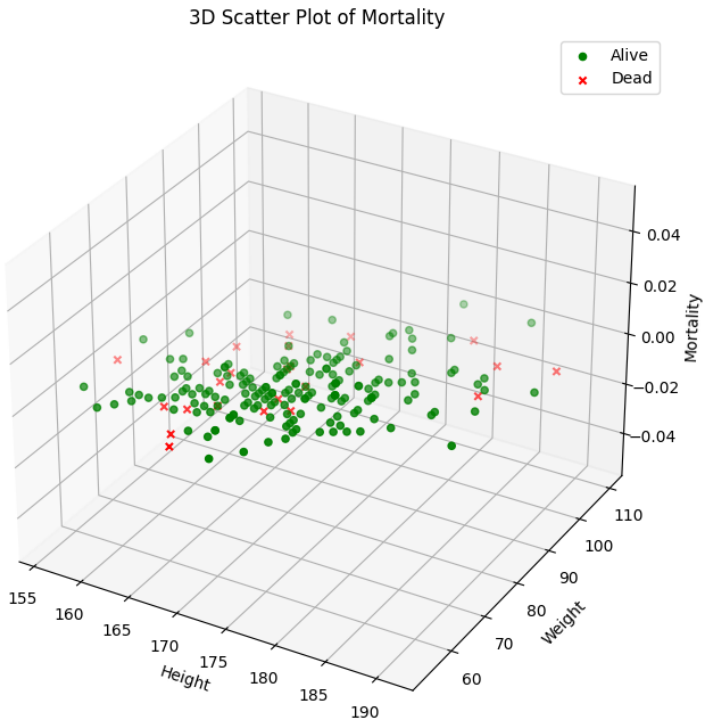
Q.1

In [ ]:
```
import pandas as pd
import matplotlib.pyplot as plt
from mpl_toolkits.mplot3d import Axes3D
data = pd.read_csv('MortalityDataset.csv')
filtered_data = data[data['MORT'].isin(['alive', 'dead'])]
alive_data = filtered_data[filtered_data['MORT'] == 'alive']
dead_data = filtered_data[filtered_data['MORT'] == 'dead']
fig = plt.figure(figsize=(10, 8))
ax = fig.add_subplot(111, projection='3d')
ax.scatter(alive_data['HEIGHT'], alive_data['WEIGHT'], zs=0, c='g', marker='o',
ax.scatter(dead_data['HEIGHT'], dead_data['WEIGHT'], zs=0, c='r', marker='x', la
ax.set_xlabel('Height')
ax.set_ylabel('Weight')
ax.set_zlabel('Mortality')
ax.set_title('3D Scatter Plot of Mortality')
ax.legend()
plt.show()
```

Figure

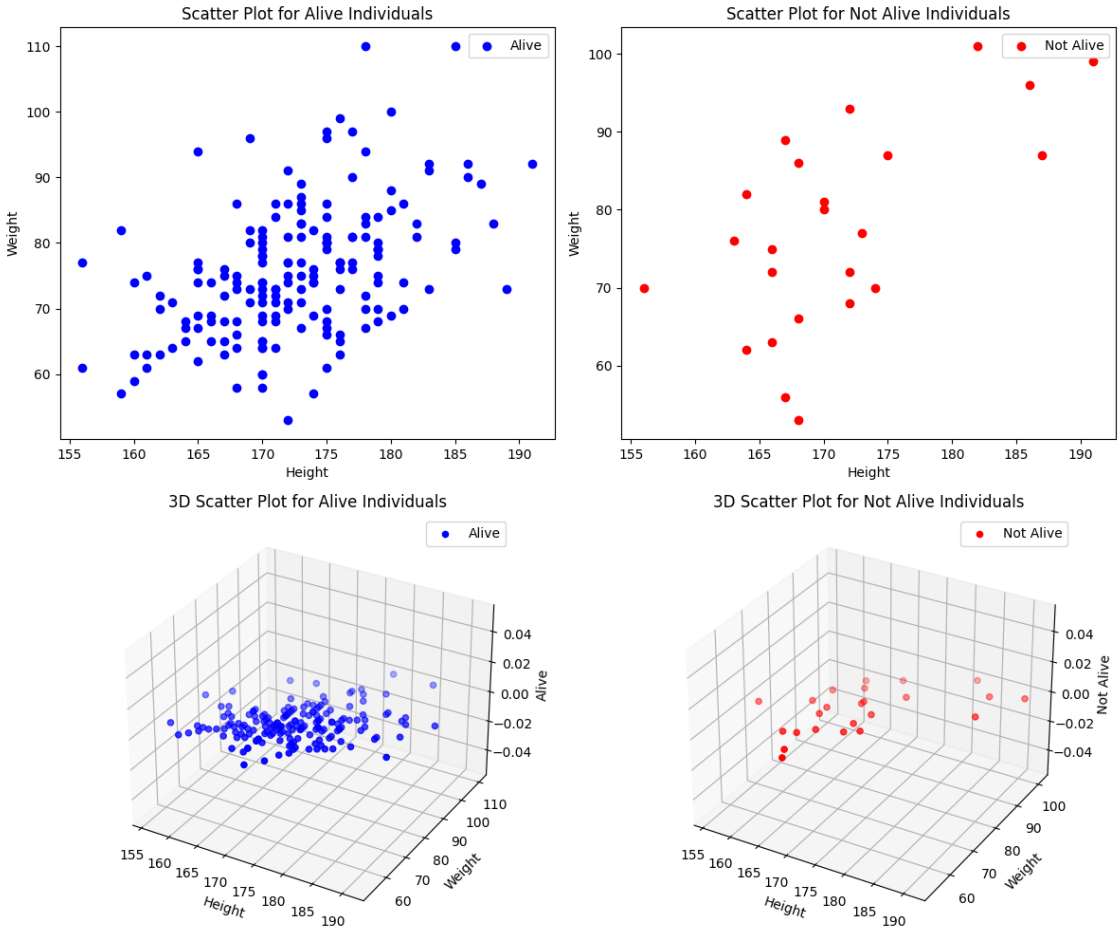


Q.3

In [ ]:
```
fig = plt.figure(figsize=(12,10 ))

ax1 = fig.add_subplot(221)
ax1.scatter(alive_data['HEIGHT'], alive_data['WEIGHT'], color='blue', label='Ali
```

```
ax1.set_title('Scatter Plot for Alive Individuals')
ax1.set_xlabel('Height')
ax1.set_ylabel('Weight')
ax1.legend()


ax2 = fig.add_subplot(222)
ax2.scatter(dead_data['HEIGHT'], dead_data['WEIGHT'], color='red', label='Not Al
ax2.set_title('Scatter Plot for Not Alive Individuals')
ax2.set_xlabel('Height')
ax2.set_ylabel('Weight')
ax2.legend()

ax3 = fig.add_subplot(223, projection='3d')
ax3.scatter(alive_data['HEIGHT'], alive_data['WEIGHT'], zs=0, c='blue', label='A
ax3.set_title('3D Scatter Plot for Alive Individuals')
ax3.set_xlabel('Height')
ax3.set_ylabel('Weight')
ax3.set_zlabel('Alive')
ax3.legend()


ax4 = fig.add_subplot(224, projection='3d')
ax4.scatter(dead_data['HEIGHT'], dead_data['WEIGHT'], zs=0, c='red', label='Not
ax4.set_title('3D Scatter Plot for Not Alive Individuals')
ax4.set_xlabel('Height')
ax4.set_ylabel('Weight')
ax4.set_zlabel('Not Alive')
ax4.legend()

plt.tight_layout()
plt.show()
```

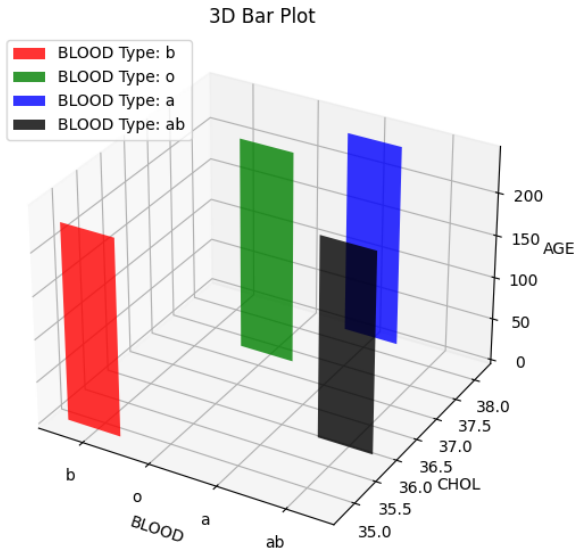
Figure



Q2.

In [ ]:
```
blood_types = list(data['BLOOD'].unique())
avg_ages = list(data.groupby('BLOOD')['AGE'].mean())
avg_chol = list(data.groupby('BLOOD')['CHOL'].mean())

fig = plt.figure(figsize=(10, 6))
ax = fig.add_subplot(111, projection='3d')

colors = ['red', 'green', 'blue', 'black']

bars = ax.bar(blood_types, avg_chol, avg_ages, color=colors, zdir='y', alpha=0.8

legend_labels = [f'BLOOD Type: {t}' for t in blood_types]
ax.legend(bars, legend_labels)

ax.set_title('3D Bar Plot')
ax.set_xlabel('BLOOD')
ax.set_ylabel('CHOL')
ax.set_zlabel('AGE')

plt.show()
```

Figure



In [ ]:
```
fig = plt.figure(figsize=(12, 10))

ax1 = fig.add_subplot(221, projection='3d')
subset_a = data[data['BLOOD'] == 'a']
avg_age_a = subset_a['AGE'].mean()
avg_chol_a = subset_a['CHOL'].mean()
ax1.bar(['a'], [avg_age_a], [avg_chol_a], color='red', zdir='y', alpha=0.8)
ax1.set_title('3D Bar Plot for Blood Type A')
ax1.set_xlabel('BLOOD')
ax1.set_ylabel('AGE')
ax1.set_zlabel('CHOL')

ax2 = fig.add_subplot(222, projection='3d')
subset_b = data[data['BLOOD'] == 'b']
avg_age_b = subset_b['AGE'].mean()
avg_chol_b = subset_b['CHOL'].mean()
ax2.bar(['b'], [avg_age_b], [avg_chol_b], color='green', zdir='y', alpha=0.8)
ax2.set_title('3D Bar Plot for Blood Type B')
ax2.set_xlabel('BLOOD')
ax2.set_ylabel('AGE')
ax2.set_zlabel('CHOL')

ax3 = fig.add_subplot(223, projection='3d')
subset_ab = data[data['BLOOD'] == 'ab']
avg_age_ab = subset_ab['AGE'].mean()
avg_chol_ab = subset_ab['CHOL'].mean()
ax3.bar(['ab'], [avg_age_ab], [avg_chol_ab], color='blue', zdir='y', alpha=0.8)
ax3.set_title('3D Bar Plot for Blood Type AB')
ax3.set_xlabel('BLOOD')
ax3.set_ylabel('AGE')
ax3.set_zlabel('CHOL')


ax4 = fig.add_subplot(224, projection='3d')
subset_o = data[data['BLOOD'] == 'o']
avg_age_o = subset_o['AGE'].mean()
avg_chol_o = subset_o['CHOL'].mean()
```

```
ax4.bar(['o'], [avg_age_o], [avg_chol_o], color='black', zdir='y', alpha=0.8)
ax4.set_title('3D Bar Plot for Blood Type O')
ax4.set_xlabel('BLOOD')
ax4.set_ylabel('AGE')
ax4.set_zlabel('CHOL')

plt.tight_layout()
plt.show()
```

Figure