

Chapter 1 Assignment

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

- The process of instructing the computer to solve a problem is called Programming.
- What type of computer language uses English-like abbreviations for machine language instructions?
Assembly Language.
- The level of computer language at which it's most convenient for you to write programs quickly and easily is High-level.
- The only language that a computer directly understands is called that computer's Machine Language.
- Web 2.0 embraces an Architecture of Participation — a design that encourages user interaction and community contributions.
- Collective Intelligence is the concept that a large, diverse group of people will create smart ideas.

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

- Java is now used to develop large-scale enterprise applications, to enhance the functionality of web servers, to provide applications for consumer devices and for many other purposes.
- C initially became widely known as the development language of the UNIX operating system.
- The C++ programming language was developed by Bjarne Stroustrup in the early 1980s at Bell Laboratories.

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

- IPv6 is the next-generation Internet Protocol that features built-in security and a new addressing scheme, significantly expanding the number of addresses available.
- HTML documents normally contain hyperlinks, which, when clicked, load a specified web document.
- A URL contains information that directs a browser to the resource that the user wishes to access; web servers make such resources available to web clients.
- The two most common HTTP request types (also known as request methods) are get and post.
- Web-based applications are multitiered applications (sometimes referred to as n-tier applications). The bottom tier (also called the data tier or the information tier) maintains the application's data and typically stores data in a relational database management system (RDBMS). The middle tier implements business logic, controller logic and presentation logic to control interactions between the application's clients and its data. The top tier, or client tier, is the application's user interface, which gathers input and displays output.
- Android, the fastest growing mobile and smartphone operating system, is based on the Linux kernel and Java.

1.11 Describe the difference between client-side programming and server-side programming.

- *Client-side programming takes place in the browser; server-side programming, on the other hand, takes place in the web server.*
- *Client-side programming has its limitations, due to browser dependency.*
- *Also, due to security reasons, server-side programming is safer: server-side programming can mirror data from the client and is thusly more secure.*

1.13 (Cloud Computing) Describe three benefits of the cloud computing model.

1. *Cloud computing allows you to use software, hardware and information stored in remote computers and accessed via the internet, thus simplifying computing.*
2. *Cloud computing allows you to increase or decrease resources to meet your needs at any given time, which is more cost effective.*
3. *Cloud computing shifts the management burden from the business, which often needs to hire knowledgeable support staff, to the service provider, empowering the business on even a shoe-string budget.*

1.17 (Watch as an Object) You're probably wearing on your wrist one of the world's most common types of objects — a 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), abstraction, encapsulation, interface and information hiding.

1. *When a watch is built, it becomes an Object I can purchase or receive.*
2. *If my particular watch is custom built according to my preferences, I may choose to make it gunmetal blue, with turquoise zeros and ones, and have my name engraved: these would be my watch's particular Attributes; in this instance, its colors and custom engraving would be its particular Attributes.*
3. *In order for my watch to behave like a watch, it must be able to tell time; this will be performed by a method, housed in the design of my watch, that instructs my watch to produce a measure of time, either digitally or mechanically: these methods are manifested as the "Behavior" of my watch.*
4. *Before someone can build my watch, they must have its design; the engineering design of my watch is analogous to its Class in programming.*
5. *If someone were to make my watch hi-tech and allow it to connect to Wi-Fi, have bluetooth and play audio and video, it would have to inherit its original features into a class with its upgraded features: this would be Inheritance.*
6. *If I don't know anything about physics, engineering, design, or mechanics, I should still be able to use my watch: Abstraction means that I can use my watch without knowing how it works "under the hood."*
7. *Encapsulation is the same idea: a class (in this case, the design of my watch) encapsulates the methods (the "behavior" of my watch) and the attributes (colors, engravings, etc.) of my watch; other watches don't have to be like mine; the encapsulation of my class of watch makes it unique.*

8. *Interface is also related to Abstraction and Encapsulation, in that what I interact with is a surface that simplifies the complexity underneath; I don't need to know all the chips, gears, mechanics and physics beneath that surface; that surface simply has to make it easy for me to interface with me, the user of the watch.*
9. *Finally, Information Hiding is also connected to the concepts of Abstraction, Encapsulation, and Interface: the implementation details of the design process are hidden from me, the user of the watch; the more information of the design of my watch is hidden from me, the better the Abstraction, the Encapsulation, and the Interface; indeed, the overall engineering of my watch is improved with good Information Hiding, just as the overall engineering of software is improved with proper Information Hiding..*

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