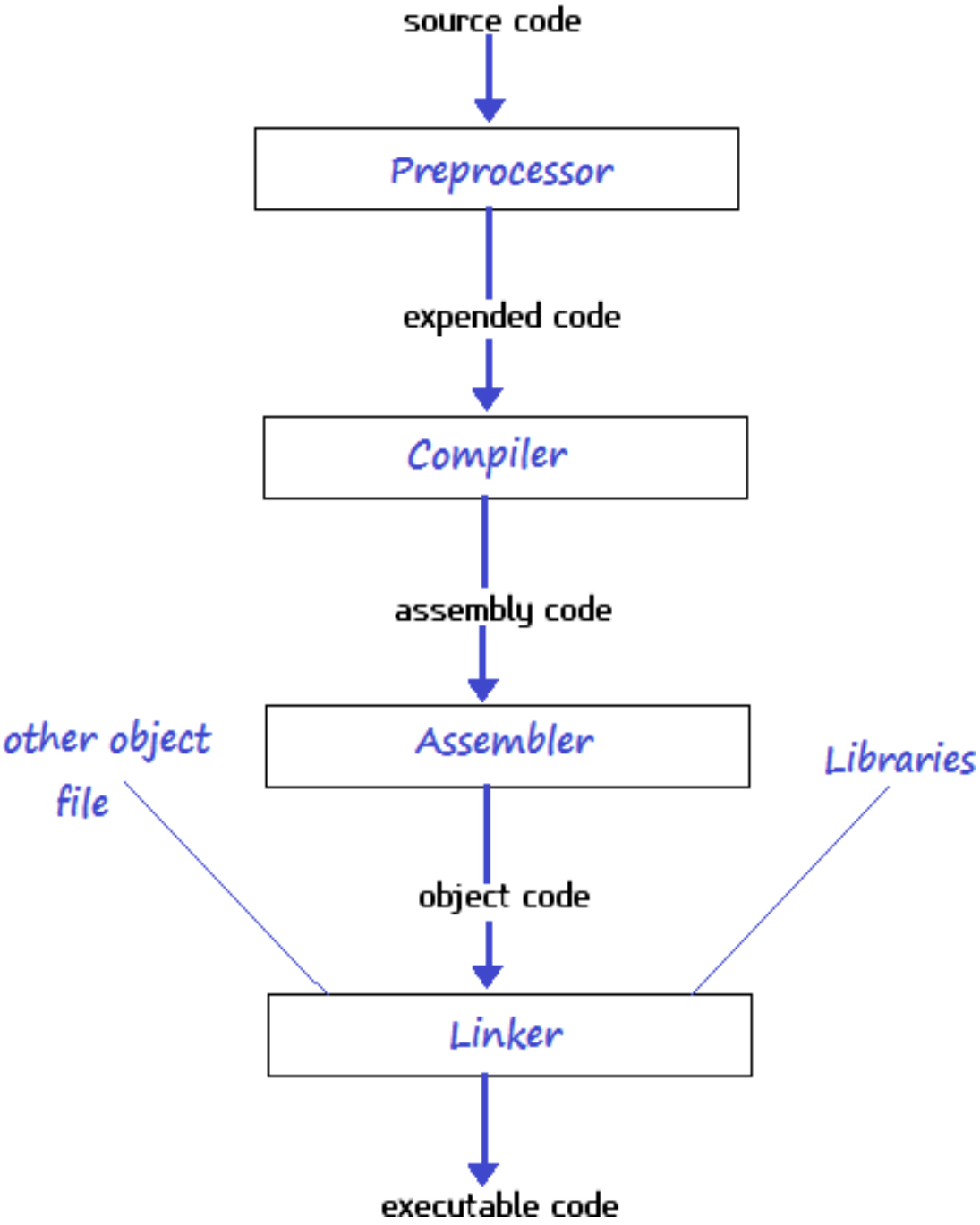
Process of Program Development

- C program compilation step:



- **Pre-Processing:**
  - This is the first phase through which source code is passed. This phase includes:
    - Removal of Comments
    - Expansion of Macros
    - Expansion of the included files.
    - Conditional compilation
  - File Type: **filename.i**

- **Compiling:**
  - The next step is to compile filename.i and produce an intermediate compiled output i.e. convert the code into assembly language.
  - File Type: **filename.s**

- **Assembly:**
  - In this phase the filename.s is taken as input and turned into object file by assembler.
  - This file contains machine level instructions. At this phase, only existing code is converted into machine language.
  - File Type: **filename.o**

- **Linking:**
  - This is the final phase in which all the linking of function calls with their definitions are done. Linker knows where all these functions are implemented.
  - This file contains machine level instructions. At this phase, only existing code is converted into machine language. For example, there is a code which is required for setting up the environment like passing command line arguments.

- Steps to Develop a Program:
  - Specifying the problem statement
  - Designing an algorithm
  - Coding
  - Debugging
  - Testing and Validating
  - Documentation and Maintenance

- Linux command to create object file:-
  - Code Compilation : gcc -o objectName fileName.c
  - Code Execution : ./objectName

- **a.out** ?
  - abbreviated form of a.out is "assembler output".
  - "a.out" remains the default output file name for executables created by certain compilers and linkers when no output name is specified, even though the created files actually are not in the a.out format.