

CHAPTER 7

Computational Thinking

95 Multiple Choice Questions

with Detailed Explanations & Highlighted Answers

95

MCQs

13

Topics

100%

Explained

Class 9 | Computer Science & Entrepreneurship

Decomposition - Patterns - Abstraction - Algorithms

1

Introduction & Definition of Computational Thinking

Q1

What is the primary purpose of Computational Thinking (CT)?

A

To learn how to build physical computers

B

To solve complex problems using methods aligned with computer science



C

To master specific programming languages like Python or Java

D

To memorize mathematical formulas



Correct Answer: B

Explanation: Computational thinking is fundamentally a problem-solving process. While it borrows concepts from computer science, its main goal is to tackle complex problems logically and efficiently, not just to learn hardware or a specific coding language.

Q2

Which of the following is NOT a fundamental component of Computational Thinking?

- A Decomposition
- B Pattern Recognition
- C Abstraction

D Hardware Assembly



✓ **Correct Answer: D**

Explanation: The core components of CT are decomposition, pattern recognition, abstraction, and algorithms. Hardware assembly is a physical IT task, unrelated to the logical problem-solving framework of CT.

Q3

According to the text, where can Computational Thinking be applied?

- A Only in computer science
- B Only in biology and mathematics
- C In various fields including biology, mathematics, and daily life 
- D Only in artificial intelligence

 **Correct Answer: C**

Explanation: The chapter emphasizes that CT is not limited to computer science. It is a versatile skill applicable to organizing tasks, planning trips, and solving problems in diverse fields like biology and math.

Q4

Which of the following everyday activities best exemplifies Computational Thinking?

A Daydreaming about a vacation

B **Planning a trip by breaking down tasks like booking tickets and packing**



C Watching a movie without analyzing it

D Memorizing a phone number

✓ **Correct Answer: B**

Explanation: Planning a trip involves decomposition (breaking it into steps) and algorithms (logical sequences). The text explicitly mentions planning a trip as a real-world application of CT.

Q5

Computational Thinking is defined as a problem-solving process that involves a set of skills and techniques to solve problems in a way that:

- A Can be executed by a human only
- B Can be executed by a computer** ✓
- C Requires no prior planning
- D Is always mathematically complex

✓ **Correct Answer: B**

Explanation: The definition provided states that CT involves solving problems in a way that can be executed by a computer, implying a logical, structured approach that can be translated into computational steps.

2

Decomposition

Q6

What is the primary goal of decomposition in computational thinking?

A

To make a problem more complex to test limits

B

To break down a complicated problem into smaller, manageable parts



C

To ignore the details of a problem

D

To find patterns in data



Correct Answer: B

Explanation: Decomposition is the strategy of dividing a large, complex task into smaller, convenient, and manageable components to make the overall problem easier to solve.

Q7

In the "Building a Birdhouse" example, which step involves deciding on the size, shape, and design?

A Gather Materials

B Cut the Wood

C **Design the Birdhouse**



D Assemble the Pieces

✓ **Correct Answer: C**

Explanation: The text lists "Design the Birdhouse" as the step where you decide on the size, shape, and design, and sketch a plan before gathering materials.

Q8

Why is decomposition considered an important step in computational thinking?

A

It eliminates the need for algorithms

B

It allows handling one part of a complex task at a time



C

It automatically writes the code for you

D

It guarantees zero errors in the final solution



Correct Answer: B

Explanation: By breaking a task into smaller parts, you can handle each piece individually. The text states, "if we break it down, we can handle each part one at a time," which reduces overwhelm.

Q9

When building a birdhouse, "Gathering Materials" and "Cutting the Wood" are examples of:

- A Abstraction
- B Pattern Recognition
- C **Decomposed sub-tasks**
- D Debugging



✓ **Correct Answer: C**

Explanation: These are specific, smaller actionable steps that emerged from decomposing the larger task of building the birdhouse.

Q10

If you are organizing a school event, which of the following is the best example of decomposition?

- A** Hiring a band immediately
- B** **Breaking the event into tasks like budgeting, venue selection, and catering** ✓
- C** Hoping the event organizes itself
- D** Buying decorations without a plan

✓ **Correct Answer: B**

Explanation: Decomposition means breaking down the big "school event" into smaller, manageable components like budgeting, venue, and catering, which can then be tackled one by one.

3 Pattern Recognition

Q11

What does pattern recognition involve in computational thinking?

A Ignoring differences between problems

B Looking for similarities or patterns among and within problems 

C Memorizing all possible solutions

D Creating random solutions

 **Correct Answer: B**

Explanation: Pattern recognition is the skill of identifying regularities, trends, or similarities within a problem or across different problems to find efficient solutions.

Q12

In the squares example (Area of squares from 1 to 7), what pattern is observed?

A

Areas increase by even numbers

B

Areas are calculated by adding consecutive odd numbers ✓

C

Areas are always prime numbers

D

Areas decrease as side lengths increase



Correct Answer: B

Explanation: The text demonstrates that the area of a square is the sum of consecutive odd numbers (e.g., Side 3: $1+3+5=9$). This mathematical pattern helps in understanding the relationship.

Q13

If you notice you always forget your homework on Mondays, what CT skill are you applying?

A Decomposition

B Pattern Recognition



C Abstraction

D Algorithm Design

✓ **Correct Answer: B**

Explanation: Noticing a recurring event (forgetting homework on a specific day) is pattern recognition. This allows you to set a reminder for Sunday, addressing the pattern.

Q14

In Figure 7.2, the pattern for the area of a square with side length 5 is calculated as:

A $1 + 3 + 5$

B $1 + 3 + 5 + 7$

C $1 + 3 + 5 + 7 + 9$



D $5 * 5$

✓ Correct Answer: C

Explanation: The text states: Side Length 5: Area = $5^2 = 25$ ($1 + 3 + 5 + 7 + 9$). The pattern is adding the first 'n' consecutive odd numbers where n is the side length.

Q15 Why is pattern recognition useful?**A****It helps in identifying regularities that can lead to solutions****B**

It makes problems more complicated

C

It replaces the need for algorithms

D

It only works for mathematical problems

**Correct Answer: A**

Explanation: Identifying patterns allows us to generalize solutions. If a problem shares similarities with a previously solved one, we can apply similar logic, saving time and effort.

4

Abstraction

Q16

What is the core idea behind abstraction?

A

Adding more details to a problem

B

Hiding complex details and focusing only on essential parts

C

Breaking a problem into smaller parts

D

Finding similarities in problems

**Correct Answer: B**

Explanation: Abstraction is about filtering out unnecessary details to focus on the high-level overview and the essential features needed to solve the problem.

Q17

In the "Making a Cup of Tea" example, which of the following represents abstraction?

- A Measuring the exact temperature of the water
- B Listing high-level steps like boiling water, adding tea, steeping, and pouring** ✓
- C Describing the chemical composition of tea leaves
- D Explaining the history of tea

✓ **Correct Answer: B**

Explanation: Abstraction means focusing on the main steps (boil, add, steep, pour) while ignoring the complex, low-level details (like exact water temperature or chemical reactions).

Q18 How does abstraction help in problem-solving?**A****It reduces complexity, allowing focus on high-level solutions** **B**

It ensures every minor detail is addressed

C

It automatically detects syntax errors

D

It slows down the problem-solving process

**Correct Answer: A**

Explanation: By hiding complex details, abstraction reduces complexity. This allows the problem solver to focus on the overall structure and main steps, making the problem easier to understand and solve.

Q19

Which statement best describes the relationship between decomposition and abstraction?

A

Decomposition focuses on details, abstraction ignores them

B

Decomposition breaks down the problem, while abstraction filters out unnecessary details



C

They are the exact same concept

D

Abstraction is only used in art, not computer science



Correct Answer: B

Explanation: Decomposition is about splitting a problem into smaller pieces. Abstraction is about looking at those pieces (or the whole) and deciding which details are relevant and which can be ignored.

Q20

When solving complex problems, the text advises to break them down and:

A

Focus on the main steps



B

Memorize every detail

C

Avoid using algorithms

D

Rely solely on pattern recognition



Correct Answer: A

Explanation: The "Tidbits" section emphasizes that breaking down complex problems and focusing on the main steps helps in understanding the problem better and finding solutions more easily.

5 Algorithms

Q21 What is an algorithm?

A A physical computer component

B A step-by-step collection of instructions to solve a problem 

C A type of software bug

D A random guess

 **Correct Answer: B**

Explanation: An algorithm is defined as a precise sequence of instructions that can be followed to achieve a specific goal, similar to a recipe.

Q22

Which of the following is an example of an algorithm in daily life?

A A recipe for baking a cake



B A painting

C A random thought

D A dream



Correct Answer: A

Explanation: The text uses a cake recipe as a prime example of an algorithm because it provides a clear, step-by-step sequence of instructions to achieve a goal (baking a cake).

Q23

In the "Planting a Tree" algorithm, what is the first step?

- A Dig a hole
- B Water the tree
- C Choose a suitable spot**
- D Add mulch



✓ **Correct Answer: C**

Explanation: The algorithm begins with "Choose a suitable spot in your garden." This is the starting point before any physical action is taken.

Q24 What makes an algorithm effective?

A It should be vague and open to interpretation

B It should be a precise sequence of instructions with a clear order 

C It should contain as many steps as possible

D It should only be understood by computers

 **Correct Answer: B**

Explanation: The text emphasizes that an algorithm is a precise sequence of instructions that tells you exactly what to do and in what order. Vagueness leads to errors.

Q25

Algorithms are not just used in computers; they are also used when:

A Following directions to a friend's house

B Playing a board game with rules

C Both A and B



D Neither A nor B



Correct Answer: C

Explanation: The "Did You Know?" section highlights that algorithms are everywhere. Following directions and playing rule-based board games are both algorithmic processes.

6

Principles of Computational Thinking

Q26

According to Albert Einstein's quote in the text, how should time be spent when solving a problem?

A 5 minutes thinking, 55 minutes solving

B **55 minutes thinking, 5 minutes solving**



C 30 minutes thinking, 30 minutes solving

D 1 hour solving immediately



Correct Answer: B

Explanation: Einstein's quote emphasizes that thoroughly understanding the problem (55 minutes) is crucial before jumping into the solution (5 minutes).

Q27

What is the first and most important step in problem-solving?

- A Writing the code
- B Understanding the problem
- C Debugging
- D Selecting a solution



✓ **Correct Answer: B**

Explanation: The text explicitly states that understanding the problem is the first and most important step. It involves identifying the core issue and defining requirements.

Q28 Problem simplification involves:

A Making the problem harder to understand

B **Breaking it down into smaller, manageable sub-problems** ✓

C Ignoring the problem completely

D Adding more requirements

✓ **Correct Answer: B**

Explanation: Simplification is a principle of CT where a complex problem is broken down into smaller sub-problems to make it more manageable, similar to decomposition but focused on making the problem easier to solve.

Q29

When choosing the best solution, what should be evaluated?

A

Only the first idea that comes to mind

B

Different approaches to find the most efficient one



C

The most expensive option

D

The solution that requires the most code



Correct Answer: B

Explanation: Solution selection involves evaluating different approaches and selecting the most efficient one, considering factors like time and resources.

Q30 Understanding the problem helps in avoiding:

A Efficient solutions

B Common pitfalls and mistakes



C Clarity

D Defining goals

✓ **Correct Answer: B**

Explanation: A thorough understanding of the problem helps avoid mistakes caused by misunderstandings, which can lead to incorrect solutions and wasted effort.

Q31

In the "Building a School Website" example, identifying the target audience (students, teachers, parents) is part of:

A Technical Constraints

B **User Needs** 

C Identify Requirements

D Coding

 **Correct Answer: B**

Explanation: The example breaks down problem understanding. "User Needs" specifically asks: "Who will use the website? Students, teachers, parents?" to design user-friendly interfaces.

Q32

What does "Defining Goals" mean in the context of problem understanding?

A Creating a vague idea of what to do

B **Determining what the final outcome should look like** ✓

C Ignoring the objectives

D Setting unrealistic expectations

✓ **Correct Answer: B**

Explanation: Defining goals means determining what the final outcome should look like and setting specific objectives to reach that outcome, providing a clear target.

Q33

Which principle involves evaluating different approaches and selecting the most efficient one?

A Problem Understanding

B Problem Simplification

C **Solution Selection and Design**



D Decomposition

✓ **Correct Answer: C**

Explanation: Solution Selection and Design is the specific CT principle focused on choosing the best approach and creating a detailed plan (algorithm) to implement it.

7

Algorithm Design Methods: Flowcharts

Q34 What is a flowchart?

A A written narrative of an algorithm

B A visual representation of the steps in a process using symbols and arrows 

C A type of programming language

D A mathematical equation

 **Correct Answer: B**

Explanation: Flowcharts are defined as visual representations of steps in a process, depicted using different symbols connected by arrows to show the flow of logic.

Q35

Which symbol is used to represent the start or end of a process in a flowchart?

A Rectangle

B Diamond

C Oval (Terminal) 

D Parallelogram

✓ **Correct Answer: C**

Explanation: The Oval, also known as the Terminal symbol, is used to represent the start or end of a process, often labeled "Start" or "End."

Q36

In a flowchart, what does a diamond symbol represent?

- A A process or task
- B Input or output
- C A decision point**
- D The direction of flow



✓ **Correct Answer: C**

Explanation: The Diamond symbol represents a decision point where the flow can branch based on a yes/no question or true/false condition.

Q37

Which symbol represents data input or output in a flowchart?

A Parallelogram



B Rectangle

C Diamond

D Oval

✓ **Correct Answer: A**

Explanation: The Parallelogram represents data input or output, such as reading input from a user or displaying output on a screen.

Q38

What is the purpose of the Arrow (Flowline) symbol in a flowchart?

- A To represent a decision
- B To show the direction of flow and connect symbols**
- C To mark the start of the process
- D To perform a calculation



✓ **Correct Answer: B**

Explanation: Arrows, or Flowlines, indicate the sequence of steps by showing the direction of flow within the flowchart, connecting the different symbols.

Q39

Why are flowcharts considered excellent communication tools?

A

They require technical programming knowledge to understand

B

They provide a clear, visual representation of complex processes to a wide audience



C

They are always written in English

D

They eliminate the need for documentation



Correct Answer: B

Explanation: Because they are visual, flowcharts communicate complex processes clearly to a wide audience, ensuring everyone has a common understanding, regardless of their programming background.

Q40

In the Shop Order Process flowchart, what happens if the item is NOT available?

- A The item is shipped anyway
- B The customer is notified**
- C The customer rating increases
- D The order is processed



✓ **Correct Answer: B**

Explanation: Following the flowchart, if "Item available?" is "No," the flow goes to "Notify the customer."

Q41

In the enhanced shop flowchart (Figure 7.5), what additional condition is checked before processing an order?

A Customer's address

B **Customer's rating**



C Item's price

D Payment method

✓ **Correct Answer: B**

Explanation: The updated flowchart introduces a "Rating" decision point to ensure only customers with a rating greater than 0 are attended to.

Q42

What does the flowchart for the login system (Figure 7.6) do after 5 failed attempts?

- A Grants access
- B Restarts the system
- C Locks the account** ✓
- D Alerts the user

✓ **Correct Answer: C**

Explanation: The flowchart shows that if "Has 5 Attempts" is "Yes," the flow goes to "Lock account." It also alerts the user, but the primary security action is locking the account.

Q43

Which of the following is NOT an importance of flowcharts mentioned in the text?

- A Clarity
- B Communication
- C Problem Solving

D Executing the program directly



✓ **Correct Answer: D**

Explanation: Flowcharts are for planning and documentation. They do not execute programs directly; they must be translated into code. The text lists Clarity, Communication, Problem Solving, and Documentation as importances.

8

Algorithm Design Methods: Pseudocode

Q44

What is pseudocode?

A

Actual code that can be run on a computer

B

A method of representing an algorithm using simple, informal language

C

A type of flowchart

D

A programming language like Python

**Correct Answer: B**

Explanation: Pseudocode is a way to describe an algorithm using a mix of programming structures and plain English. It is not actual executable code.

Q45

Why is pseudocode useful in software development?

A

It runs faster than actual code

B

It helps focus on the logic without worrying about syntax

**C**

It is required by all computers

D

It replaces the need for flowcharts



Correct Answer: B

Explanation: Pseudocode allows programmers to outline their thoughts and focus on the logic of the algorithm without getting bogged down by the strict syntax of a specific programming language.

Q46

In the pseudocode for checking if a number is even or odd, what does the condition **number % 2 == 0** check?

A If the number is greater than 2

B If the number is divisible by 2 without a remainder



C If the number is a prime number

D If the number is negative

✓ Correct Answer: B

Explanation: The modulo operator **%** returns the remainder. **number % 2 == 0** checks if the remainder when divided by 2 is zero, which defines an even number.

Q47

In the **IsPrime** pseudocode, why does the loop run from 2 to **sqrt(number)**?

A

Because it is faster

B

Because a greater factor of a number is a multiple of a previously tested smaller factor



C

Because prime numbers are only divisible by 2

D

Because **sqrt** is a built-in function



Correct Answer: B

Explanation: The explanation states that checking up to the square root is sufficient because if a number has a factor greater than its square root, it must also have a corresponding factor smaller than the square root, which would have already been tested.

Q48

Which of the following is a benefit of using pseudocode?

A

It is a universal way to convey steps of an algorithm



B

It requires specific compiler software

C

It is visually intuitive like a flowchart

D

It automatically fixes logical errors



Correct Answer: A

Explanation: Pseudocode is a universal communication method. It can be understood by team members who may be using different programming languages, facilitating collaboration.

Q49 How does pseudocode differ from a flowchart?

- A Pseudocode is visual, flowchart is narrative
- B Pseudocode is narrative-like, flowchart is visual** ✓
- C Pseudocode uses symbols, flowchart uses words
- D They are exactly the same

✓ **Correct Answer: B**

Explanation: Table 7.2 highlights this difference: Pseudocode is read like a story in a narrative format, while flowcharts use graphical symbols to represent the flow visually.

Q50

In the **CheckCredentials** pseudocode, what happens if the username is correct but the password is incorrect?

- A "Login successful" is printed
- B "Invalid username" is printed
- C "Invalid password" is printed** ✓
- D The program crashes

✓ **Correct Answer: C**

Explanation: The nested **if** statement checks the password. If the username is correct (outer **if** true) but the password is wrong (inner **if** false), it prints "Invalid password."

9

Algorithmic Activities: Time & Space Complexity

Q51

What does Time Complexity measure?

A

How much memory an algorithm uses

B

How fast or slow an algorithm performs as input size increases



C

How many lines of code are written

D

How long it takes to write the algorithm



Correct Answer: B

Explanation: Time complexity measures the running time of an algorithm and how it changes as the size of the input increases. It helps compare the efficiency of different algorithms.

Q52 Time complexity is usually expressed using:

A Big O notation 

B Simple fractions

C Roman numerals

D Binary code

 **Correct Answer: A**

Explanation: The text states that time complexity is usually expressed using Big O notation, like $O(n)$, $O(\log n)$, or $O(n^2)$.

Q53

If you have a list of 1000 names, and an algorithm takes longer to find a name than it did with 10 names, this illustrates the concept of:

A Space Complexity

B Time Complexity



C Decomposition

D Abstraction

✓ **Correct Answer: B**

Explanation: The example of searching a list perfectly illustrates time complexity: as the input size (number of names) increases, the time taken to find a specific name increases.

Q54 What does Space Complexity measure?

A The physical size of the computer

B The amount of memory an algorithm uses relative to input size 

C The length of the flowchart

D The number of variables in pseudocode

 **Correct Answer: B**

Explanation: Space complexity measures the amount of memory an algorithm requires relative to the input size, considering both input storage and any extra memory used by the algorithm.

Q55

According to the "Tidbits," what is a simple way to think about algorithm efficiency?

A More steps mean a faster algorithm

B Fewer steps mean a faster algorithm



C The number of steps doesn't matter

D Longer code is always better



Correct Answer: B

Explanation: The Tidbit advises that when writing an algorithm, consider how many steps it takes to complete the task. Fewer steps generally mean a faster algorithm.

Q56

Designing and evaluating algorithms involves activities like dry runs and simulations to ensure they:

- A Look pretty
- B Work as intended**
- C Are the longest possible
- D Use the most memory



✓ **Correct Answer: B**

Explanation: The text states that designing and evaluating algorithms involves activities like dry runs and simulations to ensure they work as intended and are correct.

10 Dry Run & Simulation

Q57 What is a dry run?

A Executing the algorithm on a computer

B Manually going through the algorithm with sample data to identify errors 

C Running the algorithm without any data

D Deleting the algorithm

 **Correct Answer: B**

Explanation: A dry run involves manually walking through the algorithm step-by-step with sample data to understand how it works and identify logical errors, without using a computer.

Q58

When dry running the flowchart for adding two numbers (3 and 5), what is the output?

A 3

B 5

C 8



D 15

✓ Correct Answer: C

Explanation: Following the steps: Input first number (3), Input second number (5), Sum = A + B ($3 + 5 = 8$), Display Sum (8).

Q59

In the dry run of the **FindMax** pseudocode with inputs 10 and 15, why is **max** assigned the value 15?

- A Because $10 > 15$ is true
- B Because $10 > 15$ is false, so it goes to the **else** block 
- C Because 15 is the first number
- D Because the code is incorrect

✓ **Correct Answer: B**

Explanation: The condition **if num1 > num2** ($10 > 15$) is False. Therefore, the **else** block executes, assigning **max = num2**, which is 15.

Q60 What is the primary benefit of doing a dry run?

A It makes the code run faster

B It helps catch errors early in the development process 

C It replaces the need for testing

D It compiles the code

 **Correct Answer: B**

Explanation: Dry running helps catch errors early on, saving time and effort in the long run. It is a key debugging technique used by professional programmers.

Q61

What is simulation in the context of computational thinking?

A Manually tracing code

B

Using computer programs to create a model of a real-world process or system



C

Writing pseudocode

D

Drawing a flowchart



Correct Answer: B

Explanation: Simulation is defined as using computer programs to create a model of a real-world process or system, allowing testing of different ideas without real-world risks.

Q62

Which of the following is a benefit of using simulation?

- A It is always expensive
- B It is safe and cost-effective
- C It cannot be repeated
- D It requires no computer



✓ **Correct Answer: B**

Explanation: The text lists benefits of simulation: Cost-Effective, Safe (testing dangerous scenarios without risk), and Repeatable (running the simulation multiple times).

Q63

Weather forecasting and traffic flow are examples of:

A Decomposition

B Simulation



C Flowcharting

D Pseudocode



Correct Answer: B

Explanation: The text provides weather forecasting and traffic flow as examples of simulation, where computer models predict real-world scenarios based on input data.

Q64 Why is simulation considered "repeatable"?

A

Because it runs the same simulation multiple times with different settings to observe changes



B

Because you have to write the code multiple times

C

Because it always gives the same result

D

Because it cannot be stopped



Correct Answer: A

Explanation: Simulation is repeatable because you can run the same model multiple times with different input settings to observe how the outcomes change, which is a key advantage for experimentation.

11 Introduction to LARP

Q65 What does LARP stand for?

A Logic of Algorithms for Resolution of Problems ✓

B Learning Algorithm Resolution Program

C Logical Analysis of Real-world Problems

D Language for Algorithmic Resolution and Programming

✓ **Correct Answer: A**

Explanation: LARP stands for Logic of Algorithms for Resolution of Problems. It is an interactive tool for learning how algorithms work by running them.

Q66

In LARP, what command is used to display messages?

A READ

B **WRITE**



C START

D IF



Correct Answer: B

Explanation: The text states that LARP uses commands like WRITE to display messages and READ to input values.

Q67 How does LARP help students learn algorithms?

A By requiring them to memorize syntax

B By allowing them to run algorithms and see the results interactively 

C By replacing the need for flowcharts

D By automatically writing code for them

 **Correct Answer: B**

Explanation: LARP is described as a fun and interactive playground where you can experiment with different algorithms and understand how they process data by running them.

Q68

Which command in LARP is used to end the program?

A STOP

B **END**



C FINISH

D CLOSE



Correct Answer: B

Explanation: The text states that LARP employs a clear syntax that begins with a START command and ends with an END command.

Q69

In LARP, what is the purpose of the **IF...THEN...ELSE** statement?

A To loop through data

B To handle decision-making processes



C To display output

D To read input

✓ **Correct Answer: B**

Explanation: The text explains that conditional statements like IF...THEN...ELSE are used to handle decision-making processes within LARP algorithms.

Q70

The LARP software example in Figure 7.9 checks if a person's annual salary is:

A Below 10,000

B Above 10,000



C Exactly 10,000

D Negative

✓ Correct Answer: B

Explanation: The code reads the salary and checks **IF Annual_salary > 10000 THEN**, applying a tax if it is above 10,000.

Q71

What is the first step when writing an algorithm in LARP?

A READ

B WRITE

C START



D END

✓ Correct Answer: C

Explanation: The text explicitly states that LARP syntax begins with a START command.

Q72

Drawing flowcharts in LARP involves translating the flowchart into LARP syntax using commands like:

A **START, WRITE, READ, IF...THEN...ELSE, END** ✓

B BEGIN, PRINT, INPUT, LOOP, FINISH

C INIT, DISPLAY, SCAN, CASE, STOP

D OPEN, SAY, ASK, WHILE, CLOSE

✓ **Correct Answer: A**

Explanation: The text lists the straightforward commands used in LARP to translate flowcharts: START, WRITE, READ, IF...THEN...ELSE, and END.

12 Error Identification and Debugging

Q73 What are syntax errors?

A Errors that occur during execution

B Errors caused by writing something incorrectly in the algorithm or flowchart 

C Errors in the logic of the algorithm

D Errors that cannot be fixed

 **Correct Answer: B**

Explanation: Syntax errors occur when something is written incorrectly, such as missing a step, using the wrong symbol, or making a grammatical mistake in the code structure.

Q74

Which type of error is the easiest to find because the LARP tool usually points it out?

- A Logical Error
- B Runtime Error
- C **Syntax Error** ✓
- D Human Error

✓ **Correct Answer: C**

Explanation: The text states that syntax errors are the easiest to find because the LARP tool usually points them out during compilation.

Q75 What is a runtime error?

A An error in the logic that causes incorrect behavior

B An error that happens when the algorithm is being executed, like dividing by zero 

C An error in the spelling of a variable

D An error that occurs before writing the code

 **Correct Answer: B**

Explanation: Runtime errors happen during the execution of the algorithm. An example given is trying to perform an impossible operation, such as dividing by zero.

Q76 Which type of error is the hardest to find?

A Syntax Error

B Runtime Error

C Logical Error 

D Compilation Error

 **Correct Answer: C**

Explanation: Logical errors are the hardest to find because the algorithm still runs without crashing, but it produces incorrect results due to flawed logic.

Q77

If an algorithm uses the wrong condition in a decision step, what type of error is this?

- A Syntax Error
- B Runtime Error
- C **Logical Error**
- D Input Error



✓ **Correct Answer: C**

Explanation: Using the wrong condition in a decision step is a flaw in the logic of the algorithm, which is a logical error. The program runs, but the outcome is wrong.

Q78 What is debugging?

- A** The process of writing new code
- B** The process of finding and fixing errors in an algorithm or flowchart 
- C** The process of deleting the program
- D** The process of compiling the code

 **Correct Answer: B**

Explanation: Debugging is defined as the process of finding and fixing errors (bugs) in an algorithm or flowchart to make it work correctly.

Q79

Which debugging technique involves going through each step of the algorithm to see where it went wrong?

- A Use Comments
- B Check Conditions
- C Trace the Steps**
- D Simplify the Problem



✓ **Correct Answer: C**

Explanation: Tracing the steps involves manually going through each step of the algorithm or flowchart to identify the exact point where the error occurs.

Q80

Adding notes to your algorithm to explain what each part is supposed to do is an example of which debugging technique?

- A Trace the Steps
- B Use Comments**
- C Check Conditions
- D Simplify the Problem



✓ **Correct Answer: B**

Explanation: Using comments helps you and others understand the intended purpose of each part of the algorithm, making it easier to spot mistakes.

Q81

What does the LARP error message "Undefined Variable" mean?

- A** You forgot to include a step
- B** You are trying to perform an operation that is not allowed
- C** You are using a variable that hasn't been defined yet 
- D** The variable is too large

 **Correct Answer: C**

Explanation: The text defines "Undefined Variable" as using a variable that hasn't been defined yet. The computer doesn't know what value it holds.

Q82

If you try to divide a number by zero in LARP, what error message will you likely see?

- A Missing Step
- B Undefined Variable
- C Invalid Operation**
- D Syntax Error



✓ **Correct Answer: C**

Explanation: Dividing by zero is an impossible mathematical operation. The text lists "Invalid Operation" as the error message for trying to perform an operation that is not allowed, like dividing by zero.

Q83 The term "debugging" originated from:

- A A computer virus
- B An actual bug (moth) found in an early computer ✓**
- C A type of software
- D A mathematical formula

✓ **Correct Answer: B**

Explanation: The "Did You Know?" section explains that the term comes from an actual bug (a moth) found causing problems in an early computer. Removing it was called "debugging."

Q84

What should you always read carefully to find exactly where the problem is?

- A The textbook
- B The error messages**
- C The flowchart symbols
- D The pseudocode comments



✓ **Correct Answer: B**

Explanation: The Tidbit advises to always read error messages carefully, as they often tell you exactly where the problem is located in your code or algorithm.

Q85

If an algorithm runs but does not produce the correct answer, what type of error is present?

- A Syntax Error
- B Runtime Error
- C **Logical Error**
- D Compilation Error



✓ **Correct Answer: C**

Explanation: The text states that logical errors are the hardest to find because the algorithm still runs but does not produce correct answers.

13**Comprehensive Review & Scenario-Based****Q86**

Which CT skill involves filtering out unnecessary details to focus on the main idea?

A

Decomposition

B

Pattern Recognition

C**Abstraction****D**

Algorithm Design

**Correct Answer: C**

Explanation: Abstraction is the process of hiding complex details and exposing only the necessary parts to reduce complexity and focus on the high-level overview.

Q87

A student writes a flowchart but forgets to add the "Start" oval. What type of issue is this?

- A Logical Error
- B Syntax Error**
- C Runtime Error
- D Space Complexity Issue

✓ **Correct Answer: B**

Explanation: A syntax error occurs when the rules of the flowchart are broken. Missing a required symbol like the Start terminal is a structural/syntax error.

Q88

Which of the following is the correct sequence of CT principles?

A Understand, Simplify, Select Solution, Design ✓

B Decompose, Abstract, Pattern, Algorithm

C Start, Process, Decision, End

D Read, Write, If, Else

✓ **Correct Answer: A**

Explanation: The principles of CT guide problem-solving: first, understand the problem, then simplify it, select the best solution, and finally design the algorithm.

Q89

In the "Building a Birdhouse" decomposition, which step comes immediately after "Cut the Wood"?

A Paint and Decorate

B **Assemble the Pieces**



C Gather Materials

D Install the Birdhouse

✓ **Correct Answer: B**

Explanation: The text lists the decomposed steps in order: Design, Gather, Cut, Assemble, Paint, Install. Therefore, Assemble comes immediately after Cut.

Q90

What is the primary difference between a flowchart and pseudocode?

A

Flowcharts are written in English, pseudocode uses symbols

B

Flowcharts use graphical symbols, pseudocode uses narrative text



C

Pseudocode can be executed by a computer, flowcharts cannot

D

There is no difference



Correct Answer: B

Explanation: Table 7.2 clarifies that flowcharts use graphical symbols and arrows, while pseudocode uses plain language and a structured, narrative-like format.

Q91

If you are writing an algorithm to calculate the average of three numbers, what would be the input symbols in the flowchart?

A Ovals

B Rectangles

C **Parallelograms**



D Diamonds

✓ **Correct Answer: C**

Explanation: Parallelograms represent data input or output. Reading the three numbers would require three parallelogram symbols.

Q92

Which of the following best describes the relationship between Time Complexity and algorithm efficiency?

A Higher time complexity means higher efficiency

B Lower time complexity means higher efficiency ✓

C Time complexity has no effect on efficiency

D Time complexity only matters for small inputs

✓ **Correct Answer: B**

Explanation: Time complexity measures how running time increases with input size. Lower time complexity means the algorithm runs faster as the input grows, making it more efficient.

Q93

The **IsPrime** pseudocode returns **False** if the number is less than or equal to 1. Why?

- A Because 1 is a prime number
- B Because prime numbers must be greater than 1** ✓
- C Because the loop doesn't run for 1
- D Because 1 is an even number

✓ **Correct Answer: B**

Explanation: The text explains that a prime number is a natural number greater than 1. Therefore, numbers less than or equal to 1 cannot be prime, and the algorithm correctly returns False.

Q94

What is the output of the LARP algorithm in Figure 7.9 if the input salary is 5000?

A "Tax applied"

B "No Tax" 

C "Error"

D "Enter Salary"

✓ **Correct Answer: B**

Explanation: The condition **IF Annual_salary > 10000** is checked. Since 5000 is not greater than 10000, the **ELSE** branch executes, printing "No Tax".

Q95

Which of the following is NOT a benefit of simulation mentioned in the text?

A Cost-Effective

B Safe

C Repeatable

D Guarantees real-world success



✓ Correct Answer: D

Explanation: While simulation is cost-effective, safe, and repeatable, it creates a model of reality. It does not guarantee real-world success, as the model may not capture every variable perfectly. The other three are explicitly listed as benefits.



Well Done!

You have completed Chapter 7 MCQs

Think in steps. Spot the patterns.
Hide the clutter. Design the algorithm.
Keep practising and keep growing!

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