What are Graph Traversal Algorithms + Comparison:

A traversal algorithm is a process of visiting (checking and/or updating) each node in a graph or a tree data structure, exactly once12. The order in which the nodes are visited depends on the type of traversal algorithm used.

- **Breadth First Search (BFS)**: A traversal algorithm that explores nodes level by level, using a queue to store frontier nodes. BFS can find the shortest path between two nodes in an unweighted graph, but it may consume more memory than DFS.
- **Depth First Search (DFS)**: A traversal algorithm that explores nodes branch by branch, using a stack to store frontier nodes. DFS can find a path between two nodes in a weighted graph, but it may not be the shortest one. DFS can also be used to perform topological sorting of a directed acyclic graph.
- **Pre-order Traversal**: A traversal algorithm that visits the root node of a tree, then recursively visits the left subtree and the right subtree. Pre-order traversal can be used to create a copy of a tree, or to print an expression tree in prefix notation.
- **In-order Traversal**: A traversal algorithm that visits the left subtree of a tree, then the root node, then recursively visits the right subtree. In-order traversal can be used to print a binary search tree in sorted order, or to print an expression tree in infix notation.
- **Post-order Traversal**: A traversal algorithm that visits the left subtree of a tree, then the right subtree, then recursively visits the root node. Post-order traversal can be used to delete a tree, or to print an expression tree in postfix notation.

Resolving collision in hashing:

- **Open Addressing:**This strategy tries to find another open slot in the array to store the key-value pair that caused the collision. There are different ways to do this, such as linear probing, quadratic probing, or double hashing

- **Chaining:** This strategy stores all the key-value pairs that map to the same slot in a separate data structure, such as a linked list or a tree. Each slot in the array holds a pointer to the data structure that contains the colliding pairs

What is Lambda function:

A lambda function in Python is an anonymous function that can take any number of arguments, but can only have one expression1. A lambda function is defined using the lambda keyword, followed by the arguments and the expression. The expression is executed and the result is returned when the lambda function is called.
Lambda functions are useful when you need to create a simple function that can be passed as an argument to another function, such as a higher-order function or a key function.

What is code refactoring and How to do it:

Code refactoring is the process of restructuring existing source code without changing its external behavior. Code refactoring is done to improve the quality, readability, maintainability, or performance of the code. Code refactoring can be done manually or with the help of automated tools

Some of the most common refactoring techniques are:

- **Red-Green Refactoring**: A test-driven development technique that involves writing a failing test (red), making it pass by writing the simplest code possible (green), and then refactoring the code to improve its quality.
- **Extract Method**: A technique that involves creating a new method from a part of an existing method that performs a single task.
- **Simplifying Methods**: A technique that involves reducing the complexity of a method by breaking it into smaller methods, removing unnecessary parameters, replacing conditional logic with polymorphism, etc.

- **Composing Method**: A technique that involves combining several methods into one method that performs a single task.
- **Abstraction**: A technique that involves identifying common functionality shared by multiple classes or methods and extracting it into a separate, abstract class or interface.