C++ How to Program - An Objects-Natural Approach 11th edition Deitel Test Bank

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***C++ How to Program: An Objects-Natural Approach, 11e* (Deitel)**
Chapter 1 Intro to Computers and C++

1.1 Introduction

1) Which of the following A, B or C are key Metaverse technologies?
A) blockchain, cryptocurrencies, NFTs,
B) Web3, augmented reality,
C) virtual reality, mixed reality.
D) All of the above.
Answer: D
Topic: 1.1 Introduction

2) Which of the following define the "objects-natural approach"?
A) You'll use small numbers of simple C++ statements to make objects of powerful existing classes perform significant tasks.
B) You'll conveniently create and use objects long before you learn how to create your own custom classes.
C) both A and B.
D) neither A nor B.
Answer: C
Topic: 1.1 Introduction

3) Which of the following statements is false?
A) Programs guide the computer through ordered actions specified by people called computer programmers.
B) A computer's hardware consists of various physical devices, such as the keyboard, screen, mouse, solid-state disks, memory and processing units.
C) Computing costs are rising due to the costs of using the latest technologies.
D) All of the above statements are true.
Answer: C
Topic: 1.1 Introduction

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1.2 Hardware

1) For decades, computer processing power approximately doubled inexpensively every couple of years. This remarkable trend is called _____.
A) Moore's law
B) Divide and conquer
C) Law of power progression
D) None of the above.
Answer: A
Topic: 1.2 Hardware

2) Which of the following statements A, B or C is false?
A) Taking full advantage of multi-core architecture requires writing multithreaded applications.
B) When a program splits tasks into separate threads, a multi-core system always can run all those threads in parallel.
C) Interest in multithreading is rising quickly because of the proliferation of multi-core systems.
D) All of the above statements are true.
Answer: B
Topic: 1.2 Hardware

3) C++20 _____ enable concurrent programming with a simple sequential-like coding style.
A) modules
B) ranges
C) coroutines
D) concepts
Answer: C
Topic: 1.2 Hardware

1.3 Data Hierarchies

1) Which of the following statements A, B or C is false?
A) A bit is a digit that can assume one of two values, 0 or 1, and is a computer's smallest data item.
B) The computer's character set contains the characters used to write programs and represent data items.
C) Computers process only 1s and 0s, so a computer's character set represents each character as a pattern of 1s and 0s.
D) All of the above statements are true.
Answer: D
Topic: 1.3 Data Hierarchies

2) Which of the following statements A, B or C is false?
A) Operating systems view a file as a collection of records.
B) A database is a collection of data organized for easy access and manipulation.
C) A relational database is stored in simple tables of rows and columns.
D) All of the above statements are true.
Answer: A
Topic: 1.3 Data Hierarchies

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3) Which of the following is equal to one petabyte?
A) 1024 gigabytes.
B) 1024 megabytes.
C) 1024 exabytes.
D) 1024 terabytes.
Answer: D
Topic: 1.3 Data Hierarchies

1.4 Machine Languages, Assembly Languages and High-Level Languages

1) Which of the following statements is false?
A) Machine languages generally consist of strings of numbers (ultimately reduced to 1s and 0s) that instruct computers to perform their most elementary operations one at a time.
B) Machine languages are machine-dependent–a particular machine language can be used on only one type of computer.
C) To speed the programming process, high-level languages were developed in which single statements could accomplish substantial tasks.
D) All of the above statements are true.
Answer: D
Topic: 1.4 Machine Languages, Assembly Languages and High-Level Languages

2) Which of the following statements is false?
A) High-level languages allow you to write instructions that look almost like everyday English and contain common mathematical notations.
B) From the programmer's standpoint, high-level languages are preferable to machine and assembly languages.
C) Assemblers convert high-level-language source code into machine language.
D) C++ is among the world's most widely used high-level programming languages.
Answer: C
Topic: 1.4 Machine Languages, Assembly Languages and High-Level Languages

3) _____ execute high-level language programs directly, avoiding compilation delays, but your code runs slower than compiled programs.
A) Assemblers
B) Compilers
C) Interpreters
D) None of the above.
Answer: C
Topic: 1.4 Machine Languages, Assembly Languages and High-Level Languages

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1.5 Operating Systems

1) Which of the following statements about open-source software is false?
A) Open-source increases productivity and has contributed to an explosion of innovation.
B) With open source, individuals and companies contribute to developing, maintaining and evolving the software. Anyone can then use open-source software for their own purposes–normally at no charge, but subject to various (typically generous) licensing requirements.
C) Proprietary software is often scrutinized by a much larger audience than open-source software, so errors can get removed faster, making the software more robust.
D) GitHub provides tools for managing open-source software-development projects. It has millions of them underway.
Answer: C
Topic: 1.5 Operating Systems

2) Which of the following statements is false?
A) The Linux kernel is the core of the most popular open-source, freely distributed, full-featured operating system.
B) The Linux kernel is developed by a loosely organized team of volunteers and is popular in servers, personal computers and embedded systems.
C) Like Microsoft's Windows and Apple's macOS source code, Linux source code is available to the public for examination and modification and is free to download and install.
D) Linux users benefit from a massive community of developers actively debugging and improving the kernel, and the ability to customize the operating system to meet specific needs.
Answer: C
Topic: 1.5 Operating Systems

3) Which of the following statements is false?
A) Android is the most widely used mobile and smartphone operating system.
B) Android is based on the Linux kernel, the Java programming language and now, the open-source Kotlin programming language.
C) Android is open-source and free.
D) All of the above statements are true.
Answer: D
Topic: 1.5 Operating Systems

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1.6 C and C++

1) Which of the following statements is false?
A) C initially became widely known as the Windows operating system's development language.
B) Today, most code for general-purpose operating systems is written in C or C++.
C) With careful design, it's possible to write C programs that are portable to most computers.
D) C++ includes capabilities for object-oriented programming.
Answer: A
Topic: 1.6 C and C++

2) Which of the following are C++ programming models?
A) procedural programming, object-oriented programming, functional-style programming.
B) generic programming, template metaprogramming.
C) Both A and B.
D) Neither A nor B.
Answer: C
Topic: 1.6 C and C++

3) Which of the following statements A, B or C is false?
A) C++ is the premiere language for building high-performance, business-critical and mission-critical computing systems.
B) C++ is often used to build the performance-intensive portions of systems programmed primarily in other languages.
C) C++ is over four decades old, so there is much existing C++ code using older programming idioms–this is typically referred to as **endowment code**.
D) All of the above statements are true.
Answer: C
Topic: 1.6 C and C++

4) Which of the following statements A, B or C is false?
A) Bjarne Stroustrup, Herb Sutter and several other contributors have created the evolving C++ Core Guidelines.
B) The C++ Core Guidelines contain extensive recommendations about how to evolve C++.
C) Various code-analysis tools enable you to check your code to ensure it follows the C++ Core Guidelines.
D) All of the above statements are true.
Answer: B
Topic: 1.6 C and C++

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1.7 C++ Standard Library and Open-Source Libraries

1) Which of the following statements about Boost and other open-source libraries is false?
A) There are enormous numbers of open-source C++ libraries, like Boost Multiprecision, that can help you perform significant tasks by writing only modest amounts of code.
B) Boost provides thousands of powerful open-source libraries.
C) Boost serves as a "breeding ground" for new capabilities that might eventually be incorporated into the C++ standard libraries.
D) All of the above statements are true.
Answer: B
Topic: 1.7 C++ Standard Library and Open-Source Libraries

2) When programming in C++, which of the following building blocks will you typically use?
A) C++ standard library classes and functions, and open-source C++ library classes and functions.
B) Classes and functions you create, and classes and functions other people have created and made available to you.
C) Both A and B
D) Neither A nor B
Answer: C
Topic: 1.7 C++ Standard Library and Open-Source Libraries

1.8 Other Popular Programming Languages

1) Which programming language had as one of its key programming goals the ability to "write once, run anywhere"?
A) Python
B) Java
C) C#
D) JavaScript
Answer: B
Topic: 1.8 Other Popular Programming Languages

2) Which of the following statements A, B or C about the Java programming language is false?
A) A key Java goal is enabling developers to write programs that run on a wide variety of computer systems.
B) Java is used in many kinds of applications, including big data, enterprise applications, web servers, video games and more.
C) All Android apps are written in Java.
D) All of the above statements are true.
Answer: C
Topic: 1.8 Other Popular Programming Languages

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3) Which of the following statements about C# is false?
A) C# is one of Microsoft's three primary object-oriented programming languages–the other two are Visual C++ and Visual Basic.
B) C# was developed to integrate the web into computer applications and is now widely used to develop many kinds of applications.
C) C# is Microsoft's primary language for Metaverse development.
D) C# is a Microsoft propriety language.
Answer: D
Topic: 1.8 Other Popular Programming Languages

4) Which of the following statements about JavaScript is false?
A) It is widely used to add programmability to web pages.
B) All major web browsers support it.
C) Many visualization libraries in other programming languages output JavaScript to create interactive visualizations you can view in your web browser.
D) It runs only inside web browsers.
Answer: D
Topic: 1.8 Other Popular Programming Languages

1.9 Introduction to Object Orientation

1) Which of the following statements about object orientation is false?
A) Objects, or more precisely the classes objects come from, are essentially reusable software components.
B) Almost any noun can be reasonably represented as a software object in terms of attributes (e.g., name, color and size) and behaviors (e.g., calculating, moving and communicating).
C) Performing a task in a program requires a function. The function houses the program statements that perform its task. The user can view these statements.
D) In C++, we often create a program unit called a class to house the set of functions that perform the class's tasks–these are known as the class's member functions.
Answer: C
Topic: 1.9 Introduction to Object Orientation

2) Which of the following statements A, B and C is false?
A) You must build an object from a class before a program can perform the tasks defined by the class's member functions.
B) The process of building an object from a class is called instantiation.
C) A class is an instance of its object.
D) All of the above statements are true.
Answer: C
Topic: 1.9 Introduction to Object Orientation

3) Which of the following statements is false?
A) An object has attributes that it carries along as it's used in a program.
B) Attributes are specified by the class's data members.
C) A bank-account object has a balance attribute representing the amount of money in the account.
D) Each bank-account object knows the balance in the account it represents and the balances of the other accounts in the bank.
Answer: D
Topic: 1.9 Introduction to Object Orientation

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1.10 Simplified View of a C++ Development Environment

1) Which of the following statements A, B or C is false?
A) C++ systems generally consist of three parts: a program development environment, the language and the C++ Standard Library.
B) C++ programs typically go through six phases: 1) edit, 2) preprocess, 3) compile, 4) link, 5) load and 6) execute.
C) Debuggers are for locating compilation errors.
D) All of the above statements are true.
Answer: C
Topic: 1.10 Simplified View of a C++ Development Environment

2) C++ programs typically contain references to functions and data defined elsewhere, such as in libraries. The object code produced by the C++ compiler typically contains "holes" due to these missing parts. A(n) _____ program weaves together the object code with the code for the missing functions to produce an executable program (with no missing pieces).
A) loader
B) connector
C) linker
D) coupler
Answer: C
Topic: 1.10 Simplified View of a C++ Development Environment

3) Which of the following statements A, B and C is false?
A) Errors such as division-by-zero occur as a program runs, so they're called runtime errors.
B) A fatal runtime error causes a program to terminate immediately without having successfully performed its jobs.
C) Nonfatal runtime errors allow programs to run to completion, often producing incorrect results.
D) All of the above statements are true.
Answer: D
Topic: 1.10 Simplified View of a C++ Development Environment

1.11 Test-Driving a C++20 Application Various Ways

1) There are no questions in this section.
Topic: 1.11 Test-Driving a C++20 Application Various Ways

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1.12 Internet, World Wide Web, the Cloud and IoT

1) Which of the following statements A, B or C is false?
A) Today's fastest Internet speeds are on the order of billions of bits per second. Trillion-bits-per-second (terabit) speeds are already in service.
B) The main benefit of the Arpanet (the precursor to the Internet) proved to be the capability for quick and easy communication via what came to be known as electronic mail (e-mail). This is true even on today's Internet, with e-mail, instant messaging, file transfer and social media, enabling billions of people worldwide to communicate quickly and easily.
C) The protocol (set of rules) for communicating over the ARPANET became known as the Transmission Control Protocol. TCP ensured that messages, consisting of sequentially numbered pieces called pages, were properly delivered from sender to receiver, arrived intact and were reassembled in the correct order.
D) All of the above statements are true.
Answer: C
Topic: 1.12 Internet, World Wide Web, the Cloud and IoT

2) In 1989, Tim Berners-Lee of CERN began developing _____–a technology for sharing information via "hyperlinked" text documents. This eventually led to the formation of the World Wide Web.
A) HTML
B) HTTP
C) TCP/IP
D) None of the above.
Answer: A
Topic: 1.12 Internet, World Wide Web, the Cloud and IoT

3) Which of the following statements A, B or C is false?
A) The apps you use daily are often heavily dependent on various cloud-based services that use massive clusters of computing resources and databases that communicate over the Internet with each other and the apps you use.
B) Cloud computing allows you to increase or decrease computing resources to meet your needs at any given time.
C) A service that provides access to itself over the Internet is known as a web service.
D) All of the above statements are true.
Answer: D
Topic: 1.12 Internet, World Wide Web, the Cloud and IoT

4) Which of the following statements A, B or C is false?
A) The Internet is no longer just a network of computers–it's an Internet of Things (IoT).
B) A thing in IoT is any device with a TCP address and the ability to send, and in some cases receive, data automatically over the Internet.
C) IoT is an example of edge computing, in which data processing and storage occurs on or close to the network-connected devices that produce the data–that is, at the edge of the network.
D) All of the above statements are true.
Answer: B
Topic: 1.12 Internet, World Wide Web, the Cloud and IoT

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1.13 Metaverse

1) Virtual reality (VR) typically refers to simulated, three-dimensional (3D) environments that you interact with. Which of the following statements A, B or C is false?
A) In non-immersive VR you view the 3D environment in two-dimensional space using your computer's screen.
B) In semi-immersive VR you view the 3D environment in two-dimensional space using a mobile phone.
C) In fully immersive VR you interact with the 3D environment via a head-mounted display (like a headset) and other devices (like hand-held controllers), making you feel like you're part of the environment.
D) All of the above statements are true.
Answer: B
Topic: 1.13 Metaverse

2) Which of the following statement about blockchain is false?
A) It is a software-based ledger distributed over nodes on the Internet.
B) It maintains transaction data in cryptographically secured chunks–called blocks–that are linked together, and new blocks are always added at the end.
C) Once created, each block is mutable, so the blockchain maintains a modifiable transaction record.
D) The blockchain is decentralized, so no one person or group has control. This decentralization is the basis for the decentralized apps (dApps) that enable digital ownership in the Metaverse.
Answer: C
Topic: 1.13 Metaverse

3) Which of the following statements A, B or C is false?
A) Ethereum is a programmable platform that enables you to build and deploy centralized applications on its network.
B) One of its key features is smart contracts, which are used to implement lending apps, decentralized trading exchanges, insurance, crowdfunding apps and more.
C) Its native cryptocurrency is Ether–the world's second most valuable cryptocurrency.
D) All of the above statements are true.
Answer: A
Topic: 1.13 Metaverse

4) Which of the following statements A, B or C is false?
A) Non-fungible tokens (NFTs) are blockchain-based "cryptographically identical" tokens.
B) Non-fungible tokens are linked to digital or physical content, providing proof of ownership.
C) NFTs are commonly used to enable individuals to own unique items, such as digital or physical artwork and photographs; limited edition digital collectibles; virtual real estate and goods in games and the Metaverse; physical real estate; intellectual property; and digital books.
D) All of the above statements are true.
Answer: A
Topic: 1.13 Metaverse

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1.14 Software Development Technologies

1) Which of the following technologies is described by, "Proven architectures for constructing flexible and maintainable object-oriented software?"
A) refactoring
B) software development kits
C) version control systems
D) design patterns
Answer: D
Topic: 1.14 Software Development Technologies

2) The most widely used version control system is _____.
A) GitHub
B) GitLab
C) Git
D) GnuHub
Answer: C
Topic: 1.14 Software Development Technologies

3) Three of the following terms are closely related. Which one is not closely related to the others?
A) Docker
B) containerization
C) microservices
D) virtualization
Answer: C
Topic: 1.14 Software Development Technologies

4) Which of the following statements A, B or C is false?
A) Containers are configured with everything you need to use their software, giving you a convenient mechanism to run that software across platforms.
B) Containerization uses a technique called virtualization to hide the underlying platform details, enabling containers to execute across platforms.
C) Docker is the most popular containerization platform in use today.
D) All of the above statements are true.
Answer: D
Topic: 1.14 Software Development Technologies

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1.15 How Big Is Big Data?

1) Which of the following statements A, B or C is false?
A) One megabyte (MB) is exactly one million bytes.
B) One gigabyte (GB) is exactly 1024 megabytes.
C) One terabyte (TB) is exactly 1024 × 1024 megabytes.
D) All of the above statements are true.
Answer: A
Topic: 1.15 How Big Is Big Data?

2) The high energy consumption associated with using Bitcoin cryptocurrency comes from the process Bitcoin _____ use to prove that transaction data is valid.
A) collectors
B) aggregators
C) miners
D) None of the above.
Answer: C
Topic: 1.15 How Big Is Big Data?

3) Which of the following V's of big data emphasizes how important it is for us to be able to trust our data?
A) veracity
B) velocity
C) volume
D) variety
Answer: A
Topic: 1.15 How Big Is Big Data?

1.16 AI—at the Intersection of Computer Science and Data Science

1) The ultimate goal of the field of AI is _____.
A) large language models
B) chatbots like ChatGPT
C) generative AI
D) artificial general intelligence
Answer: D
Topic: 1.16 AI—at the Intersection of Computer Science and Data Science

2) Which of the following statements is false?
A) AI has been a field with problems and no solutions. That's because once a particular problem is solved, people say, "Well, that's not intelligence; it's just a computer program that tells the computer exactly what to do."
B) AI-based systems now permeate our daily lives. Examples include, computer vision, speech recognition, natural language translation and self-driving cars.
C) With AI techniques like machine learning and deep learning, we pre-program solutions to specific problems.
D) Many of the most interesting and challenging AI problems are being pursued with deep learning.
Answer: C
Topic: 1.16 AI—at the Intersection of Computer Science and Data Science

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3) Which of the following statements is false?
A) Deep learning is a subset of machine learning that involves building artificial neural networks, which use "algorithms inspired by the structure and function of the brain."
B) The term "deep" comes from the deep insights required to understand such complex networks.
C) The network learns more from its training data as it proceeds through the network layers.
D) The availability of big data, significant processor power, faster Internet speeds and advancements in parallel computing hardware and software are making it possible for more organizations and individuals to pursue resource-intensive deep-learning solutions that are producing impressive results in computer vision, speech recognition, speech synthesis and newer generative AI applications.
Answer: B
Topic: 1.16 AI—at the Intersection of Computer Science and Data Science

4) Which of the following statements A, B or C about reinforcement learning is false?
A) It's a subset of machine learning in which algorithms learn from their environment, like how humans learn–for example, a video game enthusiast learning a new game or a baby learning to walk or recognize its parents.
B) The algorithm implements an agent that learns by trying to perform a task, receiving feedback about success or failure, adjusting then trying again.
C) The agent receives a positive reward for doing a right thing and a negative reward (that is, a punishment) for doing a wrong thing. The agent uses this information to determine the next action to perform and must try to maximize the reward.
D) All of the above statements are true.
Answer: D
Topic: 1.16 AI—at the Intersection of Computer Science and Data Science

5) Which of the following statements about generative AI is false?
A) Generative AI describes algorithms that can generate new content–including text, images, audio and video–based on prompts provided by a user as input.
B) OpenAI's ChatGPT is an AI-based chatbot you can converse with using natural language. ChatGPT responds to queries with answers that look and feel as if they were generated by a human.
C) ChatGPT is based on a large language model named GPT (Generative Pre-Trained Transformer), which was trained on massive amounts of text using several artificial intelligence techniques.
D) Powerful, large-language-model apps like ChatGPT and Google's Bard sometimes produce incorrect results generally referred to as "dreams," so you should verify the information that tools like these provide.
Answer: D
Topic: 1.16 AI—at the Intersection of Computer Science and Data Science

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6) Which of the following statements A, B or C is false?
A) When you converse with ChatGPT and similar tools, it may seem like you're chatting with another person.
B) In 1950, Alan Turing proposed the imitation game–now known as the Turing test–as a way to determine whether a computer exhibits intelligent behavior. In this test, three computer terminals would be hidden from one another, with two people operating terminals via text-based inputs and the third being computer-operated. One person would ask text-based questions that would be sent to the other two terminals. The second person and the computer would send text responses. If the person asking the questions could not determine whether the answers came from the other person or the computer, then the computer would be considered to have exhibited intelligent behavior.
C) OpenAI's Dall-E 2 is a generative AI for creating images from natural-language text prompts such as, "Generate an image of a golden retriever dog in the style of Claude Monet."
D) All of the above statements are true.
Answer: D
Topic: 1.16 AI—at the Intersection of Computer Science and Data Science

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