**Focal Plane Coordinate Code Summary**

The purpose of this code is to model the focal plane of the DESI spectrometer. The code models a hexagonal focal plane made up of 5000 fibers (also regular hexagons). The user inputs the bounds of the x/y axis, the coordinates of the hexagon center, the hexagon radius, and the number of random points that will be displayed on the canvas. Additionally, the hexagon is split into 6 wedges, which can be removed to analyze data biasing/cost-benefits.

The code follows the following steps:

1. Regular hexagon vertices are determined by tracing around a circle in 60-degree increments.
2. The slopes of the triangles forming the wedges are determined.
3. The hexagonal grid is drawn. The code loops through the inequality constraints of the equations of the lines that form the hexagon’s wedges.
4. A numbering scheme for each fiber in the focal plane is determined. A “wedge number” and “hex number” specify each hexagon. The “hex numbers” are consistent throughout wedges (e.g. the top hexagon in each wedge has a hex number of 1).
5. Finally, the user can map Cartesian points by inputting them in a function that converts Cartesian coordinates to focal plane coordinates (i.e. [wedge number, hex number]).