

APOLLO

Computational Thinking and Algorithms

FBISE Computer Science Class 9 (SSC-I)

Domain B: Computational Thinking and Algorithms

56 questions | questions

Original FBISE question crops. National Curriculum 2022-23 topic.

10.	Which scenario best illustrates the transition from Process to Output in an IPO chart for a weather app?	Entering the city name and clicking search.	Calculating the average weekly temperature from raw data.	Converting calculated data into a visual 7-day forecast.	Refreshing the app to check for new server updates.
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13.	A student tests a solution by executing it and fixing any errors that appear. Which stage of the problem-solving process is being carried out?	Decomposition	Debugging	Pattern recognition	Abstraction
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14.	A student is unable to identify an error in a program. The teacher advises reviewing the flowchart created before coding. How can the flowchart help?	It will automatically correct the error	It will execute the program	It will show the logical sequence of steps and decisions	It will convert the program into machine code
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17.	While preparing for exams, a student studies previous question papers to identify similarities in question types and predict possible future questions. Which computational thinking concept is being used?	Decomposition	Pattern recognition	Abstraction	Algorithm
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35.	How does an algorithm help in solving a problem effectively?	It organizes data in random order	It converts programs into machine code automatically	It deletes errors from a program automatically	It provides a clear step-by-step procedure to reach a solution
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SCENARIO#1 (FOR QUESTIONS 41-44)		A student is creating a simple website to share school announcements, mainly showing fixed content. To enhance interactivity, the student includes features like pop-up messages on clicks and voice-based controls using speech recognition. During development, the system is divided into modules such as short of attendance and exams schedule, while only key details are considered to keep the design simple. The student uses suitable software tools to write and edit the website code.			
44.	How does modular design support updating a specific part of a system like the exam section?	By allowing changes in one module independently	It forces changes in the entire system	By merging all modules into one program	By converting code into machine language

Compare simple and complex problems with one daily life example of each.	3
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4.	A startup team struggles to design a mobile app and applies design thinking by understanding users' needs, generating ideas, and testing prototypes—how does this process help in creating innovative solutions? (Give any three points)	3
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Draw a flowchart that prints the sum of first 20 even numbers.	6
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Which of the following is NOT one of the five phases of design thinking?	Empathize	Ideate	Analyze	Prototype
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(ix)	Write down any two differences between logical thinking and algorithmic thinking.	02
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OR	List down any four phases of design thinking.	02
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(viii)	How are concepts represented in a concept map?	02
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(x)	What is the importance of flowchart in solving a problem?	02
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OR	Why is design thinking considered an iterative process?	02
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OR	Draw a flowchart to find sum and product of five numbers. پانچ نمبروں کا مجموعہ اور پروڈکٹ معلوم کرنے کے لیے فلو چارٹ بنائیں۔	05
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What is correct sequence of IPO chart?	Input, plan, output	Input, process, output	Input, program, output	Input, proceed, output
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Which of the following type of process is design thinking?	Linear	Random	Iterative and non linear	Predictive
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Which of the following is the first step in solving a simple problem?	Design a plan	Implement the plan	Define and analyze the problem	Evaluate
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4. Which symbol represents processing? کون سی علامت پراسسنگ کو ظاہر کرتی ہے؟					☐	☐	☐	☐
5. Main role of an algorithm in programming is:	Store data	Step by step plan	Monitor systems	Provide security	☐	☐	☐	☐

5. Main role of an algorithm in programming is:	Store data	Step by step plan	Monitor systems	Provide security
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Q. 2 Answer the following parts briefly. (11 x 2 = 22)

درج ذیل اجزاء کے مختصر جوابات دیں۔

(i)	What is natural system? Give two examples. تدبیری نظام کما ہوتا ہے؟ دو مثالیں دیں۔	02	OR	What is meant by decomposition? تجزیہ کا کیا مطلب ہے؟	02
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(ii)	Write any two differences between RAM and ROM. ریفریبل اور رومبل کے درمیان کوئی دو فرق لکھیں۔	02	OR	Write down the importance of computational thinking in problem solving. کامپیوٹیشنل ٹینکنگ کے مسائل حل کرنے میں اہمیت لکھیں۔	02
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(vii)	List down any two phases of design thinking. ڈیزائن ٹینکنگ کے کوئی دو مراحل لکھیں۔	02
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Explain half duplex and full duplex modes with one example each. ہاف ڈپلکس اور فوڈ ڈپلکس کے کوئی ایک مثال ہر ایک کے ساتھ۔	2.5+2.5	OR	Explain two principles of computational thinking with examples. کامپیوٹیشنل ٹینکنگ کے دو اصولوں کے ساتھ مثالیں دیں۔	05
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Draw a flowchart to find area of triangle.

شکست کار قیہ معلوم کرنے کے لیے فلوچارٹ بنائیں۔ 05

First Annual 2026 | Section A Q2 | 1 mark

Why is computational thinking important in computer science?	It increases typing speed	It helps break problems into manageable steps	It improves computer hardware	It replaces programming	☐	☐	☐	☐
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First Annual 2026 | Section A Q10 | 1 mark

How does logical thinking support problem solving?	By using trial and error and providing false results	By arranging steps in a correct sequence	By memorizing commands and repeating these	By designing interfaces	☐	☐	☐	☐
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First Annual 2026 | Section B Q2(i) OR | 3 marks

OR	What is meant by problem decomposition? Elaborate briefly.	03
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First Annual 2026 | Section B Q2(ii) | 3 marks

(ii)	Why is computational thinking important in computer science? Write briefly.	03
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First Annual 2026 | Section B Q2(ix) | 3 marks

Why identifying inputs, processes, and outputs is necessary?	1x3
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First Annual 2026 | Section B Q2(x) | 3 marks

What is meant by design thinking? Also write down the names of five phases.	1.5 + 1.5	OR	Why is cloud computing needed for modern applications? Explain briefly.	03
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First Annual 2026 | Section C Q4 | 6 marks

Draw a flowchart to find the largest of three unequal numbers.	06
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First Annual 2026 | Section A Q2 | 1 mark

2. Why is algorithmic thinking useful while solving a problem?	It removes the need for inputs	It provides a clear step-by-step solution	It focuses only on outputs	It avoids decision making
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First Annual 2026 | Section A Q9 | 1 mark

What is an entrepreneurial solution mainly designed to do?	Address a problem with a business idea	Increase exams	Reduce technology use and increase manual labor	Copy existing products
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First Annual 2026 | Section A Q10 | 1 mark

Why must inputs, processes, and outputs be identified in a problem?	To increase speed	To understand how a solution works	To reduce storage	To design graphics
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First Annual 2026 | Section B Q2(ii) | 3 marks

(ii)	How logical thinking helps in solving a computational problem? Explain briefly.	03
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First Annual 2026 | Section B Q2(ix) | 3 marks

(ix)	Why is computational thinking important in computer science?	03
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First Annual 2026 | Section B Q2(x) | 3 marks

(x)	List and briefly explain any three stages of the design thinking process.	1x3
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First Annual 2026 | Section A Q1 | 1 mark

Which stage of design thinking focuses on understanding users' needs?	Ideating	Empathizing	Prototyping	Testing
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First Annual 2026 | Section A Q2 | 1 mark

2.	Why is algorithmic thinking useful while solving a problem?	It provides a step-by-step solution	It removes decision making	It focuses only on outputs	It avoids planning
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First Annual 2026 | Section A Q5 | 1 mark

5.	How does a flowchart help in solving a problem?	It stores data	It executes the program	It visually shows the sequence of steps	It replaces algorithms and performs extra calculations
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First Annual 2026 | Section A Q6 | 1 mark

6.	Why is identifying inputs, processes, and outputs important in a problem?	To reduce memory usage	To understand how a solution works	To speed up execution	To create diagrams for visualization of the program
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(ii)	How logical thinking helps in solving a computing problem? Explain briefly.	03
(iii)	Enlist any six Sustainable Development Goals (SDGs).	

2	Write down the purpose of any two flowchart symbols.	1.5 + 1.5
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x.	Which of the following problems is an example of a complex problem?	Finding the sum of two numbers	Memorizing multiplication table	Figuring out how to organize a fundraising event	Identifying prime numbers between 1 and 100	☐ ☐ ☐ ☐
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xii.	In a problem solution involving making a sandwich, what would be considered the input?	A finished sandwich	Spreading butter on bread	Bread and butter	Eating a sandwich	☐ ☐ ☐ ☐
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OR	Briefly explain the role of computational thinking in Computer Science with an example?	3
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ii.	Consider the following problem: $Y = 5x + 3$ Identify the inputs and outputs to find the solution of a problem and fill the relevant boxes. <table border="1"> <tr> <td>Input</td><td>Process</td><td>Output</td></tr> <tr> <td></td><td>$5x + 3$</td><td></td></tr> </table> If $x = -2$, compute the value of Y and show your working.	Input	Process	Output		$5x + 3$		03
Input	Process	Output						
	$5x + 3$							

ix.	Compare simple and complex problems with one daily life example of each problem.	03
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Q.4	Draw a flowchart that reads a number and prints whether it is negative, positive or zero.	6
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What is the role of computational thinking in problem solving?	02
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Draw a flow chart to find product and average of four numbers.	05
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OR	Draw a flow chart to find the largest out of three unequal numbers. تین غیر مساوی اعداد میں سے بڑے عدد کو معلوم کرنے کے لیے فلو چارٹ بنائیں۔	02
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(iii)	Create an IPO chart that allows a user to enter five subject marks and calculate the average of marks. ایک IPO چارٹ تیار کریں جو صارف کو پانچ مضامین کے نمبر داخل کرنے کی اجازت دے	02
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Q.4	What is computational thinking? Explain its four properties with examples. کمپیوٹیشنل ٹھنکنگ کیا ہے؟ اس کے چار خاصیتوں کے ساتھ مثالیں دیں۔	1+4
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