



What's new

Version 4.2 new features and enhancements

What's New in WPS version 4.2

Version: 4.2.1

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Introduction

World Programming is pleased to announce version 4.2 of the World Programming System. This version includes many improvements, including updates to the Workbench workflows, new and updated procedures, and new functionality. The new and updated features in this version are described in this document.

Workflows

New and enhanced blocks and features in the Workflow Environment are provided in this version of WPS Analytics.

Workflows – new

This release includes the following new Workflow features:

- **Parameters.** Enables global variables to be created and stored in a Workflow. Once defined, parameters can be used in place of user-specified values when configuring Data Preparation, Code and Model Training block configuration options. Parameters cannot be used in blocks used to manually build a model, or blocks that require code to be added as part of the configuration. Code blocks support parameters through macro variables.
- This release includes the following new blocks:
 - **Database Export.** Enables you to export a Workflow dataset to a specified pre-existing or newly-created database.
 - **Reject Inference.** Enables you to use a reject inference method to address any inherent selection bias in a model by including a rejected population.
 - **Population Stability Index (PSI).** Enables you to assess the stability of scorecards over time.
 - **Query.** Enables you to join database tables and perform query operations on their contents.
 - **Tableau Export.** Enables you to export a dataset to Tableau Data Extract file format (.tde) and, if required, upload the file to a Tableau server.

Workflows – enhanced

This release includes many enhancements to blocks to improve usability and performance. These include:

- Enhanced **Undo**, **Redo**, **Cut**, **Copy** and **Paste** features.
- The **Filter** block now includes an expression editor that enables filtering based on an SQL expression.
- Errors in block configuration are now displayed in the screentip for the block.

Workflow views

- The **Database Explorer** view:
 - Can be used to connect to and browse remote database tables. Connections must be set in the view and cannot be used from the **Settings** view. Table contents can be viewed in the **Dataset Viewer** and tables can be dragged to a Workflow canvas.
 - MySQL connections now support specifying SSL settings.
 - ODBC has various improvements to help you configure databases more easily.
 - You can now import from:
 - Amazon Redshift.
 - Google BigQuery.
 - MS Azure SQL Warehouse.
 - Snowflake Data Warehouse.

Import group

- The **Database Import** block:
 - MySQL connections now support specifying SSL settings.
 - ODBC has various improvements to help you configure databases more easily.
 - You can now import from:
 - Amazon Redshift.
 - Google BigQuery.
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Data Preparation group

- The **Binning** block has been updated:
 - Can now be connected to a scoring block using the **Configure Output** option on the shortcut menu.
 - Now has two outputs:
 - Binned Dataset: The input dataset, plus a new variable showing a bin for each observation.
 - Binning Model: Enables binning settings to be individually specified.
- The **Impute** block has been updated:
 - A model can now be output from the block in addition to a working dataset.
- The **Join** block has been updated:
 - The block can now be used to join tables from the **Database Explorer** view.

Model Training group

- The **Decision Tree** block has been updated:
 - **Summary** tab.

This provides a detailed summary of the tree. It replaces the **Table** tab. The node table now appears at the bottom of the **Summary** tab. The node table contains a new column that shows, for each row's condition, the percentage of the node's total observations where the dependent variable equals the value specified in **Dependent variable** value.
 - **Tree** tab.

If the tree has an active weight variable, you can now switch between displaying unweighted and weighted frequencies.
 - Now has a **History** tab, which enables previous changes to be viewed.
 - Enables binning settings to be individually specified
- The **WoE Transform** block has been updated:
 - Now supports a frequency variable.
 - Enables binning settings to be individually specified.

Export group

- The **Chart Builder** block has been updated:
 - BY variables are now selected from the block's **Preferences** dialog.
 - For each plot, you can now specify:
 - Style options such as colour and font.
 - Options that enable you to add a second axis.
- The **Database Export** block has been updated:
 - Datasets can now be exported to:
 - Amazon Redshift.
 - Google BigQuery.
 - MS Azure SQL Warehouse.
 - Snowflake Data Warehouse.

SAS language support

New and enhanced SAS language support is provided in this version of WPS Analytics.

Output Delivery System

The Output Delivery System (ODS) produces output in various formats. Existing ODS features have been significantly enhanced and augmented in this version of WPS Analytics. New features are described in the following sections.

Output Delivery System – new

The following ODS features have been added:

Global statements

- The ODS `LAYOUT` statement is now supported.
- The ODS `REGION` statement is now supported.
- The ODS `TEXT` statement is now supported

ODS destinations

- The ODS `RTF` destination is now supported.

ODS LISTING

The ODS `LISTING` destination implementation has been significantly revised to improve layout control of the destination output.

- If ODS `LISTING` is specified in a SAS language program, the new implementation is used by default. This destination can also be specified using the ODS `NEWLISTING` statement.
- Specifying ODS `OLDLISTING` uses the previous implementation available in WPS Analytics.

A new system option `ODSLISTINGDEST` is available to enable the continued use of the previous implementation of the listing destination without modifying existing SAS language programs. To use the existing listing destination, specify `ODSLISTINGDEST = OLDLISTING` in a WPS configuration file.

System options

The following system options have been added at this release:

- CMLIB
- CONNECTPAGEBREAK
- CONNECTPROGRESSINTERVAL
- CONNECTTIMEOUTLIMIT
- CONNECTTRANSCODEWARNINGS
- EMAILCSSMTPPGM
- EMAILCSSMTPSYSOUT
- EMAILSTARTTLSKEYDB
- EMAILSTARTTLSKEYDBLABEL
- EMAILSTARTTLSKEYDBPW
- EMAILSTARTTLSKEYDBSTASHFILE
- FILEBUFNO
- HTTPUSERAGENT
- IMPORTDELIMTRIM
- INPUTCASTNUMTOCHAR
- LEGACYMARIADBENGINE
- LEGACYMYSQLENGINE
- MCACHE
- ODSLISTINGDEST
- UTILLOC
- VARINITCHK
- WPCATENGINE
- WPSMBCSSTRINGUTILS

Formats and informats

The following format and informat have been updated:

- `NENGOW.d`, enabling dates to be formatted in the Reiwa era.

The following informat has been added:

- `IEEEW.d`, enabling numbers to be formatted in IEEE floating-point format.

Libname JSON

The JSON engine now supports the `NOALLDATA` option. This option prevents creation of the *alldata* dataset when a JSON file is read in to WPS Analytics.

DATA step functions – enhanced

The following functions have been updated:

- `INPUT`. If the first argument of the function is a character-formatted variable, the format of that variable is applied before the informat argument. A new system option `INPUTCASTNUMTOCHAR`, enables you to revert to the previous behaviour.
- `MAX` and `MIN`. These previously required a minimum of two arguments. They now accept one or more arguments.

General procedures – enhanced

The following general procedures have been enhanced:

CONTENTS

The options `OUTZEROVARDATASETS` and `NOOUTZEROVARDATASETS` have been added to the `PROC CONTENTS` statement. These control how the contents of empty datasets appear when created.

DATASETS

The options `OUTZEROVARDATASETS` and `NOOUTZEROVARDATASETS` have been added to the `CONTENTS` statement. These control how the contents of empty datasets appear when created.

IMPORT

The option `DELIMTRIM` has been added to the `PROC IMPORT` statement.

SQL

Now supports the `CONNECT USING` statement.

UNIVARIATE

Now supports the `INSET` statement.

Analytics

New and enhanced statistics and time series procedures are provided in this version of WPS Analytics.

Statistical procedures – new

The following statistical procedure has been added:

STDRATE

Enables you to calculate standardised rates in populations.

Statistical procedures – enhanced

The following procedures have been enhanced at this release:

MIXED

Now supports the `WEIGHT` statement.

GLMSELECT

Now supports the `PARTITION` and `PERFORMANCE` statements.

Time series procedures – new

The following time series procedures have been added:

ESM

Enables the creation of forecasts using exponential smoothing models.

SEVERITY

Enables fitting distributions to data for modelling insurance loss

SPECTRA

Enables estimation of spectral density.

TIMESERIES

Enables a time series analysis.

Machine learning procedures – enhanced

The following WPS Machine Learning procedure has been enhanced:

DECISIONFOREST

The `PROC DECISIONFOREST` statement now includes the `CLASSCOMB` option that specifies how to combine the predicted probabilities from each tree in a classification forest.

Quality control procedures – enhanced

The following WPS Quality Control procedure has been enhanced:

CAPABILITY

Now supports the `INSET` statement.

Now supports the `INTERVALS` statement.

The `OUTFIT` option has been added for the `HISTOGRAM` statement.

You can now specify a seed to be used for random number generation for goodness of fit tests for all distributions.

Data engines

New data engines have been added at this release, and some existing data engines have been updated or enhanced.

For information on the data engines, see in the section *Data Engines* in the **WPS Reference for Language Elements**.

Data engines – new

The following data engine is new at this release:

- **MARIADB** – Enables access to MariaDB databases using a multi-threaded connection and separate dataset options.
- **MYSQ** – Enables access to MySQL databases using a multi-threaded connection and separate dataset options.

Data engines – enhanced

The following data engines have been enhanced:

ODBC

- Can now access Amazon Redshift data warehouse, with the appropriate drivers.
- Can now access Google BigQuery, with the appropriate drivers.
- Can now access a Snowflake data warehouse, with the appropriate drivers.
- Can now access a Microsoft Azure SQL Data Warehouse, with the appropriate drivers.

TERADATA

Now supports options to bulk insert data on the Library reference statement, and separate dataset options.

WPS Communicate

The following enhancement has been made to WPS Communicate.

- Diagnostic messages have been improved for issues with sign-off after a sign-on with a telnet sign-on script.

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The phrases "program", "SAS program", and "SAS language program" used in this document are used to refer to programs written in the SAS language. These may also be referred to as "scripts", "SAS scripts", or "SAS language scripts".

The phrases "IML", "IML language", "IML syntax", "Interactive Matrix Language", and "language of IML" used in this document are used to refer to the computer programming language often referred to in any of these ways.

WPS includes software developed by third parties. More information can be found in the THANKS or acknowledgments.txt file included in the WPS installation.