

### Assignment #3

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CS340-Spring 2018

May 9, 2018

1. Select the make\_name and model\_name of all vehicles, regardless of whether they are on the lot or not, which have a first production year of 1986.

```
π make_name, model_name (
  σ first_production_year = '1986' (
    ((Vehicle) ⋈ Vehicle.fk_model_id = Model.model_id (Model))
    ⋈ Vehicle.fk_make_id = Make.make_id (Make))
  )
```

2. Select the make\_name and model\_name of all vehicles with the color name “Sky Blue” and which are on the lot.

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

3. Select the make\_name, model\_name and incentive amount for all vehicles on the lot with an incentive type “dealer”.

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

4. Convert the following query to relational algebra

```
SELECT Player.id, Team.name, City.name FROM Player
INNER JOIN Team ON Player.team_id = Team.id
INNER JOIN City ON Team.city_id = City.id
WHERE Player.score = 100;
```

```

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

```

5. For problem 3 above, convert your relational algebra query into a SQL query

```

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

```