NAME

xil_lookup_create, xil_lookup_create_copy, xil_lookup_destroy – create or destroy lookup tables

SYNOPSIS

#include <xil/xil.h>

XilLookup xil_lookup_create (XilSystemState *State***,**
XilDataType *input_datatype***,**
XilDataType *output_datatype***,**
unsigned int *output_nbands***,**
unsigned int *num_entries***,**
short *first_entry_offset***,**
void **data***);**

XilLookup xil_lookup_create_copy (XilLookup *lookup***);**

void xil_lookup_destroy (XilLookup *lookup***);**

DESCRIPTION

These routines create and destroy lookup tables. Lookup tables are used in transforming data, and specialized lookup tables are used as colormap attributes of images.

xil_lookup_create () creates a lookup table for one band of input data. It can be used to create a single lookup table for converting a single-band input image to a single-band or multiband destination image. Or it can be used to create *n* single lookup tables for a multiband input image with *n* bands; when used for multiband input images, the single lookups created for the input bands must be combined into a *combined* lookup table by calling the **xil_lookup_create_combined**(3) function.

When used to convert a single-band input image to a multiband image, the lookup table must have multiple output data elements per input value; the number of elements must match the number of *output_nbands* specified. When used for converting a single band of input data, the lookup table can have only one output data element per input value, and the destination *output_nbands* must equal 1.

Regardless of whether it is created for single-band or multiband input data, a lookup table allows an offset that describes the input value corresponding to the first table value. Table data can represent any of the allowed image data types, but 1-bit data is stored in an unpacked format as the least significant bit in an 8-bit entry. The tables created for multiband input data can use different offsets, but they must all use the same data types.

The maximum number of entries allowed in the lookup table is determined by the input data type and by the *first_entry_offset*, as specified in the **xil_lookup_create** () call. This ensures that inaccessible lookup table entries are not created. Lookup tables with a *first_entry_offset* of 0 and an input data type of XIL_BYTE may have at most 256 entries. Lookup tables with a *first_entry_offset* of -32768 and an input data type of XIL_SHORT may have at most 65536 entries. Lookup tables with a *first_entry_offset* of 0 and a data type of XIL_SHORT may have at most 32768 entries. This function accepts NULL as a valid value for any of its arguments.

xil_lookup_create_copy () returns a copy of the specified lookup table. Copies of lookup objects have the same *XilVersion* number as the original lookup object. The name of a copy is initially empty (NULL).

xil_lookup_destroy () destroys the specified lookup table. For multiband input data, the tables created for each input band must be destroyed individually; the combined table must also be destroyed.

ERRORS

For a complete list of XIL error messages by number, consult Appendix B of the *XIL Programmer's Guide.*

EXAMPLES

Create a lookup table for converting an 8-bit pseudocolor image to a 24-bit color image given the colormap components *red, green, blue:*

```
XilSystemState State;
XilLookup lookup_table;
Xil_unsigned8 red[256];          /* red component of colormap */
Xil_unsigned8 green[256];        /* green component of colormap */
Xil_unsigned8 blue[256];         /* blue  component of colormap */
Xil_unsigned8 data[256*3];       /* lookup table data */
int i, j;

for(j=0,i=0; i<256; i++, j+=3) {
   data[j]     = blue[i];
   data[j+1] = green[i];
   data[j+2] = red[i];
}
lookup_table = xil_lookup_create (State, XIL_BYTE, XIL_BYTE, 3, 256, 0, data);
```

SEE ALSO

xil_lookup(3), **xil_lookup_convert**(3), **xil_lookup_create_combined**(3), **xil_lookup_get_input_datatype**(3), **xil_lookup_get_num_entries**(3), **xil_lookup_get_offset**(3), **xil_lookup_get_band_lookup**(3), **xil_lookup_get_output_datatype**(3), **xil_lookup_get_input_nbands**(3), **xil_lookup_get_output_nbands**(3), **xil_lookup_get_colorcube**(3), **xil_lookup_set_offset**(3), **xil_lookup_get_colorcube_info**(3), **xil_lookup_set_values**(3).