

# H5TB\_WRITE\_FIELDS\_INDEX

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# H5TB\_WRITE\_FIELDS\_INDEX

Overwrites fields

## Procedure:

H5TB\_WRITE\_FIELDS\_INDEX (loc\_id, table\_name, nfields, field\_index, start, nrecords, type\_size, field\_offset, field\_sizes, data )

## Signature:

```
herr_t H5TBwrite_fields_index (  
    hid_t loc_id,  
    const char *table_name,  
    int nfields,  
    const int *field_index,  
    hsize_t start,  
    hsize_t nrecords,  
    size_t type_size,  
    const size_t *field_offset,  
    const size_t* field_sizes,  
    const void *data  
)
```

```

subroutine h5tbwrite_field_index_f(loc_id, dset_name, field_index, start, &
                                nrecords, type_size, buf, errcode)
    implicit none
    integer(HID_T), intent(IN) :: loc_id          ! file or group identifier
    character(LEN=*), intent(IN) :: dset_name    ! name of the dataset
    integer, intent(IN) :: field_index          ! index
    integer(HSIZE_T), intent(IN) :: start       ! start record
    integer(HSIZE_T), intent(IN) :: nrecords    ! records
    integer(SIZE_T), intent(IN) :: type_size   ! type size
    , intent(IN), dimension(*) :: buf         ! data buffer
    integer :: errcode                          ! error code
end subroutine h5tbwrite_field_index_f

```

### Parameters:

<i>hid_t</i> loc_id	IN: Identifier of the file or group where the table is located
<i>const char</i> *table_name	IN: The name of the dataset to overwrite
<i>int</i> nfields	IN: The number of fields to overwrite. This parameter is also the size of the field_index array.
<i>const int</i> *field_index	IN: The indexes of the fields to write
<i>hsize_t</i> start	IN: The zero based index record to start writing
<i>hsize_t</i> nrecords	IN: The number of records to write
<i>size_t</i> type_size	IN: The size of the structure type, as calculated by sizeof()
<i>const size_t</i> *field_offset	IN: An array containing the offsets of the fields. These offsets can be calculated with the HOFFSET macro.
<i>const size_t</i> *field_sizes	IN: An array containing the sizes of the fields
<i>void</i> *data	IN: Buffer with data

### Description:

H5TB\_WRITE\_FIELDS\_INDEX overwrites one or several fields specified by `field_index` with a buffer data from a dataset named `table_name` attached to the object specified by the identifier `loc_id`.

### Returns:

Returns a non-negative value if successful; otherwise returns a negative value.

### Example:

hl / examples / ex\_table\_05.c [36:131]

1.10/master

HDF5/hdf5

```

typedef struct Particle
{
    char    name[16];
    int     lati;
    int     longi;
    float   pressure;
    double  temperature;
} Particle;

```

```

/* Define a subset of Particle, with latitude and longitude fields */
typedef struct Position
{
    int    lati;
    int    longi;
} Position;

/* Calculate the type_size and the offsets of our struct members */
Particle  dst_buf[NRECORDS];
size_t dst_size = sizeof( Particle );
size_t dst_offset[NFIELDS] = { HOFFSET( Particle, name ),
                               HOFFSET( Particle, lati ),
                               HOFFSET( Particle, longi ),
                               HOFFSET( Particle, pressure ),
                               HOFFSET( Particle, temperature )};
size_t dst_sizes[NFIELDS] = { sizeof( dst_buf[0].name),
                              sizeof( dst_buf[0].lati),
                              sizeof( dst_buf[0].longi),
                              sizeof( dst_buf[0].pressure),
                              sizeof( dst_buf[0].temperature)};

size_t field_offset_pos[2] = { HOFFSET( Position, lati ),
                              HOFFSET( Position, longi )};

/* Initially no data */
Particle  *p_data = NULL;

/* Define field information */
const char *field_names[NFIELDS] =
{ "Name", "Latitude", "Longitude", "Pressure", "Temperature" };
hid_t      field_type[NFIELDS];
hid_t      string_type;
hid_t      file_id;
hsize_t    chunk_size = 10;
Particle  fill_data[1] =
{ {"no data",-1,-1, -99.0f, -99.0} }; /* Fill value particle */
int        compress = 0;
hsize_t    nfields;
hsize_t    start; /* Record to start reading/writing */
hsize_t    nrecords; /* Number of records to read/write */
int        i;

/* Define new values for the field "Pressure" */
float      pressure_in [NRECORDS_ADD] =
{ 0.0f,1.0f,2.0f};
int        field_index_pre[1]    = { 3 };
int        field_index_pos[2]   = { 1,2 };

/* Define new values for the fields "Latitude,Longitude" */
Position  position_in[NRECORDS_ADD] = { {0,0},
{10,10},
{20,20} };

size_t field_sizes_pos[2]=
{
    sizeof(position_in[0].longi),
    sizeof(position_in[0].lati)
};

```

```
size_t field_sizes_pre[1]=
{
    sizeof(float)
};

/* Initialize the field field_type */
string_type = H5Tcopy( H5T_C_S1 );
H5Tset_size( string_type, 16 );
field_type[0] = string_type;
field_type[1] = H5T_NATIVE_INT;
field_type[2] = H5T_NATIVE_INT;
field_type[3] = H5T_NATIVE_FLOAT;
field_type[4] = H5T_NATIVE_DOUBLE;

/* Create a new file using default properties. */
file_id = H5Fcreate( "ex_table_05.h5", H5F_ACC_TRUNC, H5P_DEFAULT, H5P_DEFAULT );

/* Make the table */
H5TBmake_table( "Table Title", file_id, TABLE_NAME, NFIELDS, NRECORDS,
               dst_size, field_names, dst_offset, field_type,
               chunk_size, fill_data, compress, p_data );

/* Write the pressure field starting at record 2 */
nfields = 1;
start = 2;
nrecords = NRECORDS_ADD;
```

```

H5TBwrite_fields_index( file_id, TABLE_NAME, nfields, field_index_pre, start,
nrecords,
    sizeof( float ), 0, field_sizes_pre, pressure_in );

```

Please see [Tables](#) for Fortran programming hints.

hl / fortran / test / tsttable.F90 [66:340]

1.10/master

HDF5V/hdf5

```

INTEGER(HSIZE_T), PARAMETER :: nrecords = 5           ! nrecords
CHARACTER(LEN=9),DIMENSION(1:nfields) :: field_names ! field names
INTEGER(SIZE_T),  DIMENSION(1:nfields) :: field_offset ! field offset
INTEGER(HID_T),   DIMENSION(1:nfields) :: field_types ! field types
INTEGER(HSIZE_T), PARAMETER  :: chunk_size = 5       ! chunk size
INTEGER, PARAMETER :: compress = 0                   ! compress
INTEGER           :: errcode = 0                     ! Error flag
INTEGER           :: i                               ! general purpose integer
INTEGER(SIZE_T)   :: type_size                       ! Size of the datatype
INTEGER(SIZE_T)   :: type_sizec                      ! Size of the character
datatype
INTEGER(SIZE_T)   :: type_sizei                      ! Size of the integer
datatype
INTEGER(SIZE_T)   :: type_sized                      ! Size of the double
precision datatype
INTEGER(SIZE_T)   :: type_sizer                      ! Size of the real datatype
INTEGER(HID_T)    :: type_id_c                      ! Memory datatype identifier
(for character field)
INTEGER(SIZE_T)   :: offset                          ! Member's offset
INTEGER(HSIZE_T)  :: start = 0                       ! start record
INTEGER, DIMENSION(nrecords) :: bufi                 ! Data buffer
INTEGER, DIMENSION(nrecords) :: bufir                ! Data buffer
REAL, DIMENSION(nrecords) :: bufrr                  ! Data buffer
REAL, DIMENSION(nrecords) :: bufrrr                 ! Data buffer
DOUBLE PRECISION, DIMENSION(nrecords) :: bufd        ! Data buffer
DOUBLE PRECISION, DIMENSION(nrecords) :: bufdr       ! Data buffer
CHARACTER(LEN=2), DIMENSION(nrecords), PARAMETER :: bufs =
(/"AB","CD","EF","GH","IJ"/) ! Data buffer
CHARACTER(LEN=2), DIMENSION(nrecords) :: bufsr       ! Data buffer
INTEGER(HSIZE_T) :: nfieldsr                         ! nfields
INTEGER(HSIZE_T) :: nrecordsr                       ! nrecords
CHARACTER(LEN=9), DIMENSION(1:nfields) :: field_namesr ! field names
INTEGER(SIZE_T),  DIMENSION(1:nfields) :: field_offsetr ! field offset
INTEGER(SIZE_T),  DIMENSION(1:nfields) :: field_sizesr ! field sizes
INTEGER(SIZE_T)   :: type_sizeout = 0                ! size of the datatype
INTEGER(SIZE_T)   :: maxlen = 0                     ! max character length of a
field name
INTEGER :: Cs_sizeof_double = H5_SIZEOF_DOUBLE      ! C's sizeof double
INTEGER :: SIZEOF_X
LOGICAL :: Exclude_double
CHARACTER(LEN=62) :: test_txt

! Find size of DOUBLE PRECISION
#ifdef H5_FORTRAN_HAVE_STORAGE_SIZE
SIZEOF_X = storage_size(bufd(1))/storage_size(c_char_'a')
#else
SIZEOF_X = SIZEOF(bufd(1))
#endif

```

```

! If Fortran DOUBLE PRECISION and C DOUBLE sizeofs don't match then disable
! creating a DOUBLE RECISION field, and instead create a REAL field. This
! is needed to handle when DOUBLE PRECISION is promoted via a compiler flag.
Exclude_double = .FALSE.
IF(Cs_sizeof_double.NE.SIZEOF_X)THEN
    Exclude_double = .TRUE.
ENDIF

!
! Initialize the data arrays.
!
DO i = 1, nrecords
    bufi(i) = i
    bufr(i) = i
    bufd(i) = i
END DO

!
! Create a new file using default properties.
!
CALL h5fcreate_f(filename, H5F_ACC_TRUNC_F, file_id, errcode)

!-----
! make table
! initialize the table parameters
!-----

field_names(1) = "field1"
field_names(2) = "field2a"
field_names(3) = "field3ab"
field_names(4) = "field4abc"

!
! calculate total size by calculating sizes of each member
!
CALL h5tcopy_f(H5T_NATIVE_CHARACTER, type_id_c, errcode)
type_size = 2
CALL h5tset_size_f(type_id_c, type_size, errcode)
CALL h5tget_size_f(type_id_c, type_sizec, errcode)
CALL h5tget_size_f(H5T_NATIVE_INTEGER, type_sizei, errcode)
IF(exclude_double)THEN
    CALL h5tget_size_f(H5T_NATIVE_REAL, type_sized, errcode)
ELSE
    CALL h5tget_size_f(H5T_NATIVE_DOUBLE, type_sized, errcode)
ENDIF
CALL h5tget_size_f(H5T_NATIVE_REAL, type_sizer, errcode)
type_size = type_sizec + type_sizei + type_sized + type_sizer

!
! type ID's
!
field_types(1) = type_id_c
field_types(2) = H5T_NATIVE_INTEGER
IF(exclude_double)THEN
    field_types(3) = H5T_NATIVE_REAL
ELSE
    field_types(3) = H5T_NATIVE_DOUBLE
ENDIF
ENDIF

```

```

field_types(4) = H5T_NATIVE_REAL

!
! offsets
!
offset = 0
field_offset(1) = offset
offset = offset + type_sizec ! Offset of the second member is 2
field_offset(2) = offset
offset = offset + type_sizei ! Offset of the second member is 6
field_offset(3) = offset
offset = offset + type_sized ! Offset of the second member is 14
field_offset(4) = offset

!-----
! make table
!-----

test_txt = "Make table"
CALL test_begin(test_txt)

CALL h5tbmake_table_f(dsetname1,&
    file_id,&
    dsetname1,&
    nfields,&
    nrecords,&
    type_size,&
    field_names,&
    field_offset,&
    field_types,&
    chunk_size,&
    compress,&
    errcode )

CALL passed()

!-----
! write field
!-----

test_txt = "Read/Write field by name"
CALL test_begin(test_txt)

CALL
h5tbwrite_field_name_f(file_id,dsetname1,field_names(1),start,nrecords,type_sizec,&
    bufs,errcode)

CALL
h5tbwrite_field_name_f(file_id,dsetname1,field_names(2),start,nrecords,type_sizei,&
    bufi,errcode)
    IF(exclude_double)THEN
        CALL
h5tbwrite_field_name_f(file_id,dsetname1,field_names(3),start,nrecords,type_sized,&
    bufr,errcode)
    ELSE
        CALL
h5tbwrite_field_name_f(file_id,dsetname1,field_names(3),start,nrecords,type_sized,&
    bufd,errcode)

```

```

ENDIF

CALL
h5tbwrite_field_name_f(file_id,dsetname1,field_names(4),start,nrecords,type_sizer,&
    bufr,errcode)

!-----
! read field
!-----

! Read an invalid field, should fail
CALL
h5tbread_field_name_f(file_id,dsetname1,'DoesNotExist',start,nrecords,type_sizec,&
    bufsr,errcode)

IF(errcode.GE.0)THEN
    PRINT *, 'error in h5tbread_field_name_f'
    CALL h5fclose_f(file_id, errcode)
    CALL h5close_f(errcode)
    STOP
ENDIF

! Read a valid field, should pass
CALL
h5tbread_field_name_f(file_id,dsetname1,field_names(1),start,nrecords,type_sizec,&
    bufsr,errcode)
IF(errcode.LT.0)THEN
    PRINT *, 'error in h5tbread_field_name_f'
    CALL h5fclose_f(file_id, errcode)
    CALL h5close_f(errcode)
    STOP
ENDIF

!
! compare read and write buffers.
!
DO i = 1, nrecords
    IF ( bufsr(i) .NE. bufs(i) ) THEN
        PRINT *, 'read buffer differs from write buffer'
        PRINT *, bufsr(i), ' and ', bufs(i)
        STOP
    ENDIF
END DO

CALL
h5tbread_field_name_f(file_id,dsetname1,field_names(2),start,nrecords,type_sizei,&
    bufir,errcode)

!
! compare read and write buffers.
!
DO i = 1, nrecords
    IF ( bufir(i) .NE. bufi(i) ) THEN
        PRINT *, 'read buffer differs from write buffer'
        PRINT *, bufir(i), ' and ', bufi(i)
        STOP
    ENDIF
END DO

```



```

IF(exclude_double)THEN

    CALL
h5tbread_field_name_f(file_id,dsetname1,field_names(3),start,nrecords,type_sized,&
    bufrr,errcode)

!
! compare read and write buffers.
!
    DO i = 1, nrecords
        CALL VERIFY("h5tbread_field_name_f", bufrr(i), bufr(i), errcode)
        IF (errcode .NE.0 ) THEN
            PRINT *, 'read buffer differs from write buffer'
            PRINT *, bufrr(i), ' and ', bufr(i)
            STOP
        ENDIF
    END DO

ELSE
    CALL
h5tbread_field_name_f(file_id,dsetname1,field_names(3),start,nrecords,type_sized,&
    bufdr,errcode)

!
! compare read and write buffers.
!
    DO i = 1, nrecords
        CALL VERIFY("h5tbread_field_name_f", bufdr(i), bufd(i), errcode)
        IF (errcode .NE.0 ) THEN
            PRINT *, 'read buffer differs from write buffer'
            PRINT *, bufdr(i), ' and ', bufd(i)
            STOP
        ENDIF
    END DO
ENDIF

CALL
h5tbread_field_name_f(file_id,dsetname1,field_names(4),start,nrecords,type_sizer,&
    bufrr,errcode)

!
! compare read and write buffers.
!
DO i = 1, nrecords
    CALL VERIFY("h5tbread_field_name_f", bufrr(i), bufr(i), errcode)
    IF (errcode .NE.0 ) THEN
        PRINT *, 'read buffer differs from write buffer'
        PRINT *, bufrr(i), ' and ', bufr(i)
        STOP
    ENDIF
END DO

CALL passed()

!-----
! write field

```

!-----

```
test_txt = "Read/Write field by index"  
CALL test_begin(test_txt)
```

```
CALL h5tbwrite_field_index_f(file_id,dsetname1,1,start,nrecords,type_sizec,&
    bufs,errcode)
```

--- Last Modified: November 20, 2019 | 02:02 PM