

Scan&Solve™ Cheat Sheet for Modifying Report Format

Scan&Solve uses template files to construct the web-ready reports when the [Report...] button is clicked in the View tab. These template files, located in the installation directory, are read by Scan&Solve and the output files are generated based on the contents of the templates. The templates use a simple format that may be easily modified to suit a particular end user application. The only tool required is Microsoft's Notepad or a similar text editor.

Template File Format

One of two different templates is used depending on the current view setting. Advanced view uses **AdvancedReportTemplate.html**, the simplified view uses **SimplifiedReportTemplate.html**. The content of these files looks something like the following (color and **Descriptions** added):

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
  <meta http-equiv="Content-Type" content="text/html; charset=utf-8">
  <title>Scan&Solve(tm) Results</title>
  <meta name="description" content="Scan&Solve(tm) Results">
  <link href="ReportStyle.css" rel="stylesheet" type="text/css" />
</head>
<body>
<div id="wrap">
<div id="header"><h1>Scan&Solve&#8482; Simulation Summary</h1></div>
##DATETIME DATE TIME
<h2>Geometry</h2>
##SCREENSHOT
<h3>Geometry Summary</h3>
##PROPERTYTABLE GEOMETRY
<h2>Material Properties</h2>
##PROPERTYTABLE MATERIAL
<h2>Loads & Restraints</h2>
##SCREENSHOT BCS
<h2>Simulation Summary</h2>
<h3>Settings</h3>
##PROPERTYTABLE ANALYSISSETTINGS
<h3>Units</h3>
##PROPERTYTABLE UNITS
<h2>Simulation Results</h2>
<h3>Displacements</h3>
##SCREENSHOT SOLUTION DSPT
<h4>Displacement Summary</h4>
##PROPERTYTABLE EXTREMA DSPT
<h3>Danger Level</h3>
##SCREENSHOT SOLUTION DGRL
<h4>Danger Level Summary</h4>
##PROPERTYTABLE EXTREMA DGRL
<h3>Results Extrema</h3>
##EXTREMATABLE DSPX DSPY DSPZ DSPT VONM SIG1 SIG2 SIG3 DGRL
<h2>CAUTION</h2>
<p>Design decisions require experimental data and substantial experience;
they should never be made based solely on a software simulation.
Simulation is not intended to replace physical testing of prototypes,
which is required to validate any design.</p>
</div>
</body>
</html>
```

Header

Report Section

Footer

The **Report Section**, where modifications may be made, contains a mixture of HTML code and Scan&Solve keywords.

The standard HTML code is demarcated by `<format_code>text</format_code>`, where the `format_code` controls how the text between the demarcations will be formatted in the output report. HTML code is ignored by Scan&Solve and passed to the output unchanged. Thus, the HTML formatting and content can be changed to suit a particular application, including additional text or images. More information on HTML formatting may be found on the web.

The Scan&Solve output is generated by the lines containing a `##KEYWORD` followed, in most cases, by a series of parameters. The keywords, their parameters, and their results in the output are as follows:

Keyword	Parameters
##SCREENSHOT	<ul style="list-style-type: none"> • With no trailing parameters includes in the report an image from the active Rhino viewport. • BCS includes an image of the geometry plus the applied boundary conditions. • SOLUTION includes an image of analysis results as specified by one of the following component tags: <ul style="list-style-type: none"> • DSPX –x component of the computed displacement field • DSPY –y component • DSPZ –z component • DSPT –total displacement • VONM –von Mises stress • SIG1 –maximum principal stress • SIG2 –middle principal stress • SIG3 –minimum principal stress • DGRL –material’s default danger level
##PROPERTYTABLE	<ul style="list-style-type: none"> • GEOMETRY includes a table of basic information about the geometry. • MATERIAL includes a table of the properties of the material currently in use. • LOADS includes a summary table of the applied loads. • RESTRAINTS includes a summary table of the applied restraints. • ANALYSISSETTINGS includes a table of the current analysis settings. • EXTREMA includes the maximum and minimum values of the analysis results as specified by one of the following component tags: <ul style="list-style-type: none"> • DSPX –x component of the computed displacement field • DSPY –y component • DSPZ –z component • DSPT –total displacement • VONM –von Mises stress • SIG1 –maximum principal stress • SIG2 –middle principal stress • SIG3 –minimum principal stress • DGRL –material’s default danger level

Keyword	Parameters
##EXTREMATABLE	<ul style="list-style-type: none"> • Includes the maximum and minimum values of the analysis results as specified by one or more of the following component tags: <ul style="list-style-type: none"> • DSPX –x component of the computed displacement field • DSPY –y component • DSPZ –z component • DSPT –total displacement • VONM –von Mises stress • SIG1 –maximum principal stress • SIG2 –middle principal stress • SIG3 –minimum principal stress • DGRL –material’s default danger level
##DATETIME	<ul style="list-style-type: none"> • DATE includes the current date in the report, may be followed by TIME • TIME includes the current time in the report, may be followed by DATE

Editing the Templates

Before editing a report template, make a backup copy in case of errors or problems. Edit the desired template as follows:

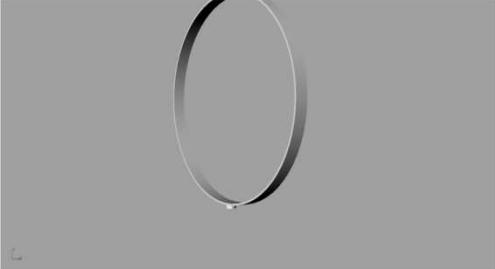
1. Start Notepad and choose File→Open...
2. In the File Open dialog, browse to the installation directory and locate the file entitled **AdvancedReportTemplate.html** or **SimplifiedReportTemplate.html**, as desired. On Windows XP, the default location will be C:\Program Files\Scan&Solve\ AdvancedReportTemplate.html or C:\Program Files\Scan&Solve\ SimplifiedReportTemplate.html.
3. Open the file.
4. Decide the type of information and its desired location in the report:
 - a. To add an image showing the **geometry alone**, add the following to the template file:
##SCREENSHOT
 - b. To add an image of the **boundary conditions**, add the following to the template file:
##SCREENSHOT BCS
 - c. To add an image showing a **component of the solution** displayed on the geometry, refer to the table of keywords above for valid entries for *component_tag* and add the following line to the template file: ##SCREENSHOT SOLUTION *component_tag*
 - d. To add a table of **geometric properties**, add the following line to the template file:
##PROPERTYTABLE GEOMETRY
 - e. To add a table of **material properties**, add the following line to the template file:
##PROPERTYTABLE MATERIAL
 - f. To add a table of **applied loads**, add the following line to the template file:
##PROPERTYTABLE LOADS
 - g. To add a table of **restraints**, add the following line to the template file:
##PROPERTYTABLE RESTRAINTS
 - h. To add a table of **analysis settings**, add the following line to the template file:
##PROPERTYTABLE ANALYSISSETTINGS

- i. To add a table showing the **extrema of a solution component**, refer to the table of keywords above for valid entries for *component_tag* and add the following line to the template file: `##PROPERTYTABLE EXTREMA component_tag`
 - j. To add a table summarizing solution extrema, refer to the table of keywords above for valid entries for *component_tag* and add the following line to the template file:
`##PROPERTYTABLE EXTREMA component_tag1 component_tag2 ...
component_tag3`
5. Headings and descriptions may be intermixed with the Scan&Solve codes to add comments and headings as desired in the final report.
6. When finished, save the template file in the installation directory.

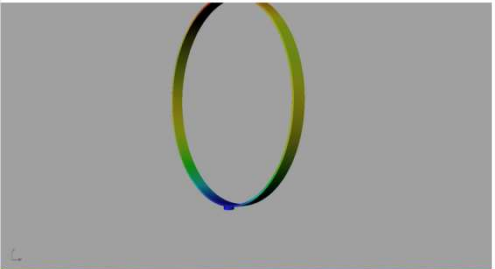
Examples

These two examples depict the output arising from sequences of template code. Refer to the previous section for more details on the specific keywords and their parameters.

Detail 1:

Template Code	Output														
<pre> <div id="header"><h1>Scan&amp;Solve&#8482; Simulation Summary</h1></div> <h2>Geometry</h2> ##SCREENSHOT <h3>Geometry Summary</h3> ##PROPERTYTABLE GEOMETRY </pre>	<p>Scan&Solve™ Simulation Summary</p> <p>Geometry</p>  <p>Geometry Summary</p> <table border="1"> <thead> <tr> <th>Quantity</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>Volume</td> <td>1900.88 in³</td> </tr> <tr> <td>Surface Area</td> <td>4382.07 in²</td> </tr> <tr> <td>Mass</td> <td>1.47632 slinch</td> </tr> <tr> <th colspan="2">Bounding Box</th> </tr> <tr> <td>min. corner</td> <td>{-50,-3,0}</td> </tr> <tr> <td>max. corner</td> <td>{50,3,101.75}</td> </tr> </tbody> </table>	Quantity	Unit	Volume	1900.88 in ³	Surface Area	4382.07 in ²	Mass	1.47632 slinch	Bounding Box		min. corner	{-50,-3,0}	max. corner	{50,3,101.75}
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Bounding Box															
min. corner	{-50,-3,0}														
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<p>Template code on the left gives rise to the output on the right. HTML code is output directly to the report file unchanged. Scan&Solve code is interpreted by the Scan&Solve plugin to produce the output shown on the right. This example introduces the use of the ##SCREENSHOT keyword and the generation of a table using the ##PROPERTYTABLE keyword.</p>															

Detail 2:

Template Code	Output									
<pre> <h2>Simulation Results</h2> <h3>Displacements</h3> ##SCREENSHOT SOLUTION TDSP <h4>Displacement Summary</h4> ##PROPERTYTABLE EXTREMA TDSP </pre>	<p>Simulation Results</p> <p>Displacements</p>  <p>Displacement Summary</p> <table border="1"> <thead> <tr> <th></th> <th>Amount</th> <th>Location</th> </tr> </thead> <tbody> <tr> <td>Minimum</td> <td>2.65838e-07 in</td> <td>{0,0,0}</td> </tr> <tr> <td>Maximum</td> <td>0.0517302 in</td> <td>{3.031e+15,3.101,25}</td> </tr> </tbody> </table>		Amount	Location	Minimum	2.65838e-07 in	{0,0,0}	Maximum	0.0517302 in	{3.031e+15,3.101,25}
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Minimum	2.65838e-07 in	{0,0,0}								
Maximum	0.0517302 in	{3.031e+15,3.101,25}								
<p>Template code on the left gives rise to the output on the right. HTML code is output directly to the report file unchanged. Scan&Solve code is interpreted by the Scan&Solve plugin to produce the output shown on the right. This example shows an expanded use of the ##SCREENSHOT keyword to display a solution value. The ##PROPERTYTABLE keyword is used to generate a summary of a solution component using the EXTREMA parameter and a solution component tag, TDSP, for total displacement.</p>										