Tuto N°3 OSII
Synchronization of processes using Monitors

Exercise 1: University Restaurant

Consider a university restaurant organized in such a way that each student respects the following protocol:

DER: Request to enter the restaurant: {*Request a tray and a chair*}

<**Eat**>

FSR: Finish and exit the restaurant: {*Release a tray and a chair*}

Initially available resources: there are **Pmax** trays and **Cmax** chairs with **Pmax > Cmax**.

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Exercise 2: River Crossing

In this exercise, we will consider a river that can be crossed by one or more **people** at a time, but only from one **bank** at a time. The two **banks** of the river are labeled **A** and **B**. Each **person** on **bank A** is assigned a **process** P_A, and each **person** on **bank B** is assigned a **process** P_B.

Write a **monitor** and complete the **processes** to ensure the coordination of the crossing between **people** from opposite **banks**. The solution should allow the simultaneous crossing of multiple **people** from the same **bank**, and should also ensure that there will be no **deadlock**.

Exercice 03 : Hair Salon Problem

In this exercise, we will consider a hair salon with a single hairdressing chair and N waiting chairs. When there are no customers, the hairdresser rests in the hairdressing chair. When a customer arrives and finds the hairdresser asleep, they wake them up. A customer who arrives and finds the hairdresser busy sits down on one of the N waiting chairs and waits their turn. If there are no more free chairs, they do not wait and leave.