```
/*--------------------------------------------------------------------------*
 * File Name: BubbleSortDemo.c                                              *
 * Creation:                                                                *
 * Purpose: Demonstration of Bubble Sort                                    *
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 *                                                                          *
 * Modification Log:                                                        *
 *--------------------------------------------------------------------------*/

////////////////////////////////////////////////////////////////////////////
// you must include this header file for all Origin built-in functions and classes
#include <origin.h>
//
////////////////////////////////////////////////////////////////////////////


////////////////////////////////////////////////////////////////////////////
// start your functions here

//-----------------------------------------------------------------------------
//
//  We define two functions in this file:
//      1> bsdShuffle(): This function orders the data in the graph in random order
//      2> bsdSort(n): This function sorts the data using the bubble sort algorithm
//                     for n passes
//
//  The bsdShuffle() function also demonstrates calling LabTalk commands from within
//  an Origin C function.
//
//-----------------------------------------------------------------------------

void bsdShuffle()
{
    // define two Dataset variable and map them to the 1st and 2nd columns of the worksheet
    Dataset dsCol1("data1", 0);
    Dataset dsCol2("data1", 1);

    dsCol1.SetSize(50);
    dsCol2.SetSize(50);

    //first fill 1st column with row numbers and 2nd column with random nos.
    for(int i=0; i<50; i++)
    {
        dsCol1[i] = i+1;
        dsCol2[i] = rand();
    }

    // Now sort the 1st column in random order by sorting the worksheet based on the 2nd column
    int nSortByCol = 1;
    Worksheet wks("data1");
    wks.Sort(nSortByCol, SORT DESCENDING);

}


void bsdSort(int iNumPass)
{
    Dataset dsCol("data1",0);
    int iColLen = dsCol.GetSize();

    double dNum1,dNum2;
    int iAllSorted, iPass = 1;
    do{
        iAllSorted = 1;
        for( int i=0; i<iColLen-iPass; i++ )
        {
            dNum1 = dsCol[i];
            dNum2 = dsCol[i+1];
            if( dNum1>dNum2 )
            {
                dsCol[i] = dNum2;
                dsCol[i+1] = dNum1;
                iAllSorted = 0;
            }
        }
        iPass++;
    }while ( !iAllSorted && ( iPass < iNumPass ) );
}
```