Clint Hawkes
cs340 - 400
Assignment 4

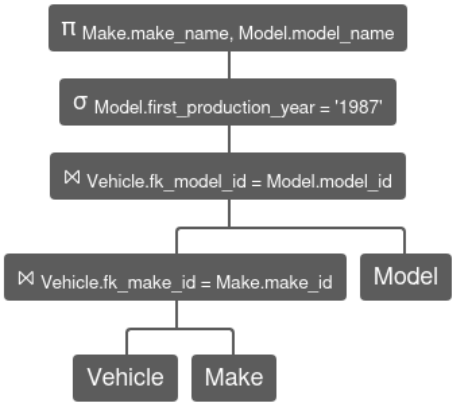
1.

Relational Algebra | SQL | Group Editor

π σ ρ ← τ γ ∧ ∨ ¬ = ≠ ≥ ≤ ∩ ∪ ÷ - × ⋈ ⋉ ⋊ ⋋ ⋌ ⋊ ▷ = -- /* {} ▦ 📅

```
1 pi Make.make_name, Model.model_name (
2   sigma Model.first_production_year = '1987' (
3     ((Vehicle) ⋈ Vehicle.fk_make_id = Make.make_id (Make)) ⋈ Vehicle.fk_model_id = Model.model_id
  (Model)
4   )
5 )
```

▶ execute query | download | history



π Make.make_name, Model.model_name (σ Model.first_production_year = '1987' (((Vehicle) ⋈ Vehicle.fk_make_id = Make.make_id (Make)) ⋈ Vehicle.fk_model_id = Model.model_id (Model)))

Make.make_name	Model.model_name
Make2	Model2

2.

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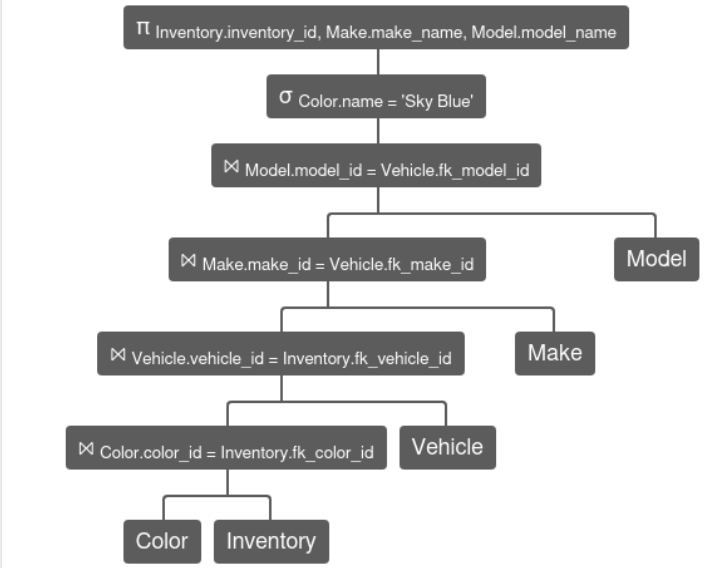
π σ ρ ← τ γ ∧ ∨ ¬ = ≠ ≥ ≤ ∩ ∪ ÷ - × ⋈ ⋉ ⋊ ⋋ ⋌ ⋊ ▷ = -- /* {} ▦ 🗔

```
pi Inventory.inventory_id, Make.make_name, Model.model_name (
  sigma Color.name = 'Sky Blue' (
    (Color) ⋈ Color.color_id = Inventory.fk_color_id (Inventory) ⋈ Vehicle.vehicle_id =
Inventory.fk_vehicle_id (Vehicle) ⋈ Make.make_id = Vehicle.fk_make_id (Make) ⋈ Model.model_id =
Vehicle.fk_model_id (Model)))
```

▶ execute query | download | history



π Inventory.inventory_id, Make.make_name, Model.model_name (σ Color.name = 'Sky Blue' ((Color) ⋈ Color.color_id = Inventory.fk_color_id (Inventory) ⋈ Vehicle.vehicle_id = Inventory.fk_vehicle_id (Vehicle) ⋈ Make.make_id = Vehicle.fk_make_id (Make) ⋈ Model.model_id = Vehicle.fk_model_id (Model)))

Inventory.inventory_id	Make.make_name	Model.model_name
1	BMW	Focus
3	BMW	Focus

The rubric instructed us to include the ID, so that caused the resulting table to have 2 rows rather than the 1 row if the ID was left out.

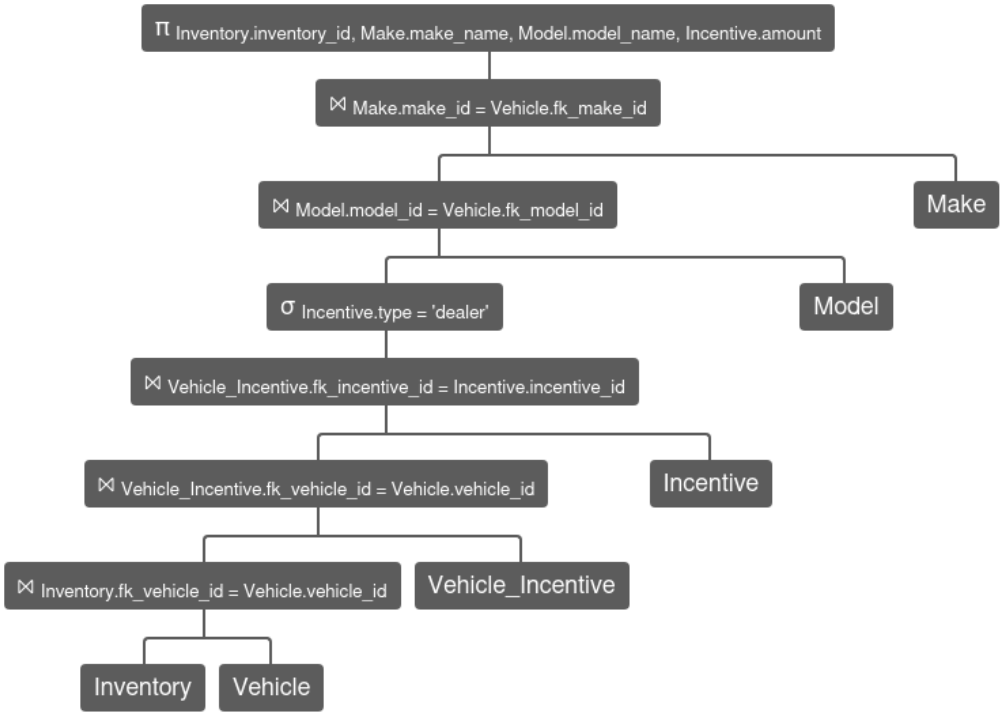
3.

Relational Algebra | SQL | Group Editor

π σ ρ ← τ γ ∧ ∨ ¬ = ≠ ≥ ≤ ∩ ∪ ÷ - × ⋈ ⋈ ⋈ ⋈ ⋉ ⋊ ▷ = -- /* {}

```
pi Inventory.inventory_id, Make.make_name, Model.model_name, Incentive.amount (
  (sigma Incentive.type = 'dealer' (
    ((Inventory) ⋈ Inventory.fk_vehicle_id = Vehicle.vehicle_id (Vehicle) ⋈
Vehicle_Incentive.fk_vehicle_id = Vehicle.vehicle_id (Vehicle_Incentive) ⋈
Vehicle_Incentive.fk_incentive_id = Incentive.incentive_id (Incentive))) ⋈ Model.model_id =
Vehicle.fk_model_id (Model) ⋈ Make.make_id = Vehicle.fk_make_id (Make)))
```

▶ execute query | download | history



π Inventory.inventory_id, Make.make_name, Model.model_name, Incentive.amount (σ Incentive.type = 'dealer' ((Inventory) ⋈ Inventory.fk_vehicle_id = Vehicle.vehicle_id (Vehicle)) ⋈ Vehicle_Incentive.fk_vehicle_id = Vehicle.vehicle_id (Vehicle_Incentive) ⋈ Vehicle_Incentive.fk_incentive_id = Incentive.incentive_id (Incentive)) ⋈ Model.model_id = Vehicle.fk_model_id (Model) ⋈ Make.make_id = Vehicle.fk_make_id (Make))

Inventory.inventory_id	Make.make_name	Model.model_name	Incentive.amount
1	BMW	Focus	400
2	BMW	Focus	400
3	BMW	Focus	400

The rubric instructed us to include the ID, so that caused the resulting table to have 3 rows rather than the 1 row if the ID was left out.

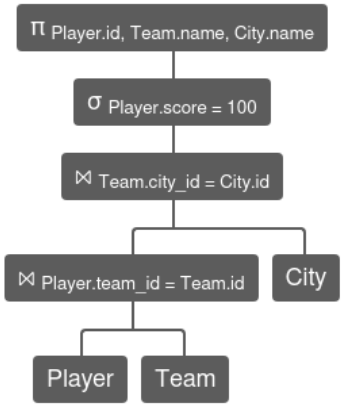
4.

Relational Algebra | SQL | Group Editor

π σ ρ ← τ γ ∧ ∨ ¬ = ≠ ≥ ≤ ∩ ∪ ÷ - × ⋈ ⋈ ⋈ ⋈ ⋉ ⋊ ▷ = -- /* {} ▦ 🗓

```
pi Player.id, Team.name, City.name (
  sigma Player.score = 100 (
    ((Player) ⋈ Player.team_id = Team.id (Team)) ⋈ Team.city_id = City.id (City)
  )
)
```

▶ execute query | download | history



π Player.id, Team.name, City.name (σ Player.score = 100 (((Player) ⋈ Player.team_id = Team.id (Team)) ⋈ Team.city_id = City.id (City)))

Player.id	Team.name	City.name
1	Team1	London
4	Team2	St Petersburg

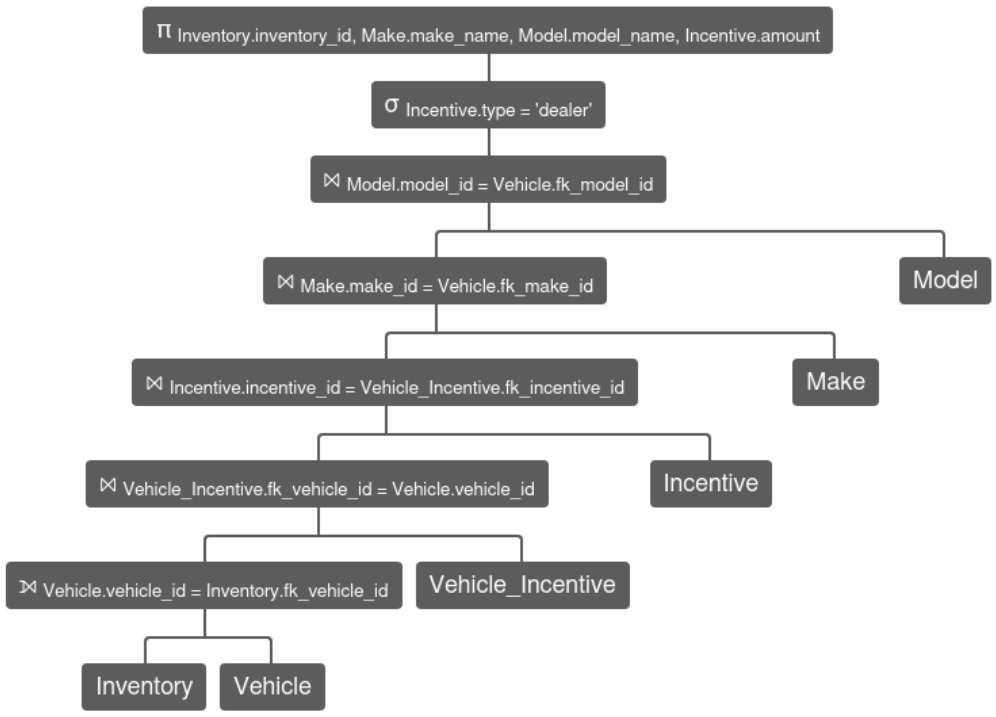
5.

select from where group having order limit

```
1 SELECT Inventory.inventory_id, Make.make_name, Model.model_name, Incentive.amount FROM Inventory LEFT
JOIN Vehicle ON Vehicle.vehicle_id = Inventory.fk_vehicle_id INNER JOIN Vehicle_Incentive ON
Vehicle_Incentive.fk_vehicle_id = Vehicle.vehicle_id INNER JOIN Incentive ON Incentive.incentive_id =
Vehicle_Incentive.fk_incentive_id INNER JOIN Make ON Make.make_id = Vehicle.fk_make_id INNER JOIN Model
ON Model.model_id = Vehicle.fk_model_id WHERE Incentive.type = 'dealer'
```

Warning: DISTINCT is missing; relational algebra uses implicit duplicate elimination

▶ execute query download history



π Inventory.inventory_id, Make.make_name, Model.model_name, Incentive.amount σ Incentive.type = 'dealer' Inventory ⋈ Vehicle.vehicle_id = Inventory.fk_vehicle_id Vehicle ⋈ Vehicle_Incentive.fk_vehicle_id = Vehicle.vehicle_id Vehicle_Incentive ⋈ Incentive.incentive_id = Vehicle_Incentive.fk_incentive_id Incentive ⋈ Make.make_id = Vehicle.fk_make_id Make ⋈ Model.model_id = Vehicle.fk_model_id Model

Inventory.inventory_id	Make.make_name	Model.model_name	Incentive.amount
1	BMW	Focus	400
2	BMW	Focus	400
3	BMW	Focus	400

Once again, the rubric instructed us to include the ID, so that caused the resulting table to have 3 rows rather than the 1 row if the ID was left out.