1. Explain the difference between high level language and machine language.
   Machine language is a system of instruction sets, it is a language represented in binary code, it is the only language that can be directly recognised and executed by the computer, it has the advantages of being directly executable by the computer, concise and fast in computing, but it is poorly intuitive, very error-prone, difficult to check and debug programs, in addition to being very machine dependent.
   High-level languages offer the user a way of working that is close to a natural language, but also allows the use of mathematical expressions and is relatively independent of the machine. High-level languages have greater expressiveness, can easily represent the operations of data and the control structure of programmes, can better describe algorithms and are easy to learn.

2. Briefly list the main components of computer hardware.
   Arithmetic unit, controller, memory, input device, output device.
   The arithmetic unit and the controller are collectively referred to as the central processing unit.

3. Briefly explain the compilation process.
   Input the assembly language source program. The syntax is checked for correctness and, if correct, the source program is translated into the equivalent binary or floating binary machine language program and a cross-reference list of the source and target programs is output as required by the user; if there is a syntax error, an error message is output, indicating the part, type and number of the error. Finally, the compiled target program is post-processed.

4. Provide the command to compile a Java Program, then the command to execute a Java Program.
   Compile the java file using the command javac.
   Execute the java program using the command java.

5. What is Eclipse? And define the term “Integrated development environment”
   Eclipse is a cross-platform open source integrated development environment.
   Integrated Development Environment is an application used to provide a program development environment, generally including tools such as code editors, compilers, debuggers and graphical user interfaces. It is an integrated development software service suite that integrates code writing functions, analysis functions, compilation functions, debugging functions, etc. All software or software packages with this feature can be called Integrated Development Environments.

6. Explain the difference between passing an input by reference and passing an input by value. Are arrays being passed by reference? Explain why and provide an example as we had discussed in class.
   When a parameter is passed by reference, the caller and callee use the same variables for the parameter. If the callee modifies the parameter variable, the effect is visible to

the caller's variable.
When passing a parameter through value, the caller and callee will have two independent variables with the same value. If the callee modifies the parameter variable, the effect is not visible to the caller.
Arrays only passed by value in Java.
When we create an array of type double in main, the system holds the array's data in memory and then lets the array name myNums map the address of this array.
When the multiplyBy method is called, it is the address of the myNums array that is actually passed into the formal parameter, so ostensibly, the value of the formal parameter is modified, but in fact here a copy of the address referenced by the actual parameter is passed to the formal parameter. Thus, the above argument is actually a value pass, passing the address of the reference to the real object as a value to the formal argument.