3 Tables Join

3 Tables Inner join:

create table continent\_master

(ContinentID Varchar(15) Primary Key,

Name\_of\_Continent Varchar(20),

Continent\_Amount\_Allocated Int

);

create table country\_master

(ContinentID Varchar(15) references continent\_master,

CountryID Varchar(15) Primary Key,

Name\_of\_Country Varchar(50),

Country\_Amount\_Allocated Int

);

create table transactions

(TrID Varchar(10),

CountryID Varchar(15) References country\_master,

Name\_of\_City Varchar(40),

Amount\_Spent Int

);

Insert into continent\_master values('Con1', 'Asia', 50000);

Insert into continent\_master values('Con2', 'Africa', 30000);

Insert into continent\_master values('Con3', 'Europe', 80000);

Insert into continent\_master values('Con4', 'Australia', 85000);

Insert into continent\_master values('Con5', 'Americas', 90000);

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Insert into country\_master values('Con1','Cu1','India',10000);

Insert into country\_master values('Con1','Cu2','China',20000);

Insert into country\_master values('Con1','Cu3','UAE',15000);

Insert into country\_master values('Con2','Cu4','Sudan',15000);

Insert into country\_master values('Con2','Cu5','Kenya',15000);

Insert into country\_master values('Con3','Cu6','France',20000);

Insert into country\_master values('Con3','Cu7','Germany',20000);

Insert into country\_master values('Con3','Cu8','Italy',20000);

Insert into country\_master values('Con4','Cu9','Australia', 12000);

Insert into country\_master values('Con4','Cu10','New Zealand', 9000);

Insert into country\_master values('Con5','Cu11','USA', 50000);

Insert into country\_master values('Con5','Cu12','Canada', 35000);

Insert into country\_master values('Con5','Cu13','Brazil', 20000);

Insert into country\_master values('Con5','Cu14','Argentina', 15000);

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Insert into Transactions values('T1', 'Cu1','Mumbai',200);

Insert into Transactions values('T2', 'Cu1','Mumbai',150);

Insert into Transactions values('T3', 'Cu1','Delhi',50);

Insert into Transactions values('T4', 'Cu1','Delhi',70);

Insert into Transactions values('T5','Cu2','Beijing',300);

Insert into Transactions values('T6','Cu2','Beijing',200);

Insert into Transactions values('T7','Cu2','Shanghai',700);

Insert into Transactions values('T8','Cu2','Shanghai',900);

Insert into Transactions values('T9','Cu3','Dubai',1000);

Insert into Transactions values('T10','Cu3','Dubai',1500);

Insert into Transactions values('T11', 'Cu3','Abu Dhabi',800);

Insert into Transactions values('T12', 'Cu3','Abu Dhabi',600);

Insert into Transactions values('T13','Cu4','Khartoum',80);

Insert into Transactions values('T14','Cu4','Khartoum',20);

Insert into Transactions values('T15','Cu4','Kassala',50);

Insert into Transactions values('T16','Cu4','Kassala',10);

Insert into Transactions values('T17','Cu5','Nairobi',90);

Insert into Transactions values('T18','Cu5','Nairobi',70);

Insert into Transactions values('T19','Cu5','Mombasa', 300);

Insert into Transactions values('T20','Cu5','Mombasa', 2000);

Insert into Transactions values('T21','Cu6','Paris', 900);

Insert into Transactions values('T22','Cu6','Paris', 1100);

Insert into Transactions values('T23','Cu6','Lyon', 2100);

Insert into Transactions values('T24','Cu6','Lyon', 200);

Insert into Transactions values('T25','Cu7','Berlin', 500);

Insert into Transactions values('T26','Cu7','Berlin', 700);

Insert into Transactions values('T27','Cu7','Munich', 1500);

Insert into Transactions values('T28','Cu7','Munich', 1700);

Insert into Transactions values('T29','Cu8','Rome', 3000);

Insert into Transactions values('T30','Cu8','Rome', 2000);

Insert into Transactions values('T31','Cu8','Milan', 500);

Insert into Transactions values('T32','Cu8','Milan', 800);

Insert into Transactions values('T33','Cu9','Sydney', 2800);

Insert into Transactions values('T34','Cu9','Sydney', 3100);

Insert into Transactions values('T35','Cu9','Melbourne', 1400);

Insert into Transactions values('T36','Cu9','Melbourne', 2400);

Insert into Transactions values('T37','Cu10','Auckland', 600);

Insert into Transactions values('T38','Cu10','Auckland', 800);

Insert into Transactions values('T39','Cu10','Wellington', 2100);

Insert into Transactions values('T40','Cu10','Wellington', 2700);

Insert into Transactions values('T41','Cu11','Sand City', 5000);

Insert into Transactions values('T42','Cu11','Sand City', 6000);

Insert into Transactions values('T43','Cu11','Dublin', 2000);

Insert into Transactions values('T44','Cu11','Dublin', 1000);

Insert into Transactions values('T45','Cu12','Toronto', 2200);

Insert into Transactions values('T46','Cu12','Toronto', 3300);

Insert into Transactions values('T47','Cu12','Ottawa', 2100);

Insert into Transactions values('T48','Cu12','Ottawa', 1300);

Insert into Transactions values('T49','Cu13','Sao Paulo', 900);

Insert into Transactions values('T50','Cu13','Sao Paulo', 400);

Insert into Transactions values('T51','Cu13','Rio de Janeiro', 700);

Insert into Transactions values('T52','Cu13','Rio de Janeiro', 800);

Insert into Transactions values('T53','Cu14','Buenos Aires', 200);

Insert into Transactions values('T54','Cu14','Buenos Aires', 400);

Insert into Transactions values('T55','Cu14','Rosario', 2300);

Insert into Transactions values('T56','Cu14','Rosario', 4400);

**Inner Join of the above 3 tables:**

Select tr.trID,

con.Name\_Of\_Continent,

cou.Name\_of\_Country,

tr.Name\_of\_City,

con.Continent\_Amount\_Allocated,

cou.Country\_Amount\_Allocated,

tr.Amount\_Spent

from continent\_master as con Join country\_master as cou

on con.ContinentID = cou.ContinentID

Join transactions tr

on cou.CountryID = tr.CountryID;

Now let’s create a copy of Transactions table and add records from that table in the new table Trasactions**2** excluding records of Mumbai and Delhi

Create table Transactions2

select \*

from Transactions

where Name\_of\_City Not In ('Mumbai','Delhi');

Let’s give the same inner join on the 3 tables, but this the 3rd table is Transactions**2**

Select tr.trID,

con.Name\_Of\_Continent,

cou.Name\_of\_Country,

tr.Name\_of\_City,

con.Continent\_Amount\_Allocated,

cou.Country\_Amount\_Allocated,

tr.Amount\_Spent

from continent\_master as con Join country\_master as cou

on con.ContinentID = cou.ContinentID

Join transactions**2** tr

on cou.CountryID = tr.CountryID; -- It shows the 52 matching rows

**Now, let’s give Left Outer join for the first 2 tables’ join, i.e. Continent\_Master and Country\_Master tables.**

Select tr.trID,

con.Name\_Of\_Continent,

cou.Name\_of\_Country,

tr.Name\_of\_City,

con.Continent\_Amount\_Allocated,

cou.Country\_Amount\_Allocated,

tr.Amount\_Spent

from continent\_master as con **Left Outer Join** country\_master as cou

on con.ContinentID = cou.ContinentID

Join transactions**2** tr

on cou.CountryID = tr.CountryID; -- No change, still it shows the same 52 matching rows

**The output is same as that of inner join because all the Continent\_IDs are matching in both the tables.**

**After this, let’s give** **Left Outer join before the 3rd table and default inner join for the first 2 tables.**

Select tr.trID,

con.Name\_Of\_Continent,

cou.Name\_of\_Country,

tr.Name\_of\_City,

con.Continent\_Amount\_Allocated,

cou.Country\_Amount\_Allocated,

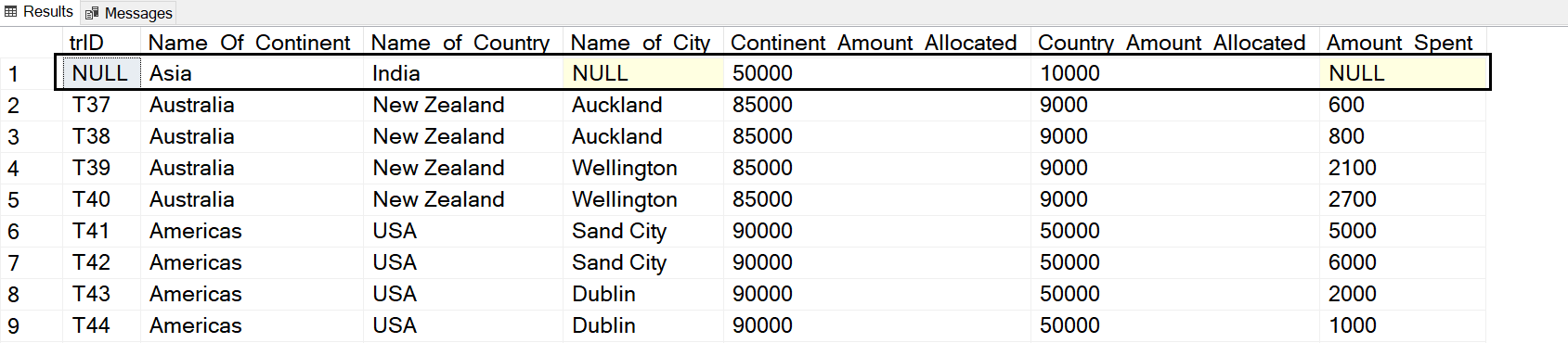
tr.Amount\_Spent

from continent\_master as con **Inner Join** country\_master as cou

on con.ContinentID = cou.ContinentID

**Left Outer Join** transactions**2** tr

on cou.CountryID = tr.CountryID; -- Now it shows one additional record of country India! Totally 53 rows



**Business Meaning 🡪 So, it means that when we give the Left outer join before the 3rd table, i.e. Transactions2 table then we understand that for India there are no transactions.**

We will create one more copy of Transactions tale. The name of that table will be Transactions**3**. In this new table will not include any record from Africa continent.

Create table Transactions3

as

select \*

from Transactions

where Name\_of\_City Not In ('Khartoum','Kassala','Nairobi','Mombasa');

Now we will have the same 3 tables join, but this time the 3rd table will be Transactions**3**.

Select tr.trID,

con.Name\_Of\_Continent,

cou.Name\_of\_Country,

tr.Name\_of\_City,

con.Continent\_Amount\_Allocated,

cou.Country\_Amount\_Allocated,

tr.Amount\_Spent

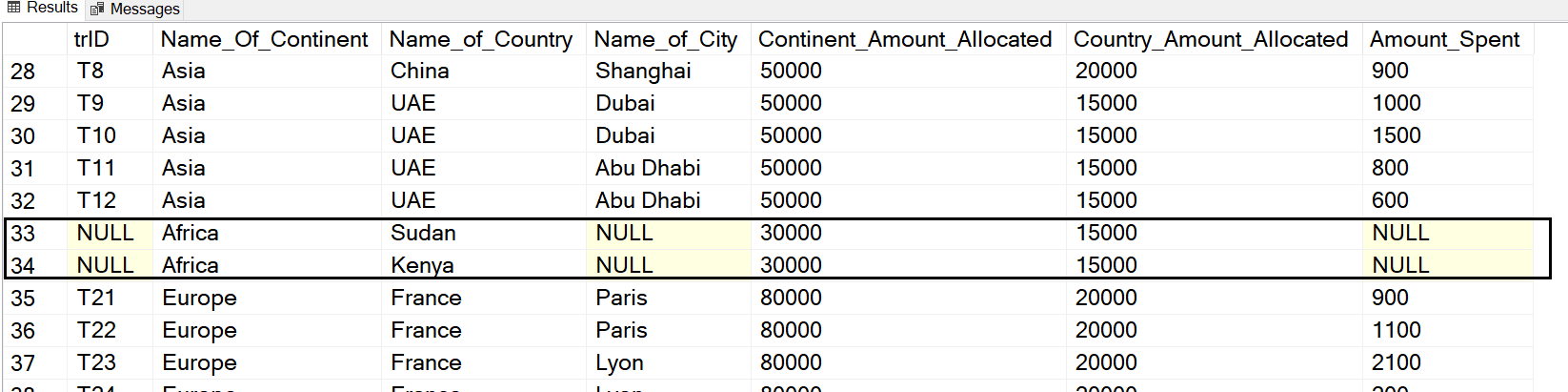
from continent\_master as con **Inner Join** country\_master as cou

on con.ContinentID = cou.ContinentID

**Left Outer Join** transactions**3** tr

on cou.CountryID = tr.CountryID;

Totally it shows 50 rows with the additional 2 records of Sudan and Kenya from Africa continent having null entries for transaction table columns as shown next 🡪



Now, let’s add one more continent record in the main master table Continent\_Master

Insert into continent\_master values('Con6', 'Oceania', 50000);

**Right now there are no records for Oceania in the Country\_Master (i.e. 2nd table) and Transactions (i.e. 3rd table).**

Select tr.trID,

con.Name\_Of\_Continent,

cou.Name\_of\_Country,

tr.Name\_of\_City,

con.Continent\_Amount\_Allocated,

cou.Country\_Amount\_Allocated,

tr.Amount\_Spent

from continent\_master as con **Left Outer Join** country\_master as cou

on con.ContinentID = cou.ContinentID

Inner Join transactions tr

on cou.CountryID = tr.CountryID; –- 56 rows

-- The additional record of Oceania is NOT shown

-- Because even if the Left join is there in the first 2 tables, still inner join is there for the 3rd table

-- So the effect gets nullified

To get the additional record we have to mention **Left Outer Join** before the 3rd table as well!!

Select tr.trID,

con.Name\_Of\_Continent,

cou.Name\_of\_Country,

tr.Name\_of\_City,

con.Continent\_Amount\_Allocated,

cou.Country\_Amount\_Allocated,

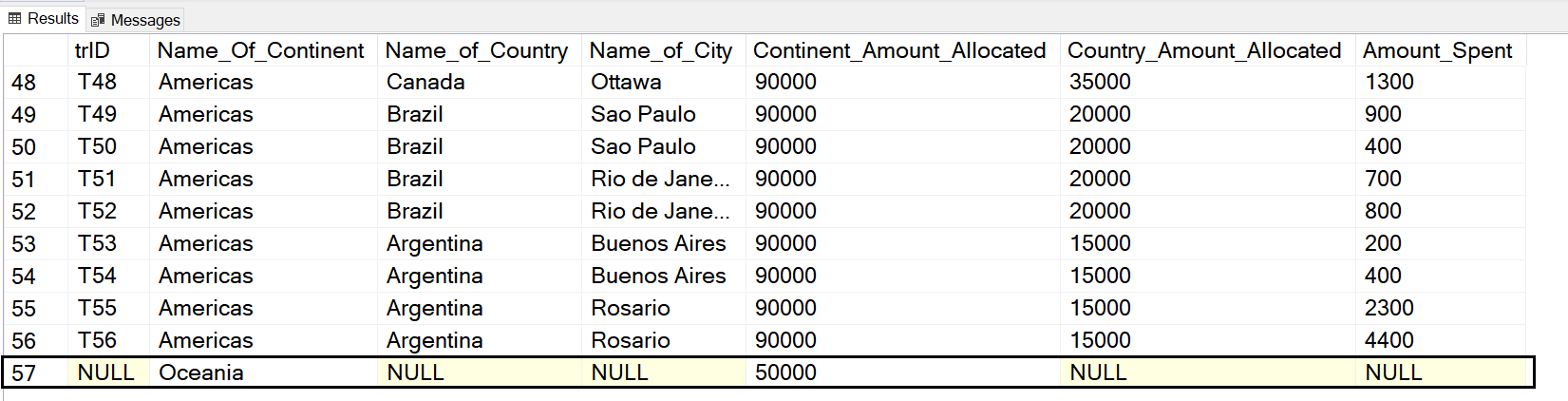
tr.Amount\_Spent

from continent\_master as con **Left Outer Join** country\_master as cou

on con.ContinentID = cou.ContinentID

**Left Outer Join** transactions tr

on cou.CountryID = tr.CountryID; -- 57 rows!!!



**Conclusion 🡪** When multiple tables are involved in joins and we want to include all the records from the first main master table then Left outer Join needs to be mentioned every time before joining with the next table.