

# uCertify

# Course Outline

## C Programming



18 May 2024

1. Course Objective
2. Exercises, Quizzes, Flashcards & Glossary  
Number of Questions
3. Expert Instructor-Led Training
4. ADA Compliant & JAWS Compatible Platform
5. State of the Art Educator Tools
6. Award Winning Learning Platform (LMS)
7. Chapter & Lessons

Syllabus

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Chapter 2: A Quick Start for the Impatient

Chapter 3: The Programming Thing

Chapter 4: Anatomy of C

Chapter 5: Trials and Errors

Chapter 6: Values and Simple Math

Chapter 7: A Place to Put Stuff

Chapter 8: Input and Output

Chapter 9: Decision Making

Chapter 10: Loops, Loops, Loops

Chapter 11: Fun with Functions

Chapter 12: The Unavoidable Math Lesson

Chapter 13: Give Me Arrays

Chapter 14: Fun with Text

Chapter 15: Structures, the Multivariable

Chapter 16: Life at the Command Prompt

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Chapter 29: Appendix A: ASCII Codes

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Videos and How To

## 8. Live labs

Lab Tasks

Here's what you get

## 1. Course Objective

The C Programming course takes you through the core elements of coding, covering everything from understanding basic concepts like variables and control structures to mastering advanced topics like functions and memory management. Designed for simplicity, this course establishes a strong foundation, empowering you to create efficient and effective C programs. This course provides a sturdy foundation, empowering you to write efficient and effective C programs.

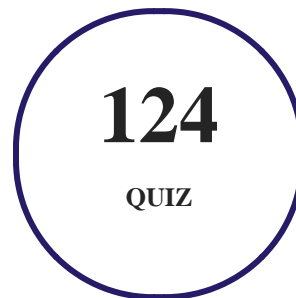
## 2. Exercises

There is no limit to the number of times learners can attempt these. Exercises come with detailed remediation, which ensures that learners are confident on the topic before proceeding.



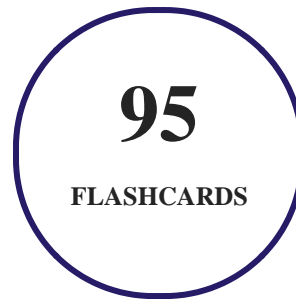
## 3. Quiz

Quizzes test your knowledge on the topics of the exam when you go through the course material. There is no limit to the number of times you can attempt it.



## 4. flashcards

Flashcards are effective memory-aiding tools that help you learn complex topics easily. The flashcard will help you in memorizing definitions, terminologies, key concepts, and more. There is no limit to the number of times learners can attempt these. Flashcards help master the key concepts.



## 5. Glossary of terms

uCertify provides detailed explanations of concepts relevant to the course through Glossary. It contains a list of frequently used terminologies along with its detailed explanation. Glossary defines the key terms.



## 6. Expert Instructor-Led Training

uCertify uses the content from the finest publishers and only the IT industry's finest instructors. They have a minimum of 15 years real-world experience and are subject matter experts in their fields. Unlike a live class, you can study at your own pace. This creates a personal learning experience and gives you all the benefit of hands-on training with the flexibility of doing it around your schedule 24/7.

## 7. ADA Compliant & JAWS Compatible Platform

uCertify course and labs are ADA (Americans with Disability Act) compliant. It is now more accessible to students with features such as:

- Change the font, size, and color of the content of the course
- Text-to-speech, reads the text into spoken words
- Interactive videos, how-tos videos come with transcripts and voice-over
- Interactive transcripts, each word is clickable. Students can clip a specific part of the video by clicking on a word or a portion of the text.

JAWS (Job Access with Speech) is a computer screen reader program for Microsoft Windows that reads the screen either with a text-to-speech output or by a Refreshable Braille display. Student can easily navigate uCertify course using JAWS shortcut keys.

## 8. State of the Art Educator Tools

uCertify knows the importance of instructors and provide tools to help them do their job effectively. Instructors are able to clone and customize course. Do ability grouping. Create sections. Design grade scale and grade formula. Create and schedule assessments. Educators can also move a student from self-paced to mentor-guided to instructor-led mode in three clicks.

## 9. Award Winning Learning Platform (LMS)

uCertify has developed an award winning, highly interactive yet simple to use platform. The SIIA CODiE Awards is the only peer-reviewed program to showcase business and education technology's finest products and services. Since 1986, thousands of products, services and solutions have been recognized for achieving excellence. uCertify has won CODiE awards consecutively for last 7 years:

- **2014**
  1. Best Postsecondary Learning Solution
- **2015**
  1. Best Education Solution

2. Best Virtual Learning Solution
3. Best Student Assessment Solution
4. Best Postsecondary Learning Solution
5. Best Career and Workforce Readiness Solution
6. Best Instructional Solution in Other Curriculum Areas
7. Best Corporate Learning/Workforce Development Solution

- **2016**

1. Best Virtual Learning Solution
2. Best Education Cloud-based Solution
3. Best College and Career Readiness Solution
4. Best Corporate / Workforce Learning Solution
5. Best Postsecondary Learning Content Solution
6. Best Postsecondary LMS or Learning Platform
7. Best Learning Relationship Management Solution

- **2017**

1. Best Overall Education Solution
2. Best Student Assessment Solution
3. Best Corporate/Workforce Learning Solution
4. Best Higher Education LMS or Learning Platform

- **2018**

1. Best Higher Education LMS or Learning Platform
2. Best Instructional Solution in Other Curriculum Areas
3. Best Learning Relationship Management Solution

- **2019**

1. Best Virtual Learning Solution
2. Best Content Authoring Development or Curation Solution
3. Best Higher Education Learning Management Solution (LMS)

- **2020**

1. Best College and Career Readiness Solution
2. Best Cross-Curricular Solution
3. Best Virtual Learning Solution

## 10. Chapter & Lessons

uCertify brings these textbooks to life. It is full of interactive activities that keeps the learner engaged. uCertify brings all available learning resources for a topic in one place so that the learner can efficiently learn without going to multiple places. Challenge questions are also embedded in the chapters so learners can attempt those while they are learning about that particular topic. This helps them grasp the concepts better because they can go over it again right away which improves learning.

Learners can do Flashcards, Exercises, Quizzes and Labs related to each chapter. At the end of every lesson, uCertify courses guide the learners on the path they should follow.

### Syllabus

#### Chapter 1: Introduction

- Why the C Language?
- The C Programming For Dummies Approach
- How This Course Works
- Icons Used in This Course

#### Chapter 2: A Quick Start for the Impatient

- What You Need to Program
- Command Prompt Programming



- IDE Programming
- Your First Program

### Chapter 3: The Programming Thing

- The History of Programming
- The Programming Process

### Chapter 4: Anatomy of C

- Parts of the C Language
- Behold the Typical C Program

### Chapter 5: Trials and Errors

- Display Stuff on the Screen
- More Text Output Nonsense

### Chapter 6: Values and Simple Math

- A Venue for Various Values
- The Computer Does the Math

### Chapter 7: A Place to Put Stuff

- Values That Vary
- Variable Madness!
- Constants Always the Same

## Chapter 8: Input and Output

- Character I/O
- Text I/O, but Mostly I

## Chapter 9: Decision Making

- What If?
- Multiple Decisions
- Multiple Comparisons with Logic
- The Old Switch Case Trick
- The Weird ?: Decision Thing

## Chapter 10: Loops, Loops, Loops

- A Little Déjà Vu
- The Thrill of for Loops
- The Joy of the while Loop

- Loopy Stuff

## Chapter 11: Fun with Functions

- Anatomy of a Function
- Functions and Variables
- Constants of the Global Kind

## Chapter 12: The Unavoidable Math Lesson

- Math Operators from Beyond Infinity
- Math Function Mania
- It's Totally Random
- The Holy Order of Precedence

## Chapter 13: Give Me Arrays

- Behold the Array
- Multidimensional Arrays
- Arrays and Functions

## Chapter 14: Fun with Text

- Character Manipulation Functions
- String Functions Galore
- Fun with printf() Formatting
- Gently Down the Stream

## Chapter 15: Structures, the Multivariable

- Hello, Structure
- Weird Structure Concepts

## Chapter 16: Life at the Command Prompt

- Conjure a Terminal Window
- Arguments for the main() Function
- Time to Bail

## Chapter 17: Variable Nonsense

- Variable Control
- Variables, Variables Everywhere

## Chapter 18: Binary Mania

- Binary Basics
- Bit Manipulation
- The Joy of Hex

## Chapter 19: Introduction to Pointers

- The Biggest Problem with Pointers
- Sizing Up Variable Storage
- The Hideously Complex Topic of Pointers

## Chapter 20: Deep into Pointer Land

- Pointers and Arrays
- Strings Are Pointer-Things
- Pointers in Functions

## Chapter 21: Memory Chunks and Linked Lists

- Give Me Memory!
- Lists That Link

## Chapter 22: It's About Time

- What Time Is It?
- Time to Program

## Chapter 23: Permanent Storage Functions

- Sequential File Access
- Random File Access

## Chapter 24: File Management

- Directory Madness
- Fun with Files

## Chapter 25: Beyond Mere Mortal Projects

- The Multi-Module Monster
- Other Libraries to Link

## Chapter 26: Out, Bugs!

- Simple Tricks to Resolve Problems
- The Debugger
- Improved Error Messages

## Chapter 27: Ten Common Boo-Boos

- Conditional Foul-Ups
- `==` v. `=`
- Dangerous Loop Semicolons
- Commas in for Loops
- Missing break in a switch Structure
- Missing Parentheses and Curly Brackets
- Don't Ignore a Warning
- Endless Loops
- `scanf()` Blunders
- Streaming Input Restrictions

## Chapter 28: Ten Reminders and Suggestions

- Maintain Good Posture
- Use Creative Names
- Write a Function
- Work on Your Code a Little Bit at a Time
- Break Apart Larger Projects into Several Modules

- Know What a Pointer Is
- Add Whitespace before Condensing
- Know When if-else Becomes switch-case
- Remember Assignment Operators
- When You Get Stuck, Read Your Code Out Loud

Chapter 29: Appendix A: ASCII Codes

Chapter 30: Appendix B: Keywords

Chapter 31: Appendix C: Operators

Chapter 32: Appendix D: Data Types

Chapter 33: Appendix E: Escape Sequences

Chapter 34: Appendix F: Conversion Characters

Chapter 35: Appendix G: Order of Precedence

## 11. Live Labs

The benefits of live-labs are:

- Exam based practical tasks



- Real equipment, absolutely no simulations
- Access to the latest industry technologies
- Available anytime, anywhere on any device
- Break and Reset functionality
- No hardware costs

## Lab Tasks

### A Quick Start for the Impatient

- Building a Project and Running a File
- Writing the Source Code
- Displaying Current Time and Day of the Week
- Writing Text to a File
- Finding a Specific Record in a File
- Separating Files from Directories
- Creating and Renaming a File
- Linking Two Source Code Files
- Creating a Debugger Target Build
- Using Debugger to Watch Variables

### Anatomy of C

- Displaying the Result of Multiplication of Two Numbers

### Trials and Errors

- Displaying a Rhyme Using the puts() Function
- Spotting Errors in the Code

### Values and Simple Math

- Using Conversion Characters
- Minding the Extra Zeros

- Using the Multiplication Operator
- Using the Addition Operator

### **A Place to Put Stuff**

- Working with a Variable
- Declaring Multiple Variables
- Using a Constant

### **Input and Output**

- Fetching Characters Using `getchar()`
- Working with Character Variables

### **Decision Making**

- Making a Comparison Using the `if` Keyword
- Using the Assignment Operator
- Using the `if-else` Structure
- Constructing a Meal Plan Using a Switch-Case Structure

### **Loops, Loops, Loops**

- Counting with the `for` Statement
- Generating a 3-Letter Acronym
- Using a While Loop

### **Fun with Functions**

- Using Local Variables in a Function
- Passing a Value to a Function
- Putting Defined Constants to Use

### **The Unavoidable Math Lesson**

- Counting Up and Down
- Displaying Modulus Values
- Converting from Radians to Degrees

## **Give Me Arrays**

- Finding Square of Array Elements
- Displaying the Stock Market Closing Numbers
- Sorting an Array Using Bubble Sort
- Creating a Three-Dimensional Array

## **Fun with Text**

- Changing Characters
- Displaying the First and Last Names

## **Structures, the Multivariable**

- Making an Array of Structures
- Putting Structures Within Structures

## **Life at the Command Prompt**

- Quitting the Program

## **Variable Nonsense**

- Using Typedef to Define a Structure

## **Binary Mania**

- Displaying Binary Values
- Using the Bitwise | Operator
- Using the Bitwise & Operator

## **Introduction to Pointers**

- Reading a Variable Size
- Reading an Array Size
- Reading a Structure Size
- Assigning Values by Using a Pointer

## Deep into Pointer Land

- Displaying Array's Element and their Values
- Building an Array of Pointers
- Using Pointers to Display a String
- Swapping the Values of Two Integer Variables

## Memory Chunks and Linked Lists

- Allocating Space Using the Malloc Function
- Traversing a Linked List

## Here's what you get

**58**

LIVE LABS

**10**

VIDEO TUTORIALS

**20**

MINUTES

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