1. Give an algorithm which finds a maximum in a list of integers and estimate its worst-case complexity.

2. Give an algorithm which finds if a string $s$ is a substring of a string $t$ and estimate its worst-case complexity.

3. Give an algorithm which finds if a string $s$ is a subsequence of a string $t$ and estimate its worst-case complexity.

4. Let $s = AACGAT$ and $t = ACTCT$. Let scores be 2 for match an -2 for mismatch and use the linear gap penalty $\gamma(g) = -3g$. Find an optimal global alignment of $s$ with $t$.

5. Let $s = AACAGTATCGCT$ and $t = CAGGTAT$. Let scores be 2 for match an -2 for mismatch and use the linear gap penalty with $\gamma(g) = -3g$. Find an optimal local alignment of $s$ with $t$.

6. Let $s = ACAGT$ and $t = AAACAGGTATATGTCACT$ with scores 2 for match an -2 for mismatch and use the linear gap penalty with $\gamma(g) = -3g$. Find an optimal semi-global alignment of $s$ with $t$.

7. Find an optimal global alignment of $PHHAWE$ with $HHWAWE$. Use the linear gap penalty $\gamma(g) = -4g$ and PAM250 as a scoring matrix (you can generate the matrix at http://www.cmbi.kun.nl/bioinf/tools/pam.shtml or use one from literature).

8. Repeat the previous exercise with local instead of global alignment.