Digital Design Methods I (2022F)
Institute of Landscape and Urban Studies (LUS)
D-ARCH, ETH Zurich

Assignment 2.A

`Digital Design Methods I`

OVERVIEW

After the first Grasshopper Session (Intro.Session), you should now have a basic understanding of the Rhino-Grasshopper platform. To help you get used to this tool that requires a different way of thinking, this assignment aims to provide you with the essential skills to connect the functions in Rhino and the corresponding components in Grasshopper.

ASSIGNMENT

In the provided `2022Fall_Grasshopper_Assignment_2.3dm` file, you will find several titled Rhino commands. Your task for this assignment is to create the corresponding Grasshopper scripts that conduct the same tasks.

HINT

1. Try to discover similar commands by typing the keywords (double-click and type).
2. To get where a component is located in the panel, press `Ctrl+Alt` + `Mouse-Left-click` on the component (Figure 1).

ROTATE (EXAMPLE)

The first function and corresponding scripts are provided as an example:

1. **Input**: Use a `brep` component to register the rhino object (letter T);
2. **Process**: Use the different `rotate` components from Grasshopper to rotate the object so that the you can see the letter in the correct direction in both "Front" view and "Right" view.

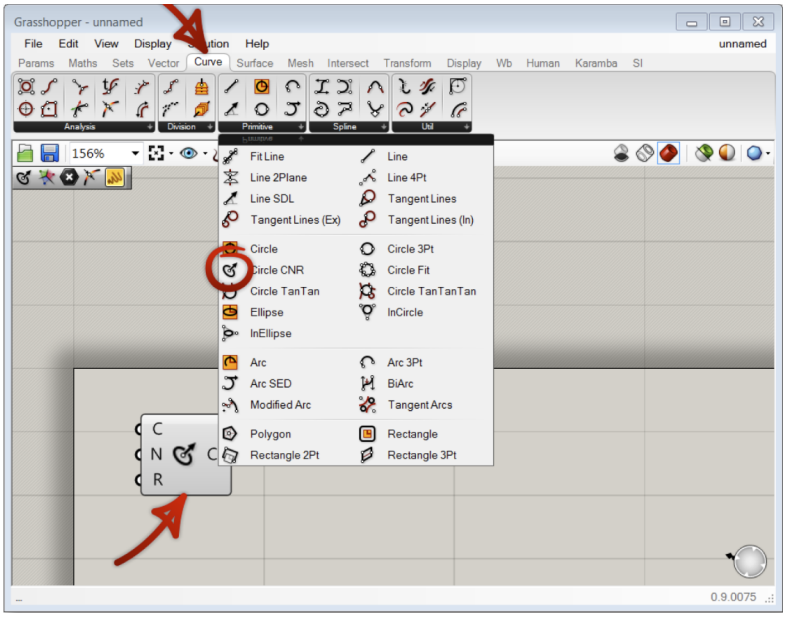

Figure 1: 'Ctrl + Alt + Mouse-Left-click' on the component.

Non-Uniform Scale

1. **Input**: Use a `brep` component to register the rhino object (a box);
2. **Process**: Finding the correct Grasshopper component to scale the box so that the lengths in each direction $\{10m, 10m, 10m\}$ becomes $\{15m, 20m, 30m\}$.

Offset & Rebuild

1. **Input**: Use a `curve` component to register the rhino object (a box);
2. **Process 1**: `Offset` the curve in both sides with a distance of $1m$;
3. **Process 2**: `Rebuild` the two offsetted curves with the following parameters: {ptNum = 20; degree = 2}, {ptNum = 10; deg = 1}.

For both process, you should not bake any object into Rhino.

Divide & Move

1. Divide the circle with 12 equally distanced points.
2. Using the point at the bottom of the triangle as a reference point, move the triangle object to the 12 points you get.
3. (***Bonus Points***) Use whatever method you can, align the triangle so that the tips of all the 12 triangles are pointing to the centre of the circle.

INPUT FILE

- `Assignment_2A.pdf` (this file)
- `Assignment_2A.3dm`
- `Assignment_2A.gh`

SUBMISSION

DEADLINE

- 06/11/2022 (23:59)

Submission(s) beyond the deadline will not be counted.

FORMAT

Please submit a `.pdf` file and the corresponding `.3dm` file to the submission on the server: `\\nas22.ethz.ch\arch_lus_mscla_student\5_HS_22\02_DDM-I\90_Submission\AS_02.A`

The naming of the submission file should follow: **LastName_FirstName_AS02.A.xxx**

LINKS

The following video tutorials are listed for reference:

- Rhino Official Tutorial
- Grasshopper Primer v3
- DDM website