[ASSIGNMENT -04]

Q1 : In case of a pattern matching algorithms, the given pattern is matched in the text for its presence. One such interesting algorithm is KMP (*Knuth Morris Pratt*) pattern searching algorithm. This algorithm uses a pre-processing string of the pattern, which will be used for matching in the text. Implement the complete C program to demonstrate the working of KMP algorithm.

Q2 : Briefly explain the steps of the Rabin-Karp string matching algorithm. Provide the pseudocode for the algorithm. Additionally, discuss its best-case and worst-case time complexities, highlighting the scenarios in which these complexities occur.

Q3: Explain the Aho-Corasick algorithm that allows to quickly search for multiple patterns in a text. The set of pattern strings is also called a *dictionary*. Provide the pseudocode for the algorithm. Additionally, discuss its best-case and worst-case time complexities, highlighting the scenarios in which these complexities occur. Implement the complete C program to demonstrate the working of this algorithm.

Q4:Explain the Bitap Algorithm (Shift-Or/Shift-And Algorithm) with Bit masking & Dynamic Programming design paradigm. Provide the pseudocode for the algorithm. Additionally, discuss its best-case and worst-case time complexities, highlighting the scenarios in which these complexities occur. Implement the complete C program to demonstrate the working of this algorithm.