 Patuakhali Science and Technology University

Assignment on

"Deitel Book chapter 1 review questions and exercise Answer"

Course Code: CCE-121
Course Title: Object Oriented Programming

Level - I; Semester - II

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Session: 2023-2024
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1. Deitel Book chapter 1 review questions and exercise Answer

1.1

a) Computers process data under the control of sets of instructions called **programs**.

b) The key logical units of the computer are the **input unit, output unit, memory unit, central processing unit, arithmetic and logic unit**, and **secondary storage unit**.

c) The three types of languages discussed in the chapter are **machine languages, assembly languages**, and **high-level languages**.

d) The programs that translate high-level language programs into machine language are called **compilers**.

e) **Android** is an operating system for mobile devices based on the Linux kernel and Java.

f) **Release candidate** software is generally feature complete, (supposedly) bug-free, and ready for use by the community.

g) The Windows license, as well as many smartphones, use a(n) **accelerometer**, which allows the device to respond to motion.

1.2

a) The **java** command from the JDK executes a Java application.

b) The **javac** command from the JDK compiles a Java program.

c) A Java source code file must end with the **.java** file extension.

d) When a Java program is compiled, the file produced by the compiler ends with the **.class** file extension.

e) The file produced by the Java compiler contains **bytecodes** that are executed by the Java Virtual Machine.

1.3

a) Objects enable the design practice of **information hiding**—although they may know how to communicate with one another across well-defined interfaces, they normally are not allowed to know how other objects are implemented.

b) Java programmers concentrate on creating **classes**, which contain fields and the set of methods that manipulate those fields and provide services to clients.

c) The process of analyzing and designing a system from an object-oriented point of

view is called **object-oriented analysis and design (OOAD)**.
d) A new class of objects can be created conveniently by **inheritance**

the new class (called the subclass) starts with the characteristics of an existing class (called the superclass), possibly customizing them and adding unique characteristics of its own.
e) **The Unified Modeling Language (UML)** is a graphical language that allows people who design software systems to use an industry-standard notation to represent them.
f) The size, shape, color, and weight of an object are considered **attributes** of the object's class.

1.4

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) **Assembly 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 storage unit** are logical units of the computer that retain information.
f) **Arithmetic and logic unit (ALU)** is a logical unit of the computer that performs calculations.
g) **Central processing unit (CPU)** 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 **machine language**.
j) **Control unit** is a logical unit of the computer that coordinates the activities of all the other logical unit

1.5

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 kinds 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

a) Java programs normally go through five phases **edit**, **compile**, **load**, **verify**, and **execute**.

b) A(n) **Integrated Development Environment (IDE)** 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) The command java invokes the **Java Virtual Machine (JVM)**, which executes Java programs.

d) A(n) **virtual machine (VM)** 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

A just-in-time (JIT) compiler in Java improves runtime performance by dynamically compiling bytecode into native machine code at execution time (rather than interpreting it line by line). This speeds up frequently executed parts of the program.

1.8

Object: A specific watch (e.g., a Rolex Submariner).
Attributes: Size, color, material, dial type, water resistance.
Behaviors: Displaying time, setting alarms (if applicable), ticking.
Class: The blueprint for all watches (e.g., "DigitalWatch" or "AnalogWatch").
Inheritance: An alarm clock inherits basic watch attributes/behaviors but adds

alarm-specific features.

Modeling: Designing a watch simulation in software using classes/objects.

Messages: User pressing a button to set the time (sends a "setTime" message to the watch object).

Encapsulation: Internal gears/battery are hidden; only buttons/screen are exposed.

Interface: Buttons/display that allow user interaction.

Information hiding: The user doesn't need to know how the watch mechanics work internally.