# Topic 1 Review Questions

Below are some questions based on Topic 1. Most of the solutions should be found within the powerpoint or the accompanying videos.

1. What are the five main components of a computer?
   * CPU
   * Main Memory
   * Secondary Memory / Storage
   * Input Devices
   * Output Devices
2. What is the difference between a machine-language program and a high-level language program?
   * Machine language is raw binary instructions that the machine can directly execute while a high-level language program is in a human readable format that is then converted into machine-language.
3. What is the role of a compiler?
   * Translate a high-level language program to machine code.
4. What is a source program? What is an object program?
   * A source program is the original code of the high-level language, and an object program is the corresponding translation into machine code.
5. What is an operating system?
   * A program or several connected programs that are controlled by a user on a computer.
6. What purpose does the operating system serve?
   * To allocate the computer’s hardware to different tasks that the computer must accomplish.
7. Name the operating system that runs on the computer you use to prepare programs for this course.
   * MacOS
8. What is linking?
   * Linking is the process of taking the object code from the programs we write and the object code for other pre-compiled routines and combining them into a machine code program for the computer to run.
9. Find out whether linking is done automatically by the compiler you use  
   for this course.
   * Clang automatically does linking on my computer
10. What is the first step you should take when creating a program?
    * Clearly define what the program is to do, or in other words that the task to be accomplished is precisely specificized.
11. The program design process can be divided into two main phases. What  
    are they?
    * The problem-solving phase and the implementation phase
12. Explain why the problem-solving phase should not be slighted.
    * Completing the problem-solving phase before implementation leads to a correctly functioning program faster than going straight to implementation.
13. What are the three main kinds of program errors?
    * Syntax Errors: Violations of the grammar rules of the language that are caught at compile time.
    * Runtime Errors: Errors that emerge at runtime.
    * Logic Errors: Mistakes in the underlying algorithm or implementation into C++.
14. What kinds of errors are discovered by the compiler?
    * Syntax Errors
15. If you omit a punctuation symbol (such as a semicolon) from a program,  
    an error is produced. What kind of error?
    * Syntax Error
16. Omitting the final brace } from a program produces an error. What kind  
    of error?
    * Syntax Error
17. Suppose you write a program that is supposed to compute the interest  
    on a bank account at a bank that computes interest on a daily basis, and  
    suppose you incorrectly write your program so that it computes interest  
    on an annual basis. What kind of program error is this?
    * Logic Error
18. Dividing by zero produces an error. What kind of error?
    * Runtime Error