Algebraic expressions

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You will below, the algebraic expressions for five of our queries. Of course, we just give the relational algebra expression for these.

In the following, we will denote by :

- σ_C the selection with condition C.
- π_L the projection of attributes L.
- $\times$ the product.
- $\bowtie$ the natural theta join.
- $\bowtie_C$ the theta join at condition C.

We will also denote . the application of the selection or projection.

R1- Give the name of all instructor that have at least a 50 score

$$\pi_{CustomerName}.\sigma_{ExperienceLevel \geq 50}(Instructor)$$

R2- Give the names of the customers that have already followed a ski class and have more than 50 years old

$$\pi_{CustomerName}.\sigma_{Age \geq 50}.\,(Customer \bowtie SkiClass)$$

R3-Give the Names of Mechanical Lift that give access to at least to 2 pistes

$$T1 = MLGiveAccessToPiste,$$

$$T2 = MLGiveAccessToPiste,$$

$$C = \{T1.MLName = T2.MLName, T1.PisteName \neq T2.PisteName\}$$

$$\pi_{MLName}.\,(T1 \bowtie_C T2)$$

R4- What is the mean price of the ski pass by ski resorts

$$\pi_{\{SkiPassId, SkiResortName, SPPrice\}}.\,(MechanicalLift \bowtie AccessMechanicalLift \bowtie SkiPass)$$

on this, you can group by SkiResortName, and select the SkiResortName with AVG(SPPrice).

R5- Give the transportType that are most used by customer that have taken at least 5 skipass

$$MakeTransport \bowtie SkiPass$$

then, you can group by CustomerName, select those having $count(SkiPassId) \geq 5$, group by transportType, and select transportType with $Max(CustomerName)$