Exam simulation

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Exam 9/1/07

Travel agency

A travel agency organizes guided trips for tourists of different nationalities. The agency wants to know the main trends about trips both with respect to the visited places and type of partecipant. The following relational schema contains the initial database:

TRIP (Code, Destination, Category, Guide, Duration, Date)

DESTINATIONS (Code, Name, Description, Type, Nation)

GROUP (Trip, Participant, Price)

PARTICIPANT (Code, Name, Surname, Address, Birthday, Nation)

NATION (Code, Name, Continent)

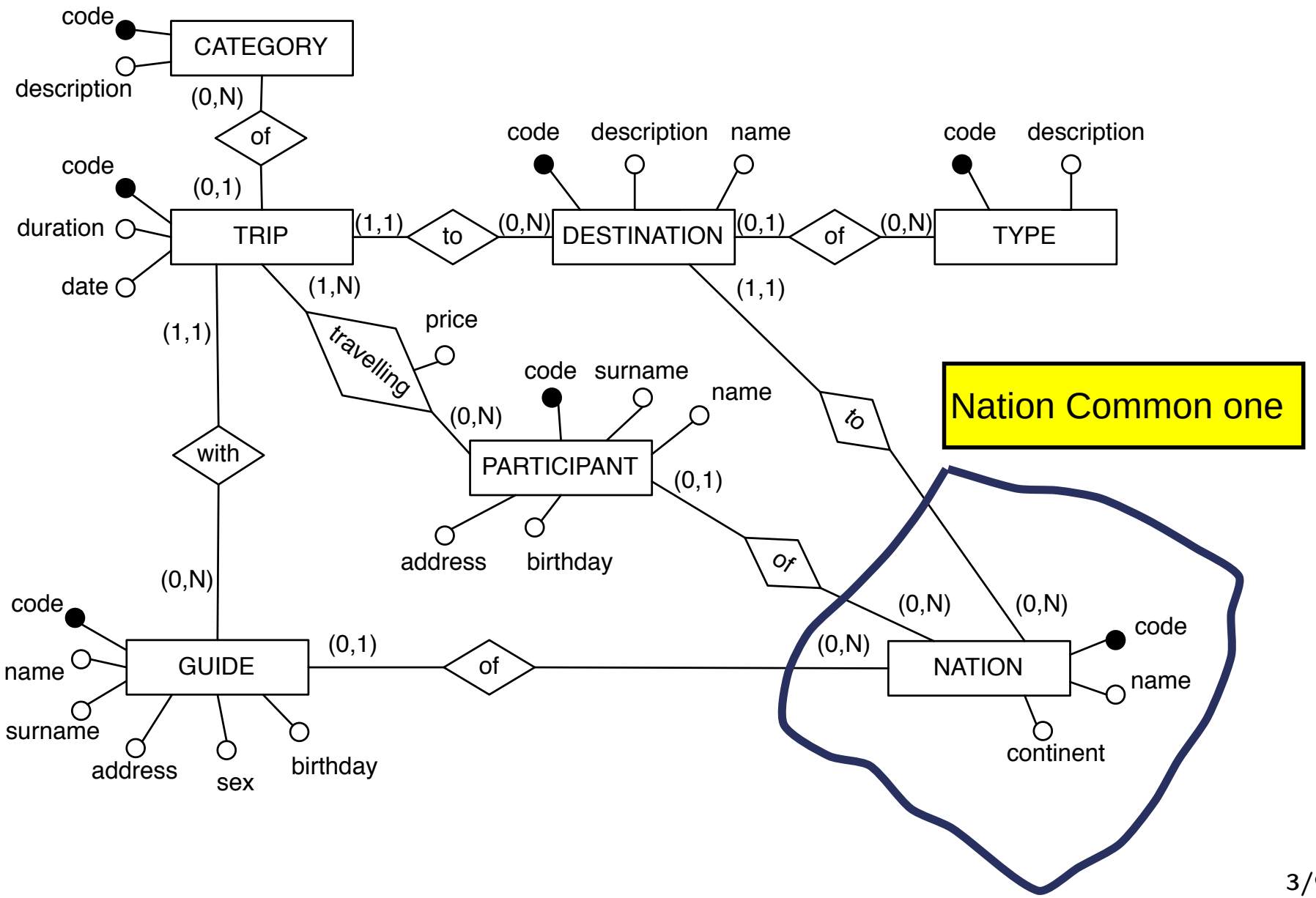
GUIDE (Code, Name, Surname, Address, Sex, Birthday, Nation)

TYPE (Code, Description)

CATEGORY (Code, Description)

Exam 9/1/07: A possible solution

Reverse engineering



Exam 9/1/07: A possible solution

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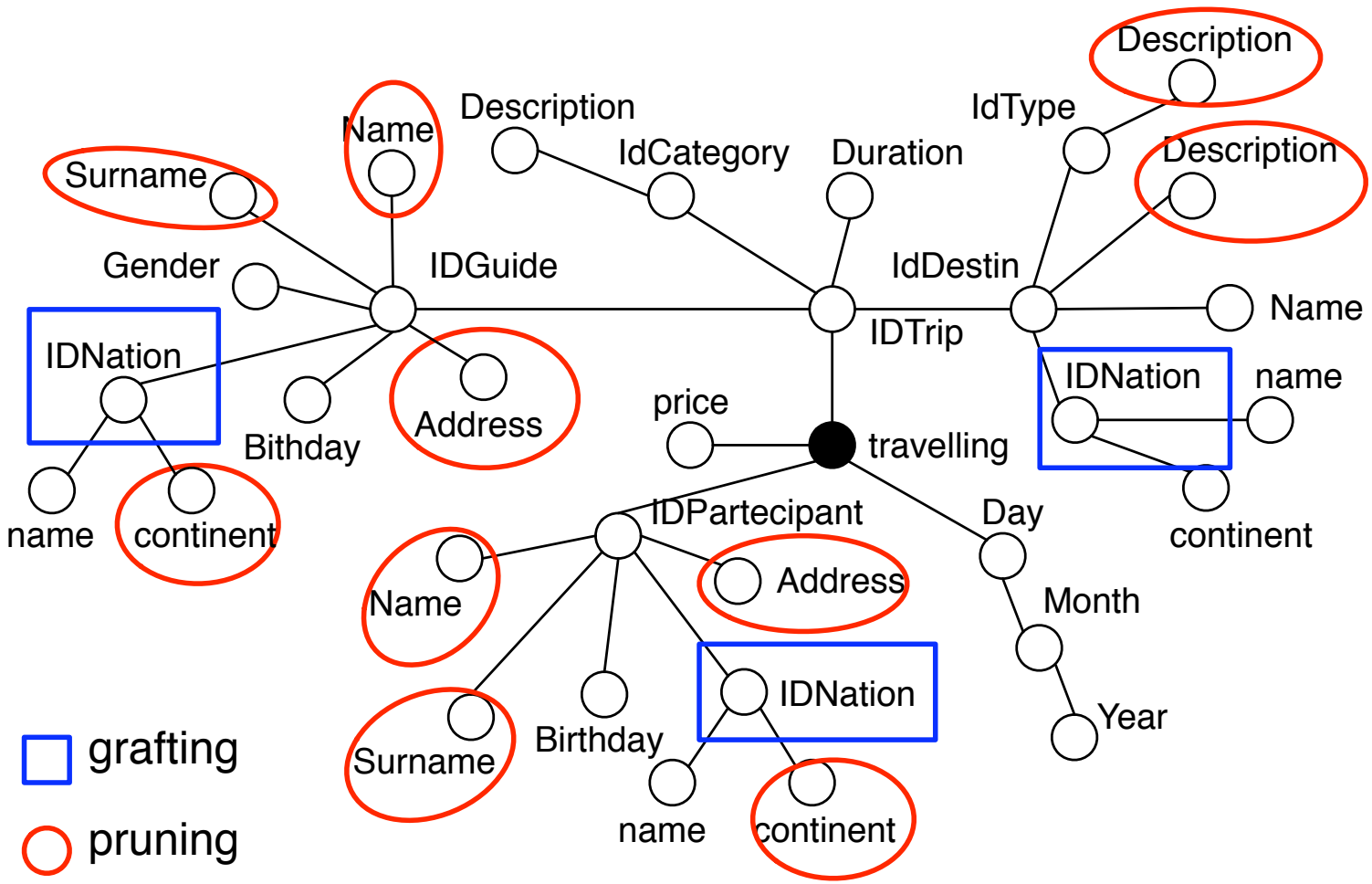
Facts, measures, dimensions, attribute tree

FACT travelling

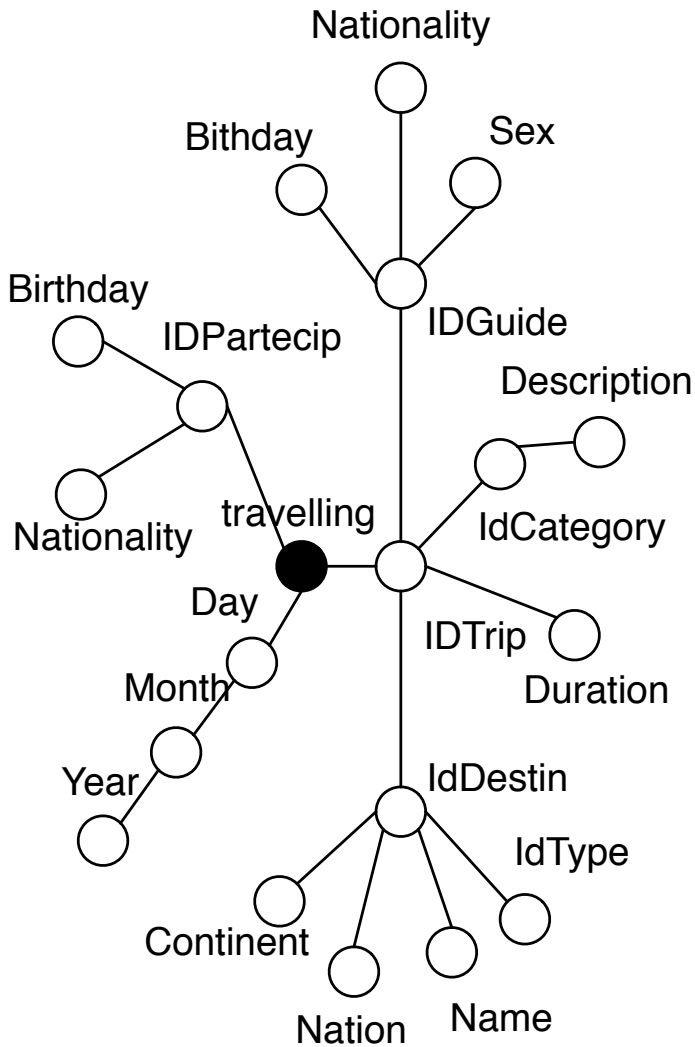
MEASURES PartecipantNr, Duration, Income

DIMENSIONS Partecipant, Trip, Time

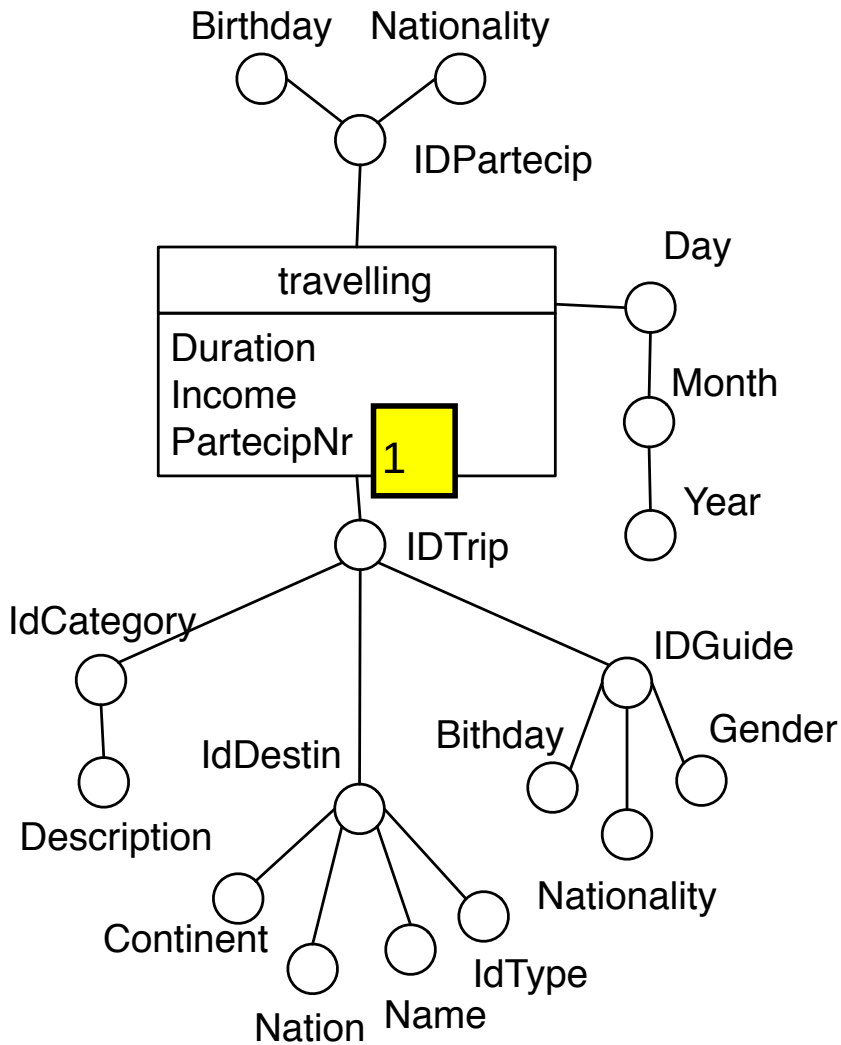


Exam 9/1/07: A possible solution

Attribute tree, fact schema



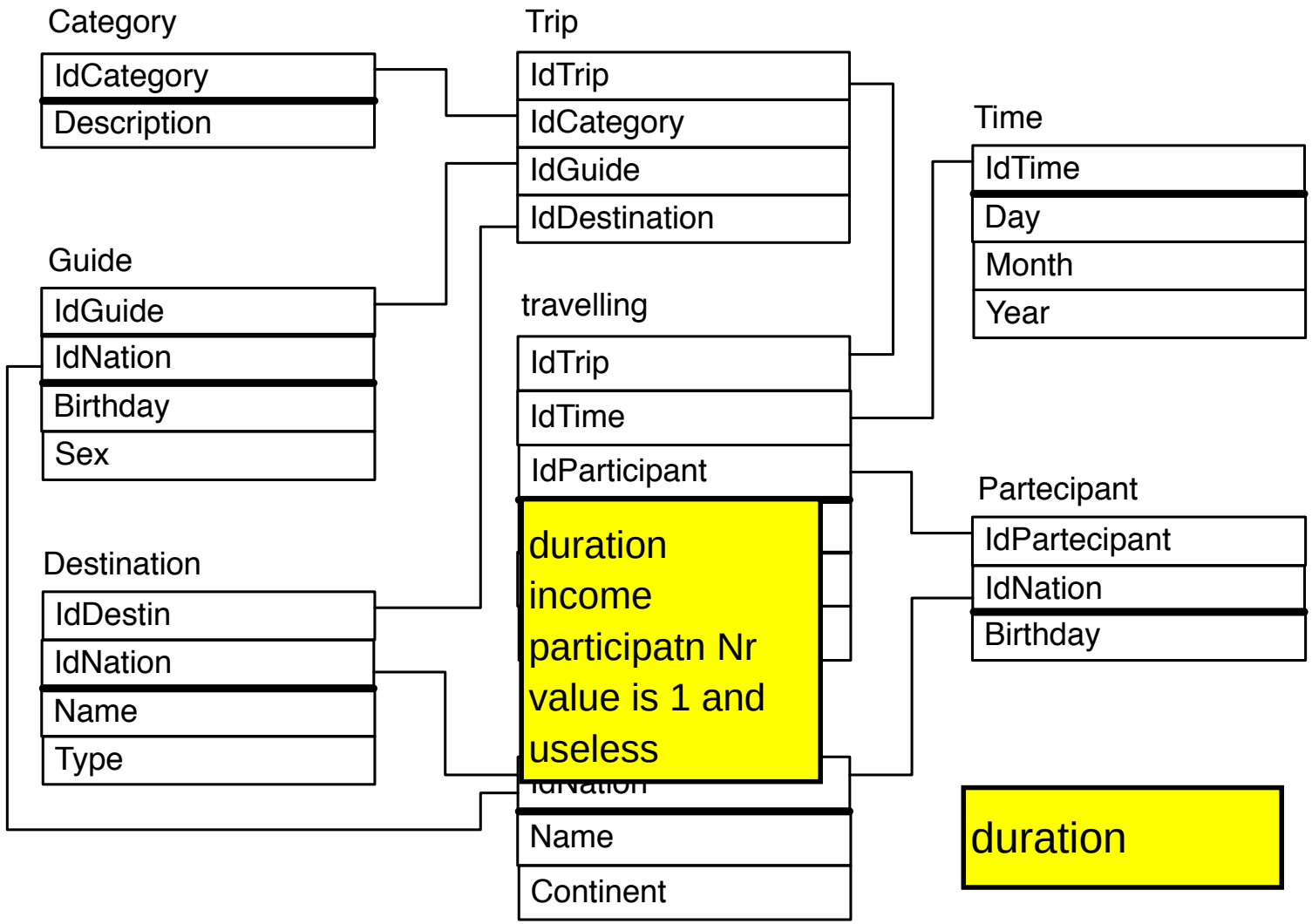
Attribute tree



Fact schema

Exam 9/1/07: A possible solution

Snowflake schema



Exam 9/1/07: A possible solution

SQL queries

- Average trip duration for a given place

```
SELECT AVG(T.Duration)
FROM travelling T, Destination D, Trip Tr
WHERE T.IdTrip = Tr.IdTrip AND Tr.IdDestin =
D.IdDstin AND D.Name = "Place"
```

- Average trip duration for a given trip category and month

```
SELECT AVG(T.Duration)
FROM travelling T, Trip Tr, Time Ti
WHERE T.IdTrip = Tr.IdTrip AND T.IdTime =
Ti.IdTime AND Tr.IdCategory = "Category" AND
Ti.Month = "Month"
```

Exam 9/1/07: A possible solution

SQL queries

- Average trip price w.r.t. duration, type of place and year

```
SELECT T.Duration, D.Type, Ti.Year, AVG(T.Income)
FROM travelling T, Trip Tr, Destination D, Time Ti
WHERE T.IdTrip = Tr.IdTrip AND T.IdTim = Ti.IdTim
AND Tr.IdDesti = D.IdDesti
GROUP BY T.Duration, D.Type, Ti.Year
```

- Average number of partecipants w.r.t. trip category and continent

```
SELECT Tr.IdCategory, N.Continent, AVG(T.PartecipNr)
FROM travelling T, Trip Tr, Destination D, Nation N
WHERE T.IdTrip = Tr.IdTrip AND T.IdDestin =
D.IdDestin AND D.IdNation = N.IdNation
GROUP BY Tr.IdCategory, N.Continent
```

Exam 9/1/07: A possible solution

SQL queries

- Number of trips w.r.t. type of place, month and guide's nationality

```
SELECT D.Type, Ti.Month, G.IdNation, COUNT(*)
FROM travelling T, Trip Tr, Destination D, Time Ti,
Guide G
WHERE T.IdTrip = Tr.IdTrip AND Tr.IdDestin =
D.IdDestin AND T.IdTime = Ti.IdTime AND Tr.IdGuide
= G.IdGuide
GROUP BY D.Type, Ti.Month, G.IdNation
```