Flow Variables allow for a parameterization of a workflow. A Flow Variable is a named storage element for different values at different execution points in the workflow, supporting configuration settings in upstream nodes.

Hidden Flow Variable Ports
Each node has hidden Flow Variable ports to accept incoming Flow Variables & propagate them to the upstream nodes. To make a Flow Variable visible, right-click the node & select Show Flow Variable Ports. Only ports of the same type can be connected.

Creating a Flow Variable
1. Right-click the workflow in KNIME Explorer & select Workflow Variables.
2. Use a Configuration port to create a Flow Variable at any point in your workflow.
4. Use the node configuration window in the Flow Variable tab, fill in a blank box with the name of the Flow Variable.

String Manipulation (Variable)
This node is the Flow Variable version of the String Manipulation node. Similarly, other nodes have their own version for Flow Variables like the Rule Engine Variable node & the Math Formula Variable node.

Merge Variables
Combines Flow Variables from two or more separate branches. To add a branch click the three dots in the bottom left corner. If Flow Variables with the same name are collected, the Flow Variable in the topmost connection is selected.

Inject Variables (Data)
Adds (Injects) the Flow Variables at the Flow Variable port into data table at the top input port. The resulting data table is forwarded (unaltered) in the node output port.

Extract Variables (Data)
Extracts the Flow Variables contained in data table at the top input port & produces them as standalone Flow Variables at the output port.

A Metanode or Component
A node that contains other nodes.

Creating a Metanode or Component
Select all relevant nodes, right-click & select Collapse into Metanode for a Metanode or Disassemble into Component for a Component. Right-clicking a Metanode or Component opens the context menu with a number of options such as open, expand, setup, or reconfigure, & save as template.

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Contingency Table
This node is a node that creates a table of selected columns from the input data table in the form of a contingency table. It produces the value of the selected option in a Flow Variable at its output port.

Single Selection Configuration
This node is a node that creates a selection configuration. Each option can be selected exactly once, and the selected option is used to assign a value to the Flow Variable.

Boolean Configuration
This node is a node that creates a selection configuration. Each option can be selected exactly once, and the selected option is used to assign a value to the Flow Variable.

Iterative Range Slider Filter Widget
This widget is a slider to filter data to only include rows with the value of a Flow Variable that is within the specified range. It can interact with variables from other JavaScript-based nodes in the same composite view.

Test Output Widget
This node is a node that creates a paragraph of either free, predefined, or HTML text.

Interactive Range Slider Filter Widget
This widget is a slider to filter data to only include rows with the value of a Flow Variable that is within the specified range. It can interact with variables from other JavaScript-based nodes in the same composite view.

Container Input (Table)
This node is a node that receives a data table from the caller workflow. If no input is provided, the template default data table is used. Similar nodes are available to exchange Flow Variables & credentials. The corresponding “Container Output (Table)” node returns the results as a data table.

Container Input (JSon)
This node is a node that receives a JSON data structure from the caller workflow. If no input is provided, the template default JSON structure is used. The corresponding “Container Output (JSon)” node returns the results as a data structure.

GET Request
This node is a node that sends a GET request to the specified URL. Similar nodes are available to exchange Flow Variables & credentials. The corresponding “POST Request” node returns the results as a data structure.

POST Request
This node is a node that sends a POST request to the specified URL. Similar nodes are available to exchange Flow Variables & credentials. The corresponding “GET Request” node returns the results as a data structure.

Feature Selection Loop Start
This node is a node that starts a selection loop iterating on a set of input columns. At each iteration, the current columns & the remaining columns are passed into the loop body.

Generic Loop Start
This node is a node that starts a loop. It should be paired with a loop end node defining the end condition.

Parallel Chunk Start
This node is a node that starts a parallel loop iterating over chunks of equal size. The loop body is executed in parallel in the local executor. The resulting data table is forwarded (unaltered) in the node output port.

Loop End
This node is a node that ends a loop. It should be paired with a loop start node defining the start condition.

Try (Data Ports)
This node is a node that tries to construct an enable the alternative path for the data flow in case of failure in the main branch. If no input is provided, the template default data table is used. Similar nodes are available to exchange Flow Variables & credentials. The corresponding “Catch Errors” node returns the template default data table.

Empty Table Switch
This node is a node that switches the input table has at least one data row. It deactivates the top output port & activates the bottom output port if the condition is met. It must be used in an active branch & deactivated the bottom output port if the condition is not met.

Active Branch Inverter
This node is a node that inverts the status of the branches. If the input port is active, the output port becomes inactive. It’s often used to force a branch to produce an output even if it’s inactive & vice versa (to deactivate a branch even if it’s active).

Node Ports
Different types of data pass through different node ports. Only ports of the same type can be connected. Here are some examples of ports for frequently used data types:

Data Table
Flow Variable
Tree Ensemble Model
Database Connection
Spark Connector
Image
HDFS

Resources
E-Books: KNIME. Advanced Luck covers these advanced features & more. Practicing Data Science is a collection of data science case studies from past projects. Both available at knime.com/book.

KNIME Blog: Engaging topics, challenges, industry news, & knowledge nuggets at knime.com/blog.

E-Learning Course: Take our free online self-paced courses to learn about the different steps in a data science project (with exercises & solutions to test your knowledge). www.knime.com/knime-self-paced-courses

KNIME Hub: Browse and share workflows, nodes, and components. Adds ratings, or comments to other workflows at hub.knime.com.

KNIME Forum: Join our global community & engage in conversations at forum.knime.com.
