

## Session: SQL Services for every Day

For: WMSUG

Date: February, 25 2026

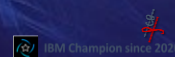
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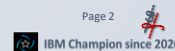
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## Agenda

### IBM i and DB2 Services Overview

- IBM i Services
- Db2 Services
- Services in the SYSTOOLS Schema

### Services for Spoolfiles

- SPOOLED\_FILE\_INFO
- OUTPUT\_QUEUE\_ENTRIES
- DELETE\_OLD\_SPOOLED\_FILES
- GENERATE\_PDF
- SPOOLED\_FILE\_DATA

### GENERATING\_SPREADSHEETS

### SEND\_EMAIL

### Helper Services

- QCMDExc – Stored Procedure/UDF
- JOBLOG\_INFO

### Combining different Services

- Embedding Services in Views
  - With and without Global Variables
- Use in embedded SQL (in RPG)

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## Db2 and IBM i Services

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## Db2 and IBM i Services

### IBM provides a Bunch of special Services

- The **SERVICES\_INFO** table (in QSYS2) includes a list of **all available Services** incl. additional information such as:
  - SQL Object Type: VIEW, PROCEDURE, TABLE\_FUNCTION ...
  - Earliest Release, Initial Db2 Group Level PTF and Latest Db2 Group Level PTF

#### Example

```
Select * from Services_Info
Order By Service_Category, Service_Name;
```

| SERVICE_CATEGORY | SERVICE_SCHEMA_NAME | SERVICE_NAME                 | SQL_OBJECT_TYPE | LATEST_DB2_GROUP_LEVEL | INITIAL_DB2_GROUP_LEVEL | EARLIEST_POSSIBLE_RELEASE | EXAMPLE                 |
|------------------|---------------------|------------------------------|-----------------|------------------------|-------------------------|---------------------------|-------------------------|
| APPLICATION      | QSYS2               | ACTIVATION_GROUP_INFO        | TABLE_FUNCTION  | <NULL>                 | <NULL>                  | V7R3M0                    | -- Description: List t  |
| APPLICATION      | QSYS2               | ADD_USER_INDEX_ENTRY         | PROCEDURE       | <NULL>                 | <NULL>                  | V7R4M0                    | -- Description: Add a   |
| APPLICATION      | QSYS2               | BINDING_DIRECTORY_INFO       | VIEW            | <NULL>                 | <NULL>                  | V7R3M0                    | -- Description: List a  |
| APPLICATION      | QSYS2               | BOUND_MODULE_INFO            | VIEW            | <NULL>                 | <NULL>                  | V7R3M0                    | -- Description: Find a  |
| APPLICATION      | QSYS2               | BOUND_SVRPGM_INFO            | VIEW            | <NULL>                 | <NULL>                  | V7R3M0                    | -- Description: Exam in |
| APPLICATION      | QSYS2               | CHANGE_USER_SPACE            | PROCEDURE       | <NULL>                 | <NULL>                  | V7R4M0                    | -- Description: Modify  |
| APPLICATION      | QSYS2               | CHANGE_USER_SPACE_ATTRIBUTES | PROCEDURE       | <NULL>                 | <NULL>                  | V7R4M0                    | -- Description: Trunca  |

• Excerpt from the SERVICES\_INFO table

### Documentation for IBM i and Db2 Services can be found in the

- In the Online Documentation under **Database → Performance and Query Optimization**
  - Db2® for i Services:** <https://www.ibm.com/docs/en/i/7.6?topic=optimization-db2-i-services>
  - IBM i Services** <https://www.ibm.com/docs/en/i/7.6?topic=optimization-i-services>



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## Db2 and IBM i Services

### Db2 and IBM i Services

- Provided as SQL Stored Procedures, User Defined (Table) Functions, Views
  - To be directly **used within SQL**
- Db2 Services** Services for retrieving/maintaining **Database Information**
- IBM i Services** Replacement/Additional to **CL Commands** and **System APIs**

### Db2 and IBM i Services are grouped into Service Categories



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## Db2 Services - Categories

| Db2 Services         |  |
|----------------------|--|
| Category             | Description  |
| Database Application | Override QAQQINI, Parse Statement, SQL Codes, SELF (SQL Error Logging Facility)            |
| Database Performance | MTI (Maintained Temporary Index) Information, Query Supervisor, Active Queries             |
| Database Plan Cache  | Change Plan Cache Size, Clear/Dump Plan Cache, Event Monitors                              |
| Database Utility     | Generate SQL, Related Objects, Cancel SQL, Compare Files, Restart Identity, Validate Files |

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## IBM i Services - Categories

| IBM i Services      |  |
|---------------------|--|
| Category            | Description  |
| Application         | Data Queue Handling, Analyzing ILE Objects,  |
| Backup and Recovery | SaveFile Information, Media Library Information  |
| Communication       | Active Database Connections, HTTP Server Information, Netstat Information  |
| Configuration       | Hardware Ressource Information   |
| IFS                 | Reading and writing into the Integrated File System (IFS), IFS Object Statistics   |
| Java                | Java Virtual Machine (JVM) Information   |
| Journal             | Journal/Receiver Information, Journaled Objects, Display Journal   |
| Librarian           | Library List Information, Library Information, Object Statistics   |
| Message Handling    | Joblog Information, Message File Data, Message Queue Information   |
| Performance         | Collection Services  |
| Product             | License Information, Software Product Information  |
| PTF                 | Group PTF Details, PTF Cover Letter, PTF and Group PTF Information   |
| Security            | Authorization Lists, Group Profiles, Object Privileges, User Information, Check Password   |
| Spool               | Output Queue Entries, Spooled File Information, Spooled File Data, Generate PDF  |
| Storage             | Auxiliary Storage Pool (ASP) Information, Disk Status, Temporary and User Storage  |
| System Health       | System Limits  |
| Work Management     | (Prestarted) Job, Object, Job Queue, Memory Pool, Sub-System Information, Object/Record Lock Information, System Values, System Status |

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## SYSTOOLS Schema

### SYSTOOLS is the Name of a Database supplied Schema (Tool)

- Includes a set of Db2 for i **Examples** and **Tools**
- SYSTOOLS is **not** part of the **Default System Path**
- IBM will dynamically **add content** to the SYSTOOLS schema

### Using SYSTOOLS

- **All Routines** in the SYSTOOLS are **ready to use**, but they are **not** subject to **IBM Service and Support**
- With Reverse Engineering (GENERATE SQL) the **SQL Source Code** can be **extracted** and used as a model for **building similar helper functions**
- New Routines can be created within the SYSTOOLS library  
However, if the individually created Objects **conflict** with the **IBM supplied Objects**, The individually created Objects **might be replaced** with (new) IBM Objects.



## Calling and Executing UDTFs



## Calling and Executing UDTFs

### FROM clause of a SELECT Statement

- **TABLE()** expression required
- Syntax: `From Table(MyUDTF(Param1, Param2 ...)) x`  
 UDTF incl. parameters must be embedded in parenthesis  
 UDTF with no parameters → empty parenthesis () needed  
 Correlation Name after the TABLE expression no longer required

### Can be joined with other Tables and Views:

- Syntax `From Table(MyUDTF(Parm1, Parm2, ...)) x  
 Join Table1 t on x.Key1 = t.Key1  
 and x.Key2 = t.Key2`

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## Calling and Executing UDTFs - Examples

```
2006 Select * from Table(USERS()) u;
```

| ODOBNM    | ODOBTX                      |
|-----------|-----------------------------|
| QANZAGENT | Trace Analyzer Agent Server |
| QAUTPROF  | IBM-supplied User Profile   |
| QBRMS     | IBM-supplied User Profile   |
| QCLUMGT   | IBM-supplied User Profile   |
| QCLUSTER  | IBM-supplied User Profile   |

USERS() UDTF within QSYS2 lib.

- Returns all user profiles
- based on DSSPOBJD CL command
- No parameters

```
2012 Select * from Table(USERS()) u
2013 where ODOBNM like '%QP%';
2014
```

| ODOBNM | ODOBTX                    |
|--------|---------------------------|
| QPFX   | IBM-supplied User Profile |
| QPGMR  | Programmer and Batch User |
| QPM400 | IBM-supplied User Profile |


USERS() UDTF within QSYS2 lib.

- List all user profiles including QP

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## Calling and Executing UDTFs - Examples

```
Select *
  from Table(QSYS2.Output_Queue_Entries(Outq_Lib => Default,
                                         Outq_Name => 'QPRINT')) a
 Where Create_Timestamp >= Current_Timestamp - 7 Days;
```

| CREATE_TIMESTAMP           | SPOOLED_F<br>ILE_NAME | USER_N<br>AME | USER_DATA | STAT<br>US | SIZE | TOTAL_<br>PAGES | COPIES |
|----------------------------|-----------------------|---------------|-----------|------------|------|-----------------|--------|
| 2024-03-09 03:11:11.973657 | QPSAVOBJ              | QSECOFR       | <NULL>    | READY      | 3140 | 757             |        |
| 2024-03-10 03:04:04.643679 | QPSAVOBJ              | QSECOFR       | <NULL>    | READY      | 2116 | 471             |        |
| 2024-03-12 17:47:49.485777 | BXCHKLOG              | BHA           | CRTSRVPGM | READY      | 36   | 5               |        |
| 2024-03-12 17:47:49.572140 | QPJOBLOG              | BHA           | CRTILE    | READY      | 148  | 20              |        |
| 2024-03-12 17:47:49.644274 | QPJOBLOG              | BHA           | CRTILE    | READY      | 164  | 21              |        |
| 2024-03-12 17:47:49.798086 | BXCHKSERV             | BHA           | <NULL>    | READY      | 2372 | 348             |        |

**OUTPUT\_QUEUE\_ENTRIES** table function in the QSYS2 schema returns Spoolfiles within the specified Output\_Queue (QPRINT)

Parameters are passed by using an argument list, i.e. Parameter Name followed by =>



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## Calling and Executing UDTFs - Examples

```
2055 Select ODOBTX, p.*
2056   From Table(Users()) u,
2057   Lateral(Select *
2058     From Table(UDTF_DspObjOwn(Odobnm)) x) p
2059   Where Odobnm Like 'HAUS%'
2060     and ObjType in ('*DTAARA', '*BNDDIR', '*SQLUDT')
```

| ODOBTX          | USRPRF     | OBJ        | OBJLIB      | OBJTYPE | AUTHDLR | SYSTEM | OBJASP  |
|-----------------|------------|------------|-------------|---------|---------|--------|---------|
| Birgitta Hauser | ... HAUSER | HSSEQU01   | HSCCOMMON05 | *DTAARA | ...     | DEV730 | *SYSBAS |
| Birgitta Hauser | ... HAUSER | MYSTMPSEQ  | HSCCOMMON05 | *DTAARA | ...     | DEV730 | *SYSBAS |
| Birgitta Hauser | ... HAUSER | MYTEMPSEQ  | HSCCOMMON05 | *DTAARA | ...     | DEV730 | *SYSBAS |
| Birgitta Hauser | ... HAUSER | TESTARRAY  | HSCCOMMON05 | *SQLUDT | ...     | DEV730 | *SYSBAS |
| Birgitta Hauser | ... HAUSER | HSBNDDIR05 | HSCCOMMON05 | *BNDDIR | ...     | DEV730 | *SYSBAS |
| Birgitta Hauser | ... HAUSER | ILEBNDDIR  | HSCCOMMON05 | *BNDDIR | ...     | DEV730 | *SYSBAS |
| Birgitta Hauser | ... HAUSER | MODBNDDIR  | HSCCOMMON05 | *BNDDIR | ...     | DEV730 | *SYSBAS |
| Birgitta Hauser | ... HAUSER | MYBNDDIR   | HSCCOMMON05 | *BNDDIR | ...     | DEV730 | *SYSBAS |

Joins the Users() UDTF with the UDTF\_DspObjOwn() UDTF

- Parameter ODOBNM is a column value returned by the Users() UDTF

- Join is performed using a LATERAL clause in composition with a Sub-SELECT



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# SPOOL Services

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## Spooled File Services

| Service Name               | Service Schema | Service Type    | Earliest Release | Description  |
|----------------------------|----------------|-----------------|------------------|--|
| OUTPUT_QUEUE_ENTRIES       | QSYS2          | VIEW            | V7R1M0           | Lists all spoolfile in an output queue. Uses the QSYS2.OUTPUT_QUEUE_ENTRIES table function with DETAILED_INFO => 'YES'   |
| OUTPUT_QUEUE_ENTRIES       | QSYS2          | TABLE FUNCTION  | V7R1M0           | Lists all spoolfile in an output queue. Returns one row for each spooledfile in an output queue  |
| OUTPUT_QUEUE_ENTRIES_BASIC | QSYS2          | VIEW            | V7R2M0           | Lists all spoolfile in an output queue. Returns less information than the OUTPUT_QUEUE_ENTRIES View and UDTF and subsequently performs much better   |
| OUTPUT_QUEUE_INFO          | QSYS2          | VIEW            | V7R1M0           | returns a row for each output queue. The values returned for the columns in the view are similar to the values returned by the Retrieve Output Queue Information (QSPROUTQ) API                      |
| SPOOLED_FILE_INFO          | QSYS2          | TABLE FUNCTION  | V7R3M0           | returns a list of spooled files on the system. This information is similar to what is returned by the Work with Spooled Files (WRKSPLF) CL command and the Open List of Spooled Files (QGYOLSPL) API |
| DELETE_OLD_SPOOLED_FILES   | SYSTOOLS       | PROCEDURE       | V7R3M0           | The procedure deletes spooled files according to filtering criteria. It can optionally return a preview of the files that meet the filtering criteria without performing the delete                  |
| PRINTER_FILE_INFO          | SYSTOOLS       | VIEW            | V7R4M0           | returns many attributes of IBM i printer files <span style="background-color: red; color: white; padding: 2px;">New Release 7.5 TR 4</span>  |
| GENERATE_PDF               | SYSTOOLS       | SCALAR FUNCTION | V7R3M0           | The scalar function generates a PDF file in the Integrated File System containing the content of a spooled file.   |
| SPOOLED_FILE_DATA          | SYSTOOLS       | TABLE FUNCTION  | V7R3M0           | returns the content of a spooled file.<br>If the spooled file contains double byte data, the job CCSID must be a mixed CCSID   |

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# SPOOLED\_FILE\_INFO Table Function

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## SPOOLED\_FILE\_INFO Table Function – List Spoolfiles

```

SPOOLED_FILE_INFO (
  User_Name           => UserName,           -- User, *ALL, *CURRENT
  Starting_Stamp     => StartingTimestamp,
  Ending_Stamp       => EndingTimestamp,
  Status              => Status,             -- *ALL, *CLOSED, *HELD ...
  Job_Name            => QualifiedJobName,    -- JOBNO/USER/JOB, *, *ALL
  Output_Queue        => QualifiedOutQueue,  -- LIB/OUTQ, *ALL
  User_Data           => UserData,          -- UserData, *ALL
  Form_Type           => Formtype,          -- Formtype, *ALL
  System_Name         => SystemName)        -- SystemName, *ALL, *CURRENT

```

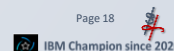
### Returns a List of Spooled Files on the System depending on the Filter Criteria

- Information similar to the Work with Spooled Files (WRKSPLF) CL command and
- the Open List of Spooled Files (QGYOLSPL) API.

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## SPOOLED\_FILE\_INFO Table Function – List Spoolfiles Parameter Status

```

SPOOLED_FILE_INFO (
  User_Name           => UserName,           -- User, *ALL, *CURRENT
  Starting_Timestamp => StartingTimestamp,
  Ending_Timestamp   => EndingTimestamp,
  Status              => Status,           -- *ALL, *CLOSED, *HELD ...
  Job_Name            => QualifiedJobName,   -- JOBNO/USER/JOB, *, *ALL
  Output_Queue        => QualifiedOutQueue,  -- LIB/OUTQ, *ALL
  User_Data           => UserData,         -- UserData, *ALL
  Form_Type           => Formtype,         -- Formtype, *ALL
  System_Name         => SystemName)       -- SystemName, *ALL, *CURRENT

```

- **\*ALL**      Default: All Spooled Files
- **\*CLOSED**   Program finished but SCHEDULE(\*JOBEND)  
and Job still active
- **\*DEFERRED**   Deferred from printing
- **\*FINISHED**   No longer in the System / Qualified jobs only
- **\*HELD**
- **\*MESSAGE**   with Message to be replied
- **\*OPEN**      Not completely processed
- **\*PENDING**   waiting for being printed
- **\*PRINTER**   sent to the printer but not printed
- **\*READY**     finished and can be sent to a printer
- **\*SAVED**     printed and saved
- **\*SENDING**   sent to a remote System
- **\*WRITING**   being produced by the writer

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## SPOOLED\_FILE\_INFO Table Function – List Spoolfiles Parameter Output\_Queue

```

SPOOLED_FILE_INFO (
  User_Name           => UserName,           -- User, *ALL, *CURRENT
  Starting_Timestamp => StartingTimestamp,
  Ending_Timestamp   => EndingTimestamp,
  Status              => Status,           -- *ALL, *CLOSED, *HELD ...
  Job_Name            => QualifiedJobName,   -- JOBNO/USER/JOB, *, *ALL
  Output_Queue        => QualifiedOutQueue,  -- LIB/OUTQ, *ALL
  User_Data           => UserData,         -- UserData, *ALL
  Form_Type           => Formtype,         -- Formtype, *ALL
  System_Name         => SystemName)       -- SystemName, *ALL, *CURRENT

```

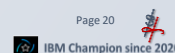
### Output\_Queue must be in the Format 'LIBRARY/OUTQUEUE'

- Special Values: **\*LIBL/\*CURLIB**    allowed for the library name
- \*ALL (Default)**    All Spoolfiles independent of the Output Queue

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## SPOOLED\_FILE\_INFO Table Function – List Spoolfiles - Examples

```
Select *
from Table(QSYS2.SPOOLED_FILE_INFO(User_Name => 'BHAPGMR'));
```

• List all Spoolfiles from user BHAPGMR

| SPOOLED_FILE_NAME | SPOOLED_FILE_NUMBER | STATUS | OUTPUT_PRIORITY | CREATION_TIMESTAMP    | USER_DATA | SIZE   | TOTAL_PAGES | COPIES | QUALIFIED_JOB_NAME         |
|-------------------|---------------------|--------|-----------------|-----------------------|-----------|--------|-------------|--------|----------------------------|
| QSQSVCDMP         | 85                  | READY  |                 | 5 2024-03-12 18:01:47 | <NULL>    | 45056  | 11          | 1      | 1793478/BHAPGMR/QPADEV0002 |
| XXCHKUSR          | 115                 | READY  |                 | 5 2024-03-12 18:02:14 | <NULL>    | 528384 | 84          | 1      | 1793478/BHAPGMR/QPADEV0002 |
| XXCHKUSR          | 116                 | READY  |                 | 5 2024-03-12 18:02:15 | <NULL>    | 364544 | 48          | 1      | 1793478/BHAPGMR/QPADEV0002 |

```
Select Count(*) "Nbr Spoolfiles",
Count(Distinct Spooled_File_name) "Nbr Diff Spoolfiles",
Count(Distinct Qualified_Job_Name) "Nbr Diff Jobs",
VarChar_Format(Sum(Size)/1000000,0,'999,999,990.00') "Size in MB",
VarChar_Format(Sum(Total_Pages),'9,999,990') "Nbr Pages",
Count(Distinct Output_Queue_Library concat Output_Queue) "Nbr OutQueues",
Count(Distinct Date(Creation_Timestamp)) "Diff Days",
Count(Case When Date(Creation_Timestamp) < Current_TimeStamp - 1 Month
Then 1 End) "Nbr Spoolfiles > 1 Month",
Count(Case When Date(Creation_Timestamp) < Current_TimeStamp - 1 Month
and Status <> 'SAVED'
Then 1 End) "Nbr Spoolfiles > 1 Month not Saved"
from Table(QSYS2.Spooled_File_Info(User_Name => '*ALL'));
```

- Spoolfiles Overview
- Nbr of Spoolfiles
- Nbr of different Spoolfiles
- Nbr of different Jobs
- Nbr of OutQueues
- Nbr of different Days
- Nbr of Spoolfiles older than 1 Month
- Nbr of Spoolfiles older than 1 Month that are not saved

| Nbr Spoolfiles | Nbr Diff Spoolfiles | Nbr Diff Jobs | Size in MB | Nbr Pages | Nbr OutQueues | Diff Days | Nbr Spoolfiles > 1 Month | Nbr Spoolfiles > 1 Month not Saved |
|----------------|---------------------|---------------|------------|-----------|---------------|-----------|--------------------------|------------------------------------|
| 900            | 56                  | 476           | 381.88     | 66,375    | 4             | 61        | 32                       | 32                                 |

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## SPOOLED\_FILE\_INFO Table Function – List Spoolfiles - Examples

```
Select Job_User,
Count(*) "Nbr Spoolfiles",
Count(Distinct Spooled_File_name) "Nbr Diff Spoolfiles",
Count(Distinct Qualified_Job_Name) "Nbr Diff Jobs",
VarChar_Format(Sum(Size)/1000000,0,'999,999,990.00') "Size in MB",
VarChar_Format(Sum(Total_Pages),'9,999,990') "Nbr Pages",
Count(Distinct Output_Queue_Library concat Output_Queue) "Nbr OutQueues",
Count(Distinct Date(Creation_Timestamp)) "Diff Days",
Count(Case When Date(Creation_Timestamp) < Current_TimeStamp - 1 Month
Then 1 End) "Nbr Spoolfiles > 1 Month",
Count(Case When Date(Creation_Timestamp) < Current_TimeStamp - 1 Month
and Status <> 'SAVED'
Then 1 End) "Nbr Spoolfiles > 1 Month not Saved"
from Table(QSYS2.Spooled_File_Info(User_Name => '*ALL'))
Group By Job_User
Order By "Size in MB" Desc;
```

• Spoolfile Overview by User

| JOB_USER | Nbr Spoolfiles | Nbr Diff Spoolfiles | Nbr Diff Jobs | Size in MB | Nbr Pages | Nbr OutQueues | Diff Days | Nbr Spoolfiles > 1 Month | Nbr Spoolfiles > 1 Month not Saved |
|----------|----------------|---------------------|---------------|------------|-----------|---------------|-----------|--------------------------|------------------------------------|
| BHA      | 433            | 53                  | 87            | 211.80     | 30,013    | 1             | 1         | 0                        | 0                                  |
| QSECOFR  | 83             | 2                   | 69            | 143.54     | 33,881    | 2             | 61        | 32                       | 32                                 |
| QSYS     | 123            | 1                   | 122           | 10.24      | 1,026     | 1             | 8         | 0                        | 0                                  |
| #SYSLOAD | 133            | 2                   | 131           | 5.97       | 403       | 2             | 8         | 0                        | 0                                  |
| HAUSER   | 5              | 2                   | 2             | 4.01       | 545       | 1             | 2         | 0                        | 0                                  |
| QUSER    | 93             | 1                   | 37            | 3.25       | 160       | 1             | 8         | 0                        | 0                                  |
| QTCP     | 15             | 1                   | 15            | 1.74       | 189       | 1             | 3         | 0                        | 0                                  |
| BHAPGMR  | 3              | 2                   | 1             | 0.94       | 143       | 2             | 1         | 0                        | 0                                  |

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# OUTPUT\_QUEUE\_ENTRIES

## Table Function

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## Output Queue Entries – Table Function and Views

### OUTPUT\_QUEUE\_ENTRIES Table Function

- Returns the information for **all Spooled Files** within the **specified** qualified Output Queue
- Returns either **Basic or Detailed Information** (Parameter **DETAILED\_INFO**) about the spooled files

### OUTPUT\_QUEUE\_ENTRIES View

- Returns the spooled file information for **all Spooled Files** in **ALL Output Queues**
- Based on the **OUTPUT\_QUEUE\_ENTRIES** Table Function with **DETAILED\_INFO= 'YES'**
- If only information from a single Output Queue is needed, the **OUTPUT\_QUEUE\_ENTRIES** Table Function should be used

### OUTPUT\_QUEUE\_ENTRIES\_BASIC View

- Returns the spooled file information for **all Spooled Files** in **ALL Output Queues**
- Based on the **OUTPUT\_QUEUE\_ENTRIES** Table Function with **DETAILED\_INFO = 'NO'**
- Performs much better than the **OUTPUT\_QUEUE\_ENTRIES** View, i.e. **OUTPUT\_QUEUE\_ENTRIES** view should only be used if **OUTPUT\_QUEUE\_ENTRIES\_BASIC** does **not** return the needed information

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## OUTPUT\_QUEUE\_ENTRIES – Table Function

OUTPUT\_QUEUE\_ENTRIES (OutQ\_Lib => OutQueueLibrary,  
 OutQ\_Name => OutQueueName,  
 Detailed\_Info => YES/NO)

Returns one row for each Spooled File in the specified Output Queue

### Parameters:

- *OutQ\_Lib*: Output Queue Library  
Special Value: \*LIBL (Default)
- *OutQ\_Name*: Output Queue Name
- *Detailed\_Info*: **YES** All information for the spoolfiles in the Outqueue is returned  
**NO** Only Basic Information is returned



## OUTPUT\_QUEUE\_ENTRIES – Table Function - Examples

```
Select * from Table(QSYS2.Output_Queue_Entries(Outq_Lib => Default,  

    Outq_Name => 'QEZDEBUG',  

    Detailed_Info => 'NO',  

    Ignore_Errors => Default))
```

| CREATE_TIMESTAMP           | SPOOLED_FILE_NAME | USER_NAME | USER_DATA | STATUS | SIZE | TOTAL_PAGES | COPIES | FORM_TYPE | JOB_NAME                  | DEVICE_TYPE | OUTPUT_PRIORITY |
|----------------------------|-------------------|-----------|-----------|--------|------|-------------|--------|-----------|---------------------------|-------------|-----------------|
| 2024-03-12 18:01:47.958674 | QSQSVCDMP         | BHAPGMR   | <NULL>    | READY  | 44   | 11          | 1      | *STD      | 793478/BHAPGMR/QPADEV0002 | *SCS        | 5               |

• List all Spoolfiles in the QEZDEBUG Output Queue – Basic Info Only

```
Select *  

from Output_Queue_Entries_Basic  

where Output_Queue_Name = 'QEZDEBUG'  

and Spooled File Name = 'QPSRVDMP':
```

• List all Service Dumps (Spooled\_File\_Name = QPSRVDMP) in the QEZDEBUG Output Queue

| OUTPUT_QUEUE_NAME | OUTPUT_QUEUE_LIBRARY_NAME | CREATE_TIMESTAMP           | SPOOLED_FILE_NAME | USER_NAME | USER_DATA | STATUS | SIZE | TOTAL_PAGES | COPIES | FORM_TYPE |
|-------------------|---------------------------|----------------------------|-------------------|-----------|-----------|--------|------|-------------|--------|-----------|
| QEZDEBUG          | QUSRSYS                   | 2024-03-10 00:32:36.175947 | QPSRVDMP          | QTMHHTTP  | <NULL>    | READY  | 28   | 1           | 1      | *STD      |
| QEZDEBUG          | QUSRSYS                   | 2024-03-10 00:32:36.514276 | QPSRVDMP          | QTMHHTTP  | <NULL>    | READY  | 28   | 1           | 1      | *STD      |
| QEZDEBUG          | QUSRSYS                   | 2024-03-10 00:32:35.410176 | QPSRVDMP          | QTMHHTTP  | <NULL>    | READY  | 28   | 1           | 1      | *STD      |
| QEZDEBUG          | QUSRSYS                   | 2024-03-10 00:32:38.827702 | QPSRVDMP          | QTMHHTTP  | <NULL>    | READY  | 28   | 1           | 1      | *STD      |
| QEZDEBUG          | OUSRYS                    | 2024-03-10 00:32:35.246058 | QPSRVDMP          | QTMHHTTP  | <NULL>    | READY  | 28   | 1           | 1      | *STD      |



# QCMDEXC – Execute CL Commands Stored Procedures and Function

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## QCMDEXC Stored Procedures and Function – Execute CL Commands

### QCMDEXC Stored Procedures

```
QCMDEXC (CLCommand, Length)
QCMDEXC (CLCommand)
```

- **Stored Procedures** for executing CL Commands
- Must be called with the **SQL CALL Statement**

### QCMDEXC Scalar Function

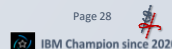
```
QCMDEXC (CLCommand)
```

- **Scalar Function** for executing CL Command
- Can be executed with **VALUES** or called within a **SELECT** Statement (**SELECT/WHERE**)
- **Returns 1** (CL Command executed successfully) or **-1** (CL Command failed)

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## Delete Old Spool Files with QCMDEXC and DLTSPFL CL Command

```

With x as (Select Spooled_File_Name, File_Number, User_Name, Output_Queue_Name, User_Data,
Total_Pages, Create_Timestamp, Job_Name,
QCMDEXC('DLTSPFL FILE(' concat Spooled_File_Name concat ')' concat
' JOB(' concat Job_Name concat ')' concat
' SPLNBR(' concat File_Number concat ')' concat
' SELECT(' concat User_Name concat ')' )' ) ExcCL
-- , a.*
from Output_Queue_Entries_Basic a
Where User_Name = 'HAUSER'
and Create_Timestamp <= Current_Timestamp - 1 Day)
Select Count(*) Total_Selected,
Count(Case When EXCCL = 1 Then 1 End) Deleted,
Count(Case When EXCCL < 0 Then 1 End) Not_Deleted
From x;

```

| TOTAL_SELECTED | DELETED | NOT_DELETED |
|----------------|---------|-------------|
| 4              | 4       | 0           |

### CTE X:

- Select Spoolfiles for User HAUSER older than 1 Day
- Prepare the DLTSPFL command for all selected spoolfiles
- Execute the DLTSPFL command with the QCMDEXC UDF

### Final Select Returns

- How many spoolfiles are deleted
- How many spoolfiles are deleted
- How many spoolfiles are not deleted



## DELETE\_OLD\_SPOOLED\_FILES

### Table Function



## DELETE\_OLD\_SPOOLED\_FILES Stored Procedure in the SYSTOOLS Schema

|  |                   |          |
|--|-------------------|----------|
| DELETE_OLD_SPOOLFILES (Delete_Older_Than | => Timestamp,     |          |
| P_Output_Queue_Library_Name              | => OutqueueSchema | or *ALL, |
| P_Output_Queue_Name                      | => OutqueueName   | or *ALL, |
| P_User_Name                              | => UserProfile    | or *ALL  |
| Preview                                  | => YES/NO)        |          |

### Deleting (old) spooled files depending on the filter criteria

#### Parameter:

- *Delete\_Older\_Than* Timestamp of the **Starting Point**  
Any spoolfile older than this timestamp might be deleted  
Default: **Current\_Timestamp - 3 Months.**
- *P\_Output\_Queue\_Library\_Name* OutQueue Library Special Value: \*ALL → Default: \*ALL
- *P\_Output\_Queue\_Name* OutQueue Name Special Value: \*ALL → Default: \*ALL
- *P\_User\_Name* User whose spoolfiles are to be deleted Special Value: \*ALL → Default: \*ALL
- *Preview* **Delete** spooled files or return them as **result set**  
**YES** = Returned as Result Set / **No** = Delete → Default = \*NO

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## DELETE\_OLD\_SPOOLED\_FILES Stored Procedure Example - Preview

```
Call SysTools.Delete_Old_Spooled_Files(Delete_Older_Than => Current_Timestamp - 1 Day,
P_User_Name => 'HAUSER',
Preview => 'YES');
```

| SPOOLED_F<br>ILE_NAME | JOB_NAME                 | FILE_N<br>UMBER | USER_N<br>AME | SIZE | OUTPUT_QU<br>EUE_NAME | OUTPUT_QUEUE_<br>LIBRARY_NAME | CREATE_TIMESTAMP           | USER_DATA  | STATUS | TOTAL_<br>PAGES | COP<br>IES | FORM_<br>TYPE | DEVICE<br>_TYPE | OUTPUT_P<br>RIORITY | SYSTEM   |
|-----------------------|--------------------------|-----------------|---------------|------|-----------------------|-------------------------------|----------------------------|------------|--------|-----------------|------------|---------------|-----------------|---------------------|----------|
| BXCHGLF               | 793470/HAUSER/QPADEV0002 | 1               | HAUSER        | 3652 | QPRINT                | QGGL                          | 2024-03-12 17:57:44.476777 | <NULL>     | READY  | 511             | 1          | *STD          | *SCS            | 5                   | F7073980 |
| BXCHGLF               | 793470/HAUSER/QPADEV0002 | 2               | HAUSER        | 36   | QPRINT                | QGGL                          | 2024-03-12 17:57:47.206695 | CRTSRVPGM  | READY  | 5               | 1          | *STD          | *SCS            | 5                   | F7073980 |
| BXCHGLF               | 793470/HAUSER/QPADEV0002 | 3               | HAUSER        | 36   | QPRINT                | QGGL                          | 2024-03-12 17:57:47.397404 | CRTSRVPGM  | READY  | 5               | 1          | *STD          | *SCS            | 5                   | F7073980 |
| QPJOBLOG              | 793470/HAUSER/QPADEV0002 | 4               | HAUSER        | 148  | QPRINT                | QGGL                          | 2024-03-12 17:57:47.553401 | QPADEV0002 | READY  | 20              | 1          | *STD          | *SCS            | 5                   | F7073980 |
| QPJOBLOG              | 793969/HAUSER/QPADEV0002 | 1               | HAUSER        | 44   | QPRINT                | OGPL                          | 2024-03-13 14:24:36.257614 | QPADEV0002 | READY  | 4               | 1          | *STD          | *SCS            | 5                   | F7073980 |

- List all Spooled Files owned by HAUSER older than 1 Day

```
Call SysTools.Delete_Old_Spooled_Files(Delete_Older_Than => Current_Timestamp - 1 Day,
P_User_Name => 'HAUSER');
```

- Delete all spooled Files owned by HAUSER older than 1 Day

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## DELETE\_OLD\_SPOOLED\_FILES Stored Procedure - Example

```
Call SysTools.Delete_Old_Spooled_Files(Delete_Older_Than      => Default,
                                         P_Output_Queue_Library_Name => Default,
                                         P_Output_Queue_Name      => Default,
                                         P_User_Name              => 'HAUSER',
                                         Preview                  => Default);
```

- Delete old Spoolfiles for User HAUSER with Default Values
- DELETE\_OLDER\_THAN           Default: Current\_Timestamp – 3 Month
- P\_OUTPUT\_QUEUE\_LIBRARY\_NAME   Default: \*ALL
- P\_OUTPUT\_QUEUE\_NAME           Default: \*ALL
- P\_USER\_NAME                    Default: \*ALL
- PREVIEW                        Default: NO



## GENERATE\_PDF Table Function



## GENERATE\_PDF – Scalar Function in the SYSTOOLS Schema

```
GENERATE_PDF (JOB_NAME           => QualifiedJobName,
              SPOOLED_FILE_NAME  => SpooledFileName,
              SPOOLED_FILE_NUMBER => SpooledFileNumber,
              PATH_NAME           => QualifiedIFSFileName)
```

### Generates a PDF File out of a Spooled File in the IFS (Integrated File System)

- Scalar function: Located within the **SYSTOOLS** schema
- Required Product: **5770TS1 - Option 1 - Transform Services - AFP to PDF Transform**



## GENERATE\_PDF – Scalar Function in the SYSTOOLS Schema

```
GENERATE_PDF (JOB_NAME           => QualifiedJobName,
              SPOOLED_FILE_NAME  => SpooledFileName,
              SPOOLED_FILE_NUMBER => SpooledFileNumber,
              PATH_NAME           => QualifiedIFSFileName)
```

### Parameters:

- *Job\_Name*: Qualified Job-Name = **JobNo/JobUser/JobName**  
Special Values: \* = Current Job
- *Spooled\_File\_Name*: Name of the Spooled File
- *Spooled\_File\_Number*: Number of the Spooled File  
Special Values: \***LAST** = highest no. of the selected Spooled File Name
- *Path\_Name*: Qualified IFS-File Name (where the PDF has to be written)

### Returns:

**1** = PDF generated successfully / **-1** = Generation failed



# Generate\_PDF - Example

```
Select Spooled_File_Name, File_Number, User_Name, Output_Queue_Name, User_Data,
      Total_Pages, Create_Timestamp, Job_Name
from QSYS2.Output_Queue_Entries_Basic a
Where User_Name = 'HAUSER'
      and Status = 'READY';
```

• Display Output\_Queue\_Entries for User HAUSER and Status READY

| SPOOLED_F<br>FILE_NAME | FILE_N<br>UMBER | USER_<br>NAME | OUTPUT<br>_QUEUE<br>_NAME | USER_DATA | TOTAL_<br>PAGES | CREATE_TIMESTAMP           | JOB_NAME                 |
|------------------------|-----------------|---------------|---------------------------|-----------|-----------------|----------------------------|--------------------------|
| SALESP                 | 1               | HAUSER        | QPRINT                    | <NULL>    | 3               | 2024-02-24 18:49:01.151852 | 783421/HAUSER/QPRTJOB    |
| SALESL01               | 2               | HAUSER        | QPRINT                    | <NULL>    | 3               | 2024-02-24 18:49:01.411255 | 783421/HAUSER/QPRTJOB    |
| SALESL02               | 3               | HAUSER        | QPRINT                    | <NULL>    | 3               | 2024-02-24 18:49:01.661717 | 783421/HAUSER/QPRTJOB    |
| SALESL03               | 4               | HAUSER        | QPRINT                    | <NULL>    | 3               | 2024-02-24 18:49:01.917621 | 783421/HAUSER/QPRTJOB    |
| PRTRPGFR02             | 1               | HAUSER        | QPRINT                    | BHAP30LIN | 4138            | 2024-02-25 17:29:43.396654 | 783965/HAUSER/QPADEV0002 |
| PRTRPGFR02             | 4               | HAUSER        | QPRINT                    | BHAP300PM | 4               | 2024-02-25 17:49:49.849170 | 783965/HAUSER/QPADEV0002 |
| PRTRPGFR02             | 5               | HAUSER        | QPRINT                    | BHAP30LIN | 4               | 2024-02-25 17:49:49.864934 | 783965/HAUSER/QPADEV0002 |
| PRTRPGFR02             | 7               | HAUSER        | QPRINT                    | BHAP300PM | 4               | 2024-02-25 17:54:29.849285 | 783421/HAUSER/QPRTJOB    |
| PRTRPGFR02             | 8               | HAUSER        | QPRINT                    | BHAP30LIN | 4               | 2024-02-25 17:54:29.865889 | 783421/HAUSER/QPRTJOB    |

```
Values(Generate_PDF(Job_Name => '783421/HAUSER/QPRTJOB',
                   Spooled_File_Name => 'PRTRPGFR02',
                   Spooled_File_Number => 7,
                   Path_Name => '/home/Hauser/Examples_SysTools/BHAP300PM_2024-02-25_01.pdf'));
```

• Convert the selected spoolfile into PDF and save it into the IFS

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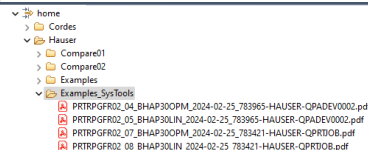


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# Generate\_PDF User Defined Function - Examples

```
Select Generate_PDF(Job_Name => a.Job_Name,
                   Spooled_File_Name => a.Spooled_File_Name,
                   Spooled_File_Number => a.File_Number,
                   Path_Name => '/home/Hauser/Examples_SysTools/'
                   Trim(a.Spooled_File_Name) concat ' ' concat
                   Right(Digits(a.File_Number), 2) concat ' ' concat
                   Case When a.User_Data > ''
                       Then Trim(a.User_Data) concat ' '
                       Else ''
                   End
                   Char(Current_Date, ISO) concat ' ' concat
                   Replace(a.Job_Name, '/', '-') concat '.pdf') GenPDF,
      Spooled_File_Name, File_Number, User_Name, User_Data,
      Total_Pages, Create Timestamp, Job_Name
from Table(QSYS2.Output_Queue_Entries(Outq_Lib => Default,
                                       Outq_Name => 'QPRINT')) a
Where User_Name = 'HAUSER'
      and User_Data like 'BHAP30%'
      and Status = 'READY'
Order By Create_Timestamp Desc, User_Data;
```

• PDFs successfully generated



| GENPDF | SPOOLED_FILE<br>NAME | FILE_N<br>UMBER | USER_<br>NAME | USER_DATA | TOTAL_<br>PAGES | CREATE_TIMESTAMP           | JOB_NAME                 |
|--------|----------------------|-----------------|---------------|-----------|-----------------|----------------------------|--------------------------|
| 1      | PRTRPGFR02           | 8               | HAUSER        | BHAP30LIN | 4               | 2024-02-25 17:54:29.865889 | 783421/HAUSER/QPRTJOB    |
| 1      | PRTRPGFR02           | 7               | HAUSER        | BHAP300PM | 4               | 2024-02-25 17:54:29.849285 | 783421/HAUSER/QPRTJOB    |
| 1      | PRTRPGFR02           | 5               | HAUSER        | BHAP30LIN | 4               | 2024-02-25 17:49:49.864934 | 783965/HAUSER/QPADEV0002 |
| 1      | PRTRPGFR02           | 4               | HAUSER        | BHAP300PM | 4               | 2024-02-25 17:49:49.849170 | 783965/HAUSER/QPADEV0002 |

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# Global Variables

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## Global Variable - What is a SQL Global Variable?

### It is a permanent object (\*SRVPGM) located in a schema

- Is created with the SQL command **CREATE VARIABLE**
- Almost any SQL data type is allowed (Except ROWID and DATALINK)
- Cannot be created in the QTEMP library/schema

### Even though being global it is managed at job/connection level

- The same variable may have different values for different jobs/connections

### Initialization occurs with the first use in a job/connection

- Initialization can be based on
  - a constant value
  - a special register
  - an other (SQL) global variable
  - a scalar function or a User Defined Function (UDF)
  - a SQL statement that returns a single value (row/column)

### Can be used in triggers and in view definitions

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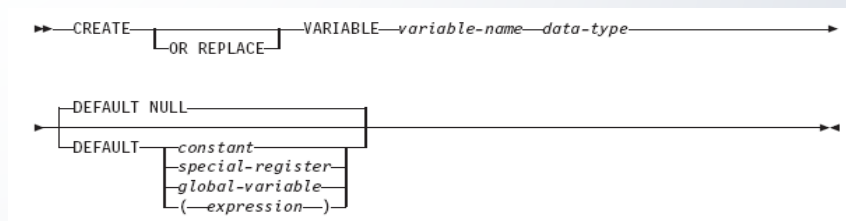


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## Global Variable



### SQL Command CREATE VARIABLE

- Variable Name (upto 128 characters) must be specified
- Almost any data type allowed (except ROWID and DATALINK)
- Default Values can be specified (Default = NULL)



## Global Variables – Create Variable - Examples

```

Create Variable HSCCOMMON10.GblBossIdFix Integer
Default 101;

```

```

Create Variable HSCCOMMON10.GblBossId Integer
Default (Select Employee
        from Staff
        Where Boss = 0
        Fetch First Row Only);

```

- |                 |   |
|-----------------|---|
| • GblBossIdFix: | Global Variable with data type Integer<br>Default value = 101   |
| • GblBossId:    | Global Variable with data type Integer<br>Default value depends on the manager's employee no<br>→ Employee without an superior employee |

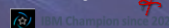


# Views and Global Variables

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## Create Global Variables for Generating PDF

```
Create Or Replace Variable HSCCOMMON10.GblPath
  VarChar(256) Default '/home/Hauser/';
```

• **GblPath:** Qualified IFS Stream File name

```
Create Or Replace Variable HSCCOMMON10.GblUser
  VarChar(10) Default Session_User;
```

• **GblUser:** User → Default Session User

```
Create Or Replace Variable HSCCOMMON10.GblUsrDta
  VarChar(10) Default '';
```

• **GblUsrDta:** User Data for Spoolfiles

```
Create Or Replace Variable HSCCOMMON10.GblOutQ
  VarChar(10) Default 'QPRINT';
```

• **GblOutQ:** OutQueue Name → Default QPRINT

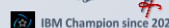
```
Create Or Replace Variable HSCCOMMON10.GblJobQual
  VarChar(26) Default QSYS2.Job_Name;
```

• **GblJobQual:** Qualified Job → Default Current Job

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# View Generating PDFs for multiple OutQueue Entries including Global Variables

```

Create Or Replace View HSCCOMMON10_VWCRTPDF as
With x as (Select SysTools.Generate_PDF(
    Job_Name          => a.Job_Name,
    Spooled_File_Name => a.Spooled_File_Name,
    Spooled_File_Number => a.File_Number,
    Path_Name         => '/' concat RTrim(LTrim(GblPath) '/'), '/' concat '/' concat
                    Trim(a.Spooled_File_Name) concat ' ' concat
                    Right(Digits(a.File_Number), 2) concat ' ' concat
                    Case When a.User_Data > ''
                        Then Trim(a.User_Data) concat ' '
                    Else ''
                    End
                    Char(Current_Date, ISO) concat ' '
                    Replace(a.Job_Name, '/', '-') concat '.pdf') GenPDF,
    a.*,
    'PDF for Spoolfile ' concat Trim(Spooled_File_Name) concat
    ' SpoolfileNo '      concat File_Number concat
    ' User '             concat Trim(User_Name) concat
    ' UserData '        concat Trim(User_Data) concat
    ' TotalPages '      concat Total_Pages concat
    ' Job '              concat Trim(Job_Name) concat
    ' SpoolCreation '   concat Create_Timestamp as MsgText
from Table(QSYS2.Output_Queue_Entries(Outq_Lib => Default,
    Outq_Name => GblOutQ)) a
where User_Name = Upper(Trim(GblUser))
    and User_Data like Upper(Trim(GblUsrDta)) concat '%'
    and Job_Name = GblJobQual
    and Status = 'READY')
Select x.*,
    Trim(MsgText) concat Case When GenPDF = 1 Then 'successfully generated'
    Else 'not generated'
End as MsgTxt2
From x;
    
```

• Generate PDF-Documents for the selected Output Queue Entries

• Read Output Queue Entries

- Using SQL Global Variables in:
  - CTE / Generate\_PDF: GblPath
  - From Clause: GblOutQ
  - Where Conditions: GblUser, GblUsrDta, GblJob

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## Check the Generated PDFs

```

Select *
from Table(QSYS2.Output_Queue_Entries(Outq_Lib => Default,
    Outq_Name => GblOutQ)) a
where Create_Timestamp >= Current_Timestamp - 10 Minutes

Set GblPath      = '/Home/Hauser/Examples_SysTools',
    GblOutQ      = 'QPRINT',
    GblUser       = Session_User,
    GblJobQual   = '797696/HAUSER/QPRTJOB';

Select *
From HSCCOMMON10_VWCRTPDF;
    
```

| CREATE_TIMESTAMP           | SPOOLED_FILE_NAME | USER_NAME | USER_DATA | STATUS | SIZE | TOTAL_PAGES | COPIES | FORM_TYPE | JOB_NAME              |
|----------------------------|-------------------|-----------|-----------|--------|------|-------------|--------|-----------|-----------------------|
| 2024-03-23 15:23:38.411897 | PRTRPGFR02        | HAUSER    | BHAP300PM | READY  | 36   | 4           | 4      | 1*STD     | 797696/HAUSER/QPRTJOB |
| 2024-03-23 15:23:38.522384 | PRTRPGFR02        | HAUSER    | BHAP300PM | READY  | 44   | 4           | 4      | 1*STD     | 797696/HAUSER/QPRTJOB |

```

GENPDF CREATE_TIMESTAMP SPOOLED_FILE_NAME USER_NAME USER_DATA STATUS SIZE TOTAL_PAGES COPIES FORM_TYPE JOB_NAME
1 2024-03-23 15:23:38.411897 PRTRPGFR02 HAUSER BHAP300PM READY 36 4 4 1*STD 797696/HAUSER/QPRTJOB
1 2024-03-23 15:23:38.522384 PRTRPGFR02 HAUSER BHAP300PM READY 44 4 4 1*STD 797696/HAUSER/QPRTJOB
    
```

• Display the generated Spooled Files with the Output\_Queue\_Entries UDTF

• Set the Global Variables before calling the VWCRTPDF View

• Executing the VWCRTPDF View

• PDFs are generated successfully

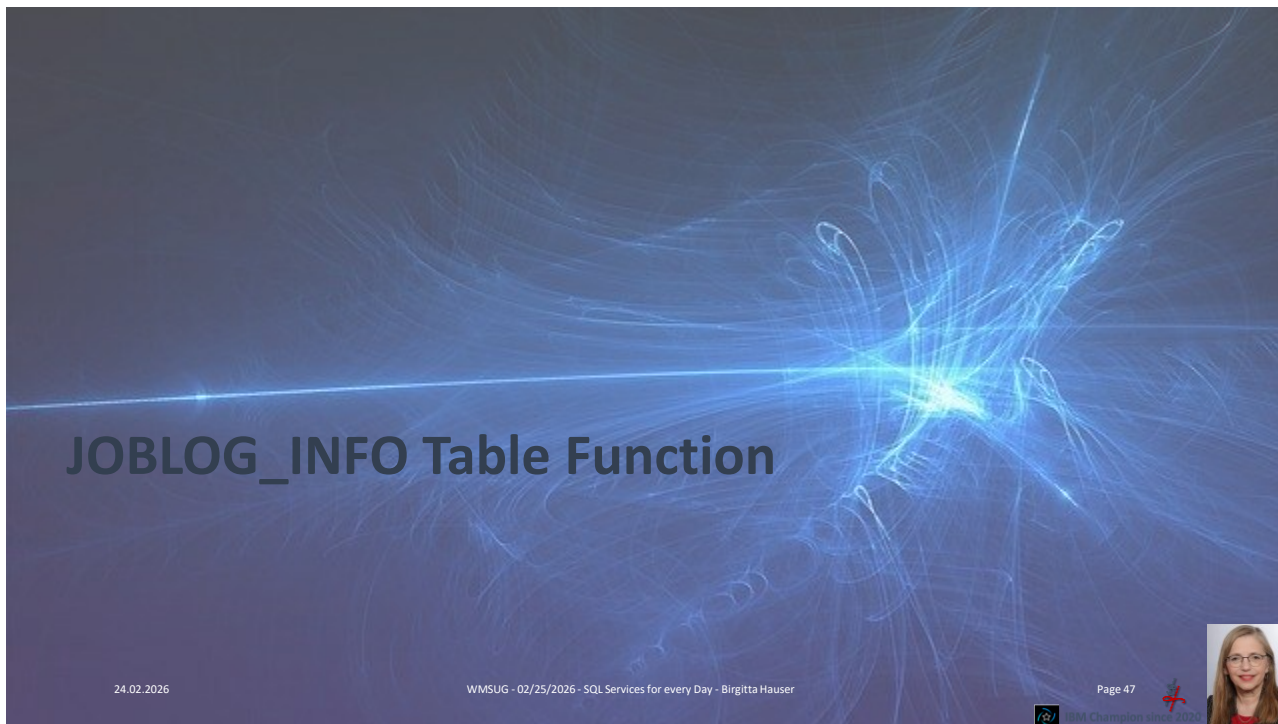
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# JOBLOG\_INFO Table Function

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## JOBLOG\_INFO Table Function – Display Joblog

```
JOBLOG_INFO (JOB_NAME      => QualifiedJobName,
             IGNORE_ERRORS => NO/YES)
```

### Display/Search Joblog Information for any job

- Returns one row for each Message in the Joblog (Level 1 and Level 2 Message Text)

### Parameters

- *Job\_Name*: In the format: **JOBNO/JOBUSER/JOBNAME**  
Special Value: **'\*'** = Current Job
- *Ignore\_Errors*: Identifies what to do when an error is encountered  
**NO**: Error: is returned (DEFAULT)  
**YES**: Error: **no rows** but a **warning** is returned

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# JOBLOG\_INFO – Table Function - Example

```
Select Message_Id, Message_Text, Message_Timestamp, a.*
from Table(Qsys2.Joblog_Info('787683/QUSER/QZDASOINIT')) a
Where Message_Id = 'CPC3311'
and Message_Timestamp >= Current_TimeStamp - 15 Minutes;
```

| MESSAGE_ID | MESSAGE_TEXT   | MESSAGE_TIMESTAMP          |
|------------|--|----------------------------|
| CPC3311    | Spooled file copied to /home/Hauser/Examples_SysTools/PRTRPGFR02_12_BHAP300PM_2024-03-03_... | 2024-03-03 17:44:19.952124 |
| CPC3311    | Spooled file copied to /home/Hauser/Examples_SysTools/PRTRPGFR02_13_BHAP300PM_2024-03-03_... | 2024-03-03 17:44:20.554787 |
| CPC3311    | Spooled file copied to /home/Hauser/Examples_SysTools/PRTRPGFR02_14_BHAP300PM_2024-03-03_... | 2024-03-03 17:44:20.924445 |
| CPC3311    | Spooled file copied to /home/Hauser/Examples_SysTools/PRTRPGFR02_15_BHAP300PM_2024-03-03_... | 2024-03-03 17:44:21.312290 |
| CPC3311    | Spooled file copied to /home/Hauser/Examples_SysTools/PRTRPGFR02_16_BHAP300PM_2024-03-03_... | 2024-03-03 17:44:21.640575 |
| CPC3311    | Spooled file copied to /home/Hauser/Examples_SysTools/PRTRPGFR02_17_BHAP300PM_2024-03-03_... | 2024-03-03 17:44:22.033042 |
| CPC3311    | Spooled file copied to /home/Hauser/Examples_SysTools/PRTRPGFR02_18_BHAP300PM_2024-03-03_... | 2024-03-03 17:44:22.403963 |
| CPC3311    | Spooled file copied to /home/Hauser/Examples_SysTools/PRTRPGFR02_19_BHAP300PM_2024-03-03_... | 2024-03-03 17:44:22.804143 |
| CPC3311    | Spooled file copied to /home/Hauser/Examples_SysTools/PRTRPGFR02_12_BHAP300PM_2024-03-03_... | 2024-03-03 17:45:15.166714 |

- List all Message Entries from Job 787683/QUSER/QZDASOINIT within the last 15 Minutes with Message-Id CPC3311

```
Select Message_Id, Message_Timestamp, Severity, Message_Text, Message_Type
from Table(Joblog_Info('*'))
Where Severity >= 40 and Message_Type = 'ESCAPE'
Order By Message_Timestamp;
```

| MESSAGE_ID | MESSAGE_TIMESTAMP          | SEVERITY | MESSAGE_TEXT  | MESSAGE_TYPE |
|------------|----------------------------|----------|---|--------------|
| CPF1336    | 2024-03-02 20:19:08.653706 | 40       | Fehler im Befehl CHGJOB für Job 787683/QUSER/QZDASOINIT.                | ESCAPE       |
| CPF2103    | 2024-03-03 11:12:00.570268 | 40       | Library QTEMP already exists in library list.                           | ESCAPE       |
| CPF2110    | 2024-03-03 11:12:00.572230 | 40       | Library QPGL not found.   | ESCAPE       |
| CPF7304    | 2024-03-03 11:20:31.112992 | 40       | File SQL_ERRORRT in QSYS2 not changed.                                  | ESCAPE       |
| CPF9898    | 2024-03-03 11:20:31.181288 | 40       | UNABLE TO CREATE SQL_ERRORRT.   | ESCAPE       |
| CPF3344    | 2024-03-03 12:16:35.966555 | 40       | File PRTRPGFR02 number 7 no longer in the system.                       | ESCAPE       |
| CPF4131    | 2024-03-03 17:37:24.346229 | 40       | Level check on file PRTRPGFR02 in library QTEMP with member PRTRPGFR02. | ESCAPE       |
| RNX1216    | 2024-03-03 17:37:24.356183 | 99       | Error message CPF4131 appeared during OPEN for file PRTRPGFR02.         | ESCAPE       |

- List all Message Entries from the current job with a Severity >= 40 and Message Type Escape



# IFS\_OBJECT\_STATISTICS Table Function

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## IFS\_OBJECT\_STATISTICS Table Function

```
IFS_Objects_Statistics( {
  Start_Path_Name      => IFSStartingPathName
  Subtree_Directories => YES/NO
  Object_Type_List     => SystemObjectType
  Omit_List            => ListOfPathNames
  Ignore_Errors       => YES/NO
} )
```

Returns a Table of Objects located in the Starting Path or accessible from the Starting Path

### Parameters:

- **START\_PATH\_NAME:** Has to be passed (all other parameters have a DEFAULT value)
- **SUBTREE\_DIRECTORIES:** YES/NO → YES (Default) = Sub-Directories are processed
- **OBJECT\_TYPE\_LIST:** List of Standard System Types (e.g. \*PGM, \*STMF) separated by a comma
  - Special values:
    - \*ALLDIR all directory object types including \*LIB, \*DIR, \*FLR, \*FILE, \*DDIR object types
    - \*ALLSTMF all stream file object types including \*MBR, \*DOC, \*STMF, \*DSTMF, \*USRSPC object types
    - \*MBR all database file member types
    - \*NOQDLS Excluding all QDLS file system object types
    - \*NOQOPT Excluding all QOPT and QNTC file system object types.
    - \*NOQSYS Excluding all QSYS.LIB object types.
- **Omit\_List:** List of IFS Paths/Files to be omitted
- **IGNORE\_ERRORS:** YES/NO → YES (Default) = Errors are ignored

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## IFS\_OBJECT\_STATISTICS Table Function – Example

```
Set GblPath      = '/Home/Hauser/Examples_SysTools';

-- Check Entries in the IFS
Select Path_Name, Object_Type, Create_Timestamp
  from Table(Qsys2.IFS_Object_Statistics(Start_Path_Name => GblPath,
                                       Object_Type_List => '*STMF')) a;
```

| PATH_NAME   | OBJECT_TYPE | CREATE_TIMESTAMP    |
|---|-------------|---------------------|
| /Home/Hauser/Examples_SysTools/PRTRPGFR02_46_BHAP300PM_2024-03-02_787684-HAUSER-QPADEV0002... | *STMF       | 2024-03-02 19:22:48 |
| /Home/Hauser/Examples_SysTools/PRTRPGFR02_47_BHAP300PM_2024-03-02_787684-HAUSER-QPADEV0002... | *STMF       | 2024-03-02 19:22:48 |
| /Home/Hauser/Examples_SysTools/PRTRPGFR02_02_BHAP300PM_2024-03-23_797696-HAUSER-QPRTJOB.pdf   | *STMF       | 2024-03-23 15:36:25 |
| /Home/Hauser/Examples_SysTools/PRTRPGFR02_01_BHAP300PM_2024-03-23_797696-HAUSER-QPRTJOB.pdf   | *STMF       | 2024-03-23 15:36:25 |

- Display all Stream Files (\*STMF) in the '/Home/Hauser/Examples\_SysTools' directory
  - Directory/Start\_Path\_Name set in the GblPath SQL global Variable (could also have been hardcoded!)
- Lists the previously generated PDF Documents

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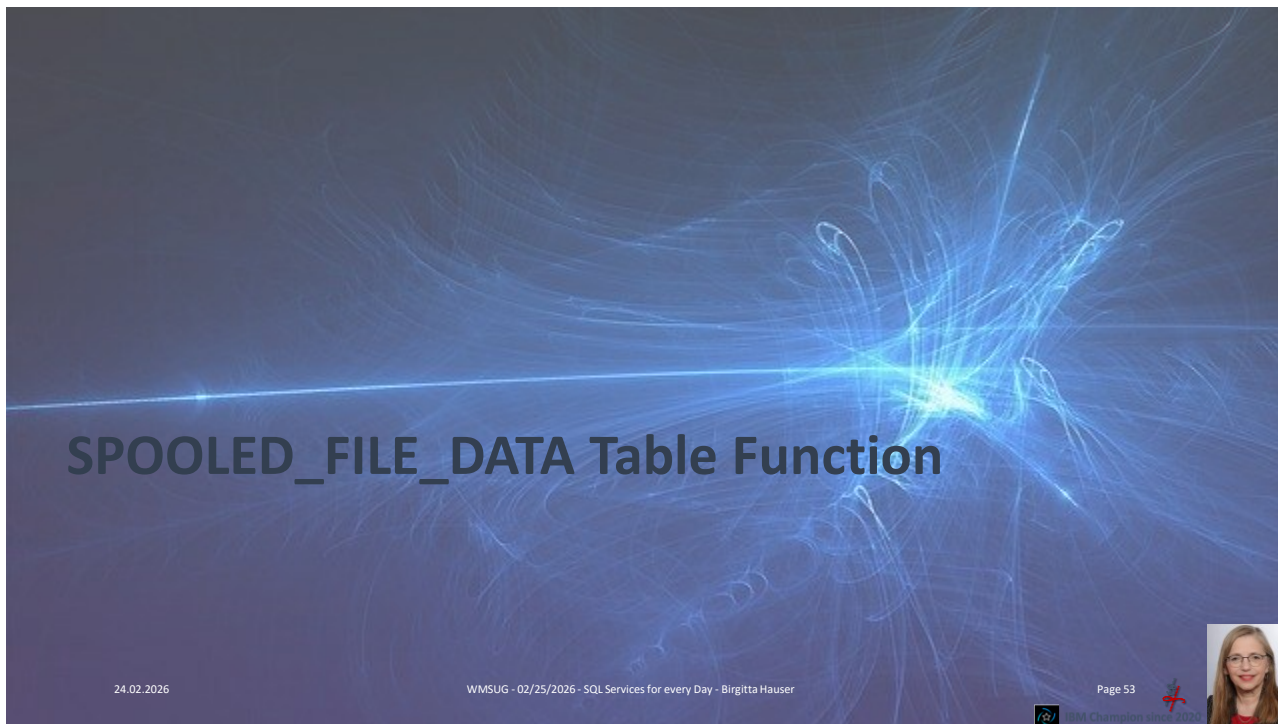
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# SPOOLED\_FILE\_DATA Table Function

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## SPOOLED\_FILE\_DATA – Table Function – Display the Content of a Spooled File

```
SPOOLED_FILE_DATA (JOB_NAME           => QualifiedJobName,
                   SPOOLED_FILE_NAME  => SpoolFileName,
                   SPOOLED_FILE_NUMBER => SpoolFileNo)
```

### Returns the Content of a Spooled File

- Uses the CPYSPLF (Copy Spooled File) CL Command
- If the Spooled File contains **Double Byte Data** the Job CCSID must be a **mixed CCSID**

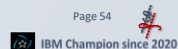
### Returns a Table consisting of the following columns:

- **ORDINAL\_POSITION** (Integer) Relative Position of the row in the spooled file
- **SPOOLED\_DATA** (VarChar(200)) Data for this row in the spooled file

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## SPOOLED\_FILE\_DATA – Table Function – Display the Content of a Spooled File

```
SPOOLED_FILE_DATA (JOB_NAME           => QualifiedJobName,
                    SPOOLED_FILE_NAME => SpoolFileName,
                    SPOOLED_FILE_NUMBER => SpoolFileNo)
```

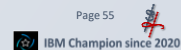
### Parameters:

- *Job\_Name*: In the format: **JOBNO/JOBUSER/JOBNAME**  
Special Value: **'\*'** = Current Job
- *Spooled\_File\_Name*: Spooled File Name: If omitted → **QPJOBLOG** is used
- *Spooled\_File\_Number*: Spooled File Number: If omitted → **Highest** Spooled File No for the Spoolfile Name

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## SPOOL\_FILE\_DATA Table Function - Example

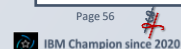
```
Select *
from Table(SysTools.Spooled_File_Data(Job_Name   => '787684/HAUSER/QPADEV0002',
                                       Spooled_File_Name => 'PRTRPGFR02',
                                       Spooled_File_Number => 46));
```

| ORDINAL POSITION | SPOOLED_DATA                         |                             |                 |             |              |
|------------------|--------------------------------------|-----------------------------|-----------------|-------------|--------------|
| 1                | 2.03.24 Kundenliste 19:22:46         |                             |                 |             |              |
| 2                | *****                                |                             |                 |             |              |
| 3                | BHAP300PM                            |                             |                 |             |              |
| 4                | *****                                |                             |                 |             |              |
| 5                | 1 1000200                            | Pagacx, Gutmann and Langosh | 168 Erie Way    | CN          | Ansheng      |
| 6                |                                      | Gigazoom                    |                 |             | 508-572-8877 |
| 7                |                                      | Product Management          |                 |             | 568-189-5586 |
| 8                | Jahr                                 | Umsatz                      | Kosten          | Gewinn      | Marge(%)     |
| 9                | 2017                                 | 118.095,72                  | 227.775,43      | 109.679,71- | 92,87- <---  |
| 10               | 2018                                 | 177.143,57                  | 22.777,50       | 154.366,07  | 87,14        |
| 11               | gesamt:                              | 295.239,29                  | 250.552,93      | 44.686,36   | 15,13        |
| 12               | *****                                |                             |                 |             |              |
| 13               | 787684/HAUSER/QPADEV0002 Seite: 0001 |                             |                 |             |              |
| 14               | 2.03.24 Kundenliste 19:22:46         |                             |                 |             |              |
| 15               | *****                                |                             |                 |             |              |
| 16               | BHAP300PM                            |                             |                 |             |              |
| 17               | *****                                |                             |                 |             |              |
| 18               | 1 1000500                            | Mosciski-Kohler             | 2116 Basil Pass | PL 98-270   | Zloczew      |
| 19               |                                      | Bubblemix                   |                 |             | 305-216-8332 |
| 20               |                                      | Product Management          |                 |             | 416-281-3613 |
| 21               | Jahr                                 | Umsatz                      | Kosten          | Gewinn      | Marge(%)     |
| 22               | 2017                                 | 92.107,86                   | 159.359,92      | 67.252,06-  | 73,01- <---  |
| 23               | 2018                                 | 138.161,77                  | 15.935,97       | 122.225,80  | 88,46        |
| 24               | gesamt:                              | 230.269,63                  | 175.295,89      | 54.973,74   | 23,87        |
| 25               | *****                                |                             |                 |             |              |
| 26               | 787684/HAUSER/QPADEV0002 Seite: 0002 |                             |                 |             |              |

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• More Rows

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# Create View for Reading a Spoolfile and Return the Data

```

Create or Replace View WMS000010.WMSp1fDta as
with a as (Select * from Table(SysTools.Spoiled_File_Data(Job_Name => GblJobQual,
                Spooled_File_Name => GblSp1f,
                Spooled_File_Number => GblSp1fNo))),
-- Heading
x1 as ( Select Ordinal_Position, Spooled_Data, Row_Number() Over(Order By Ordinal_Position) Lf0x1,
        Lead(Ordinal_Position, 1, 999999999) Over(Order By Ordinal_Position) MaxOrd
        from a
        where Left(Spoiled_Data, 5) = ' Jahr'),
-- Sales Information
x2 as (Select Ordinal_Position, Spooled_Data,
        Left(Spoiled_Data, 10) SalesYear,
        Try_Cast(Replace(Trim(Substr(Spoiled_Data, 11, 20)), '-', '')) as Dec(11, 2)) Sales,
        Try_Cast(Replace(Trim(Substr(Spoiled_Data, 37, 29)), '-', '')) as Dec(11, 2)) Costs,
        Case When Locate('-', Substr(Spoiled_Data, 66, 29)) > 0 Then -1 else 1 End *
        Try_Cast(Trim(Replace(Trim(Substr(Spoiled_Data, 66, 29)), '-', '')) as Dec(11, 2)) Diff,
        Case When Locate('-', Substr(Spoiled_Data, 96, 9)) > 0 Then -1 else 1 End *
        Try_Cast(Trim(Replace(Trim(Substr(Spoiled_Data, 96, 9)), '-', '')) as Dec(11, 2)) Percent
        from a
        where Left(Spoiled_Data, 105, 10) col6
        --, Substr(x2.Spoiled_Data, 105, 10) col6
        where Left(Spoiled_Data, 5) between ' 1990' and ' ' concat Digits(Dec(Year(Current_Date), 4), 0)),
-- Address Information
x3 as ( Select Row_Number() Over(Order By Ordinal_Position) Lf0x3,
        Try_Cast(Trim(Left(Spoiled_Data, 3)) as Dec(5, 0)) Company,
        Try_Cast(Trim(Substr(Spoiled_Data, 5, 7)) as Dec(5, 0)) Custno,
        Trim(Substr(Spoiled_Data, 11, 34)) Custname,
        Trim(Substr(Spoiled_Data, 46, 33)) Address,
        Trim(Substr(Spoiled_Data, 79, 2)) Country,
        Trim(Substr(Spoiled_Data, 81, 10)) Zipcode,
        Trim(Substr(Spoiled_Data, 91)) City
        from a
        where Left(Spoiled_Data, 3) between ' 1' and ' 9'
        and Substr(Spoiled_Data, 5, 7) between '000000' and '999999'
        and Locate('-', Left(Spoiled_Data, 105)) = 0),
-- Heading and Sales Information
x4 as ( Select distinct
        Case When x1.Ordinal_Position between x1.Ordinal_Position and x1.MaxOrd Then Lf0x1 End Lf0x4,
        x2.*
        from x1 cross join x2
        where Case When x1.Ordinal_Position between x1.Ordinal_Position and x1.MaxOrd Then Lf0x1 End is not Null)
Select x4.Ordinal_Position,
        Company, Custno, Custname, Address, Country, Zipcode, City,
        SalesYear, Sales, Costs, Diff, Percent
from x4 join x3 on Lf0x4 = Lf0x3
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```

• CTE a: Select Spoiled File Data with the SPOILED\_FILE\_DATA UDTF in composition with SQL Global Variables

• CTE x1: Column Heading

• CTE x2: Sales Information – Split into Columns

• CTE x3: Address Information – Split into Columns

• CTE x4: Merge X1 and X2 and build a new counter to get the data in the right sequence

• Final Select: Join x3 and x4 → Include Sales Data



# Run View for Reading a Spoolfile and Display the Data

```

Set GblJobQual = '797696/HAUSER/QPRTJOB',
    GblSp1f = 'PRTRPGFR02',
    GblSp1fNo = 1;
    
```

```

Select * from WMSp1fDta;
    
```

| ORDINAL POSITION | COMP ANY | CUSTNO  | CUSTNAME                      | ADDRESS                 | COUN TRY | ZIPCODE | CITY       | SALESYEAR | SALES     | COSTS     | DIFF       | PERCENT |
|------------------|----------|---------|-------------------------------|-------------------------|----------|---------|------------|-----------|-----------|-----------|------------|---------|
| 9                | 1        | 1000200 | Pagacx, Gutmann and Langosh   | 168 Erie Way            | CN       |         | Ansheng    | 2017      | 118095,72 | 227775,43 | -109679,71 | -92,87  |
| 10               | 1        | 1000200 | Pagacx, Gutmann and Langosh   | 168 Erie Way            | CN       |         | Ansheng    | 2018      | 177143,57 | 227777,50 | 154366,07  | 87,14   |
| 22               | 1        | 1000500 | Mosciski-Kohler               | 2116 Basil Pass         | PL       | 98-270  | Zloczew    | 2017      | 92107,86  | 159359,92 | -67252,06  | -73,01  |
| 23               | 1        | 1000500 | Mosciski-Kohler               | 2116 Basil Pass         | PL       | 98-270  | Zloczew    | 2018      | 138161,77 | 159359,97 | 122225,80  | 88,46   |
| 35               | 1        | 1001200 | Brakus-Armstrong              | 309 Fallview Road       | ID       |         | Bangbayang | 2017      | 259205,48 | 479163,34 | -219957,86 | -84,85  |
| 36               | 1        | 1001200 | Brakus-Armstrong              | 309 Fallview Road       | ID       |         | Bangbayang | 2018      | 388800,20 | 47916,30  | 340891,90  | 87,67   |
| 48               | 1        | 1001500 | Schinner, Walter and Franecki | 3935 Norway Maple Alley | SE       | 135 34  | Tyresö     | 2017      | 311759,33 | 639208,43 | -327449,10 | -105,03 |
| 49               | 1        | 1001500 | Schinner, Walter and Franecki | 3935 Norway Maple Alley | SE       | 135 34  | Tyresö     | 2018      | 467638,98 | 63920,82  | 403718,16  | 86,33   |

```

Select *
from Table(SysTools.Spoiled_File_Data(Job_Name => '787684/HAUSER/QPADEV0002',
                Spooled_File_Name => 'PRTRPGFR02',
                Spooled_File_Number => 46));
    
```

```

ORDINAL POSITION  SPOOLED_DATA
1 2.03.24          Kundenliste          10:22:46
2
3 *****
4 *****
5 1 1000200 Pagacx, Gutmann and Langosh 168 Erie Way CN Ansheng 588-572-8877
6 @ligacone 568-189-5586
7 Product Management
8 Jahr Umsatz Kosten Gewinn Marge(%)
9 2017 118.095,72 227.775,43 100.679,71 92,87 <---
10 2018 177.143,57 22.777,50 154.366,07 87,14
11 gesamt: 295.239,29 250.552,93 44.686,36 15,13
12 *****
    
```

• Excerpt from the Spooled File



# GENERATE\_SPREADSHEET Function

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## GENERATE\_SPREADSHEET – Scalar Function

|                      |                   |                           |
|----------------------|-------------------|---------------------------|
| Generate_Spreadsheet | (Path_Name        | => QualifiedIFSFileName   |
|                      | SpreadSheet_Query | => SelectStatement        |
|                      | Library_Name      | => TableLibrary           |
|                      | File_Name         | => TableName              |
|                      | SpreadSheet_Type  | => SpreadSheetType        |
|                      | Column_Headings   | => IncludeColumnHeadings) |

Generates a file within the IFS (Integrated File System) containing

- The result of an SQL **Select Statement** or
- The complete content of a **Database File**

Relies on the CLDownload Feature provided by ACS (IBM i Access Client Solutions)

LOBs (Large Objects – CLOB, BLOB, DBCLOB) are not supported

- **CAST** the Column(s) into a **non-LOB** Data type

Returns: **1** = Spreadsheet successfully written / **-1** = Error

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## GENERATE\_SPREADSHEET – Scalar Function

|                      |                   |                           |
|----------------------|-------------------|---------------------------|
| Generate_Spreadsheet | (Path_Name        | => QualifiedIFSFileName   |
|                      | SpreadSheet_Query | => SelectStatement        |
|                      | Library_Name      | => TableLibrary           |
|                      | File_Name         | => TableName              |
|                      | SpreadSheet_Type  | => SpreadSheetType        |
|                      | Column_Headings   | => IncludeColumnHeadings) |

### Parameters:

- *Path\_Name*: Qualified IFS File Name to be written → an existing IFS File is **overwritten**
- *Spreadsheet\_Query*: **SELECT** Statement to be executed and written to the Spreadsheet  
Maximum Length: **4000 Characters**
- *Library\_Name*: Schema where the File to be written to the Spreadsheet is located
- *File\_Name*: Name of the File → physical File, Table, View  
**Library\_Name** and **File\_Name** must be passed if a **complete file** should be downloaded

|                                    |  |
|------------------------------------|--|
| SpreadSheet_Query <b>specified</b> | → Library_Name and File_Name are <b>ignored</b>    |
| Spreadsheet_Query <b>omitted</b>   | → Library_Name and File_Name must be <b>passed</b> |

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## GENERATE\_SPREADSHEET – Scalar Function

|                      |                   |                           |
|----------------------|-------------------|---------------------------|
| Generate_Spreadsheet | (Path_Name        | => QualifiedIFSFileName   |
|                      | SpreadSheet_Query | => SelectStatement        |
|                      | Library_Name      | => TableLibrary           |
|                      | File_Name         | => TableName              |
|                      | SpreadSheet_Type  | => SpreadSheetType        |
|                      | Column_Headings   | => IncludeColumnHeadings) |

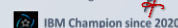
### Parameters:

- *Spreadsheet\_Type*: Spreadsheet Types  
Supported Types: **csv, ods, xls**  
→ must be specified in **lower case**
- *Column\_Headings*: Specifies whether a **heading row** is included or not  
**NONE** Without heading row (Default)  
**COLUMN** Column Names are used for heading  
**LABEL** Column Texts are used / without Column Text → Column Name

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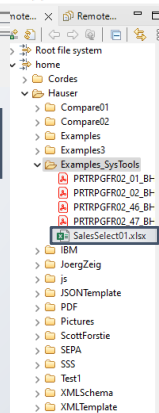
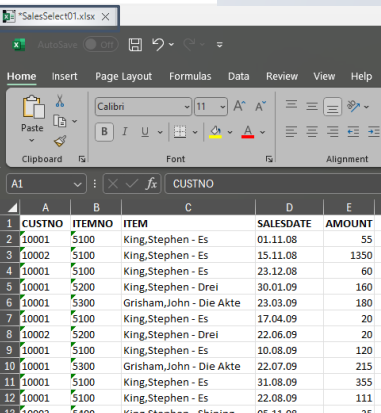
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## GENERATE\_SPREADSHEET – Example 1 Based on a SELECT Statement

```
Values(Systools.Generate_Spreadsheet(Path_Name => '/Home/Hauser/Examples_SysTools/SalesSelect01',
Spreadsheet_Query => 'Select * from COMSQLQRY.Sales',
Spreadsheet_Type => 'xlsx',
Column_Headings => 'COLUMN'));
```

00001  
1

- Generate an \*.xlsx (Excel) Spreadsheet based on a SELECT Statement passed as SPREADSHEET\_QUERY

|    | A      | B      | C                       | D         | E      |
|----|--------|--------|-------------------------|-----------|--------|
|    | CUSTNO | ITEMNO | ITEM                    | SALESDATE | AMOUNT |
| 2  | 10001  | \$100  | King,Stephen - Es       | 01.11.08  | 55     |
| 3  | 10002  | \$100  | King,Stephen - Es       | 15.11.08  | 1350   |
| 4  | 10001  | \$100  | King,Stephen - Es       | 23.12.08  | 60     |
| 5  | 10001  | \$200  | King,Stephen - Drei     | 30.01.09  | 160    |
| 6  | 10001  | \$300  | Grisham,John - Die Akte | 23.03.09  | 180    |
| 7  | 10001  | \$100  | King,Stephen - Es       | 17.04.09  | 20     |
| 8  | 10002  | \$200  | King,Stephen - Drei     | 22.06.09  | 20     |
| 9  | 10001  | \$100  | King,Stephen - Es       | 10.08.09  | 120    |
| 10 | 10001  | \$300  | Grisham,John - Die Akte | 22.07.09  | 215    |
| 11 | 10001  | \$100  | King,Stephen - Es       | 31.08.09  | 355    |
| 12 | 10001  | \$100  | King,Stephen - Es       | 22.08.09  | 111    |
| 13 | 10003  | \$400  | King,Stephen - Shining  | 05.11.08  | 35     |

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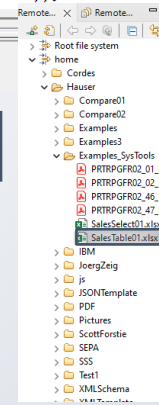
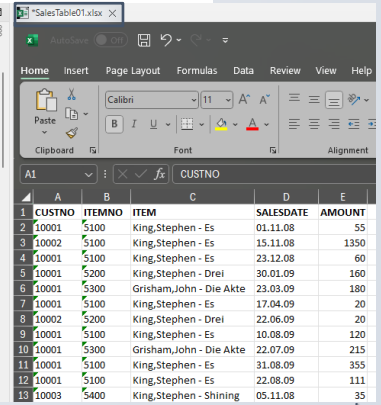
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## GENERATE\_SPREADSHEET – Example 2 Based on Table and Schema Names

```
Values(Systools.Generate_Spreadsheet(Path_Name => '/Home/Hauser/Examples_SysTools/SalesTable01',
Library_Name => 'COMSQLQRY',
File_Name => 'SALES',
Spreadsheet_Type => 'xlsx',
Column_Headings => 'COLUMN'));
```

00001  
1

- Generate a Spreadsheet for a complete Table based on the specified LIBRARY\_NAME and FILE\_NAME

|    | A      | B      | C                       | D         | E      |
|----|--------|--------|-------------------------|-----------|--------|
|    | CUSTNO | ITEMNO | ITEM                    | SALESDATE | AMOUNT |
| 2  | 10001  | \$100  | King,Stephen - Es       | 01.11.08  | 55     |
| 3  | 10002  | \$100  | King,Stephen - Es       | 15.11.08  | 1350   |
| 4  | 10001  | \$100  | King,Stephen - Es       | 23.12.08  | 60     |
| 5  | 10001  | \$200  | King,Stephen - Drei     | 30.01.09  | 160    |
| 6  | 10001  | \$300  | Grisham,John - Die Akte | 23.03.09  | 180    |
| 7  | 10001  | \$100  | King,Stephen - Es       | 17.04.09  | 20     |
| 8  | 10002  | \$200  | King,Stephen - Drei     | 22.06.09  | 20     |
| 9  | 10001  | \$100  | King,Stephen - Es       | 10.08.09  | 120    |
| 10 | 10001  | \$300  | Grisham,John - Die Akte | 22.07.09  | 215    |
| 11 | 10001  | \$100  | King,Stephen - Es       | 31.08.09  | 355    |
| 12 | 10001  | \$100  | King,Stephen - Es       | 22.08.09  | 111    |
| 13 | 10003  | \$400  | King,Stephen - Shining  | 05.11.08  | 35     |

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# SEND\_EMAIL Function

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## SEND\_EMAIL – Scalar Function

Enhanced  
RELEASE 7.5 TR 5

|            |            |                                    |
|------------|------------|------------------------------------|
| Send_eMail | (To_eMail  | => ReceiverEmailAddresses,         |
|            | Subject    | => eMailSubject,                   |
|            | Body       | => eMailText,                      |
|            | Attachment | => Attachment                      |
|            | CC_eMail   | => CopyEmailAddresses              |
|            | BCC_eMail  | => BlindCopyEmailAddresses         |
|            | Body_Type  | => BodyType - *PLAIN, *HTML, *XML) |

### Sends an eMail to one or more Recipients

Enhanced  
RELEASE 7.5 TR 5

- Using the **SNDSMTPEMM** (Send SMTP E-mail Message) CL Command

### Pre-Requisites

- User Profile must have been added to the System Distribution Directory  
`ADDIRE USRID(MYUSER MYSYS) USRD('MyUser_eMail') USER(MYUSER)`
- User must have been registered to the SMTP Server  
`ADDUSRSMTP USRPRF(MYUSER)`
- SMTP Server must have been started  
`STRTCPSVR SERVER(*SMTP)`

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## SEND\_EMAIL – Scalar Function

Enhanced  
RELEASE 7.5 TR 5

|            |            |                                    |
|------------|------------|------------------------------------|
| Send_eMail | (To_eMail  | => ReceiverEmailAddresses,         |
|            | Subject    | => eMailSubject,                   |
|            | Body       | => eMailText,                      |
|            | Attachment | => Attachment                      |
|            | CC_eMail   | => CopyEMailAddresses              |
|            | BCC_eMail  | => BlindCopyEMailAddresses         |
|            | Body_Type  | => BodyType - *PLAIN, *HTML, *XML) |

### Parameters:

- *To\_eMail*: eMail Addresses of the Receiver(s) separated by a comma
- *Subject*: Subject of the eMail Max. 255 Characters
- *Body*: Text of the eMail Max. 5000 Characters
- *Attachment*: IFS Path where the attachment is located Max.1000 Chars (Optional)

**Returns: 1 = eMail sent successfully / -1 = Error**

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## SEND\_EMAIL – Scalar Function

Enhanced  
RELEASE 7.5 TR 5

|            |            |                                    |
|------------|------------|------------------------------------|
| Send_eMail | (To_eMail  | => ReceiverEmailAddresses,         |
|            | Subject    | => eMailSubject,                   |
|            | Body       | => eMailText,                      |
|            | Attachment | => Attachment                      |
|            | CC_eMail   | => CopyEMailAddresses              |
|            | BCC_eMail  | => BlindCopyEMailAddresses         |
|            | Body_Type  | => BodyType - *PLAIN, *HTML, *XML) |

### New Parameters in Release 7.5 TR 5:

- *CC\_eMail*: one or more eMail Addresses to send a copy of the eMail
- *BCC\_eMail*: one or more eMail Addresses to send a blind copy of the eMail

**Note: Total number of eMail addresses in To\_eMail, CC\_eMail and BCC\_eMail must not exceed 20**

- *Body\_Type*: Content Type for the body  
Special Values: \*PLAIN (Default), \*HTML, \*XML

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## Send\_eMail - Example


```
Values(Systools.Send_Email(To_Email => 'Hauser@ModEdCon.Com',
    Subject => 'Sales Report',
    Body => 'Attached you will find the monthly sales report',
    Attachment => '/Home/Hauser/Examples_SysTools/MONSUMX03.xlsx'));
```

00001

1

Sales Report

 HAUSER@BHADEV.RZKH.DE  
To hauser@modedcon.com

 MONSUMX03.xlsx  
5 KB

Dear Customer,  
Attached you will find the monthly sales report

- Send eMail with attachment
- As an aside the attachment was previously generated with the GENERATE\_SPREADSHEET Function

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# Any Questions?

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## References

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### Database performance and query optimization

<https://www.ibm.com/docs/en/i/7.6?topic=database-performance-query-optimization>

- Db2® for i Services  
<https://www.ibm.com/docs/en/i/7.6?topic=optimization-db2-i-services>
- IBM i Services  
<https://www.ibm.com/docs/en/i/7.6?topic=optimization-i-services>

### SQL Reference

[https://www.ibm.com/support/knowledgecenter/ssw\\_ibm\\_i\\_76/db2/rbafzintro.htm](https://www.ibm.com/support/knowledgecenter/ssw_ibm_i_76/db2/rbafzintro.htm)

### PDF Files for Database

[https://www.ibm.com/support/knowledgecenter/ssw\\_ibm\\_i\\_76/rzafd/rzafdprintable.htm](https://www.ibm.com/support/knowledgecenter/ssw_ibm_i_76/rzafd/rzafdprintable.htm)

### Database Information Finder

[https://www.ibm.com/support/knowledgecenter/ssw\\_ibm\\_i\\_76/rzafd/rzafdfinder.htm](https://www.ibm.com/support/knowledgecenter/ssw_ibm_i_76/rzafd/rzafdfinder.htm)

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## Special Thanks to

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### Holger Scherer – RZKH Rechenzentrum Kreuznach

- For providing an IBM i-System enabling the creation of the samples/code used in my presentations
- <http://www.rzkh.de>



■ Your data is save! ... in the bunker

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## Speaker's Biography

**Birgitta Hauser**  
**Diplom-Betriebswirt (BA)**  
**Database and Software Architect**

**Birgitta Hauser** worked on the IBM i and its predecessors since 1992. She graduated with a business economics diploma, and started programming on the AS/400 in 1992. She worked and works as traditional RPG Programmer but also as Database and Software Architect, focusing on IBM i application and database modernization.

Currently she is an independent consultant and works in Application Modernization, Education and Consulting on IBM i and especially Database Modernization on Db2 for i. She also provides individual programming on IBM I as well as education classes and workshops on IBM i and Db2 for i to her customers.

Additionally, she also works in education as a trainer for RPG and SQL developers.

Since 2002 she has frequently spoken at the COMMON User Groups and other IBM i and Power Conferences in Germany, other European Countries, USA and Canada.

In addition, she is co-author of two IBM Redbooks and also the author of several articles and papers focusing on RPG and SQL for the ITP Verlag (a German publisher), IT Jungle Guru and IBM DeveloperWorks.

In 2015 she received the John Earl Speaker Scholarship Award. In 2018 she received the Al Barsa Memorial Scholarship Award.



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**Thank you!**  
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**Now i'll use them!**

If you are interested in more detailed individual Workshops on-site or remote,  
 Please contact me directly

**Birgitta Hauser – Modernization – Education – Consulting on IBM i**

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