h5watch Examples



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Contents

1. h5watch Examples 4

1.1. Case A: Monitor a One-dimensional Dataset 4

1.2. Case B: Monitor a Two-dimensional Dataset 5

1.3. Case C: Monitor a Dataset with a Compound Datatype 9

1.4. Case D: Monitor Changes in the Size of Dataset Dimensions via the ––dim Option 12

# h5watch Examples

This document describes several ways that the h5watch tool can be used.

h5watch can be used to monitor data that is added to a dataset. The functionality is similar to the Unix user command tail with the follow option, which outputs appended data as the file grows. See the [h5watch reference manual entry](h5watch.htm) for more information.

## Case A: Monitor a One-dimensional Dataset

In this case, we see how h5watch might be used to monitor changes to a one-dimensional dataset with three data elements. The picture below shows the dataset, and the examples in this case will start with this dataset.

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We start h5watch running with the following command line:

h5watch example.h5/dsetA

The dataset we are watching in this case is dsetA and is located in the file example.h5.

Example 1

Suppose in this example the dimension size of dsetA is increased from three to five and data is then written to dsetA. The picture below shows the change.

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h5watchwill produce the following output:

dims[0]: 3->5

Data:

(3): data

(4): data

Example 2

Suppose in this example the dimension size of dsetA is decreased from three to two and data is then written to dsetA. The picture below shows the change.

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h5watchwill produce the following output:

dims[0]: 3->2

## Case B: Monitor a Two-dimensional Dataset

In this case, we see how h5watch might be used to monitor changes to a two-dimensional dataset with 3x4 data elements. The picture below shows the dataset, and the examples in this case will start with this dataset.

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We start h5watch running with the following command line:

h5watch example.h5/dsetB

The dataset we are watching in this case is dsetB and is located in the file example.h5.

Example 1

Suppose in this example the dimension size of dsetB is changed—dims[0] is increased from three to six. Data is then written to dsetB. The picture below shows the change.

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h5watchwill produce the following output:

dims[0]: 3->6

dims[1]: unchanged

Data:

(3, 0): data, data, data, data

(4, 0): data, data, data, data

(5, 0): data, data, data, data

Example 2

Suppose in this example the dimension size of dsetB is changed—dims[1] is increased from four to five. Data is then written to dsetB. The picture below shows the change.

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h5watchwill produce the following output:

dims[0]: unchanged

dims[1]: 4->5

Data:

(0, 4): data

(1, 4): data

(2, 4): data

Example 3

Suppose in this example the dimension size of dsetB is changed—dims[0] is increased from three to five and dims[1] is increased from four to five. Data is then written to dsetB. The picture below shows the change.

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h5watchwill produce the following output:

dims[0]: 3->5

dims[1]: 4->5

Data:

(0, 4): data

(1, 4): data

(2, 4): data

(3, 0): data, data, data, data, data

(4, 0): data, data, data, data, data

(5, 0): data, data, data, data, data

Example 4

Suppose in this example the dimension size of dsetB is changed—dims[0] is increased from three to five and dims[1]is decreased from four to three. Data is then written to dsetB. The picture below shows the change.

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h5watchwill produce the following output:

dims[0]: 3->5

dims[1]: 4->3

Data:

(3, 0): data, data, data

(4, 0): data, data, data

Example 5

Suppose in this example the dimension size of dsetB is changed—dims[0] is decreased from three to two and dims[1] is increased from four to five. Data is then written to dsetB. The picture below shows the change.

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h5watchwill produce the following output:

dims[0]: 3->2

dims[1]: 4->5

Data:

(0, 4): data

(1, 4): data

Example 6

Suppose in this example the size of dsetB is changed—dims[0] is decreased from three to two and dims[1] is decreased from four to two. Data is then written to dsetB. The picture below shows the change.

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h5watchwill produce the following output:

dims[0]: 3->2

dims[1]: 4->2

## Case C: Monitor a Dataset with a Compound Datatype

In this section, we see how h5watch might be used to monitor changes to a two-dimensional dataset with a compound datatype. The examples in this case will start with different datasets.

Example 1

For this example, we start h5watch running with the following command line:

h5watch example.h5/dsetC1

The dataset we are watching is dsetC1 and is located in the file example.h5.

Suppose in this example dsetC1 is a two-dimensional dataset of 3x4 data elements with a compound datatype defined as the following:

DATATYPE "ctype1" H5T\_COMPOUND {

H5T\_STD\_I32BE "c1";

H5T\_STD\_I32BE "c2";

H5T\_STD\_I32BE "c3";

H5T\_STD\_I32BE "c4";

}

Suppose the dimension size of dsetC1 is changed—dims[0] is increased from three to five. Data is then written to dsetC1. The picture below shows the change.

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h5watchwill produce the following output:

dims[0]: 3->5

dims[1]: unchanged

Data:

(3, 0): {{data for c1,c2,c3,c4}, {data for c1,c2,c3,c4},

{data for c1,c2,c3,c4}, {data for c1,c2,c3,c4}}

(4, 0): {{data for c1,c2,c3,c4}, {data for c1,c2,c3,c4},

{data for c1,c2,c3,c4}, {data for c1,c2,c3,c4}}

Example 2

For this example, we will continue to watch dsetC1 with its compound datatype, and will display data elements only for the second field and the fourth field of the compound datatype.

We will run h5watch with the ––fields option with the following command line:

h5watch ––fields=c2,c4 example.h5/dsetC1

This command line could also be written as the following:

h5watch ––fields=c2 ––fields=c4 example.h5/dsetC1

Suppose in this example the dimension size of dsetC1 is changed—dims[1] is increased from four to five. Data is then written to dsetC1. The picture below shows the change.

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h5watchwill produce the following output:

dims[0]: unchanged

dims[1]: 4->5

Data:

(0, 4): {{data for c2,c4}}

(1, 4): {{data for c2,c4}}

(2, 4): {{data for c2,c4}}

Example 3

In this example, we will look at a different dataset with a nested compound datatype. The picture below shows the dataset.

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The dataset is a one-dimensional dataset of three data elements with nested compound data type defined as:

DATATYPE "ctype2" H5T\_COMPOUND {

H5T\_STD\_I32BE "c,1";

H5T\_STD\_I32BE "c,2";

H5\_COMPOUND {

H5T\_STD\_I32BE "sub.1";

H5T\_STD\_I32BE "sub.2";

} c3;

}

We first start h5watch running with the following command line:

h5watch ––fields=c\,1 ––fields=c3.sub\.2 example.h5/dsetC2

The dataset we are watching is dsetC2 and is located in the file example.h5. The ––fields=c\,1 and ––fields=c3.sub\.2 options will select the first field of the compound datatype and the second subfield in the third field of the compound datatype. Backslash is used to escape “,” and “.” in the field names.

Suppose the dimension size of dsetC2 is changed—dims[0] is increased from three to five and data is then written to dsetC2. The picture below shows the change.

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h5watchwill produce the following output:

dims[0]: 3->5

Data:

(3): {{data for “c,1”, “sub.2 of c3”}}

(4): {{data for “c,1”, “sub.2 of c3”}}

## Case D: Monitor Changes in the Size of Dataset Dimensions

h5watch has a ––dim option. When this option is used, only the dimension changes are monitored.

Suppose in the examples below dsetD1 is a one-dimensional dataset with three data elements and dsetD2 is a two-dimensional dataset with 3x4 data elements.

Example 1

Suppose the dimension size of dsetD1 is increased from three to five. The picture below shows the change.

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If h5watch is run with the following command line:

h5watch ––dim example.h5/dsetD1

then h5watchwill produce the following output:

dims[0]: 3->5

Example 2

Suppose the dimension size of dsetD1 is decreased from three to two. The picture below shows the change.

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If h5watch is run with the following command line:

h5watch ––dim example.h5/dsetD1

then h5watchwill produce the following output:

dims[0]: 3->2

Example 3

Suppose the dimension size of dsetD2 is changed—dims[0] is increased from three to six. The picture below shows the change.

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If h5watch is run with the following command line:

h5watch ––dim example.h5/dsetD2

then h5watchwill produce the following output:

dims[0]: 3->6

dims[1]: unchanged

Example 4

Suppose the dimension size of dsetD2 is changed—dims[0] is increased from three to five and dims[1] is increased from four to five. The picture below shows the change.

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If h5watch is run with the following command line:

h5watch ––dim example.h5/dsetD2

then h5watchwill produce the following output:

dims[0]: 3->5

dims[1]: 4->5