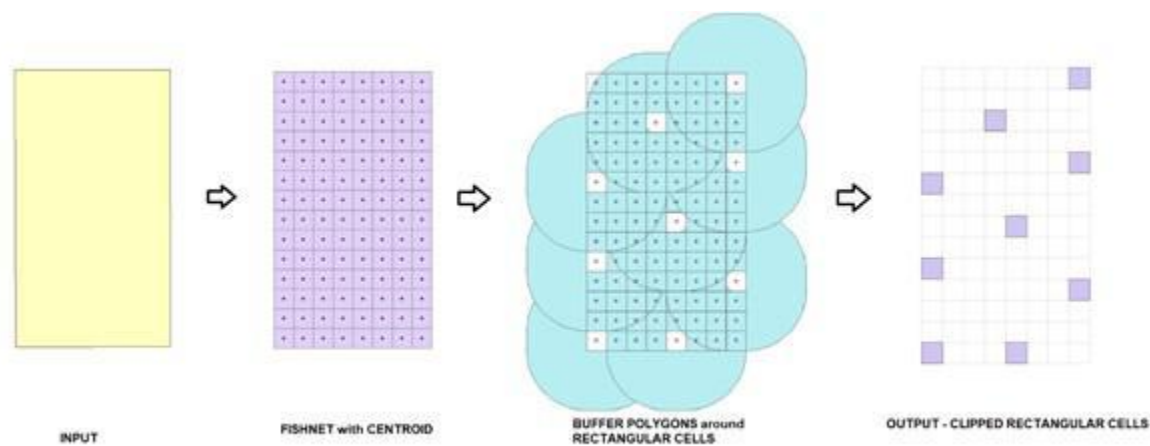# Seating Capacity Tool

Title   Seating Capacity Tool

Summary

Estimate capacity for the input feature class by extracting rectangular cells from fishnet at suitable distance.

Use this tool for planning purpose. For example - Use classroom shapefile to identify locations for seat placement at suitable distance.

Illustration

INPUT   FISHNET with CENTROID   BUFFER POLYGONS around   OUTPUT - CLIPPED RECTANGULAR CELLS
                                                 RECTANGULAR CELLS

Usage

Buffer Usage
Clip Usage
Create Fishnet Usage

Syntax

SeatingCap (Input_Feature_Class, Cell_Width, Cell_Height, Sort_Method, Social_Distance, Measure_from, Output_Feature_Class)

Parameter	Explanation	Data Type
Input_Feature_Class		Feature Class
	Select a polygon feature class. The extent of output feature class will be calculated using this shapefile.	
	Python Reference	
	The parameters to create a fishnet - Fishnet Origin Coordinate (origin_coord), Y-Axis Coordinate (y_axis_coord), Extent (template) -	

are calculated using input feature class.

CreateFishnet_management (out_feature_class, origin_coord, y_axis_coord, cell_width, cell_height, number_rows, number_columns, corner_coord, labels, template)

Cell_Width   **Double**

Enter positive non-zero integer for cell width.

Use to represent an object dimension along x-axis. For example - a width of a chair.

Default cell width is 1 Feet.

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Python Reference

The parameter to create a fishnet - cell_width - is calculated using this input.

CreateFishnet_management (out_feature_class, origin_coord, y_axis_coord, cell_width, cell_height, number_rows, number_columns, corner_coord, labels, template)

Cell_Height   **Double**

Enter positive non-zero integer for cell height.

Use to represent an object dimension along y-axis. For example - a length of a chair.

Default cell height is 1 Feet.

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Python Reference

The parameter to create a fishnet - cell_height - is calculated using this input.

CreateFishnet_management (out_feature_class, origin_coord, y_axis_coord, cell_width, cell_height, number_rows, number_columns, corner_coord, labels, template)

Sort_Method   **String**

Select a corner from where tool will start applying social distance buffer. This reserves the selected corner as safe location.

UL - Upper left corner of the input feature class.

UR - Upper right corner of the input feature class.

LL - Lower left corner of the input feature class.

LR - Lower right corner of the input feature class.

_____

Python Reference

The parameter - sort_method - is obtained from this input.

Sort_management(in_feature_class, out_feature_class, [["Shape", "ASCENDING"]],sort_method)

Social_Distance		**Linear unit**

Enter positive non-zero integer for social distance.

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Python Reference

The parameter - distance - is obtained from this input.

Buffer_analysis(in_feature_class, out_feature_class, distance, "OUTSIDE_ONLY", "", "NONE")

Measure_from		**String**

Select a starting point to apply social distance.

Center - The social distance is measured from the center of the cell.

Boundary - The social distance is measured from the boundary of the cell.

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Python Reference

For Center as input, distance = distance - cell_width.

For Boundary as input, distance = distance.

Buffer_analysis(in_feature_class, out_feature_class, distance, "OUTSIDE_ONLY", "", "NONE")

Output_Feature_Class		**Shapefile**

Provide name for output feature class.

Code Samples

Create Fishnet Example (Python Script)

The following Python script demonstrates how the tool creates fishnet for selected input feature class.

```
#import system modules
import arcpy
from arcpy import env

#Set workspace environment
arcpy.env.workspace = 'C:/Data'
arcpy.env.overwriteOutput = True

#Select input feature class
fc = r'C:\Data\SeatingArea.shp'

# Set parameters for creating fishnet
# 1) Create a  point feature class  - label
# 2)Each output cell will be a polygon with cell width = 2 Feet and cell heigh

labels = 'LABELS'
geometryType = 'POLYGON'

#  Fetch each feature from the cursor and examine the extent properties for row in
arcpy.da.SearchCursor(fc, ['SHAPE@']):
          extent = row[0].extent
    fishnet = arcpy.CreateFishnet_management("Fishnet.shp", str(extent.XMin) + "
#Outputs are - Fishnet.shp and Fishnet_label.shp
```

Buffer Example (Python Script)

The following Python script demonstrates how to create buffer around selected fishnet cell.

```
#import system modules
import arcpy
from arcpy import env

#Set workspace environment
arcpy.env.workspace = 'C:/Data'
arcpy.env.overwriteOutput = True

#Select input feature class
fc = r'C:\Data\Fishnet.shp'

cursor1 = arcpy.SearchCursor(fc)
for row in cursor1:
        if row.getValue("FID") == 0
                    arcpy.Buffer_analysis(row.Shape, "Buf_temp.shp", "6 Feet", "OU
                    arcpy.CopyFeatures_management("Buf_temp.shp", "Buf_poly.shp")

            elif row.getValue("FID") == 5:
                    arcpy.Buffer_analysis(row.Shape, "Buf_temp.shp", "6 Feet", "OU
                    arcpy.Append_management("Buf_temp.shp", "Buf_poly.shp", "TEST"

arcpy.Delete_management("Buf_temp.shp")
#Output is - "Buf_poly.shp" where buffer polygons of 6 Feet are created around
```

Tags
#Buffer #Clip #Fishnet #BatchProcess #Geoprocessing #SeatingCapacity #Planning

Credits
Trupti Lokhande

Use limitations
Tool created in ArcMap 10.7.1 Toolbox.
Check toolbox compatibility before use.