# Quantitative Data Analysis Reflection

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## 1. Reflection on Coding the Data

The process of coding the data required careful attention to the Likert-scale questions. I followed the prescribed coding system, converting qualitative responses such as Strongly Disagree through Strongly Agree into a numeric scale from 1 to 5. Similarly, the behavioral frequency questions were coded on a 1 to 4 scale. Maintaining both the original text responses and the new numeric codes was helpful for clarity and cross-checking. I learned that consistency in applying these codes is essential, and creating a codebook provided a valuable reference point. To streamline the process, I used a Python script (which I developed with AI assistance) to automate the coding and reduce manual errors. This saved time while ensuring accuracy and reproducibility.

## 2. Observations on the Survey Instrument

The survey was generally well-structured, but a few questions could be reworded for clarity. Some items combined multiple ideas into a single statement, which might have led to different interpretations among participants. For example, technology-related obstacles could have been separated into distinct items (e.g., Internet connectivity vs. software issues) for more precise analysis. Additionally, it would have been helpful to include a few demographic questions not present in the survey, such as employment status or prior experience with online coursework.

## 3. Quantitative Results of the Survey

The coded and analyzed results revealed several noteworthy patterns. On the Likert-scale items (Q6–Q16), many respondents rated themselves highly in confidence and persistence when navigating online coursework. The composite ONLINE_LEARNER score reflected generally strong readiness for online learning across participants. Numeric responses, such as graduate hours completed, showed a wide distribution, suggesting the sample included both early-stage and more advanced students. In terms of satisfaction-related questions, the majority of responses leaned toward “Agree” or “Strongly Agree,” highlighting an overall positive perception of their academic program.

## 4. Most Meaningful Statistical Test

The most meaningful statistical test in this dataset was the calculation of averages combined with standard deviation. Averages provided a clear sense of central tendency for each survey item, while standard deviation gave insight into the variability of responses. For example, while the mean scores suggested agreement with confidence statements, the spread of scores indicated that some students were significantly less confident, a detail that the mean alone might have obscured.

## 5. Most Interesting Results

The most interesting finding was the variation in persistence scores when facing technological obstacles. While many students reported high persistence, there was still a notable group of respondents who rated themselves lower. This suggests that while the majority of students adapt well to online challenges, a subset may require additional support or resources to succeed.

## 6. Most Challenging Aspect of the Assignment

The most challenging aspect of this assignment was ensuring that each variable was properly coded and aligned with the statistical calculations. Because the dataset included a mix of Likert scales, numeric values, and open-ended responses, it required careful attention to determine which variables should be analyzed quantitatively. Developing a reproducible process in Python, rather than manually coding in Excel, added initial complexity but ultimately simplified the workflow.

## 7. Application of Skills in the Future

The skills I developed through this project will be valuable in my professional career. Data cleaning, coding, and statistical analysis are fundamental for evaluating program effectiveness, making evidence-based decisions, and presenting results clearly. I also gained confidence in using computational tools to automate repetitive tasks. The combination of statistical reasoning and technical skills will support future research and professional responsibilities that involve large datasets and survey analysis.