

# CP5804: SAS Week 6

## Collaborative Tutorial

### Session

*Presented by Sisi*

# SAS Essentials

## ➤ Installation:

❑ SAS University Edition: [https://www.sas.com/en\\_au/software/university-edition/download-software.html](https://www.sas.com/en_au/software/university-edition/download-software.html)

❑ VirtualBox: [https://www.virtualbox.org/wiki/Download\\_Old\\_Builds\\_5\\_2](https://www.virtualbox.org/wiki/Download_Old_Builds_5_2),  
(Tip: please download 5.2.X builds instead of the latest version)

## ➤ Weekly materials:

❑ Assessments → SAS Self-Training Content

❑ Assessments → Assessment 5 (SAS Coursework)

# Troubleshooting VirtualBox

- Check if you have enabled VT-X in BIOS in startup. Could refer to the link for details: [https://docs.fedoraproject.org/en-US/Fedora/13/html/Virtualization\\_Guide/sect-Virtualization-Troubleshooting-Enabling\\_Intel\\_VT\\_and\\_AMD\\_V\\_virtualization\\_hardware\\_extensions\\_in\\_BIOS.html](https://docs.fedoraproject.org/en-US/Fedora/13/html/Virtualization_Guide/sect-Virtualization-Troubleshooting-Enabling_Intel_VT_and_AMD_V_virtualization_hardware_extensions_in_BIOS.html);
- If VT-X is already enabled, check if Hyper\_V is turned off. Try running the following in Command Prompt (Run): **dism.exe /Online /Disable-Feature:Microsoft-Hyper-V**. Could refer to the link for details: <https://superuser.com/questions/1153470/vt-x-is-not-available-but-is-enabled-in-bios>;
- If the issue still exists, possibly try using VMware instead of VirtualBox.

# SAS Assessments

➤ Submission due:

Week 6 due on **Wednesday of Week 7 (22/04/2020 11:59pm AEST)**

Week 7 non-graded

# SAS Assessments

## ➤ Marking criteria (2/2):

### ☐ For activity answer sheets less than or equal to 10 questions:

- 0 – not submitted or submit non-relevant results
- 1 – more than half, but all attempted
- 1.5 – more than 2, less than half
- 2 – less than 2 incorrect answer

### ☐ For activity answer sheets more than 10 questions:

- 0 – not submitted or submit non-relevant results
- 1 – more than half, but all attempted
- 1.5 – more than 4, less than half
- 2 – less than 4 incorrect answer

# SAS Help

- Q&A for SAS
- Setup Instructions: Assessments → SAS Self-Training Content → Video Instructions for SAS Setup
- Demo

# SAS Week 6 Activity Answer Sheet

## ➤ 5.01:

- ☐ Preparation: SQ\_Ch05, page 6, slide 12;
- ☐ SQ\_Ch05, page 5, slide 11.

**Subqueries**

A subquery

- returns values to be used in the outer query's WHERE or HAVING clause
- must return only a single column
- can return multiple values or a single value.

```
SELECT ...>
FROM ...
<WHERE ...>
<GROUP BY ...>
<HAVING ...>
<ORDER BY ...>;
```

```
... (select Employee_ID
from orion.staff
where ... )...
```

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**Setup for the Poll**

Is the following SELECT statement valid as a subquery?

```
(select Employee_ID,
Gender
from orion.staff)
```

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# SAS Week 6 Activity Answer Sheet

## ➤ 5.02:

- ☐ No prerequisite program, answering based on general definition;
- ☐ Sample: **s105d03**.

## ➤ 5.03:

- ☐ Execute the program **s105a01**;
- ☐ SQ\_Ch05, page 13, slide 28.

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### Setup for the Poll

- Open the program **s105a01**.
- Change the IN operator to an equal sign in the code.
- Run the changed program and review the SAS log for messages.

```
proc sql;
select Employee_Name, City, Country
  from orion.employee_addresses
 where Employee_ID =
      (select Employee_ID
        from orion.employee_payroll
         where month(Birth_Date)=2)
 order by 1;
quit;
```


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# SAS Week 6 Activity Answer Sheet

## ➤ 5.04:

- ☐ Preparation: SQ\_Ch05, page 22, slide 45;
- ☐ Hint: a subquery must return values from a **single** column.

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### Setup for the Poll

Can this SELECT statement be used as a subquery?

```
select Job_Title,  
       avg(Salary) as Job_Avg  
       format=comma7.  
from orion.employee_payroll as p,  
     orion.employee_organization as o  
where p.Employee_ID=o.Employee_ID  
      and Employee_Term_Date is missing  
      and Department="Sales"  
group by Job_Title;
```

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# SAS Week 6 Activity Answer Sheet

## ➤ 5.05:

- ☐ Preparation: SQ\_Ch05, page 23, slide 48;
- ☐ Hint: an in-line view can be referenced **only** in the select statement where it is defined

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### Setup for the Poll

```
select Name, emp.Job_Title, Job_Avg
  from (in-line view) as job,
        orion.staff as emp
  where emp.Job_Title=job.Job_Title;
select Job_Title, Job_Avg
  from job;
```

The first SELECT statement uses an in-line view to create data that is referenced with the alias **job**. Can **job** also be referenced in the second SELECT statement?

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# SAS Week 6 Activity Answer Sheet

## ➤ 5.06:

### ☐ Preparation:

- ☐ SQ\_Ch05, page 29, slide 61;
- ☐ Step 1 query results: page 28, slide 59;

☐ Noncorrelated subquery: a self-contained query. It executes **independently** of the outer query.

☐ In-line view: consists of any valid SQL query, **except for** ORDER BY clause.

**Setup for the Poll**

To join the **employee\_organization** table with the Step 1 query results, you use the query from Step 1 as which of the following?

```
select distinct Employee_ID
  from orion.order_fact as of,
       orion.product_dim as p
 where of.Product_ID=p.Product_ID
        and year(Order_Date)=2011
        and Product_Name contains
        'Expedition Zero'
        and Employee_ID ne 99999999;
```

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**Coding the Complex Query**

**Part 1** Write a query to obtain the employee ID of all employees who sold Expedition Zero merchandise in 2011.

```
select distinct Employee_ID
  from orion.order_fact as of,
       orion.product_dim as p
 where of.Product_ID=p.Product_ID
        and year(Order_Date)=2011
        and Product_Name contains
        'Expedition Zero'
        and Employee_ID ne 99999999;
```

PROC SQL Output

Employee ID
121065


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s105d08

# SAS Week 6 Activity Answer Sheet

## ➤ 5.07:

- ☐ Preparation: SQ\_Ch05, page 31, slide 67;
- ☐ Hint: a subquery can return values for **multiple** rows, but must return values for **only one** column.

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### Setup for the Poll

Is it possible to use the entire query in Step 2 as a subquery?

```
select Manager_ID
  from orion.employee_organization as o,
       (select distinct Employee_ID
        from orion.order_fact as of,
         orion.product_dim as p
        where of.Product_ID=p.Product_ID
              and year(Order_Date)=2007
              and Product_Name
                contains 'Expedition Zero'
              and Employee_ID ne 99999999) as ID
 where o.Employee_ID=ID.Employee_ID;
```

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# SAS Week 6 Activity Answer Sheet

## ➤ 6.02:

- ☐ Preparation: program **s106a01**;
- ☐ SQ\_Ch06, page 15, slide 32;
- ☐ **ALL** modifier:
  - ❖ Rows from both intermediate result sets are concatenated.
  - ❖ Duplicate rows are **not** removed from the final result tables.

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### Setup for the Poll

Open the program **s106a01**, submit the program, and view the report.

Return to the program, add the ALL keyword with the UNION operator, resubmit the program, and view the report. Answer the following question.

Is there any difference in the output with the ALL keyword? Why?

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# SAS Week 6 Activity Answer Sheet

## ➤ 6.05:

- ☐ Preparation: SQ\_Ch06, page 31, slide 68;
- ☐ **CORR** modifier: Columns are matched by name and **non-matching columns are removed** from the intermediate result sets.

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### Setup for the Poll

View the PROC SQL code below and respond to the following True/False statement: Adding the CORR keyword to this code will change the results.

```
proc sql;
select ID, Name from train_a
except
select ID, Name from train_b;
quit;
```

**Partial train\_a**

ID	Name	Date
11	Bob	15JUN2012
16	Sam	5JUN2012
14	Pete	21JUN2012

**Partial train\_b**

Name	ID	SDate	EDate
Bob	11	9JUL2012	13JUL2012
Pam	15	25JUL2012	27JUL2012
Kyle	19	12JUL2012	20JUL2012
Chris	21	29JUL2012	.

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# SAS Week 6 Activity Answer Sheet

## ➤ 7.01:

- ☐ **DESCRIBE:** writes information about the table to the SAS log;
- ☐ **SELECT:** creates a report that lists the contents of the table.

## ➤ 7.06:

- ☐ Submit the second code in Q7.05.



### 7.05 Quiz

What differences are there between the SQL code written to the SAS log by the DESCRIBE VIEW statement and the CREATE VIEW code, which actually created the view `orion.tom_zhou`?

Original

```
select Employee_Name as Name format=$25.0,
       Job_Title as Title format=$15.0,
       Salary 'Annual Salary' format=comma10.2,
       int((today()-Employee_Hire_Date)/365.25)
       as YOS 'Years of Service'
from Employee_Addresses as a, Employee_Payroll as p,
     Employee_Organization as o
where a.Employee_ID=p.Employee_ID and
     o.Employee_ID=p.Employee_ID and
     Manager_ID=120102;
```

DESCRIBE VIEW

```
select Employee_Name as Name format=$25.0,
       Job_Title as Title format=$15.0,
       Salary label='Annual Salary' format=COMMA10.2,
       int((today()-Employee_Hire_Date)/365.25)
       as YOS label='Years of Service'
from EMPLOYEE_ADDRESSES a, EMPLOYEE_PAYROLL p,
     EMPLOYEE_ORGANIZATION o
where (a.Employee_ID=p.Employee_ID) and
     (o.Employee_ID=p.Employee_ID) and
     (Manager_ID=120102);
```

# SAS Week 6 Activity Answer Sheet

## ➤ 8.01:

☐ Metadata: SQ\_Ch08, page 4, slide 6;

☐ SQ\_Ch08, page 10, slide 16;

## ➤ 8.02:

☐ **Two** correct options.

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### Using Dictionary Tables in Other SAS Code

SAS provides views based on the dictionary tables in the **Sashelp** library.

Most of the **Sashelp** library dictionary view names are similar to dictionary table names, but are shortened to eight characters or less. They begin with the letter v and do not end in s. For example:

**dictionary.tables = sashelp.vtable**

The following code executes successfully:

```
title 'Tables in the ORION Library';
proc print data=sashelp.vtable label;
    var memname nobs nvar;
    where libname='ORION';
run;
```

16s108d02



# SAS Set Up for Weeks 5 and 6

- SAS Self-Training Content → Video Instructions for SAS Setup → SAS Set Up for Weeks 5 and 6
- Demo