Programming Fundamentals- I

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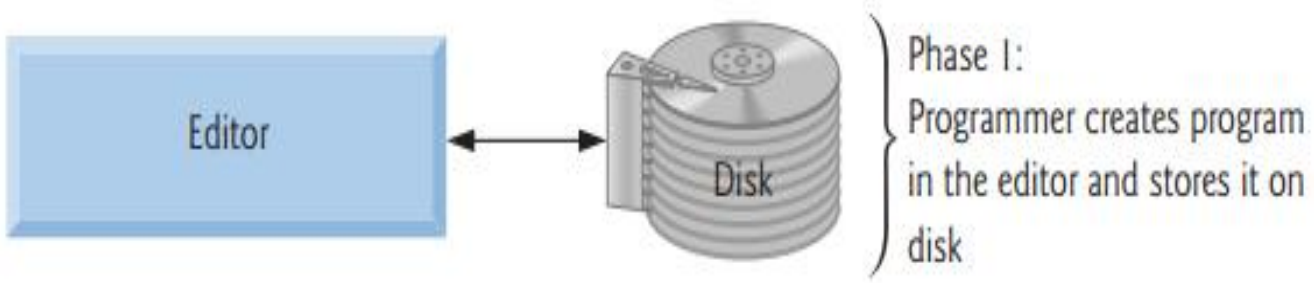
Administrative Stuff

- Course related stuff is available on following link:

  https://piazza.com/uol.edu.pk/fall2016/cs1012/home

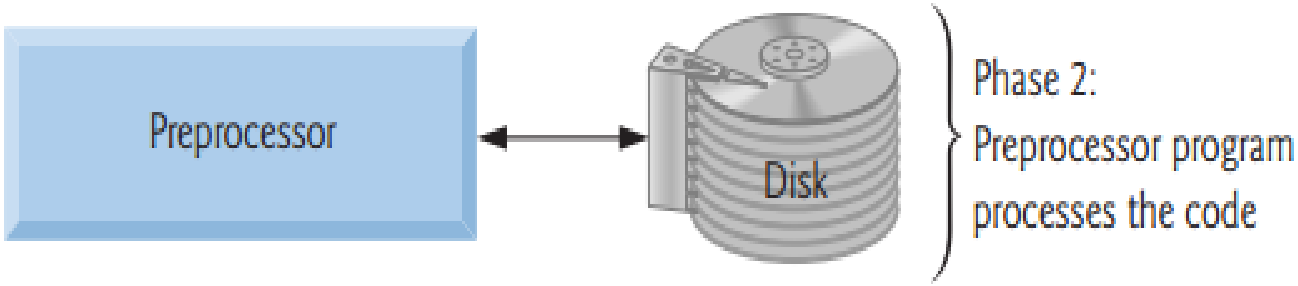
C++ Program Development Environment

Creating a Program



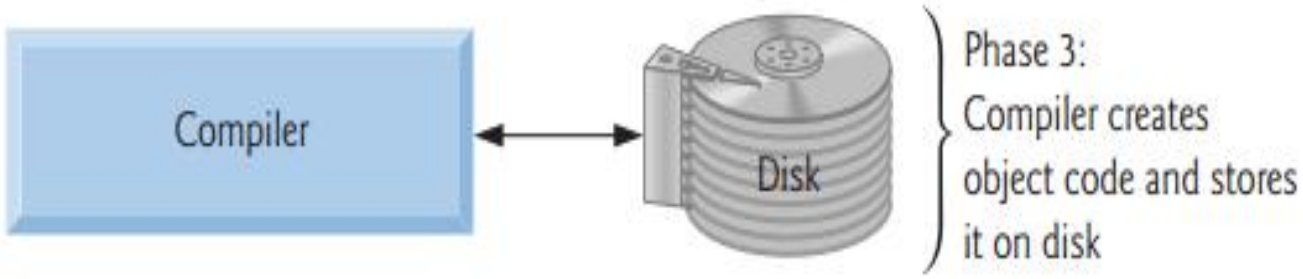
- **Source code** (reside on Secondary Memory i.e. Hard Drive)
- C++ **source code** filenames often end with the **.cpp, .cxx, .cc** or **.C** extensions

Preprocessing a C++ Program



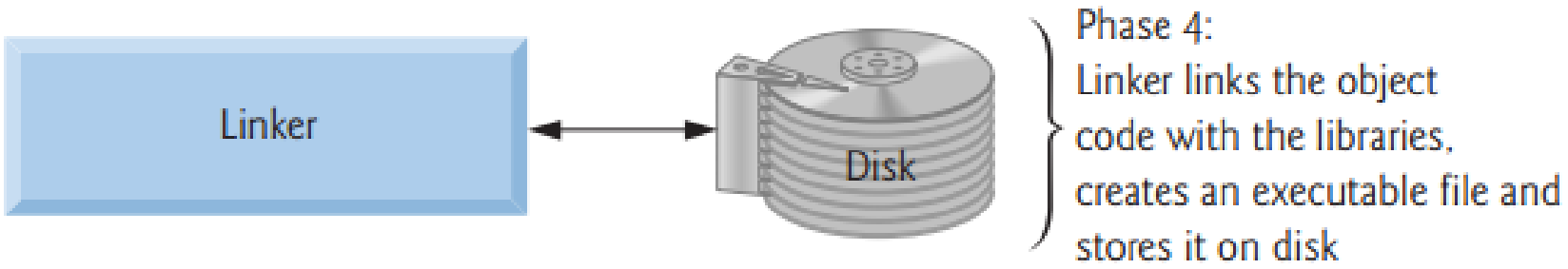
- **Compile** the program
- **Preprocessor Directives**

Compiling a C++ Program



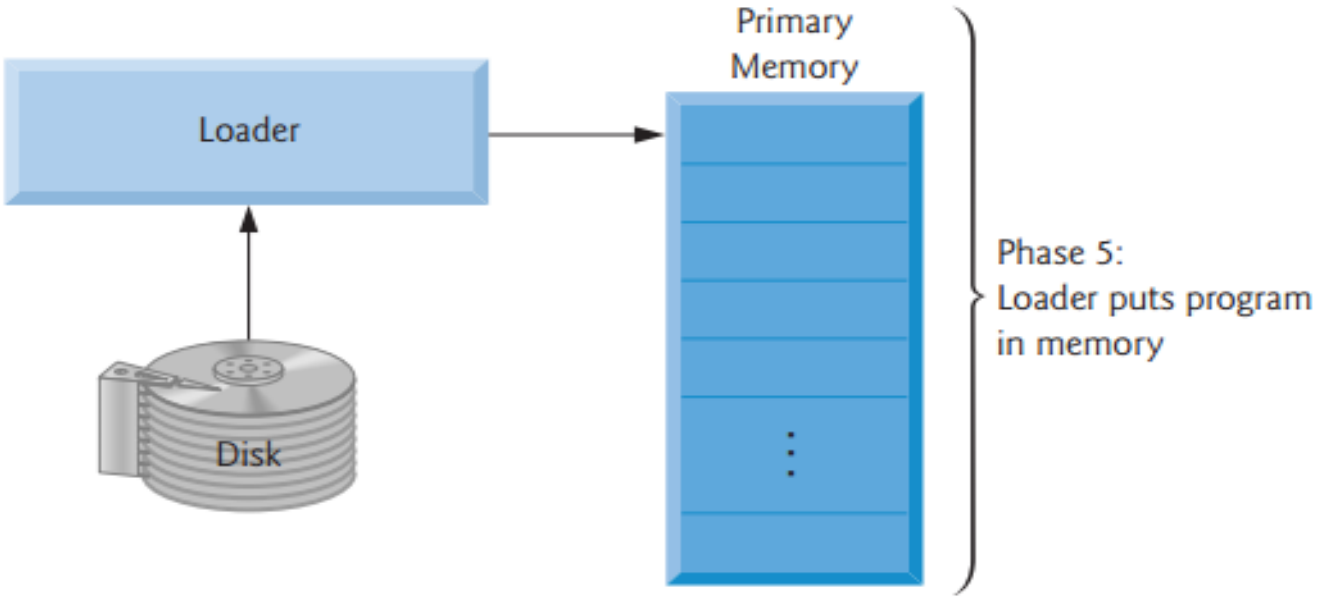
- compiler translates the C++ program into **machine language** code—also referred to as **object code**

Linking



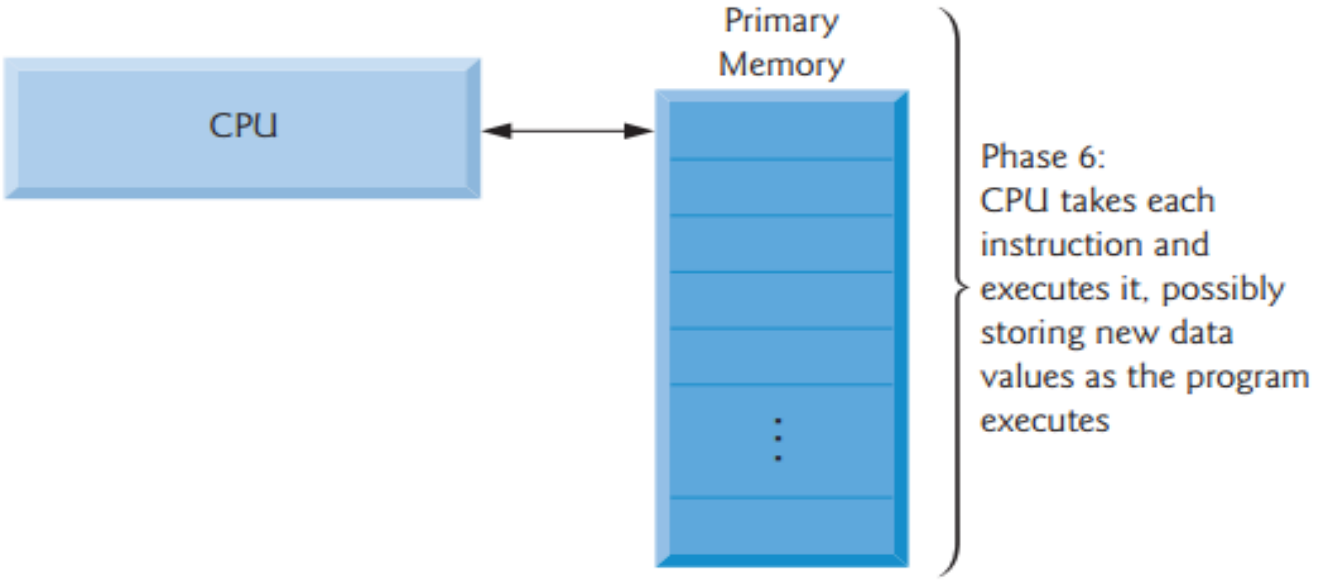
- A **linker** links the **object code** with the code for the missing functions to produce an **executable** program

Loading



- Before a program can be executed, it must first be placed in memory.
- This is done by the **loader**, which takes the **executable image** from disk and transfers it to memory.

Execution

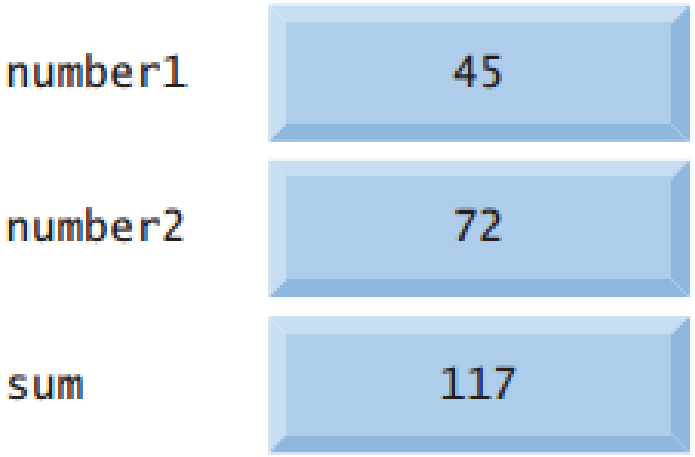


- Finally, the computer, under the control of its CPU, **executes** the program one instruction at a time.
- Some modern computer architectures can execute several instructions in parallel.

Memory Concepts

Memory Concepts

- **Variable names** such as number1, number2 and sum actually correspond to **locations** in the computer's memory.
- Every variable has a **name**, a **type**, a **size** and a **value**.



Memory Concepts

- When a value is placed in a memory location, the value **overwrites** the previous value in that location; thus, placing a new value into a memory location is said to be **destructive**.
- **Nondestructive** memory location