1. Manber 5.11.

2. Manber 5.18

3. Let $\Sigma$ be an alphabet of symbols, and let $X, Y, Z \in \Sigma^*$. Say that $Z$ is a shuffle of $X$ and $Y$ if $|Z| = |X| + |Y|$ and if $X$ and $Y$ occur as disjoint substrings of $Z$. For example, if $X = \text{close}$ and $Y = \text{class}$, then $\text{cloclasess}$, $\text{classclo}$, and $\text{ccllaossse}$ are all shuffles of $X$ and $Y$, but $\text{clacloesss}$ and $\text{lassosecl}$ are not.

Describe an efficient algorithm to determine whether $Z$ is a shuffle of $X$ and $Y$. Let $M$ be the length of $X$ and $N$ the length of $Y$. What is the time complexity of your algorithm as a function of $M$ and $N$?