**Lab 1B\_SUMMER2023 : Algebraic query language**

**We have the database consist of 5 relations:**

Product (ProductCode, Name, PurchasePrice, SellPrice, Type, SupplierCode)

Supplier (SupplierCode, SupplierName, Address)

Employee (EmloyeeID, FullName, Gender, BirthDate, Address)

Invoice (InvoiceID, SellDate, EmployeeID)

InvoiceLine(ProductCode, InvoiceID, Quantity)

**Write expressions of relational algebra to answer the following queries:**

1. Find name and sell price of televisions supplied by Samsung.

ΠName,SellPrice(σSupplierName=’Samsung’ AND Type = ‘television’(Product ⋈ Supplier ))

1. Find name and address of all suppliers who supply television product.

ΠSuppliers,Address(σType = ‘television’(Product ⋈ Supplier ))

1. Find name of all employee who were born in 1983.

ΠFullname(σBirthDate >= ‘01/01/1983’ AND BirthDate <= ‘31/12/1983’ (Employees))

1. Find name and type of all products sold in ‘23/05/2018’.

ΠName,Type (σSellDate=’23/05/2018’(InvoiceLine ⋈ Invoice ⋈ Product))

1. Find name of female employees who sold televisions.

ΠFullname (σGender = ‘female’ and Type = ‘Television’ (InvoiceLine ⋈ Invoice ⋈ Product ⋈ Employee))

1. Find name and address of suppliers who supply both television and mobile.

ΠSupplierName, Address(σType = ‘Television’ (Product⋈Supplier)) ∩ ΠSupplierName, Address (σType = ‘Mobile’ (Product⋈Supplier))

1. List name and price of all product sold by employee “Nguyễn Văn A” in April 2018.

ΠName, SellPrice (σFullname = ‘Nguyễn Văn A’ AND (SellDate >= ‘01/04/2018’ AND BirthDate <= ‘30/04/2018’) (InvoiceLine ⋈ Invoice ⋈ Product ⋈ Employee))

1. Find name and price of all mobile products of Samsung sold in April 2018.

ΠName, SellPrice (σType = ‘mobile AND ‘SupplierName’ = ‘Samsung’ AND (SellDate >= ‘01/04/2018’ AND BirthDate <= ‘30/04/2018’) (InvoiceLine ⋈ Invoice ⋈ Product ⋈ Supplier))

1. Find the product with highest SellPrice.

ΠProductCode,Name,Type (σSellPrice >=all(σSellPrice(Product))(Product))

1. Find the amount (quantity \* sellPrice) of each invoice line of product sold in 30/04/2018.

Π(Quantity \* SellPrice) → Amount(σSellDate=’30/04/2018’(InvoiceLine ⋈ Invoice ⋈ Product))

Quy định nộp lab:

Định dạng file: docx

Tên file: Mã\_sinh\_viên\_gạch\_nối\_Họ\_và\_tên\_SV\_Lap1.

Ví dụ: HE141227\_Phan Sỹ Nguyên\_Lap1B.docx