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/*-----*
* File Name: SetCellsOutsideCircle *
* Creation: *
* Purpose: Programming Example *
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* *
* Modification Log: *
*-----*/

#include <Origin.h>

////////////////////////////////////
// This example shows how to set all cells outside of a circular area in a
// matrix to a particular value.
//
// NOTE: It is assumed that a square matrix is active.
//
//
void set_cells_outside_circle(double dOutsideVal = 0)
{
    // Declare matrix layer and check validity
    MatrixLayer ml = Project.ActiveLayer();
    if( !ml )
    {
        out_str("Active layer is not a matrix");
        return;
    }

    // Declare matrix object and get dimensions
    Matrix mm(ml);
    int nRows = mm.GetNumRows();
    int nCols = mm.GetNumCols();
    if( nRows != nCols )
    {
        out_str("Matrix is not a square matrix");
        return;
    }
    int nrc = 0.5 + nRows/2.0; // nearest int
    int ncc = 0.5 + nCols/2.0;
    double rr = min(nrc, ncc);

    // Loop over all cells
    for(int nr = 0; nr < nRows; nr++)
    {
        for(int nc = 0; nc < mm.GetNumCols(); nc++)
        {
            double xsqr = (nr - nrc)^2;
            double ysqr = (nc - ncc)^2;
            if(sqrt(xsqr + ysqr) > rr)
            {
                mm[nr][nc] = dOutsideVal;
            }
        }
    }
}
////////////////////////////////////

```