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1.4 Fill in the blanks in each of the following statements:

A) The logical unit that receives information from outside the computer for use by the computer is the input unit.
B) The process of instructing the computer to solve a problem is called programming.
C) Asembly language is a type of computer language that uses English like abbreviations for machine-language instructions.
D) Output unit is a logical unit that sends information which has already been processed by the computer to various devices so that it may be used outside the computer.
E) Memory unit and Secondary memory are logical units of the computer that retain information.
F) Arithmetic logic unit is a logical unit of the computer that performs calculations.
G) Arithmetic logic unit is a logical unit of the computer that makes logical decisions.
H) High level languages are most convenient to the programmer for writing programs quickly and easily.
I) The only language a computer can directly understand is that computer's macnine language.
J) Central processing unit is a logical unit of the computer that coordinates the activities of all the other logical units.

1.5 Fill in the blanks in each of the following statements:

A) Java is a platform independent programming language that was built with the objective of allowing programs to be written once and then run on a large variety of electronic devices without modification
B) Java SE (Standard Edition), Java EE (Enterprise Edition), and Java ME (Micro Edition) are the names of the three editions of Java that can be used to build different kind of applications
C) Bandwidth is the information-carrying capacity of communication lines, and has rapidly increased over the years and become more affordable. Its availability is a cornerstone for building applications that are significantly connected.
D) A(n) assembler is a translator that can convert early assembly-language programs to machine language with reasonable efficiency

1.6 Fill in the blanks in each of the following statements:

A) Java programs normally go through five phases—Edit, Compile, Load, Verify, and Execute

B) A(n) Integrated Development Enviroment (IDEs) provides many tools that support the software development process, such as editors for writing and editing programs, debuggers for locating logic errors in programs, and many other features.
C) c) The command java invokes the Java Virtual Machine, which executes Java programs.
D) A(n) Virtual Machine is a software application that simulates a computer, but hides the underlying operating system and hardware from the programs that interact with it.
E) The Class Loader takes the .class files containing the program's bytecodes and transfers them to primary memory.
F) The Bytecode Verifier examines bytecodes to ensure that they're valid.

1.7 Explain what a just-in-time (JIT) compiler of Java does.

A just-in-time (JIT) compiler is a component of the Java Virtual Machine which compiles Java bytecode into machine code just before the code is executed. To optimizes the performance of Java programs, It works by analyzing the Java code and identifying parts of the code that are frequently executed. The JIT compiler then compiles those frequently executed parts into machine code, which can be executed directly by the computer's processor.

The JIT compiler also provides another benefit for Java programs, which is platform independence. Since the JIT compiler compiles the bytecode to machine code at runtime, the resulting machine code is specific to the hardware platform it's running on. This means that the same Java program can run on different hardware platforms without requiring any changes to the code

1.8 One of the world's most common objects is a wrist watch. Discuss how each of the following terms and concepts applies to the notion of a watch: object, attributes, behaviors, class, inheritance (consider, for example, an alarm clock), modeling, messages, encapsulation, interface and information hiding.

As a common object that many people use every day, relating a wrist watch to object-oriented programming, it is considered an object with specific attributes and behaviors. For example, a wristwatch has the attributes of time, date, and various hands, and it has the behaviors of showing time, setting the time, changing the date, and activating an alarm.

A class is a template for creating objects that share common attributes and behaviors. A wristwatch belongs to a class of objects that share similar attributes and behaviors, such as other time-telling devices like wall clocks or pocket watches. Inheritance is a concept in which a new class is created by inheriting properties and methods from an existing class. For example, an alarm clock is a subclass of a wristwatch that adds an alarm feature to the basic watch functionality.

Modeling a wristwatch involves representing it in a software model, defining its attributes, behaviors, and relationships with other objects. Messages are the way objects communicate with each other, and in the case of a wristwatch, this could include pressing a button to activate a behavior. Encapsulation is a concept of hiding the implementation details of an object and only exposing the necessary information to the outside world. In the case of a wristwatch, the user only needs to interact with the interface (buttons, crown, etc.) and does not need to know the details of how the watch functions internally.

The interface is the set of methods that define the behavior of an object, and in the case of a wristwatch, this includes the buttons, crown, and display that the user interacts with. Information hiding is the process of hiding the details of an object's implementation, such as how the watch keeps time or how it activates an alarm. This is done so that the user only needs to know how to use the watch's interface to perform specific actions.