h5watch Examples

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Contents

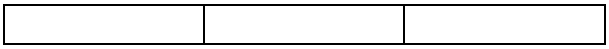
1. h5watch Examples

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 of three records. The picture below shows the dataset, and the examples in this case will start with this dataset.



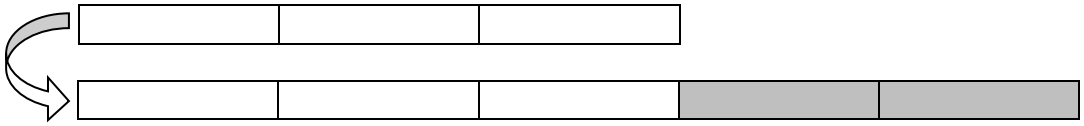
We start `h5watch` running with the following command line:

```
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 changed from three to five and is written to `dsetA`. The picture below shows the change.



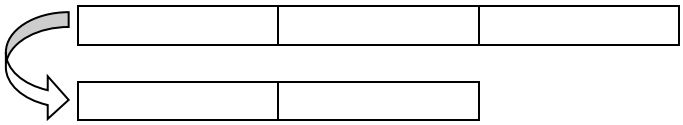
`h5watch` will produce the following output:

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

Data:
(3): record
(4): record
```

Example 2

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

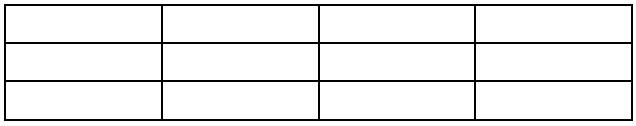


`h5watch` will produce the following output:

```
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 of 3x4 records. The picture below shows the dataset, and the examples in this case will start with this dataset.



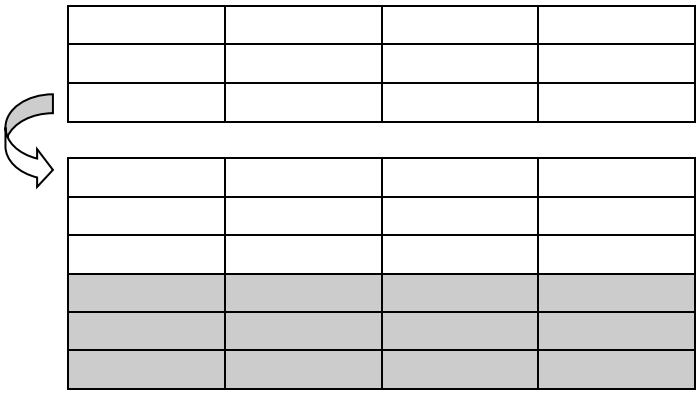
We start `h5watch` running with the following command line:

```
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 dims[0]` is changed from three to six and is written to `dsetB`. The picture below shows the change.



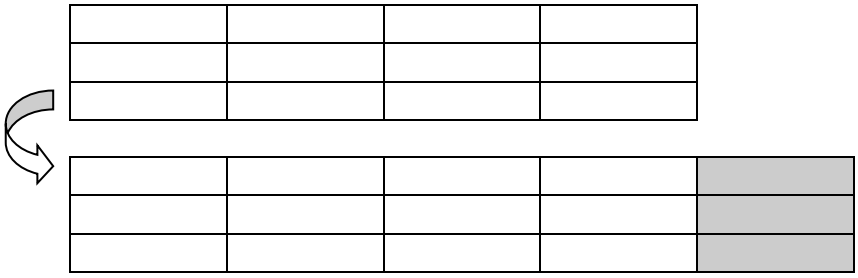
`h5watch` will produce the following output:

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

Data:
(3, 0): record0, record1, record2, record3
(4, 0): record0, record1, record2, record3
(5, 0): record0, record1, record2, record3
```

Example 2

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



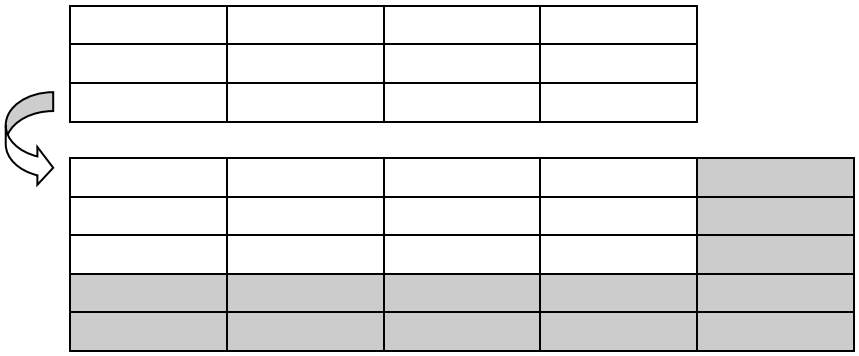
`h5watch` will produce the following output:

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

Data:
(0, 4): record
(1, 4): record
(2, 4): record
```

Example 3

Suppose in this example the dimension size of `dsetB` `dims[0]` is changed from three to five, `dims[1]` is changed from four to five, and both are written to `dsetB`. The picture below shows the change.



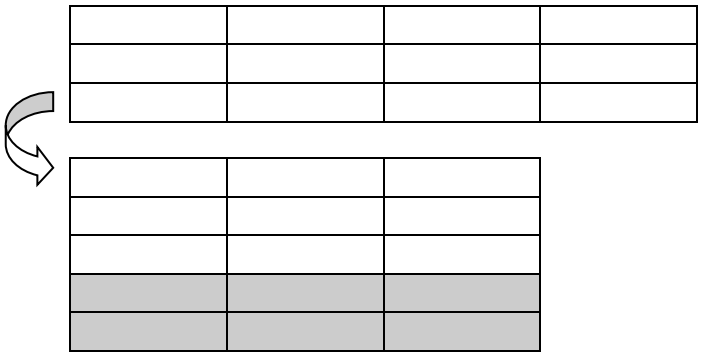
`h5watch` will produce the following output:

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

Data:
(0, 4): record
(1, 4): record
(2, 4): record
(3, 0): record0, record1, record2, record3, record4
(4, 0): record0, record1, record2, record3, record4
(5, 0): record0, record1, record2, record3, record4
```

Example 4

Suppose in this example the dimension size of `dsetB` `dims[0]` is changed from three to five, `dims[1]` is changed from four to three, and both are written to `dsetB`. The picture below shows the change.



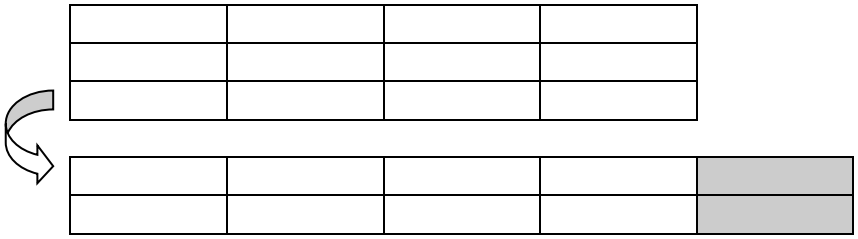
`h5watch` will produce the following output:

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

Data:
(3, 0): record0, record1, record2
(4, 0): record0, record1, record2
```

Example 5

Suppose in this example the dimension size of `dsetB` `dims[0]` is changed from three to two, `dims[1]` is changed from four to five, and both are written to `dsetB`. The picture below shows the change.



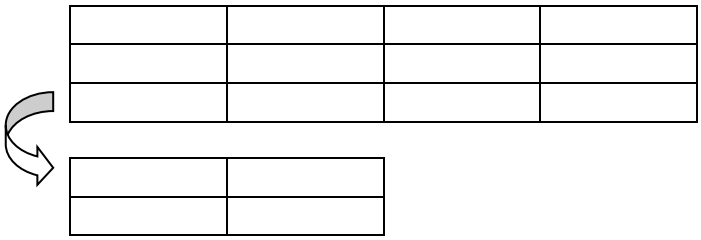
`h5watch` will produce the following output:

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

Data:
(0, 4): record
(1, 4): record
```

Example 6

Suppose in this example the size of `dsetB` `dims[0]` is changed from three to two, `dims[1]` is changed from four to two, and both are 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:

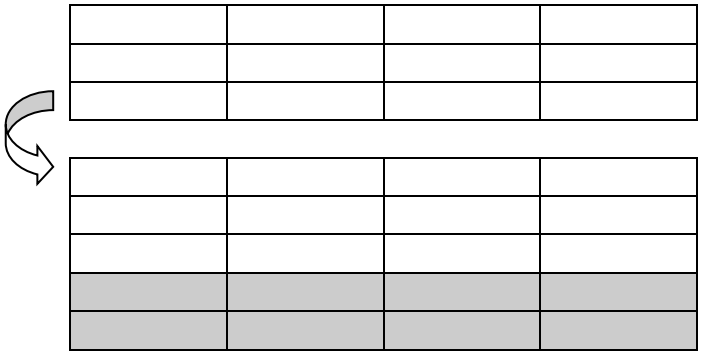
```
h5watch example.h5/dsetC1
```

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 records 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` `dims[0]` is changed from three to five and is 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.

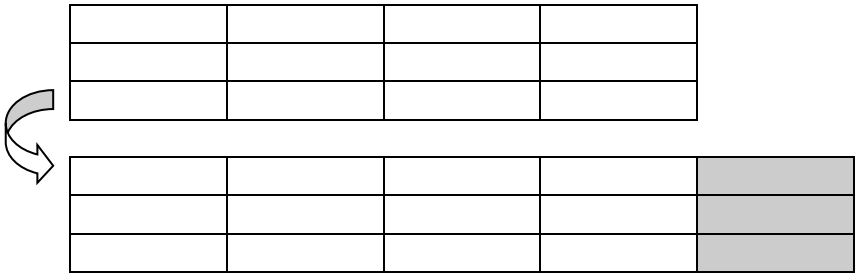
We will run h5watch with the `--fields` option with the following command line:

```
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` `dims[1]` is changed from four to five and is written to `dsetC1`. The picture below shows the change.



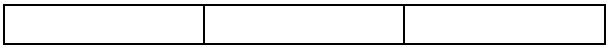
`h5watch` will produce the following output:

```
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 records with nested compound data type defined as:

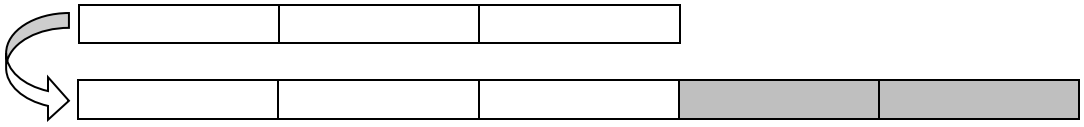
```
DATATYPE "ctype2" H5T_COMPOUND {
      H5T_STD_I32BE "c,1";
      H5T_STD_I32BE "c,2";
      H5_COMPOUND {
      H5T_STD_I32BE "sub.1";
      H5T_STD_I32BE "sub.2";
      } c3;
      }
```

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 show the first element of the compound datatype and the second element of the nested compound datatype.

Suppose the dimension size of `dsetC2` `dims[0]` is changed from three to five and is 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"}}
(4): {{data for "c,1", "sub.2"}}
```

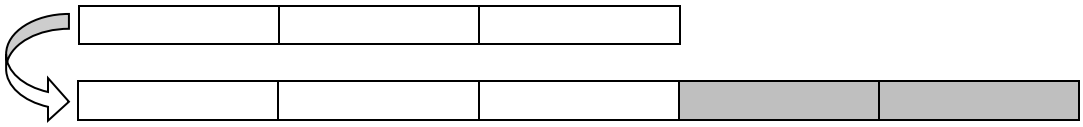
1.4. Case D: Monitor Changes in the Size of Dataset Dimensions via the —dim Option

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 of three records and dsetD2 is a two-dimensional dataset of 3x4 records.

Example 1

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



If h5watch is run with the following command line:

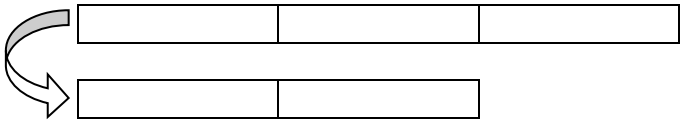
```
h5watch --dim example.h5/dsetD1
```

then h5watch will produce the following output:

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

Example 2

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



If h5watch is run with the following command line:

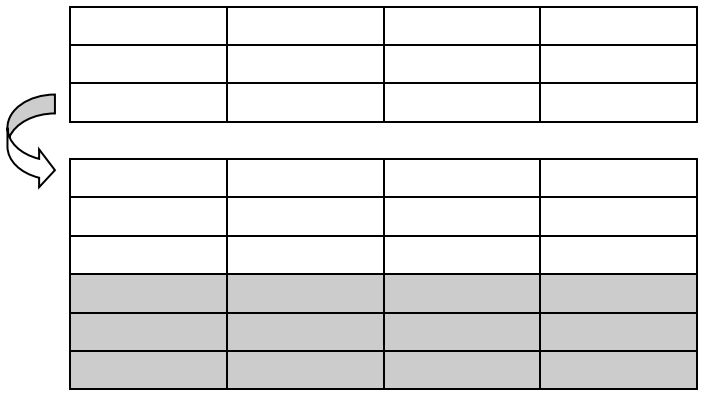
```
h5watch --dim example.h5/dsetD1
```

then `h5watch` will produce the following output:

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

Example 3

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



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

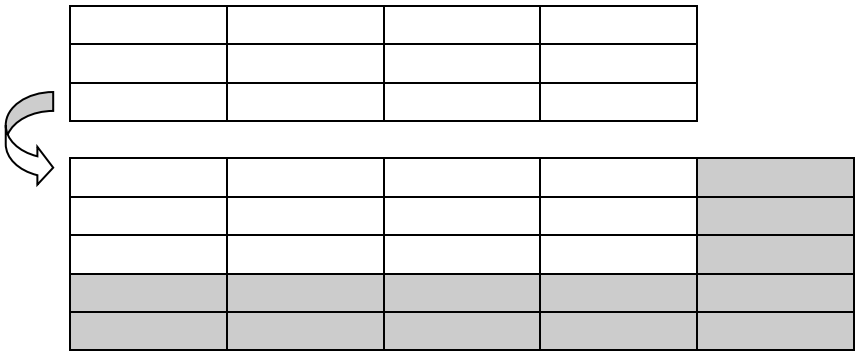
```
h5watch --dim example.h5/dsetD2
```

then `h5watch` will produce the following output:

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

Example 4

Suppose the dimension size of `dsetD2` `dims[0]` is changed from three to five and `dims[1]` is changed 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
```