

CodeHS AP Computer Science Principles (CSP) Practice Exam (Sample)

Study Guide



Everything you need from our exam experts!

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 - 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

Questions

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- 1. Which practice involves finding and fixing problems in your algorithm or program?**
 - A. Variable**
 - B. Debugging**
 - C. Selection**
 - D. Boolean**

- 2. Which extension is a graphics format with lossless compression and supports transparency?**
 - A. .png**
 - B. .gif**
 - C. .bmp**
 - D. .jpeg**

- 3. Which device forwards packets toward their destination based on addressing information?**
 - A. Switch**
 - B. Router**
 - C. Bridge**
 - D. Hub**

- 4. What term describes the act of repeating a process?**
 - A. Algorithm**
 - B. Loop**
 - C. Abstraction**
 - D. Megabyte**

- 5. What is the representation of processor instructions using binary digits 0 and 1 called?**
 - A. Source Code**
 - B. Markup Language**
 - C. High Level Language**
 - D. Binary Code**

- 6. What term refers to the gap between people with ready access to computers and the Internet and those without?**
- A. Digital Divide**
 - B. Connectivity Gap**
 - C. Technology Gap**
 - D. Information Divide**
- 7. Which encryption method uses a fixed substitution of letters with no repeating patterns, producing ciphertext?**
- A. Caesar Cipher**
 - B. Cipher**
 - C. Encryption**
 - D. Random Substitution Cipher**
- 8. What service translates URLs to IP addresses?**
- A. DHCP**
 - B. SMTP**
 - C. DNS**
 - D. FTP**
- 9. Which of the following is a common aggregation operation that computes a single value from a set of values?**
- A. Sum**
 - B. Max**
 - C. Median**
 - D. Aggregation**
- 10. What is the generic term for a technique (or algorithm) that performs encryption?**
- A. Encryption**
 - B. Decryption**
 - C. Cipher**
 - D. Random Substitution Cipher**

Answers

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1. B
2. A
3. B
4. B
5. D
6. A
7. D
8. C
9. D
10. C

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Explanations

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1. Which practice involves finding and fixing problems in your algorithm or program?

- A. Variable
- B. Debugging**
- C. Selection
- D. Boolean

Debugging is the process of finding and fixing problems in your algorithm or program. When code doesn't behave as expected, you identify where things go wrong, inspect the logic, and correct mistakes so the program produces the intended results. This includes using error messages, running test cases, stepping through code, and observing variable values with prints or a debugger. The other terms refer to different ideas: a variable stores data, a selection chooses between different paths in the code, and a boolean represents true/false. Debugging targets the issues that prevent correct behavior, improving the program's reliability and accuracy.

2. Which extension is a graphics format with lossless compression and supports transparency?

- A. .png**
- B. .gif
- C. .bmp
- D. .jpeg

The key idea here is choosing a graphics format that preserves image data exactly while also supporting transparency. PNG fits this description: it uses lossless compression, so decompressing returns the original pixels, and it includes an alpha channel that allows varying levels of transparency for each pixel. This makes PNG ideal for images with crisp edges and transparent areas. GIF also uses lossless compression, but it's limited to 256 colors and only supports binary transparency (fully transparent or opaque, not partial transparency). BMP typically has little to no compression and doesn't inherently provide an alpha channel for transparency. JPEG uses lossy compression, which sacrifices some image data to reduce file size, and it does not support transparency.

3. Which device forwards packets toward their destination based on addressing information?

- A. Switch
- B. Router**
- C. Bridge
- D. Hub

Forwarding packets toward their destination based on addressing information is the job of a router. Routers connect different networks and examine the destination IP address in each packet to decide where to send it next. They use routing tables and protocols to pick the best path toward the final destination, then forward the packet to the appropriate next hop, across network boundaries. Inside a local network, switches handle the forwarding of frames using MAC addresses. They keep a table that links MAC addresses to specific ports and send frames only toward the device that matches the destination MAC, staying within the same network. Bridges work similarly by connecting LAN segments and using MAC addresses to forward traffic, but they're an older or simpler form of that behavior. Hubs just repeat incoming signals to all ports, without considering addresses, so every device on the same hub shares the same connection. So, because the question emphasizes directing traffic between networks using addressing, the correct device is the router.

4. What term describes the act of repeating a process?

- A. Algorithm
- B. Loop**
- C. Abstraction
- D. Megabyte

Repetition is handled in programming by a loop. A loop is a control structure that runs a block of code multiple times, usually until a condition is met. For example, a while loop keeps executing its body as long as a counter or condition stays true, which makes it ideal for counting or processing items in a list without rewriting the same steps each time. An algorithm is the overall step-by-step procedure to solve a problem and can include loops as part of its plan, but the act of repeating itself is provided by the loop. Abstraction is about simplifying details to manage complexity, not about repeating actions. A megabyte is simply a unit of data size, not a concept related to repetition. So the term that describes repeating a process is a loop.

5. What is the representation of processor instructions using binary digits 0 and 1 called?

- A. Source Code**
- B. Markup Language**
- C. High Level Language**
- D. Binary Code**

Binary code is the representation of processor instructions using binary digits. The processor directly reads sequences of 0s and 1s from memory, which encode the operations to perform and the data to use. This low-level form, also called machine code, matches the hardware's on/off states and is what the CPU understands natively. Higher-level ideas like source code refer to human-written language that must be translated into this binary form before the CPU can execute it. Markup languages format or structure data, not program instructions, and high-level languages are abstractions that require a compiler or interpreter to turn into machine code.

6. What term refers to the gap between people with ready access to computers and the Internet and those without?

- A. Digital Divide**
- B. Connectivity Gap**
- C. Technology Gap**
- D. Information Divide**

The term for the gap between people who have ready access to computers and the Internet and those who don't is the digital divide. This concept captures how differences in access to devices, broadband, and digital skills create unequal opportunities in education, work, and everyday life. In practice, students without home Internet or a computer may struggle with online homework, applying for jobs, or accessing important services, which widens social and economic disparities. The digital divide is the standard label used in education, policy, and technology discussions to describe this split. The other phrases are less precise: they might hint at related ideas, but they aren't the established term for the broad gap in technology access and capability.

7. Which encryption method uses a fixed substitution of letters with no repeating patterns, producing ciphertext?

- A. Caesar Cipher**
- B. Cipher**
- C. Encryption**
- D. Random Substitution Cipher**

The thing being tested is how letters get mapped to hide patterns. A random substitution cipher uses a one-to-one mapping where each plaintext letter is replaced by a randomly chosen ciphertext letter, and that mapping stays fixed for the message. Because the replacement isn't tied to a simple rule like shifting the alphabet, the resulting ciphertext doesn't show the regular, repeating patterns you'd get from a fixed shift. The Caesar cipher, by contrast, applies a constant shift to every letter, which creates predictable patterns that can be spotted. The other terms are too broad to describe this specific idea of a non-patterned, random-like substitution.

8. What service translates URLs to IP addresses?

- A. DHCP
- B. SMTP
- C. DNS**
- D. FTP

DNS is the system that translates human-friendly domain names into numeric IP addresses so computers can find each other on the network. When you type a URL, your computer asks a DNS resolver to look up the corresponding IP address. The resolver may query root servers, top-level domain servers, and the domain's authoritative server, using cached results to speed things up. Once the IP is known, your browser can connect to the correct server. Other services do different jobs: DHCP assigns IP addresses to devices on a local network; SMTP handles email delivery between servers; FTP is used for transferring files between a client and a server.

9. Which of the following is a common aggregation operation that computes a single value from a set of values?

- A. Sum
- B. Max
- C. Median
- D. Aggregation**

Aggregation is the process of turning many values into one value. It's the general idea of summarizing a set by combining its elements. The other options are specific ways to summarize data—sum adds all values, max picks the largest, and median finds the middle value. All of these are examples of aggregation, but the word that best names the overall operation of reducing a set to a single value is aggregation itself.

10. What is the generic term for a technique (or algorithm) that performs encryption?

- A. Encryption
- B. Decryption
- C. Cipher**
- D. Random Substitution Cipher

Cipher is the generic term for the technique or algorithm used to turn readable information into unreadable data. It describes the set of rules that transform plaintext into ciphertext. Encryption is the act of applying that cipher to produce ciphertext, while decryption is using the inverse process to recover the original message. A random substitution cipher is a specific type of cipher, not the broad term for the encryption technique.

Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

<https://codehsapcsp.examzify.com>

We wish you the very best on your exam journey. You've got this!

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