1. **Objective Function:**

- The function f(x,y)=((x)2+y−11)2+((y)2+x−7)2f(x, y) = ((x)^2 + y - 11)^2 + ((y)^2 + x - 7)^2f(x,y)=((x)2+y−11)2+((y)2+x−7)2 is defined. This function has several local minima.

2. **Gradient Computation:**

- The gradient of the function is approximated using finite differences.

3. **Armijo Line Search:**

- The step size is adapted during the gradient descent process to ensure that the Armijo condition is met, providing a balance between sufficient decrease and step size reduction.

4. **Gradient Descent:**

- The algorithm iteratively updates the point (x1,x2)(x_1, x_2)(x1,x2) using the computed gradient and the step size from the line search.
- It tracks the path taken by the gradient descent and the corresponding function values.

5. **Visualization:**

- The code generates two plots:
    - **2D Contour Plot:** Shows the contour lines of the function and the path taken by the gradient descent.
    - **3D Surface Plot:** Shows the surface of the function and the descent path in 3D space.