BDS HW4a

Analysis

1. Quantitative Analysis - Original Data

	PID	Pre-Test-Score	Post-Test-Score	Helpfulness	Interest
PID	1.000000e+00	0.036993	0.188391	0.145241	-2.078197e-16
Pre-Test-Score	3.699307e-02	1.000000	0.439188	-0.616531	-1.657985e-02
Post-Test-Score	1.883913e-01	0.439188	1.000000	0.283526	8.117722e-02
Helpfulness	1.452412e-01	-0.616531	0.283526	1.000000	1.382034e-01
Interest	-2.078197e-16	-0.016580	0.081177	0.138203	1.000000e+00

A. **Pre-Test-Score** and **Post-Test-Score** :
The correlation coefficient is approximately 0.439, suggesting a moderate positive linear relationship. This implies that higher pre-test scores are moderately associated with higher post-test scores.

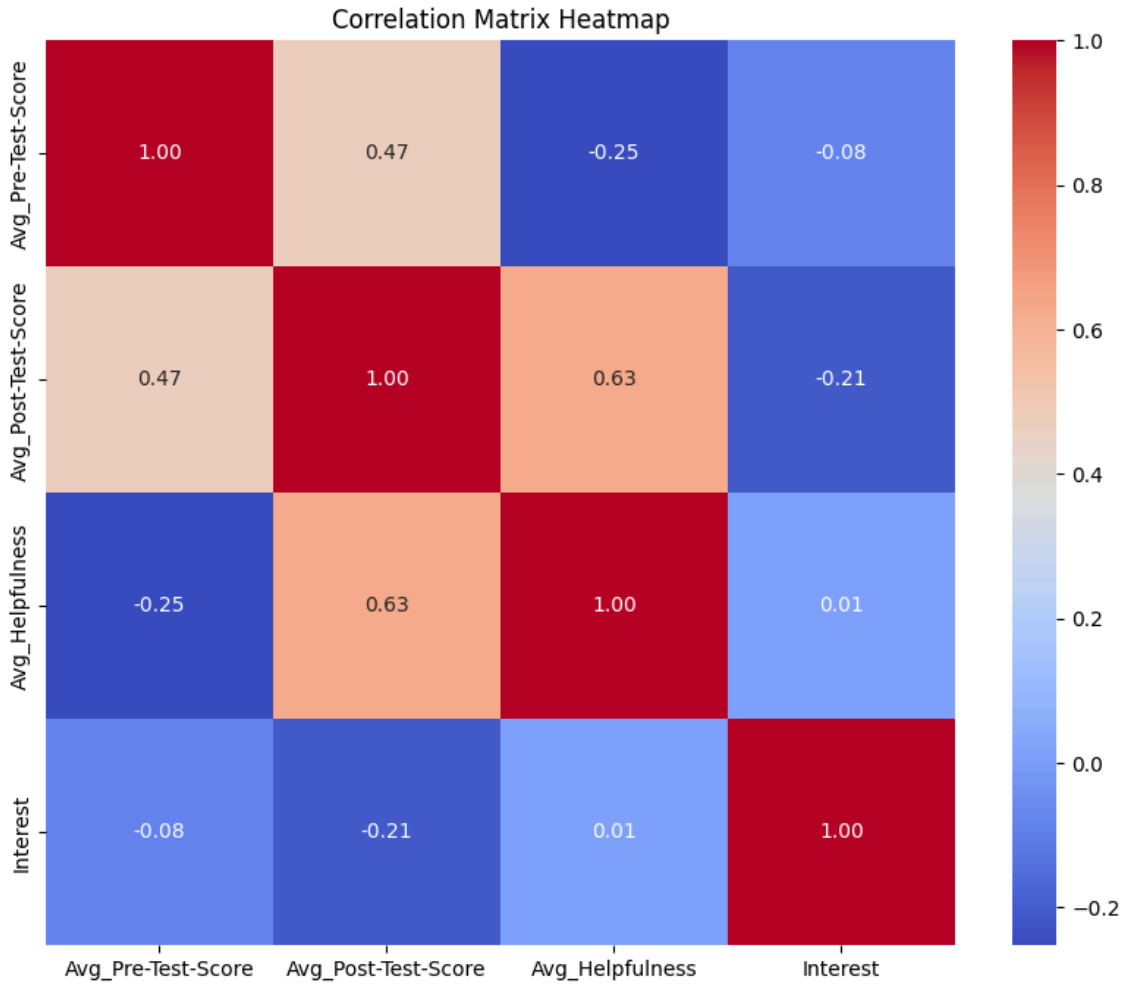
B. **Pre-Test-Score** and **Helpfulness** : 前測分數越低，覺得 AI 幫助越大。
The correlation coefficient is approximately -0.617, indicating a moderate negative linear relationship. This suggests that higher pre-test scores are associated with lower ratings of helpfulness, which might indicate that students who performed better in the pre-test found the resources or methods less helpful, possibly due to already having a good grasp of the material.

C. **Post-Test-Score** and **Helpfulness** :
The correlation coefficient is approximately 0.284, indicating a weak positive linear relationship.

D. **Interest** and other numeric columns :
The correlation coefficients between Interest and other variables are very close to zero, indicating no significant linear relationship.

2. Quantitative Analysis - Original Data

	Avg_Pre-Test-Score	Avg_Post-Test-Score	Avg_Helpfulness	Interest
Avg_Pre-Test-Score	1.000000	0.474672	-0.252384	-0.082817
Avg_Post-Test-Score	0.474672	1.000000	0.629835	0.204490
Avg_Helpfulness	-0.252384	0.629835	1.000000	0.395572
Interest	-0.082817	0.204490	0.395572	1.000000



A. **Avg_Pre-Test-Score** and **Avg_Post-Test-Score**: There is a moderate positive correlation (0.47). This suggests that higher pre-test scores tend to be associated with higher post-test scores.
B. **Avg_Pre-Test-Score** and **Avg_Helpfulness**: There is a weak negative correlation (-0.25). This indicates that higher pre-test scores are slightly associated with lower perceived helpfulness, though the relationship is not very strong.
C. **Avg_Pre-Test-Score** and **Interest**: The correlation is very weak and negative (-0.08), implying almost no relationship between pretest scores and interest levels.
D. **Avg_Post-Test-Score** and **Avg_Helpfulness**: There is a moderate positive correlation (0.63), indicating that higher post-test scores are somewhat associated with higher perceived helpfulness.
E. **Avg_Post-Test-Score** and **Interest**: The correlation is weak but positive (0.20), suggesting a slight tendency for higher post-test scores to be associated with higher interest levels.
F. **Avg_Helpfulness** and **Interest**: There is a moderate positive correlation (0.40), indicating that higher perceived helpfulness is somewhat associated with higher interest levels.

3. Qualitative Analysis

A. **Institution & Level:** There are 17 unique institutions and 5 different education levels in the dataset. There are not significant relationships between **Institution & Level** and their test scores.
    a. The relationships between **“Level”** and the Mean value of “**Helpfulness**” and “**Interest**”.

Level	Mean Helpfulness	Mean Interest
大學二	0.518519	1.333333
大學三	0.400000	1.000000
大學四	0.583333	0.750000
碩士一	0.577778	1.000000
碩士二	0.444444	2.000000

b. The relationships between **“Institution”** and the Mean value of “**Helpfulness**” and “**Interest**”.

Institution	Mean Helpfulness	Mean Interest
中山大學	0.666667	1.000000
交大	0.592593	0.666667
台北醫學大學	0.555556	1.666667
台大	1.000000	1.500000
台科大	0.333333	2.000000
成大	0.388889	1.000000
政治大學	0.444444	2.000000
清大	0.333333	0.750000
高雄醫學大學	0.333333	1.000000

B. **Background**: Each of the 20 entries in your dataset has a unique background description.

Conclusions

1. The lower the pre-test score, the greater the perceived help from AI.
2. The dataset encompasses 17 unique institutions and 5 different education levels. However, there is no significant relationship observed between the institution or level of education and the test scores. This might imply that the institutional and educational level factors do not play a major role in influencing the scores in this context.
3. We can observe that the interest toward AI assistance increases as the education level increases. That may result from the **disparity in “ability of using the AI assistance”** and **the different demand on information gathering and organization**.