

SQL SERVER Reporting Services Interview questions and answers - I

<http://msbiskills.com/>

I have been collecting interview questions from the people who have given interviews at various organizations. Here I came with a list of questions which are common asked in interviews. Please go through these questions before attending any technical Interview. Below is the list of questions & short answers on SQL Server Reporting Services.

Q. How to join two datasets and use in a single report?

A. We can use LookUp. It was introduced in SSRS 2008. This function is used to retrieve the value from multiple datasets based on 1 to 1 mapping.

For example if we have two datasets and both the datasets have CustomerID so based on the CustomerID mapping, we can retrieve the data from both the datasets , means should have 1:1 relationship between datasets.

Syntax: LOOKUP (Key value from already mapped dataset, Key value from new dataset, new value from new dataset)

Q. How to do paging in SSRS?

Pagination refers to the number of pages within a report and how report items are arranged on these pages. Pagination in Reporting Services varies depending on the rendering extension you use to view and deliver the report. When you run a report on the report server, the report uses the HTML renderer. HTML follows a specific set of pagination rules. If you export the same report to PDF, for example, the PDF renderer is used and a different set of rules are applied; therefore, the report paginates differently.

Example- If you want to display 10 records in each page, we can achieve it follow the steps below.

1. Click the Details group in the Row Groups pane.
2. From the Tablix member Properties pane, expand "Group" -> "PageBreak".
3. Set the "BreakLocation" to "End" and set the "Disable" property to the expression like below:
= IIF(rownumber(nothing) mod 10=0,false,true)

OR

=CEILING(RowNumber(Nothing)/10)

Q. How to deal with multi valued parameters?

Join function in SSRS and split function in T-SQL. For splitting the string always use SQLCLR function rather than a normal SQL function.

Q. I want one page should be displayed in landscape and other pages in different formats in a report. Can you design a SSRS report for this requirement?

No, mixed page orientation is not supported. There are workaround is to break the report into multiple reports and combine them into a single PDF.

Q. What is the difference between Table and Matrix?

In SQL 2005 Table and Matrix were both available as data region options and they were two distinct objects with different properties.

In SQL 2008 onward, Table and Matrix were replaced by a new object of "Tablix", which combined the properties of both the older objects. However the design interface still shows Table and Matrix on the available tools, these are both Tablix under the hood but with different default configurations (the "Matrix" shows column groups but the "Table" does not).

Q. What is a shared dataset?

A shared dataset is published on a report server and can be used by multiple reports. A shared dataset must be based on a shared data source. A shared dataset can be cached and scheduled by creating a cache refresh plan.

Q. Can we use shared dataset with the sub report?

Its depends

No, there is no way to Preview the subreport with shared datasource/dataset in BIDS.

Yes, As soon as we deploy this to Reporting Service server it starts working fine.

Q. What is drill across through report?

Drill across means you are drilling across the reports to get the data. This means when you are jumping or navigating from one report to other, then you are drilling across the reports. This you will get from the property navigation and by this you can show the data from other reports.

Q. How to keep header in all pages – SSRS?

<https://msdn.microsoft.com/en-us/dd207045.aspx>

Select the Tablix.

In the grouping pane, click on the small triangle and select "Advanced Mode" to show static members.

In the row group hierarchy, select the corresponding (static) item of the header row.

In the Properties grid:

Set RepeatOnNewPage to True

Q. What is a sub report?

A subreport is a report item that displays another report inside the body of a main report. Conceptually, a subreport in a report is similar to a frame in a Web page. It is used to embed a report within a report. Any report can be used as a subreport. The report that is displayed as the subreport is stored on a report server, usually in the same folder as the parent report. You can design the parent report to pass parameters to the subreport. A subreport can be repeated within data regions, using a parameter to filter data in each instance of the subreport.

Q. What is the difference between a drill through report and subreport?

Drillthrough reports: Drillthrough reports are standard reports that are accessed through a hyperlink on a report item in the original report. Drillthrough reports work with a main report and are the target of a Drillthrough action for a report item such as placeholder text or a chart. The main report displays summary information, for example in a matrix or chart. Actions defined in the matrix or chart provides drill through links to reports that display greater details based on the aggregate in the main report. Drillthrough reports can be filtered by parameters.

Subreports: A subreport is a report item that displays another report inside the body of a main report. Conceptually, a subreport in a report is similar to a frame in a Web page. It is used to embed a report within a report. Any report can be used as a subreport. The report that is displayed as the subreport is stored on a report server, usually in the same folder as the parent report. You can design the parent report to pass parameters to the subreport. A subreport can be repeated within data regions, using a parameter to filter data in each instance of the subreport.

Q. How to remove PDF from the export options in SSRS report?

You can hide PDF button globally in a specific config file here:

```
"InstallPath\Reporting Services\ReportServer\rsreportserver.config"
```

Q. What are the user roles available in SSRS?

Two main roles, **System Administrator** and **System User** are predefined.

Assignment to these roles is made by clicking on Site Setting in the upper right corner of the report server site; next click on the Security link from the left menu. Local and active directory groups and users can be assigned to either of these roles; however SQL Server logins cannot.

Generally the System Administrator role is reserved for those who need to have full control over the Report Server whereas the System User role is applied to users / groups who are power users of the Report Server.

Moving beyond the system level roles, permissions must also be applied at the folder and report level on the Report Server. Similar to the System Assignments, a local or active directory user or group can be assigned to one or more roles. SSRS includes 5 predefined roles that should suffice in most circumstances. These roles include:

- Browser-allows users to run reports and browse folders; this role will be used by most end users
- Content Manager-allows users to manage and define folders and reports and to grant permissions
- Report Builder-allows users to create Report Builder reports
- Publisher-allows users to deploy / upload reports and create folders
- My Reports-allows users to create and maintain personal MyReports folders

More details can be found at: <http://msdn.microsoft.com/en-us/library/ms157363.aspx>.

Q. What are the data regions in SSRS?

A data region is an object in a report that displays data from a report dataset. Report data can be displayed as numbers and text in a table, matrix, or list; graphically in a chart or gauge; and against a geographic background in a map. Tables, matrices, and lists are all based on the *tablix* data region, which expands as needed to display all the data from the dataset. A tablix data region supports multiple row and column groups and both static and dynamic rows and columns. A chart displays multiple series and category

groups in a variety of chart formats. A gauge displays a single value or an aggregated value for a dataset. A map displays spatial data as map elements that can vary in appearance based on aggregated data from a dataset.

Q. How to design a report to show the alternative rows in a different colour?

Go to the table row's BackgroundColor property and choose "Expression..."

Use this expression:

```
= IIf(RowNumber(Nothing) Mod 2 = 0, "Green", "Red")
```

Q. Write a code to customize the SSRS report. Where the code has to be written?

Create a dataset using **AdventureWorks** as datasource the following query:

```
SELECT top 1 Name, StandardCost, ListPrice, ListPrice - StandardCost AS ProductProfit
FROM Production.Product
WHERE (StandardCost >= 1000)
```

Select **Report**-> Report Properties from the menu.

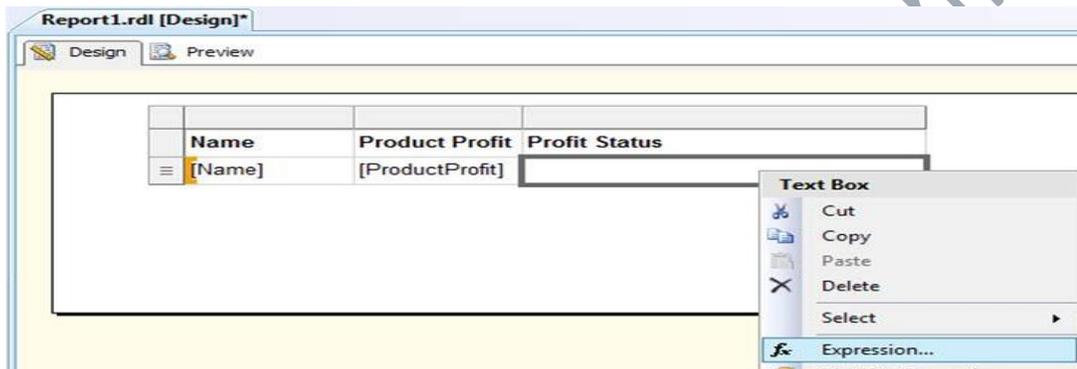
Select **Code** tab from the report property window

Example Function :

```
Public Shared Function Test(ByVal profit As Decimal) As String
    Dim st As String
    If profit >= 1000 Then
        st = "High Profit"
```

```
Elseif profit >= 500 Then
    st = "Moderate Profit"
Else
    st = "Average Profit"
End If
Return st
End Function
```

Right-click on the textbox and go to expressions.



To call the function written in the custom code window you will have to enter **Code.FunctionName** . In the expression in our example it would be something like this:

```
=Code.Test(Fields!ProductProfit.Value)
```

The final Output should be something like this.

Name	Product Profit	Profit Status
HL Road Frame - Black, 58	372.1900	Average Profit
HL Road Frame - Red, 58	372.1900	Average Profit
Road-150 Red, 62	1406.9758	High Profit

Q. How to troubleshoot SSRS report using ExecutionLog2?

Analyzing report execution log data in particular can help answer questions such as, which reports might be good candidates for caching, how many reports were returned from cache vs. live execution vs. execution snapshot, what was the most popular report for the week, and what are the poor performing reports.

USE ReportServer

Select * from ExecutionLog2 order by TimeStart DESC

1. Long running reports
2. Live Data or Snapshots
3. Discover report patterns
4. Most popular reports
5. Users utilizing the report server the most, and their favorite reports
6. High resource utilization
7. Number of bytes/rows returned
8. Large report outputs
9. Report Health

- **Long running reports**

Which reports have the highest (TimeEnd - TimeStart) values?

If the TimeDataRetrieval is high, the data source could be a bottleneck, or the queries retrieve lots of data. If there is a high RowCount, lots of data is being retrieved - you might want to review the dataset queries. If high volumes of data are grouped, sorted, and aggregated, high EstimatedMemoryUsageKB values for Processing are very likely.

- **Live Data or Snapshots**

Sorting by the Source field reveals the types of load on the server. If reports don't need to always run with the latest up-to-the-millisecond data (e.g. parameterized reports that report from constant past data, or reports that run from data sources that are only refreshed with delays anyway), consider creating [history snapshots](#), configuring [execution snapshots](#), and/or setup [caching](#). Thereby repeated query executions for the same data are avoided, including certain aspects of report processing.

- **Discover report patterns**

Sorting by ReportPath and TimeStart may reveal interesting report execution patterns – for example, an expensive report that takes 5 minutes to run is executed every 10 minutes.

- **Most popular reports**

Grouping by ReportPath and counting report executions shows the most popular reports. Analyze the results by *Source* type, and focus on live executions first. Review and optimize the ones with the highest resource utilization (RowCount, TimeDataRetrieval, TimeProcessing, TimeRendering, EstimatedMemoryUsageKB, ScalabilityTime).

- **Users utilizing the report server the most, and their favorite reports**

Group the data by user and look for total report executions, live executions, reports with high resource utilization.

- **High resource utilization**

Review reports with the highest resource utilization, particularly those with EstimatedMemoryUsageKB > 50000, ScalabilityTime > 10000. Frequent high values for ScalabilityTime might also point to general high load on the report server,

which causes memory pressure for large requests. You might want to review the memory configuration of the report server as well.

- **Number of bytes/rows returned**

Are there reports that return 100,000 and more rows (RowCount), but are only ever viewed interactively (*Format* = RPL, HTML4.0), and never exported to other formats? If yes, do these reports aggregate data, or just provide a list of several thousand pages of detail data and users only look at the first few pages?

- **Large report outputs**

Are there reports with very large outputs (ByteCount)? You might want to investigate e.g. reports with >100 MB PDF output.

- **Report Health**

Sort by Status and look for report executions with Status != rsSuccess, which might indicate missing subreports, expired stored data source credentials, subscription delivery errors, invalid report definitions, etc.

Q. How to upgrade SSRS reports?

Report definition (.rdl) files are automatically upgraded in the following ways:

- When you open a report in Report Designer in SQL Server Data Tools (SSDT), the report definition is upgraded to the currently supported RDL schema. When you specify a SQL Server 2008 or SQL Server 2008 R2 report server in the project properties, the report definition is saved in a schema that is compatible with the target server.
- When you upgrade a Reporting Services installation to a SQL Server 2014 Reporting Services (SSRS) installation, existing reports and snapshots that have been published to a report server are compiled and automatically upgraded to the new schema the first time they are processed. If a report cannot be automatically upgraded, the report is processed using the backward-compatibility mode. The report definition remains in the original schema.

Tool - Reporting Service Migration tool (<https://www.microsoft.com/en-us/download/details.aspx?id=29560>)

Q. How to manually allocate memory to SSRS service?

Although Reporting Services can use all available memory, you can override default behavior by configuring an upper limit on the total amount of memory resources that are allocated to Reporting Services server applications. You can also set thresholds that cause the report server to change how it prioritizes and processes requests depending on whether it is under low, medium, or heavy memory pressure. At low levels of memory pressure, the report server responds by giving a slightly higher priority to interactive or on-demand report processing. At high levels of memory pressure, the report server uses multiple techniques to remain operational using the limited resources available to it.

The location of the rsconf file is generally:

```
\Program Files\Microsoft SQL Server\MSRS1111.MSSQLSERVER\Reporting  
Services\ReportServer
```

The following example shows the configuration settings for a report server computer that uses custom memory configuration values. If you want to add **WorkingSetMaximum** or **WorkingSetMinimum**, you must type the elements and values in the RSReportServer.config file.

Both values are integers that express kilobytes of RAM you are allocating to the server applications. The following example specifies that total memory allocation for the report server applications cannot exceed 4 gigabytes. If the default value for **WorkingSetMinimum** (60% of **WorkingSetMaximum**) is acceptable, you can omit it and specify just **WorkingSetMaximum** in the RSReportServer.config file. This example includes **WorkingSetMinimum** to show how it would appear if you wanted to add it:

```
<MemorySafetyMargin>80</MemorySafetyMargin>  
<MemoryThreshold>90</MemoryThreshold>  
<WorkingSetMaximum>4000000</WorkingSetMaximum>  
<WorkingSetMinimum>2400000</WorkingSetMinimum>
```

Q. How to view report server logs and call stacks in SSRS?

You need to look in the "Report Server Execution Log" which is a particular SQL Reporting Services log file.

USE ReportServer

Select * from ExecutionLog

Q. Can you explain how to disable parallel processing or how to serialize dataset execution?

There are different ways of serializing dataset executions.

Serializing dataset executions for a particular data source:

Open the data source dialog in report designer, and select the "**Use Single Transaction**" checkbox. Once selected, datasets that use the same data source are no longer executed in parallel. They are also executed as a transaction, i.e. if any of the queries fails to execute, the entire transaction is rolled back.

The order of the dataset execution sequence is determined by the top-down order of the dataset appearance in the RDL file, which also corresponds to the order shown in report designer.

Serializing dataset executions when using multiple data source:

Note that datasets using *different* data sources will still be executed in parallel; only datasets of the same data source are serialized when using the single transaction setting. If you need to chain dataset executions across different data sources, there are still other options to consider.

For example, if the source databases of your data sources all reside on the same SQL Server instance, you could use just one data source to connect (with single transaction turned on) and then use the three-part name (*catalog.schema.object_name*) to execute queries or invoke stored procedures in different databases.

Another option to consider is the [linked server](#) feature of SQL Server, and then use the four-part name (*linked_server_name.catalog.schema.object_name*) to execute

queries. However, make sure to carefully read the documentation on linked servers to understand its performance and connection credential implications.

Q. You have any idea about IIF, SWITCH and LOOKUP functions in SSRS?

IIF() - Returns one of two objects, depending on the evaluation of an expression.

Switch() - *Evaluates a list of expressions and returns an Object value corresponding to the first expression in the list that is True.*

LOOKUP() - Use **Lookup** to retrieve the value from the specified dataset for a name/value pair where there is a 1-to-1 relationship. For example, for an ID field in a table, you can use **Lookup** to retrieve the corresponding Namefield from a dataset that is not bound to the data region.

Q. What formats can SSRS export or render to?

CSV,Excel,Word,Web archive,Acrobat (PDF) file,TIFF file,XML,Atom

Q. What servers can be used with SSRS?

While most companies use SQL Server with SSRS, you can also integrate other database servers with your SSRS reports. SSRS is compatible with Oracle, ODBC and OLEDB connections, Hyperion, Teradata and flat XML files that contain data.

Q. Can we create a chart report using Report Wizard?

No, Only table or matrix kind of report

Q. Can you edit the .rdl code associated with a linked report?

No, because a linked report has no .rdl code of its own. It refers to the .rdl code of the base report. (Shortcut to the report). Normal reports can be edited using rdl code.

Q. What is reporting lifecycle and behind the scene with Reporting Services?

Creating, Managing, and Delivering Reports.

User request the steps that happen are behind the scene:

- Client makes a request to the report server
- Report server then makes a request to the report catalog
- Report catalog sends back to report server report definition and tells the report server which data sources to hit.
- Report server request data from source database
- Source database sends data and the report server renders report metadata and data for the client

Q. What is the difference between ReportServer and ReportServerTempDB?

ReportServer

The **report server** database is a SQL Server database that stores the following content:

- Items managed by a report server (reports and linked reports, shared data sources, report models, folders, resources) and all of the properties and security settings that are associated with those items.
- Subscription and schedule definitions.
- Report snapshots (which include query results) and report history.
- System properties and system-level security settings.
- Report execution log data.
- Symmetric keys and encrypted connection and credentials for report data sources.

ReportServerTempDB

- Each report server database uses a related temporary database to store session and execution data, cached reports, and work tables that are generated by the report server. Background server processes will periodically remove older and unused items from the tables in the temporary database.
- Reporting Services does not re-create the temporary database if it is missing, nor does it repair missing or modified tables. Although the temporary database does not contain persistent data, you should back up a copy of the database anyway so that you can avoid having to re-create it as part of a failure recovery operation.
- If you back up the temporary database and subsequently restore it, you should delete the contents. Generally, it is safe to delete the contents of the temporary database at any time. However, you must restart the Report Server Windows service after you delete the contents.

Q. What is toggling in SSRS?

Add a visibility toggle when you want to enable a user to interactively show or hide report items or, for a table or matrix, rows and columns associated with a group. To toggle the visibility for an item, you set the visibility properties for the item that you want to show or hide. You must specify the name of the text box in the report where you want to display the toggle image. In the rendered report, the text box displays a plus (+) or minus (-) in addition to its contents. When the user clicks the toggle, the report display is refreshed to show the current visibility settings for items in the report.

Typically, visibility toggles are used to initially display summary data and to provide the user with the option of seeing more details. For example, you can initially hide a table that displays values for a chart, or hide child groups for a table with nested row or column groups, as in a drilldown report.

Q. I have a report server A with more than 600 reports; now the report Server A is down and we would like to move all the reports, their subscriptions and alerts on server B in a minimum down time. What would be your approach?

I think you take back up from report server and report server temp DB from Server A and restore on server B. Need to check this 😊