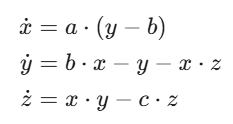
**Task 2 - Lorenz System Trajectory Plotter**

**1. Overview**

This project simulates a dynamical system defined by a set of differential equations and visualizes its trajectory in 3D space. The program uses Python's scientific libraries to solve the equations numerically and generate a plot of the resulting path.

**2. Problem Statement**

The goal is to model the path of an object (a "Bee") moving in 3D space. The movement is governed by the following system of differential equations:



The initial position is given as (x0​,y0​,z0​)=(0,1,1.05), and the system parameters are a=10, b=28, and c=2.667. The final output is a 3D plot of the Bee's path over time.

**3. Implementation Details**

The solution is implemented in Python using the numpy, matplotlib, and scipy libraries.

* **lorenz Function**: This function encapsulates the system of differential equations. It takes the current state and parameters, calculates the time derivatives, and returns them, allowing the solver to integrate the system.
* **solve\_ivp**: This function from the scipy.integrate module is the core solver. It numerically integrates the lorenz function from the initial state over the specified time span, generating the trajectory points.
* **3D Plotting**: matplotlib is used to visualize the solution. The plot function is used to draw the 3D trajectory using the x, y, and z coordinates obtained from the solver's output.

**4. Output**

The program generates a 3D plot titled "Lorenz System Trajectory (Bee Path)". The plot shows the trajectory as a blue line, spiraling in space. The axes are labeled X, Y, and Z. This plot visualizes the complex, non-periodic path of the Bee as it evolves over time.

