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| **Practicum Case** |  |
| SCIE6062 | SCIE6062001 | SCIE6062016 | SCIE6062049  Computational Biology |
| **Mathematics & Statistics** | **E231-SCIE6062-VO01-04** |
| ***Valid on*** *Even Semester Year 2022/2023* | **Revision 00** |

**Learning Outcome**

* LO3 – implement basic bioinformatics analysis in scope of DNA composition and sequence analysis, protein synthesis, sequence alignment, and other works related to biological database using Biopython
* LO4 – analyze the basic bioinformatics analysis results using Biopython

## Topic

* Session 04 – Sequence Alignment Using Biopython

## Sub Topics

* Global and Local Assignment
* Similarity Analysis
* Hamming Distance, Levenshtein Distance, Dot Plot

## Soal

*Case*

For given **DNA sequences**:

Sequence A:

**AAGCTTAGCTAGAGCAGTCAGCTAGCTAGCT**

Sequence B:

**TCTGAAGCTAGCTAGTGCATAGCTAGCTAGC**

Please use Biopython to:

* Determine **score** **of best local alignment**.
* **Calculate** **similarity** of **DNA** **sequence** **A** and **sequence** **B** using **hamming distance** method.
* **Calculate** **similarity** of **DNA** **sequence** **A** and **sequence** **B** using **levenshtein distance** method
* **Map** **DNA sequence** **A** and **sequence** **B** **similarity** using **dot plot** technique.