**Test Case Creation: Data Compression**

**Task:** *Design the test plan and implement test cases for the simple\_compress function below. Please submit a write-up of the test plan, run report (including expected / actual output) & analysis, and any source code or project files used to generate output.*

This function will be called with two arguments; a pointer to the data buffer (data\_ptr) and the number of bytes to compress (data\_size). After the function executes the data in the buffer will be modified and the size of the modified buffer will be returned.

The data\_ptr will point to an array of bytes. Each byte will contain a number from 0 to 127 (0x00 to 0x7F).

The function will replace a sequence of a value repeated two or more times with a marker that indicates a repeated value and the number of times it is repeated. The marker in the data will have bit 7 set (0x80). The remaining seven bits of the byte are used to indicate the number of times the value repeats (ie: 0x91, repeats 0x11 or 17 times). The next byte following the marker will be the repeated data (ie: 0x87 0x34; 0x34 was repeated 7 times).

**int simple\_compress( unsigned char \*data\_ptr, int data\_size )**

**{**

**int src\_idx = 0;**

**int dst\_idx = 0;**

**unsigned char next\_byte;**

**while( src\_idx < ( data\_size - 1 ))**

**{**

**next\_byte = data\_ptr[ src\_idx + 1 ];**

**if( data\_ptr[ src\_idx ] == next\_byte )**

**{**

**data\_ptr[ dst\_idx ] = 0x81;**

**while(( data\_ptr[ ++src\_idx ] == next\_byte )**

**&& ( src\_idx < data\_size ))**

**{**

**data\_ptr[ dst\_idx ]++;**

**}**

**data\_ptr[ ++dst\_idx ] = next\_byte;**

**dst\_idx++;**

**}**

**else**

**{**

**data\_ptr[ dst\_idx++ ] = data\_ptr[ src\_idx++ ];**

**}**

**}**

**if( src\_idx < data\_size )**

**{**

**data\_ptr[ dst\_idx++ ] = data\_ptr[ src\_idx ];**

**}**

**return dst\_idx;**

**}**