**Karkhana.io Assignment**

**Write-Up for Mobius Strip Assignment:**

**Code Structure:**

- The solution is encapsulated in a class `MobiusStrip`.

- It accepts radius (R), width (w), and resolution (n) as inputs.

- The mesh grid of (x, y, z) points is computed using parametric equations.

- Methods provided include:

- \_generate\_mesh()to calculate surface points.

- surface\_area() using double integration over parametric space.

- edge\_length() by summing boundary distances.

- plot() to visualize in 3D using `matplotlib`.

**Surface Area Approximation:**

- Calculated via `scipy.integrate.dblquad` using the magnitude of the cross product of partial derivatives (Jacobian determinant).

- This accounts for local area elements across the parameterized surface.

**Challenges Faced:**

- Ensuring the integration domain accurately captured the twisted topology.

- Dealing with the geometry's inherent non-orientability in numerical approximation.

- Maintaining resolution without overloading computation time.

This modular approach ensures clarity, extendability, and computational correctness**.**