**Test script for new rebinning in the VSI**

**Context:**We reimplement the mechanism of the rebinning for the VSI. Previously it was based on a plugin. We stripped everything related to this plugin from the code and reimplemented rebinning for the VSI using the existing BinMD and SliceMD algorithms.

Several data sets are required to perform this test:

* MDEvent1 (is a 4D workspace)
* MDHisto1

**Test instruction:**

The rebin button was replaced with a QToolButton which has several sub options, such as “BinMD”, “SliceMD” and “Remove Rebinning”. The options which cause a rebin event, i.e. “BinMD” and “SliceMD” are referred to as B1 and “Remove Rebinning” as B2

Note that the BinMDAlgorithmDialog and SliceMDAlgorithmDialog are used. They have line edit fields which are used to control the binning behaviour. Four comma-separated values are required: **Name of the Dimension**, **Lower Extent**, **Upper Extent**, **Bins.** You see something like Qx,-10, 10, 50.

Perform the test once with BinMD and once with SliceMD.

**Rebinning of a single MDEvent workspace:**

1. Start Mantid
2. Load the MDEvent1 workspace into MantidPlot
3. Load it into the VSI. If you are not in the STANDARD view, switch to it.
   1. Confirm that B1 is enabled
   2. Confirm that B2 is disabled
4. Press B1
   1. Confirm that a modified BinMDAlgorithmDialog/SliceMDAlgorithmDialog appears
   2. Confirm that this dialog shows the correct number of inputs (one per dimension, i.e 4)
   3. Confirm that the there are no line edit fields for the input and the output workspace name
   4. Confirm that the rebinning of the data set for the first three dimensions is set to 50 for BinMD and 5 for SliceMD. This is the entry in the line edit fields associated with the “AlignedDimX” property. SliceMD is kept at the workspace settings as large slice settings are very resource intensive.
5. Press Ok
   1. Confirm that a workspace has been created and added into Mantid which has the same name as the input workspace and ends in “tempvsi”
   2. Confirm that in the pipeline browser, the MDEvent1 source has disappeared and that there is a new source
   3. Confirm that both B1 and B2 are enabled
6. Press B2
   1. Confirm that B2 is disabled
   2. Confirm that the workspace with the postfix “tempvsi” has disappeared from the MantidDock
   3. Confirm that a source which is based on MDEvent1 has reappeared.
   4. Confirm that B1 is still enabled
7. Press B1, leave the settings and press OK
8. Press B1
   1. Change the binning to 20(BinMD)/7(SliceMD) in each dimension. This is achieved by altering the entry after the last comma in the line edit fields associated with the “AlignedDimX” property.
9. Press OK
   1. Confirm that the binning of the rendered object has changed. It should be coarser.
10. Press B2
    1. Confirm that the old source and the old rendered image appear
11. Press B1, set the lower extent for the first three dimensions to 0. And Press OK
    1. Confirm that the image is clipped.
12. Load the temporary file ending in “tempvsi” into the VSI
    1. Confirm that a message box appears which warns you that you cannot reload a temporary workspace.
13. Click the message box away.
    1. Confirm that nothing has changed.
14. Close the VSI
    1. Confirm that the temporary file ending with “tempvsi” is gone.

**Rebinning of a single MDEvent workspace with filters**

We want to confirm that the filters in the pipeline as well as their settings are respected by a rebinning operation.

1. Load the MDEvent1 workspace into MantidPlot
2. Load it into the VSI. If you are not in the STANDARD view, switch to it.
3. Apply a scale filter with a scaling of factor 2 in the first dimension.
   1. Confirm that the rendered image shows this scaling
4. Press B1 (BinMD) and set a binning of 20 in each dimension
5. Press OK
   1. Confirm that a temporary workspace was created in MantidDock.
   2. Confirm that the source at the bottom of the pipeline has been replaced with a source which is based on the temporary workspace.
   3. Confirm that the filter remains intact, i.e. that the slice filter still has a scaling of 2 in the first dimension
   4. Confirm that the rendered image reflects both the rebinning and the scaling
6. Press B2
   1. Confirm that the underlying source has reverted back

**Rebinning of a single MDEvent workspace with an MDHisto workspace – Button logic:**

This tests the visibility logic of B1 and B2. We want the rebinning to be available when we are only dealing with MDEvent workspaces. As soon as we have loaded an MDHisto workspace, we don’t want to have the option to rebin. We want to be able to unbin a workspace as long as there are sources based on temporary MDHisto workspaces in the pipeline.

1. Close the VSI
2. Load MDEvent1 and MDHisto1 into MantidPlot
3. Load MDEvent1 into the VSI
   1. Confirm that B1 is enabled
   2. Confirm that B2 is disabled
4. Load MDHisto1 into the VSI
   1. Confirm that B1 and B2 are disabled
5. Delete the source based on MDHisto1 from the VSI
   1. Confirm that B1 is enabled and B2 is disabled
6. Press B1 and press OK
   1. Confirm that B1 and B2 are enabled
7. Load MDHisto1 into the VSI
   1. Confirm that B1 is disabled and B2 is enabled
8. Select the rebinned source as the active source and press B2
   1. Confirm that B2 is disabled