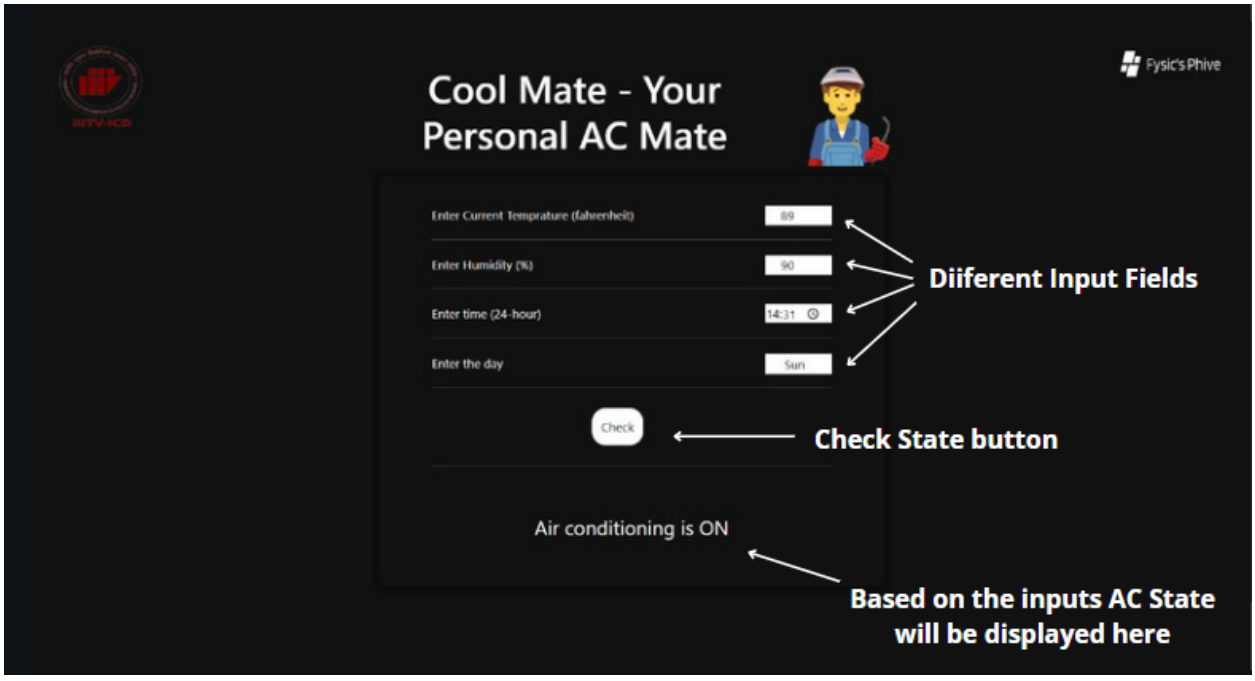

Fig 6.1:Air Conditioning Control Unit

CHAPTER 7

A synchronous Modulo-10 gray code counter

- Synchronous Modulo-10 Gray Code Counter is an online tool designed to simulate a digital circuit that counts in a synchronous modulo-10 gray code sequence. This tool can be useful for students and professionals who are learning about digital logic design and want to practice designing and simulating digital circuits.
- A synchronous Modulo-10 Gray Code Counter is a digital circuit that counts in a gray code sequence with ten states. The gray code sequence is a binary code in which successive numbers differ by only one bit, and the Modulo-10 gray code sequence is a variation of the gray code sequence in which the count is reset to zero after reaching a count of nine.

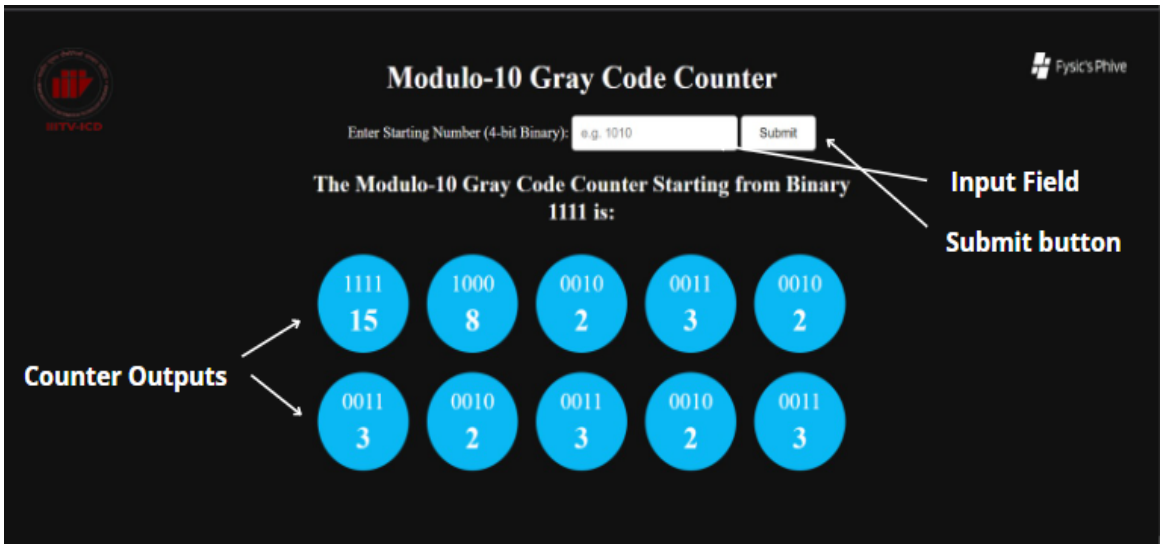

Fig 7.1: Synchronous Modulo-10 gray code counter

CHAPTER 8

Acknowledgment

The group Fysic's Phive would like to express their sincere gratitude and appreciation to **Dr. Varun Kumar**, our faculty for the course **Computer Organization and Architecture** in semester 4 of **CSE B.tech** of **2021**, for his unwavering support and guidance throughout our group project.

We would also like to acknowledge our group members for their hard work, dedication, and collaboration in completing the project. Their contributions and insights were instrumental in the success of our project

Lastly, we would like to thank the institute, **IIITV-ICD** for providing us with the opportunity to take this course and for the resources and support that were made available to us. This experience has been instrumental in shaping our understanding of computer organization and architecture, and we look forward to applying this knowledge in our future endeavors.