Course Name	**Essentials of C Programming**
Required Software	**Visual Studio Code with wsl enabled**
Syllabus	1. **Introduction to C Programming** History, C Standards, Building a C Program **Language Basics** Keywords, Variables and Rules for naming variables, Identifiers, Data Types, Qualifiers – signed, unsigned, short, long, Constants - Numeric, Character, String and Enumeration, Type conversions – Implicit and Explicit type conversion, Type casting 2. **Operators & Flow Control** Arithmetic Operators, Relational Operators, Assignment Operators, Increment and Decrement Operators, Logical Operators, Bitwise Operators, Conditional operators, Special Operators , Precedence and Associativity of operators **Flow Control** Conditionals / Decision Making- if statement, if-else statement, conditional (ternary) operator, Nested if-else, else if ladder, Switch case Loops- for loop, while loop, do-while loop, break, continue and goto 3. **Preprocessors, Arrays, Strings & Functions** **Role of Preprocessor** Preprocessor directives and their usage, Symbolic constants, Macros and Macro functions **Arrays** 1D Arrays – Creation and initialization, accessing array members – read/write operations, random access, 2D Arrays – creation, initialization, Traversing 2D Arrays, random access **Strings** Declaring string and importance of Null char termination, Reading and writing strings, String handling routines in the standard library, Passing strings to functions **Functions** Function prototype, function body and function call, Parameter passing, By value and by address, passing arrays and structures, Returning values from functions, Recursion 4. **Pointers in C** Pointer to basic data types, Types of pointers, significance of NULL pointer, Pointers and structures, ` Pointer to structure variables, Member access, arrow operator, Significance of dynamic memory, Dynamic Memory APIs from std library, Pointers and Dynamic memory allocation 5. **Structures, Unions, file Handling & Code Style & Best Practices** **Structures & Unions** Creating Structures, Declaring Variables, Initialization, Member Access, dot and arrow operators, Anonymous structures, typedef usage, Array of structures, Arrays within structure, Union and its usage **File Handling** Simple I/O operations, Formatted I/O: printf() and scanf(), Character I/O: getchar() and putchar(), Format specifiers, Command line arguments **Code Style & Best practices** Code style guidelines – Indentation, Naming Conventions, Meaningful Names, Best practices for writing C programs
Mandatory Assignment	• Daily activities shared after the session needs to be submitted within timelines. • Learn C | Discover our Courses - Sololearn
End Module Assessment	MCQ based Hacker earth assessment with Camera enabled.
Additional Learning & Practice Resources	C Programming Language Tutorial - GeeksforGeeks Learn C Programming C Tutorial - Learn C Programming C Tutorial - Learn C - Cprogramming.com