What is Pattern Matching?

Def:-Pattern matching is the process of checking for the presence of a pattern within a sequence of sting

Ex…

- Ctrl + F on your keyboard: When you search a word in a document—this is the example of pattern matching
- Google Search: You type a phrase, and Google matches it with billions of web pages
- Text prediction on your phone: It matches what you type with common phrases
- Spam filters: Match patterns like "Congratulations, you won!" to filter emails

Importance in Computer Science

- Used in search engines, bioinformatics, text editors
- Text search, DNA sequence analysis, virus scanning

Strings and Substrings

- A string is a sequence of characters
- A substring is any contiguous sequence of characters within a string

Prefixes and Suffixes

- Prefix: starts at the beginning
- Suffix: ends at the string’s end

What is a Suffix Tree?

- A Suffix Tree is a special type of data structure used to store all the suffixes (endings) of a string so that you can quickly search for patterns

Imagine you have the word “banana”. The suffixes are:

- banana
- anana
- nana
- ana
- na
- a

Node and Edge