## **Bytexl Guided Project Overview**

**Title:** C Music Player Demo Frame   
**Duration:** Approximately 2 hours  
**Programming Language:** C Language  
**Platform:** code::block

**Purpose:**This project offers students a practical, hands-on approach to learning essential Data Structures like user-defined and dynamic Data Structure. By developing a Music Player Framework, students will gain valuable experience in coding and designing user-defined data structures, implementing, and understanding how these data structures function in real-time. This is an excellent opportunity for students preparing for technical interviews or wanting to deepen their knowledge of data structures and algorithms (DSA) applicable to real-world scenarios.

## **Project-Based Learning Course Overview**

### **About the Project**

The **C MUSIC PLAYER FRAMEWORK** is designed for students who wish to strengthen their understanding of Data Structures by implementing **Data Structures** where they can create new song, add songs in List, create playlist, play Next Song, play Previous song and Delete songs to visualize their operations in real-time. This project is especially useful for students preparing for technical coding assessments, interviews, or roles requiring strong DSA knowledge.

### **Prerequisites**

* **Programming Skills:** Basic knowledge of C language.
* **Data Structures Knowledge:** Understanding of fundamental DSA, like Structure, Linked List, required header file, file handling and algorithm basics.

### **Learning Objectives**

By the end of this project, students will:

1. Develop a clear understanding of **Linked List** and **user-defined Data Structure**.
2. Strengthen practical DSA skills by building and debugging Linked List algorithms.
3. Gain confidence in using C Language for visualizing **Data Structure** like **Linked List** and **user-defined data structure** like **Structure** and their algorithms, which is beneficial for interviews and real-world applications.

### **Key Skills to Practice**

* **Algorithm Implementation:** Create **Linked List** and **user-defined Data Structures** and implement their algorithm in **C language**.
* **Linked List** & **Structures:** Understanding the structure and application of Linked List nodes and traversals.
* **Visualization & Debugging:** Building a visual interface for step-by-step algorithm testing and debugging.

### **Learning Platform: code::block**

Students will complete this project on **code::block** IDE, specifically used for developing C language code for interactive, hands-on projects. Code::block is pre-configured with C compiler and other development tools, removing the need for complex setup and allowing students to focus directly on coding and visualization.

**Platform Benefits:**

* **C/C++ language Environment:** C and C++ based environment tailored for data structure and algorithm development.
* **Step-by-Step Instructor Guidance:** Supportive guidance at each step to ensure smooth project completion.
* **Development-Ready Tools:** Tools are pre-installed, allowing students to start coding immediately without setup. As per the requirement we can additionally use more tools.
* **Real-Time Interaction:** Execute, test, and visualize Linked List algorithms in real time on any desktop or laptop.

## **Step-by-Step Learning Guide**

The **C Music Player Demo Framework** is structured to be completed in approximately 2 hours, with specific tasks for clear learning progression.

### **Project Structure**

* **Task 1:** Set up the **C Music Player** **Frame** interface using C language using SDL2.
* **Task 2:** Implement Structures and Linked List, integrating step-by-step visualization.
* **Task 3:** We can additionally add more data structures which showing real-time experience.
* **Task 4:** Test and refine the **C Music Player Frame**, ensuring usability and accuracy in the visual display.

## **Educator’s Introduction**

Hello!   
I’m *Shubham D*, your instructor for this course. I have a background in computer science engineering with over 2.5 years of teaching experience specializing in Data Structures and Algorithms. I’ve taught at more than 3 colleges across India and am certified in DSA, receiving consistent positive feedback from students. My goal is to build interactive, engaging learning experiences to support your growth in technical skills. When I’m not teaching, I enjoy diving into advanced topics in computer science and expanding my technical knowledge.

## **Completion and Certification**

Upon successfully completing the **C Music Player Demo Frame** project, students will have the opportunity to take a quiz to reinforce their learning. Scoring 80% or higher will earn them a completion certificate, validating their project achievement and DSA skills in Python. This certification will enhance their portfolio, making them better prepared for technical roles and coding challenges.