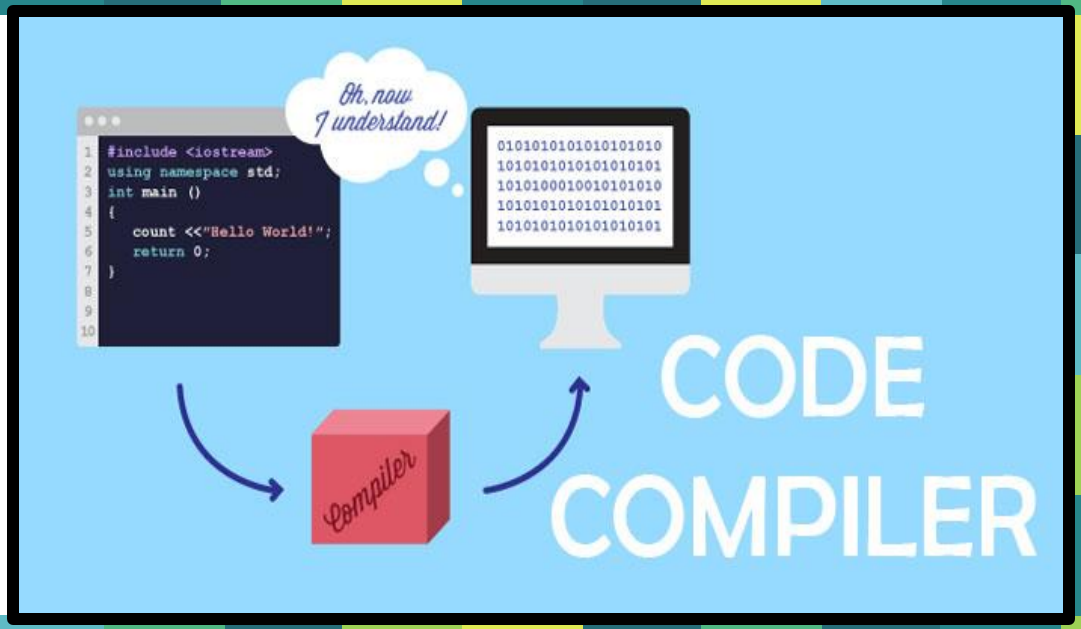
CSE- 303

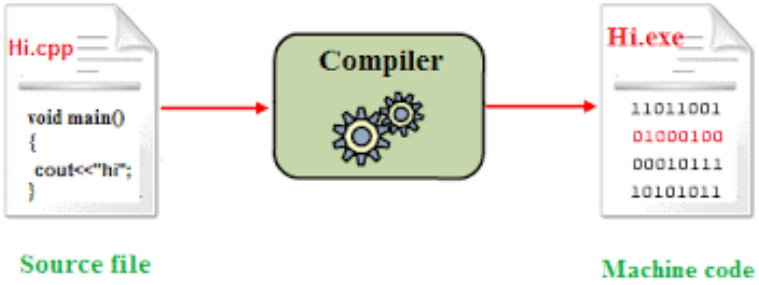
Compiler

Introduction



Introduction to Compilers

- A compiler is a software program that transforms high-level source code (high-level programming language) into a low level binary code in machine language (object code)
- Machine language can be understood by the processor
- The process of converting high-level programming into machine language is known as compilation.



Introduction to Compilers

- A compiler executes **four** major steps:

1) **Scanning:** scanner reads one character at a time from the source code
2) **Lexical Analysis:** compiler converts the sequence of characters that appear in the source code into a series of strings of characters (tokens)
3) **Syntactic Analysis:** syntax analysis is performed to determine whether the tokens created are in proper order. The correct order of a set of keywords, which can yield a desired result, is **called syntax.**
4) **Semantic Analysis:** structure of tokens, their order and grammar is checked. The token structure is interpreted to an intermediate code (object code). Optimizations are performed (if possible) and the final object code is saved inside a file.

Examples of Compilers

- C compilers: GCC C of GNU, Visual C++ Express of Microsoft
- C++ compilers: Turbo C++ by Borland
- JAVA compilers: gcj by GNU, javac OpenJDK by Oracle
- Python compiler: PyPy by JIT

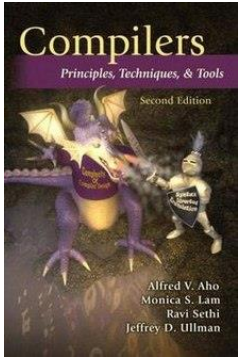
Is Code::Blocks a compiler???

Some Basic Concepts

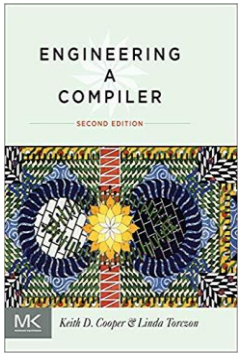
What is an IDE???

Are there any difference between compilers, translators, interpreters, and assemblers????

Reference Books



- ALFRED V. AHO, MONICA S. LAM, RAVI SETHI AND JEFFREY D. ULLMAN Compilers: Principles, Techniques & Tools, Second edition. Pearson/Addison Wesley, 2007.



- LINDA TORCZON AND KEITH COOPER Engineering A Compiler, Second edition. Morgan Kaufmann Publishers Inc., 2011.

Major Topics

- Introduction and basic concepts
- Lexical analysis
- Syntax analysis
- Syntax-directed translation
- Intermediate-code generation
- Run-time environments
- Code generation

Google Classroom

- Google Classroom name: CSE_303+304_2019 (CSE 17)
- Join Code: vis4nh4
- All materials will be uploaded in the Google classroom

All Students Must Join!!!

Thank You