

```
1: import numpy as np
2: import pandas as pd
3: import week6
4: import matplotlib.pyplot as plt
5: from mpl_toolkits.mplot3d import Axes3D
6:
7: # Global variables for extents
8: x_min, x_max = -5, 5
9: y_min, y_max = -5, 5
10:
11: def plot_wireframe_and_contour(f, T, resolution=100):
12:     global x_min, x_max, y_min, y_max
13:
14:     # Generate data for wireframe plot
15:     x_range = np.linspace(x_min, x_max, resolution)
16:     y_range = np.linspace(y_min, y_max, resolution)
17:     X, Y = np.meshgrid(x_range, y_range)
18:     Z = np.zeros_like(X)
19:     for i in range(resolution):
20:         for j in range(resolution):
21:             Z[i, j] = f([X[i, j], Y[i, j]], T)
22:
23:     # Plot wireframe
24:     fig = plt.figure(figsize=(12, 6))
25:
26:     ax_wireframe = fig.add_subplot(121, projection='3d')
27:     ax_wireframe.plot_wireframe(X, Y, Z, color='blue')
28:     ax_wireframe.set_xlabel('X')
29:     ax_wireframe.set_ylabel('Y')
30:     ax_wireframe.set_zlabel('f(x, T)')
31:     ax_wireframe.set_title('Wireframe Plot of f(x, T)')
32:
33:     # Generate data for contour plot
34:     Z_contour = np.zeros_like(X)
35:     for i in range(resolution):
36:         for j in range(resolution):
37:             Z_contour[i, j] = f([X[i, j], Y[i, j]], T)
38:
39:     # Plot contour
40:     ax_contour = fig.add_subplot(122)
41:     contour = ax_contour.contourf(X, Y, Z_contour, levels=20, cmap='viridis')
42:     plt.colorbar(contour, ax=ax_contour, label='f(x, T)')
43:     ax_contour.set_xlabel('X')
44:     ax_contour.set_ylabel('Y')
45:     ax_contour.set_title('Contour Plot of f(x, T)')
46:
47:     plt.tight_layout()
48:     plt.show()
49:
50: if __name__ == "__main__":
51:     df = pd.read_csv("data/T.csv")
52:     T = df.values
53:     plot_wireframe_and_contour(week6.f, T) # Call the function to plot wireframe and contour
54:
```