Architect

Language: Python

Goal of these project is a program that can compute the coordinates of a point after several transformations. To make it nice and clean, you chose to use homogeneous coordinates. (We were not allowed to use any matrix calculation library.)

O being the origin of both axis, here are the transformations that we implemented:

- Translation
- Scaling
- Rotation centered at O
- Reflection over any axis that passes through O
- Any combination of the previous transformations

Usage:

```
marcpister@Marcs-MBP workspace % ./102architect -h
USAGE
        ./102architect x y transfo1 arg1 [arg12] [transfo2 arg12 [arg22]] ...

DESCRIPTION
        x  abscissa of the original point
        y  ordinate of the original point

         tarnsfo arg1 [arg2]
        -t i j translation along vector (i, j)
        -z m n scaling by factors m (x-axis) and n (y-axis)
        -r d   rotation centered in 0 by a d degree angle
        -s d   reflection over the axis passing through 0 with an inclination
               angle of d degrees
```

Example:

```
marcpister@Marcs-MBP workspace % ./102architect 1 2 -t 2 3 -z 1 -2 -r 45 -s 30
Translation along vector (2.0, 3.0)
Scaling by factors 1 and -2
Rotation by a 45 degree angle
Reflection over an axis with an inclination angle of 30 degree
0.50    0.87    0.00
0.87    -0.50   0.00
0.00    0.00    1.00
(1.00, 2.00) => (0.31, 10.44)
```