

Level: 2nd Year Bachelor's in Computer Science (2025/2026)

Module: Databases

TP 4: Relational Algebra

Connect your **Blood-Donation** database to the RAT tool and execute the following queries using Relational **Algebra** based on the following schema:

Donor (**Donor_ID**, First_Name, Last_Name, Gender, Date_Of_Birth, Blood_Type, Phone)

Donation (**Donation_ID**, Donation_Date, Volume_ML, Donation_Type, #***Donor_ID***)

Blood_Inventory (**Unit_ID**, Blood_Type, Collection_Date, Expiration_Date, Status, #***Donation_ID***)

Recipient(**Recipient_ID**, First_Name, Last_Name, Gender, Date_Of_Birth, Blood_Type, Hospital_name, Town)

Transfusion (**Transfusion_ID**, Transfusion_Date, #***Recipient_ID***, #***Unit_ID***)

- 1- List the Unit_ID, Blood_Type, and Expiration_Date of all blood inventory units that will expire before February 1, 2025."
- 2- Which blood units are available and have an expiration date on or before March 7, 2026?
- 3- Now, change the status of the obtained results from 'Available' to 'Expired' using SQL.
- 4- Which blood units were collected in 2025?
- 5- How can we record in SQL new blood donations for Donors 1 and 2 on March 10, 2026, and then update the blood inventory with the corresponding blood units, including their blood types and expiration dates (1 month)?"
- 6- List the first_name, last_name, and blood_type of all donors who have donated plasma.
- 7- Get all available blood units (Unit_Id and Blood_Type) and their corresponding donors
- 8- Find all the donors who have donated blood and whose donation has been transfused.
- 9- Provide the blood type, first name, and last name of donors and recipients involved in transfusions where their blood types are compatible but not identical