Content 1:- Install & Configure VS Code With C Compiler

1. What is an IDE?,
2. What is an compiler?
3. And installation of Visual Studio Code(IDE Software) and MINGW compiler.

### Content 2:- Basic Structure of C Program

1. Detailed breakdown of structure (like pre-processor commands, Functions, Variables, Statements, Expressions, Comments) of an C program with the help of simple program.
2. Power terminal trick or method to change the file name (if you want to change) which we gaved before(at starting) and now we want to change.
3. Simple **code** for printing Hello world.

Content 3:- Basic Syntax of C

1. Defination of Syntax.
2. Tokens and Following Tokens (like Keywords, Identifiers, constant, string literals, and Symbols) with detailed Explaination.
3. Information about blank or white spaces in code.
4. **Codes** provided for understanding.

Content 4:- Variables & Data Types In C

### What is variable.

### About declaration of variable with Syntax and also example.

### Naming and Rules for naming a variables, Example for naming.

### Memory and Renge chart for Data type (but its depends on architect of PC).

### Code for knowing the Size of data type taking in our PC.

Content 5:- Operators In C

1. Defination of Operators.
2. Types of Operators (Arthmetic, Relational, Logical, Bitwise and Assignment Operator) with deep and detailed informations and also Examples are included.
3. Conclusion.
4. **Code** for Operators.

### Content 6:- Printing Multiplication Table.

### Enter an number to get the multiplication table.

### Content 7:- Format Specifiers and Escape Sequences With Examples

### Defination of Format specifiers like (%f, %c, %lf, %lu).

### Examples of Format Specifiers.

### Defination of Escape Sequence. (like \n, \t)

### Example of Escape Sequence.

### Code for Understanding the Format specifiers and Escape Sequence.

Content 8:- If-Else Control Statements in C.

1. Assignment Operators.
2. If-Else Statements and its Examples.
3. Nested If-Else statements.
4. Summary.
5. **Code** for explaination of If-Else statements.

Content 9:- Switch Case Control Statements In C.

1. Explaination of Switch Statements.
2. Syntax And Exa,ple of Switch Statements.
3. Why do we need Switch Statements?
4. Rules for Switch Statements.
5. Difference between Switch and If Statements.
6. **Code1** for Switch Statements.
7. **Code2** Calculator using Switch statements.

Content 10:- Loops in C .

1. Loops Explaination.
2. Types of Loop (For Loop, While Loop and Do While Loop).
3. Kinds of Loops (Entry Controlled Loop and Exit Controlled Loop.
4. Short definition of For Loop, While Loop and Do While Loop.
5. About infinite Loop.
6. Short definition about Continue and Break statements.
7. **Do While Loop**:- Detailedexplaination of Do while loop with Syntax**,** How does Do While Loop Works?**,** **Code** for Do While Loops**,** Difference between While and Do While Loops**.**
8. **While Loop:-** Explaination with Syntax**,** Program and Explaination**,** Properties of While Loops**,** Two **codes** for Explaination of While Loop.
9. **For Loop:**- Explaination of For Loops and Syntax**, Code** and its Explainations.

Content 11:- Break and Continue statements.

1. Break statement explaination with **code**.
2. Continue statement explaination with **code**.
3. If you both the **codes** of Break and continue Statemenets then you will get the diffrerence Between them also.

Content 12:- Goto Statements.

1. Explaination and Syntax of Goto Statements.
2. **Code** With Explaination.

Content 13:- Typecasting In C.

1. Typecasting Expalination with **Code**.
2. Most concept explained if you see the whole content.

Content 14:- Functions In C

1. Explaination of function.
2. Advantages of functions.
3. Aspect of Functions.
4. Types of functions.
5. 4 Ways to define functions with **codes**.
6. **Final code** for Explaination of function.

Content 15:- Recursive Functions (Recursion In C)

1. Explaination to recursive function.

2. Base Condition.

3. Recursive Case.

4. **Code** for Factorial.

Content 16:- Arrays In C.

1. Arrays Explaination.
2. Most used Arrays (1d and 2d).
3. Advantages and Disadvantages of Arrays.
4. Properties of Arrays.
5. How to declare and Initialize Arrays.
6. **Code** for 1D array, 2D array(Matrics addition) and 3D array.

Content 17:- Program For Conversion.

1. Kms to inches etc.

Content 18:- Pointers In C.

1. Explaination and Syntax.
2. Uses of Pointer.
3. Code for pointer understanding

Content 19:- Pointers Arithmatics and Arrays In C.

1. Explaination of pointers.
2. Arrays.
3. **Code**

Content 20:- Program to produce fabonacci series.

1. By Using both Recursive and Iterative approach.
2. Is Recursion is always good?

Content 21:- Call by Value & Call By Reference In C.

1. Function calls in C programming.
2. What are pointers and Syntax.
3. Actual and formal Parameters.
4. Arguments (Call by value and Call by reference) explaination with **code**.
5. Conclusion.

Content 22:- Passing arrays as function arguments.

1. Only had program in vs code with error.

Content 23:- Star Pattern Printing.

1. Triangular Star Pattern.
2. Reversed Triangular Star Pattern.

Content 24:- String In C.

1. String Short Explaination.
2. Declaration of String.
3. Conclusion.
4. Code for String.

Content 25:- String Function and String.h Library In C.

1. Brief Description of Commonly used String Functions **[Strcat(), Strlen(), strcpy(),strcmp(), strrev()].**

Content 26:- Structures in C.

1. Structure explaination with Syntax and Example.
2. How to access elements.
3. **Codes**.

Content 27:- Typedef in C.

1. Typedef with syntax and Example.
2. Advantages of Typedef.
3. **Code**.

Content 28:- Unions in C.

1. Union with Syntax and Eample.
2. What are the difference detween Union and structure.
3. What are the similarties between structure and uions.
4. **Code**.

Content 29:- Program for Reversing an Array In C.

1. Code and Extra knowledge and logic.

Content 30:- Global, Local and Static Variable In C.

1. Gobal Variables detailed Explainatin with **code**.
2. Local Variables explained with **Code**.
3. Statuc Variables explain with **code**.

Content 31:- Global, Local and Static Variable In C.

1. Program for HTML Parser.

Content 32:- Program Displaying Details of Travel Agency.

1. **Code**.

Content 33:-Memory Layout In C.

1. Dynamic memory.
2. What and Why Dynamic Memory.
3. Static and Dynamic Memory allocation Difference.
4. Memory Allocation in C program.
5. C program memory Layout in full detail and description.
6. When Heap is used by user.
7. Memory taken by C layout segments in Vs code.

Content 34:- Dynamic Memory Allocation Malloc Calloc Realloc & Free()

1. Detailed Description of Malloc() function with sntax ,Example and **code**.
2. Detailed Description of Calloc() function with sntax ,Example and **code**.
3. Detailed Description of Realloc() function with sntax ,Example and **code**.
4. Detailed Description of free() function with sntax ,Example and **code**.

Content 35:-Program using Memory Dynamic allocation.

Content 36:- Storage Classes In C Auto, Extern Static & Register Storage Class in C

1. Definition of Declaration and Definition.
2. Storage Class with **code**.
3. Auto Class or auto variable with **code**.
4. Extern Storage class with **Code**.
5. Extern Keyword with **code**.
6. Static storage class with **code**.
7. Register Storage class.

Content 37:- Void pointer in C language.

1. Void Pointer with Explaination.
2. About syntax and Decleration.
3. Uses of void pointer
4. **Code**

Content 38:- Null Pointer in C Language.

1. Null pointer with Syntax and example.
2. Null pointer Vs uninitialized pointer.
3. Null pointer Vs Void pointer.
4. Advantages.
5. **Code**.

Content 39:- Dangling Pointer In C.

1. Meaning of word Dangling and Explaination.
2. Three causes of Dangling Pointer with **codes**.
3. How to avoid the Dangling pointer.
4. Is dangling pointer is good?

Content 40:- Wild pointer In C.

1. Wild Pointer explaination.
2. Disadvantages.
3. Solution with code.

Content 41:- Program for Stone-Paper-Scissor.

Content 42:- C Pre-processor Introduction & Working

1. Code Journey in pc.
2. What is preprocessing.
3. Directives of preprocessors.
4. Preprocessors Examples.
5. Summary.
6. Preprocssors command list.

Content 43:- #define and #include Preprocessor Directives

1. #include Syntax and **code**.
2. #define Syntax and **Code**.
3. #define used for debugging.

Content 44:- Predefined Macros & Other Pre-processor Directives: C

1. All preprocessor derivaties with syntax and Explainaton.
2. Predefined Micros.
3. **Code**.

Content 45:- File I/O In C:

1. Why do we need file.
2. Data and Information definition.
3. Purpose of files in C.
4. Difference between Volatile and non-volatile mmemory.
5. Types of file.
6. Operation on file.
7. Conclusion.

Content 46:- Function File I/O In C:

1. Modes of file.
2. Opening file.
3. Closing file.
4. Reading and writing in file.
5. Conclusion.
6. **Codes**

Content 47:- Program to check palindrome number.

1. Logic Explaination.

Content 48:- Program for Matrix Multiplication.

1. Not present the logic for taking the input in matrix format.

Content 49:- File modes, fgets, fputs, fgetc, fputc & more on C file handling: C

1. Modes of files with Syntax, despcription, and **Code**.

Content 50:- Function Pointers in C

1. Description.
2. Syntax.
3. Important points regarding to the function pointers.
4. **Code.**

Content 51:- Callback Functions Using Function Pointers In C

1. Callback function description with syntax.

2. D/w Callback function and Function pointer.

3. **Code.**

Content 52:- Memory Leak In C

1. Memory Leak in detail wit example.
2. Reason for Memory Leak.
3. How to avoid memory leak.
4. Rules for Dynamic memory allocation.

Content 53:- Command Line Arguments In C

1. Command line description.
2. Advantages of command line.
3. Argc and argv explaination with example and **Code**.
4. Terminal commands used at last.

Content 54:- Command line calculator In C (program)

1. Calculator program using command line.

Content 55:- Advance Function Of Callback Function

1. Program for calculation of Area of circle.