

## Relational Algebra

In this assignment you will be writing **relational algebra** (not SQL) queries to select various sets of data. Attached is a schema of a auto dealership database.

Vehicle - The base class for types of vehicles to be sold.

Make - The brand of vehicle. (e.g. BMW, Ford etc)

Model – The specific model (2 Series, Focus etc). First production year is the first year that model was ever made

Vehicle\_Incentive – A relationship table between Vehicles and Incentives. Keeps track of when the incentive for that vehicle expires.

Incentive – Discounts and other deals. Type includes things like Factory or Dealer depending who is offering the incentive.

Inventory - The actual stock of vehicles in the lot. The price is the MSRP for that specific vehicle.

Color – The potential colors cars can come in. The name is the name given by the factory (Taffeta white). The code is the hex representation of that color (e.g. #FFFAFA)

### Questions

1. Select the model\_name of all vehicles who's maker is from US
2. Select the make\_name, model\_name and color name for all cars with the price greater than \$25000
3. Select the make\_name, model\_name and incentive amount for all vehicles with a dealer type incentive less than \$2000
4. Convert the following into 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 = 20;
```

5. For problem 2 above, convert your relational algebra query into a SQL query. This will be graded on the equivalence of your SQL query to your relational algebra query (in other words the

correctness of this is not based on the results that would be returned but rather the extent to which it matches the relational algebra query)