Project

Engineer 4, ISI major
Algorithm and advanced data structures

Duration 4:30   Examiners : Cheikh KACFAH & Frédéric ADJEWA

Academic year 2025-2026 ; Semester I

*«The objective is not to rush through the entire exam carelessly and botching the reasoning, but rather to **cover a significant portion in a convincing manner**.» ND/NG*

File naming rule : Project2526_ISI4_SECTION_SDT1-SDT2.ipynb

Example : Project2526_ISI4_EN_MISPA-PAMIS.ipynb

Please ensure that you follow the naming convention before submission.

Statement : Everyone Chooses

At SJI, at the end of the academic year, second-year students must choose a specialization. There are a total of n students concerned and m specializations available. Furthermore, each specialization f has f_i $(i \in [1, m])$ available slots.

Knowing that at SJI, students express their specialization preferences by ranking 3 specializations among the m in decreasing order of preference and specializations are then assigned based on ranking of students in order of merit. Your objective is to analyze this problem and provide the necessary elements to obtain the allocation of students to each specialization, according to the data you consider relevant.

⚠ You must choose the data structures you consider appropriate and define them clearly. Do not hesitate to explain your choices and your approach in detail.

The expected deliverables are :

1. A report detailing your methodology, algorithms, and an analysis of their complexities.
2. A **commented** notebook (with simple comments and Markdown) allowing the testing of your solution. Please ensure that there is no ambiguity in the explanations regarding the use of your notebook.