Name: Ayush Chanchal

Sap id: 500097569

Roll no.: R2142211432

Batch: B6

EXPERIMENT: 05

Source Code:

import numpy as np

import pandas as pd

import scipy.stats as stats

# Set random seed for reproducibility

np.random.seed(123)

# Generate synthetic data

group1 = np.random.normal(loc=15, scale=3, size=100) # Group 1 data

group2 = np.random.normal(loc=20, scale=3, size=100) # Group 2 data

group3 = np.random.normal(loc=25, scale=3, size=100) # Group 3 data

# Combine data into a DataFrame

data = pd.DataFrame({

'Group 1': group1,

'Group 2': group2,

'Group 3': group3

})

# Perform t-test between Group 1 and Group 2

t\_statistic, p\_value = stats.ttest\_ind(data['Group 1'], data['Group 2'])

print("t-test between Group 1 and Group 2:")

print("t-statistic:", t\_statistic)

print("p-value:", p\_value)

# Calculate z-score and p-value for comparing Group 1 and Group 2 means

z\_score, p\_value\_z = stats.zscore(data['Group 1']), stats.zscore(data['Group 2'])

print("z-test between Group 1 and Group 2:")

print("z-score:", z\_score)

print("p-value:", p\_value\_z)

# Perform ANOVA test

f\_statistic, p\_value\_anova = stats.f\_oneway(data['Group 1'], data['Group 2'], data['Group 3'])

print("ANOVA test:")

print("F-statistic:", f\_statistic)

print("p-value:", p\_value\_anova)

Screenshot:

