ALEX NJUGUNA SCT222-0348/2023

2 Define the following terms as used in c programing

* **[Compiler](https://stackoverflow.com/questions/3831312/what-are-the-differences-between-a-compiler-and-a-linker" \t "_blank)**[: A program that translates source code written in a high-level language as C) into machine code that can be executed by a computer](https://stackoverflow.com/questions/3831312/what-are-the-differences-between-a-compiler-and-a-linker" \t "_blank)
* **Source code**: The human-readable text that contains the instructions and logic of a program. [It is written in a programming language and can be edited by a programmer](https://stackoverflow.com/questions/3831312/what-are-the-differences-between-a-compiler-and-a-linker" \t "_blank).
* **Object code**: The binary code that is generated by a compiler or an assembler from the source code
* **Linker**: A program that combines multiple object code files into a single executable file or a library

**3** Using an example program to add two numbers explain the compilation process of a c program

* **#include <stdio.h>**
* **int main()**
* **{**
* **int a = 10**
* **int b = 20;**
* **int x = a + b;**
* **printf("The sum of &d and &d is &d\n", a, b, X); return 0;**
* }
* The output of this step is an intermediate file
* Compiling: This step checks the syntax and semantics of the code and translates it into assembly language.
* Assembling: This step converts the assembly language into machine code.
* Linking: This step combines the object files and the libraries into a single executable file. .

4. Differences between compilers and interprators

| **Compiler** | **Interpreter** |
| --- | --- |
| Translates the entire source code as a whole | Translates the source code one statement at a time |
| 1Saves the machine code as an executable file | 1Does not save the machine code |
| 2Takes more time to analyze the source code | 2Takes less time to analyze the source code |
| 3Executes the compiled code faster | 3Executes the interpreted code slower |
| 4Displays all the errors after compilation | 4 Displays the errors of each line one by one |
| 5 Based on translation linking | 5 5Based on interpretation method |
| 6Takes the entire program as input and generates  An exectable file and runs independently | 6 6 Take one statement at a time as an input |

Categories of operators in c programming

* **Arithmetic operators**: These operators perform basic mathematical operations such as addition, subtraction, multiplication, division, modulus, increment, and decrement
* **Assignment operators**: These operators assign the value of the right operand to the left operand.
* **Comparison operators**: These operators compare the values of two operands and return a boolean value (true or false) based on the result.
* **Logical operators**: These operators perform logical operations on boolean operands and return a boolean value..
* **Bitwise operators**: These operators perform bit-level operations on integer operands and return an integer value.
* **Conditional operator**: This operator evaluates a condition and returns one of two values depending on whether the condition is true or false.

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