A Level · OCR · Computer Science

🕐 6 mins   ❓ 3 questions

Exam Questions

7.2 Computational Methods

Computational Methods / Problem Recognition / Problem Decomposition / Divide & Conquer Algorithms / Use of Abstraction / Backtracking Algorithms / Heuristics for Problem Solving / Performance Modelling / Pipelining as a Computational Method / Visualisation for Problem Solving

Scan here to return to the course
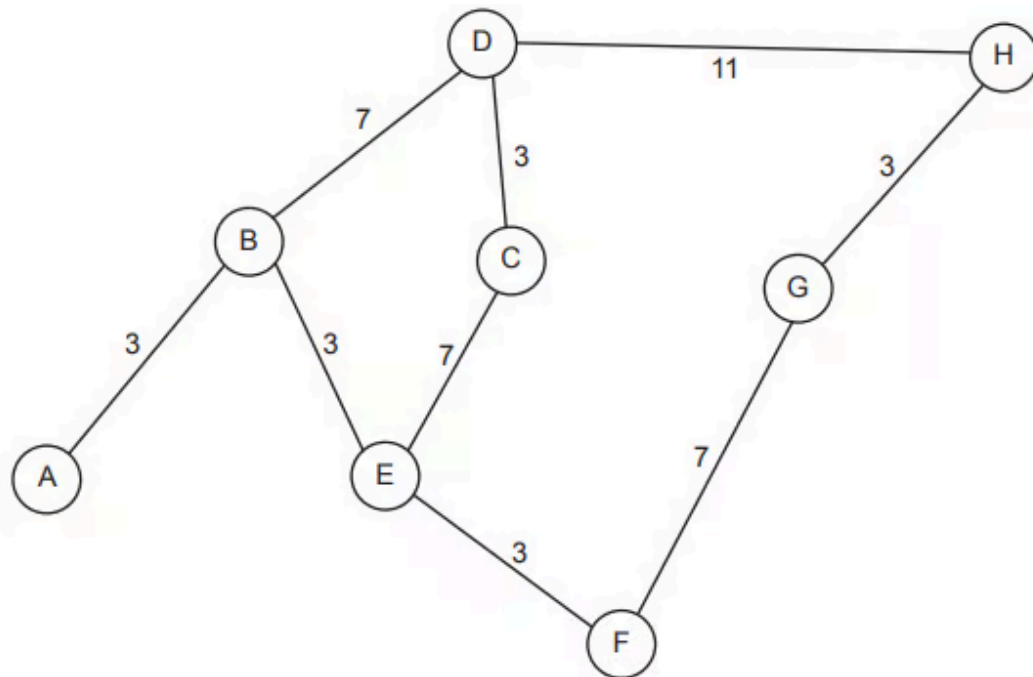or visit savemyexams.com

Total Marks   **/6**

1 Fig. 5 shows a graph data structure representing a small section of a parcel delivery network. Each node represents an address where deliveries need to be made. The edges show the possible routes and distances between these deliveries.
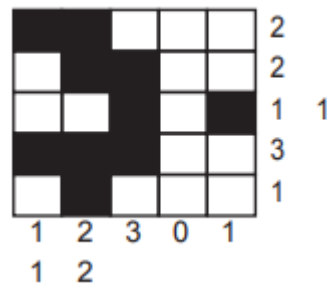

State why performance modelling is used to test a system.

_____

(1 mark)

2 A Nonogram is a logic puzzle where a player needs to colour in boxes. The puzzle is laid out as a grid and each square needs to be either coloured black or left white.

The numbers at the side of each row and column tells the player how many of the boxes are coloured in consecutively. Where a row has two or more numbers, there must be a white square between the coloured squares.
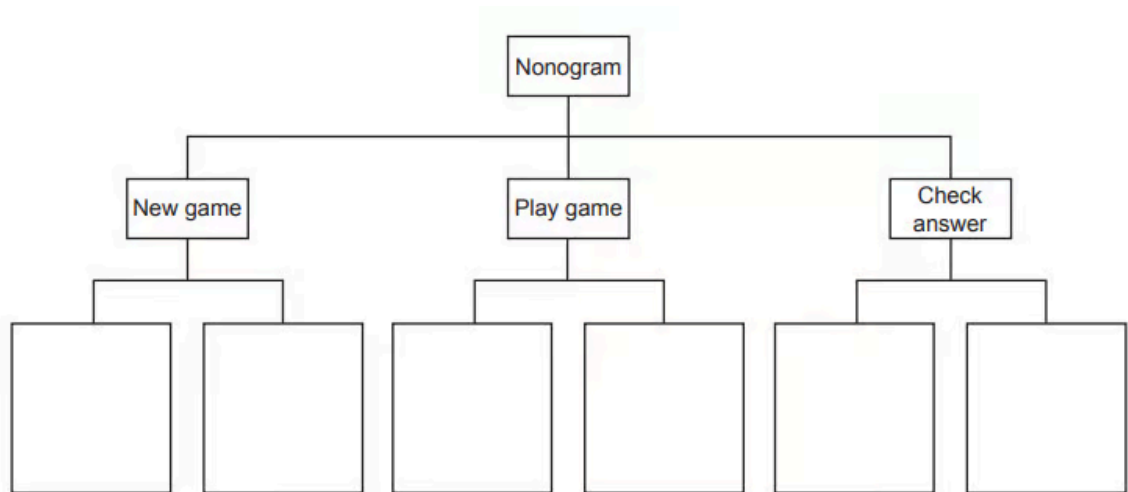

In this example:

- the first column has 1 1, this means there must be two single coloured boxes in this column. There must be at least 1 white box between them.

- the first row has 2, this means there must be two consecutively coloured boxes in the row.

Juan is creating a program that will store a series of Nonograms for a user to play. The game will randomly select a puzzle and display the blank grid with the numbers for each row and column to the user

The user plays the game by selecting a box to change its colour. If the box is white it will change to black and if it is black it will change to white. The user can choose to check the answer at any point, and the game will compare the grid to the answers and tell the user if they have got it correct or not.

Juan is creating a structure diagram to design the game.

Complete the structure diagram by adding another layer for New game, Play game and Check answer.

....

....

....

(3 marks)

3 **Explain** why decomposing a problem can help a developer design a solution.

....

....

(2 marks)