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C HAPTER 1

WHAT IS PROGRAMMING? EXPLORE C++ IN ARDUINO

Learn Delve into concepts of C++ programming and its role in Arduino projects. This chapter provides a strong foundation for writing efficient and simple programs in C++ for Arduino.

C HAPTER 2

LEARN ABOUT DATA TYPES AND LOOPS IN ARDUINO PROGRAMMING

Focus on fundamental coding concepts related to data types and loops used in Arduino. It helps students understand how to control electronic projects by writing simple codes.

C HAPTER 3

INTERFACING OF IR SENSOR WITH ARDUINO BOARD

This chapter introduces infrared (IR) sensors and conditional statements used in Arduino. It covers the principles of IR sensor operation, circuit connections, and programming to detect objects and measure distances using IR sensors.

C HAPTER 4

INTRODUCTION TO OPERATORS IN PROGRAMMING

Explore different types of operators used in programming, such as logical, arithmetic, bitwise, and relational operators. This chapter explains how to use these operators in C++ to perform real-world projects in Arduino and apply programming concepts.

C HAPTER 5

UNDERSTANDING COMMUNICATION PROTOCOL

This chapter covers bitwise operators and their practical applications in Arduino programming. It includes and demonstrates how communication protocols are used in Arduino.

C HAPTER 6

MISCELLANEOUS SENSORS

Explore different types of sensors and their practical applications in Arduino programming. This chapter includes sensors such as gas sensor, force sensor, flex sensor, temperature sensor, and many more.

C HAPTER 7

DESIGN A UTILITY APP - FLASHLIGHT TORCH

Discover the basics of MIT App Inventor by creating a flashlight app. Learn to design the user interface and program the flashlight function, transforming your phone into a handy torch.

C HAPTER 8

BUILD A COMMUNICATION-VOICE TRANSLATOR APP

Create a voice translator app using MIT App Inventor. This chapter covers integrating voice recognition and text-to-speech to capture, translate, and output speech in different languages, showcasing real-time translation in action.

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CHAPTER 9

CREATE A SOCIAL APP WITH PROXIMITY SENSOR

Develop an app that detects and counts objects using a Bluetooth proximity sensor. Learn to connect the sensor to your smartphone, process sensor data, and display counts in real time, ideal for educational and social applications.

CHAPTER 10

DESIGN A HEALTHCARE APP WITH ALARM CLOCK, TIMER & STOPWATCH

Build a healthcare app featuring an alarm clock, timer, and stopwatch. This chapter guides you in designing a multifunctional UI and programming time-tracking functionalities, perfect for managing schedules and daily tasks.

CHAPTER 11

BUILD A BUSINESS SECTOR CALCULATOR APP

Create a business calculator app with MIT App Inventor. Design a user-friendly interface to perform arithmetic and financial calculations, demonstrating how mobile apps can simplify business tasks.

CHAPTER 12

INTRODUCTION TO CAD AND FUSION 360

An introduction to computer-aided design (CAD) and Fusion 360, a powerful 3D CAD software developed by Autodesk. This chapter covers the basics of CAD, the capabilities of Fusion 360, and how to get started with this tool.

CHAPTER 13

EXPLORE FUSION 360

Dive into the user interface of Fusion 360, exploring its various components, tools, and features. This chapter also covers important concepts like axis, workplanes, and workspace navigation to help maximize the software's capabilities.

CHAPTER 14

2D SKETCHING TOOLS – I

Explore the fundamental sketching tools in Fusion 360 such as Line, Rectangle, Circle, and Arc. This chapter details how to create and manipulate 2D sketches effectively using these basic tools.

CHAPTER 15

2D SKETCHING TOOLS – II

Delve into more advanced sketching tools in Fusion 360, including Polygon, Ellipse, and Slot. This chapter also discusses different types of polygons and their applications in design, providing a deeper understanding of creating complex 2D shapes.

3D CAD