# FAQ

| Module-6 | |
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| **Question 1.** | **What is the primary purpose of a Trie in string operations?** |
| **Answer** | The Trie data structure is a tree-based data structure that is often used for the purpose of storing a dynamic collection of strings. It enables rapid searching of words and retrieval of prefixes. It may be quite advantageous for applications such as dictionaries or auto-complete functionalities. |
| **Question 2.** | **What is the role of Huffman Coding in the field of data compression?** |
| **Answer** | The Huffman Coding algorithm is a lossless method of data compression thatinvolves the assignment of variable-length codes to input characters, with thelength of each code determined by the frequency of the corresponding letter. In the context of coding, it is observed that characters with higher frequency tend to be assigned shorter codes, whilst characters with lower frequency are assigned longer codes. The variation in |

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| | code length leads to effective storageand data compression. |
| **Question 3.** | **In the context of words and their relationships, why are Graphs useful?** |
| **Answer** | Graphs may be used to depict the connections or associations between different items. Graphs are a useful tool for representing various linguistic links, such as synonyms, antonyms, translations, and so on. In this system, nodes are used to represent individual words, while edges are used to denotethe links between these words. This graphical representation facilitates the visualisation and processing of queries relating to words. |
| **Question 4.** | **What are the differences between storing graphs and other datastructures?** |
| **Answer** | The storage of graphs might vary based on the specific use case. Adjacency matrices and adjacency lists are two widely used techniques in the field. Theadjacency matrix is a two-dimensional array in which the element at position[i][j] is assigned the value '1' (or 'true') if there exists an edge between vertices i and j. Conversely, if |

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| | there is no edge between vertices i and j, the element is assigned the value '0' (or 'false'). In contrast, an adjacency list is a data structure consisting of an array that contains many lists. The list located at index 'i' comprises all vertices that are next to the vertex denoted by index<br>i. The selection between the two options is mostly contingent upon the density of the graph and the required procedures. |
| **Question 5.** | **What are the fundamental traversal techniques used in Graph theory?** |
| **Answer** | Depth-First Search (DFS) and Breadth-First Search (BFS) are the two primary traversal techniques used in graph theory. The Depth-First Search (DFS) algorithm is characterised by its approach of exploring a branch as much as possible before backtracking. In contrast, the Breadth-First Search (BFS) algorithm is distinguished by its strategy of visiting all the vertices atthe current depth level before proceeding to the vertices at the subsequent depth level. |