-- Lab 1

/* Review of the Data Hierarchy, Data Aggregation and Horizontal Reporting */

/* Use AdventureWorks2017 database */

/* The following code creates a longlist report. */

```sql
SELECT DISTINCT h.SalesPersonID, p.FirstName, p.LastName, d.ProductID
FROM Sales.SalesOrderHeader h join Sales.SalesOrderDetail d on
d.SalesOrderID=h.SalesOrderID
JOIN Person.Person p
ON h.SalesPersonID = p.BusinessEntityID
ORDER BY h.SalesPersonID, ProductID;
```

/* We want to create a shortlist report containing the same data
without duplicating the salesperson info. The code below tried to do
it but the generated report had an issue. It still duplicated some
salesperson info. */

```sql
select distinct sh.SalesPersonID, pp.FirstName,pp.LastName,
stuff((select ', ', rtrim (cast(ProductID as char))
from Sales.SalesOrderDetail
where SalesOrderID= sh.SalesOrderID
order by sd.ProductID
for xml path('')), 1,2,'' ) as Product
from Sales.SalesOrderHeader sh
join Sales.SalesOrderDetail sd on
sd.SalesOrderID=sh.SalesOrderID
join Person.Person pp
on pp.BusinessEntityID = sh.SalesPersonID order
by sh.SalesPersonID;
```

/* Please investigate the issue and find out what caused the issue.
Give a detailed explanation of your findings. Writing some code
to prove your explanation would be convincing. */

Issue: Due to the join of Sales.SalesOrderDetail and Sales.SalesOrderHeader,
there is a duplication problem. A join should have been made between
Sales.SalesOrderHeader and Person.Person.

Correct code lines:

```sql
STUFF((SELECT ', ' + CAST(sd.ProductID AS VARCHAR(10))
```

and

```sql
FROM Sales.SalesOrderHeader sh

JOIN Person.Person pp ON sh.SalesPersonID = pp.BusinessEntityID




/* Modify the incorrect solution provided above to create the correct
report. */

SELECT DISTINCT sh.SalesPersonID, pp.FirstName, pp.LastName,
STUFF((SELECT ', ' + CAST(sd.ProductID AS VARCHAR(10))
FROM Sales.SalesOrderDetail sd
WHERE sd.SalesOrderID IN (SELECT sh1.SalesOrderID FROM
Sales.SalesOrderHeader sh1 WHERE sh1.SalesPersonID = sh.SalesPersonID)
ORDER BY sd.ProductID
FOR XML PATH('')), 1, 2, '') AS Product
FROM Sales.SalesOrderHeader sh
JOIN Person.Person pp ON sh.SalesPersonID = pp.BusinessEntityID
ORDER BY sh.SalesPersonID;




/* Use STRING_AGG to create the same report */

 select sh.SalesPersonID, pp.FirstName, pp.LastName,
    STRING_AGG(cast(sd.ProductID as NVARCHAR(MAX)), ', ') as Products
from Sales.SalesOrderHeader sh
join Sales.SalesOrderDetail sd on sd.SalesOrderID = sh.SalesOrderID
join Person.Person pp on pp.BusinessEntityID = sh.SalesPersonID
group by sh.SalesPersonID, pp.FirstName, pp.LastName
order by sh.SalesPersonID;
```