

h5watch Examples



The HDF Group

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1. 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](#) for more information.

1.1. 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.



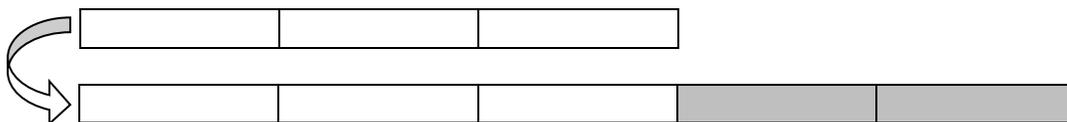
We start h5watch running with the following command line:

```
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.



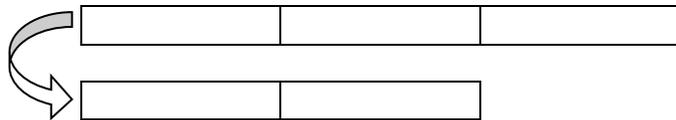
h5watch will produce the following output:

```
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.



`h5watch` will produce the following output:

```
dims[0]: 3->2
```

1.2. 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.

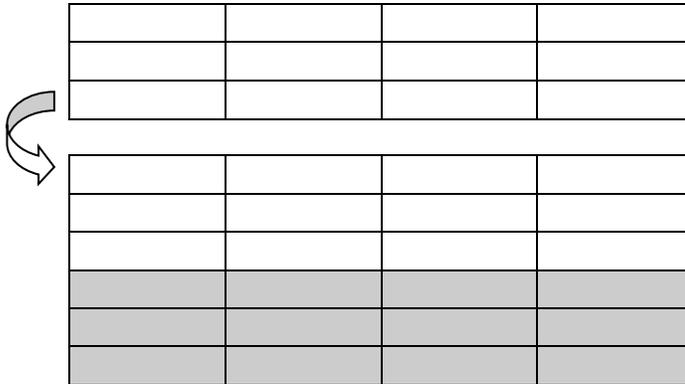
We start `h5watch` running with the following command line:

```
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.



h5watch will produce the following output:

```

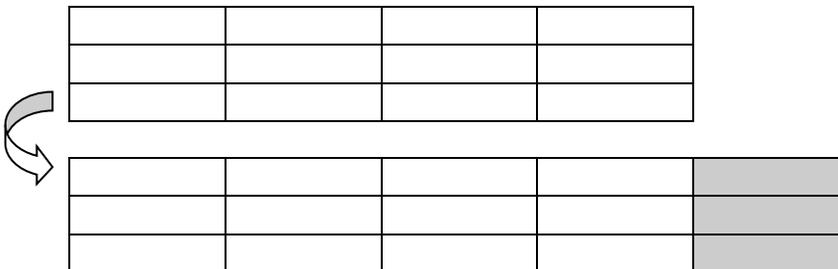
dims[0]: 3->6
dims[1]: unchanged

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.



h5watch will produce the following output:

```

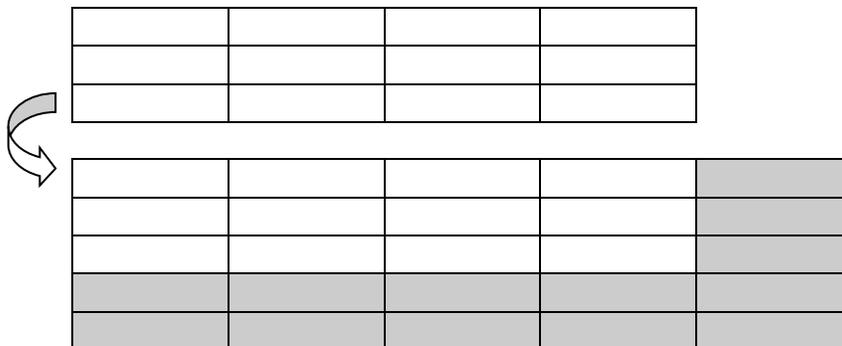
dims[0]: unchanged
dims[1]: 4->5

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.



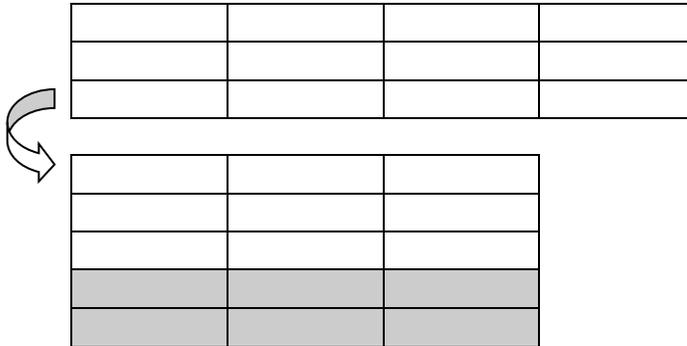
h5watch will produce the following output:

```
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.



h5watch will produce the following output:

```

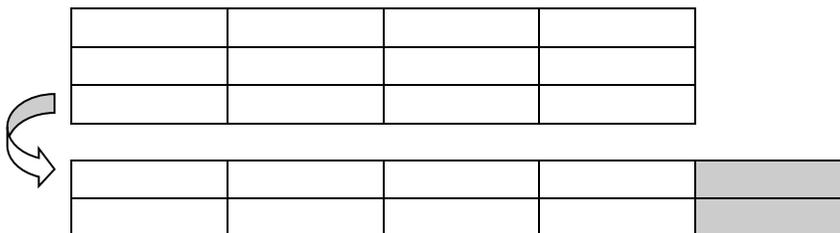
dims[0]: 3->5
dims[1]: 4->3

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.



h5watch will produce the following output:

```

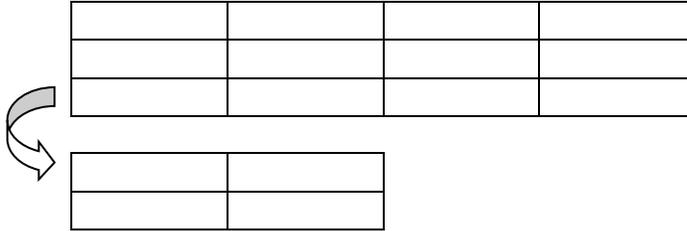
dims[0]: 3->2
dims[1]: 4->5

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.



`h5watch` will produce the following output:

```
dims[0]: 3->2
dims[1]: 4->2
```

1.3. 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:

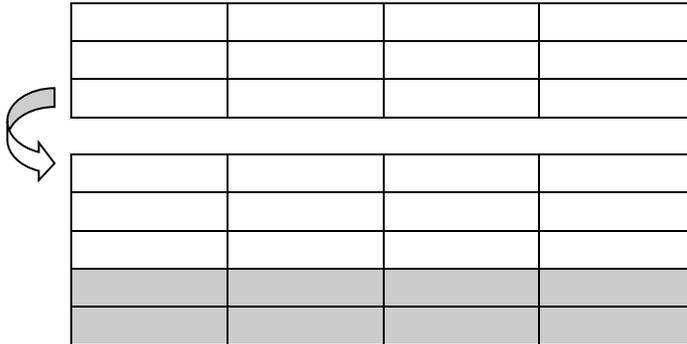
```
h5watch example.h5/dsetC1
```

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.



`h5watch` will 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.

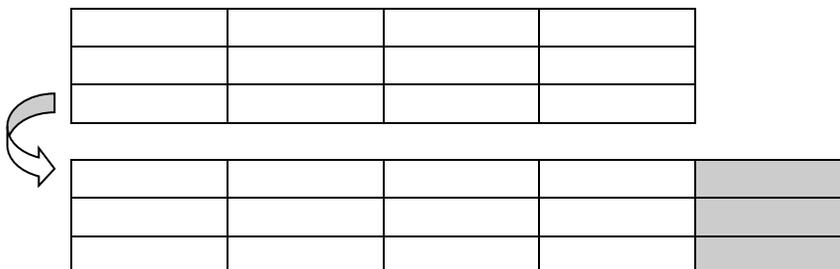
We will run `h5watch` with the `--fields` option with the following command line:

```
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.



h5watch will 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.



The dataset is a one-dimensional dataset of three data elements with a 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;
}

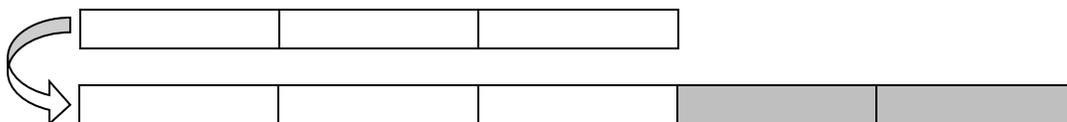
```

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. A 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.



h5watch will 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"}}
```

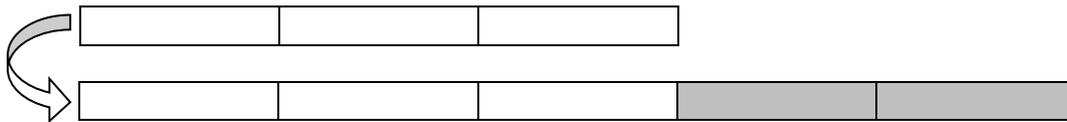
1.4. Case D: Monitor Changes in the Size of Dataset Dimensions

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.



If h5watch is run with the following command line:

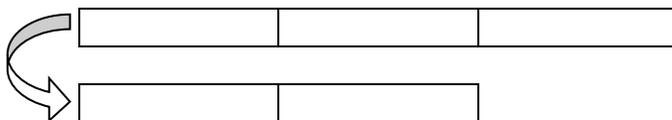
```
h5watch --dim example.h5/dsetD1
```

then h5watch will 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.



If h5watch is run with the following command line:

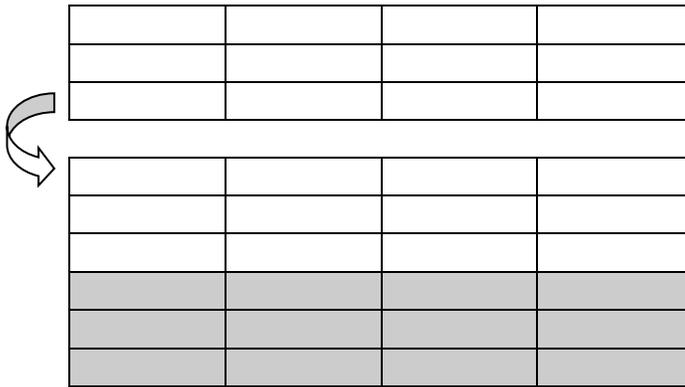
```
h5watch --dim example.h5/dsetD1
```

then `h5watch` will 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.



If `h5watch` is run with the following command line:

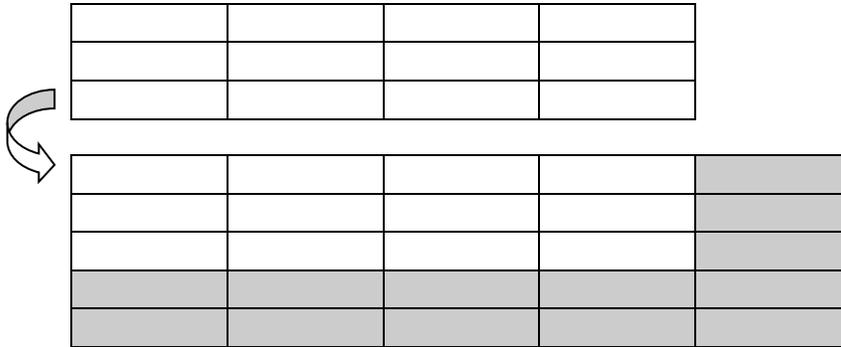
```
h5watch --dim example.h5/dsetD2
```

then `h5watch` will 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.



If `h5watch` is run with the following command line:

```
h5watch --dim example.h5/dsetD2
```

then `h5watch` will produce the following output:

```
dims[0]: 3->5  
dims[1]: 4->5
```