The goal of this project is to explore and compare the physical height profiles of collegiate athletes participating in swimming and volleyball, for both men's and women's teams. Specifically, the analysis seeks to determine whether there is a general trend in which swimmers or volleyball players tend to be taller on average, and whether these trends vary between genders. This exploration can offer insight into whether height plays a more defining role in one sport over another, and may suggest correlations between physical attributes and athletic specialization.

To conduct this analysis, Python was used as the primary tool, alongside the pandas library for data processing and matplotlib for visualization (later, in Step 8). The dataset for each team was stored in CSV format and accessed via file paths. The Python scripts read these files, parsed their content into structured DataFrames, and computed statistical information such as average height. The decision to use pandas was based on its flexibility and efficiency in handling structured tabular data, which is ideal for sports-related analytics. Additionally, this project showcases how Python allows for operator overloading — for instance, using the same + operator to add numerical height values or concatenate player names, depending on data type context.

Each of the four datasets (men's swimming, men's volleyball, women's swimming, and women's volleyball) was read using pandas.read_csv(). From there, the script targeted a specific column labeled Height_in, which stores each athlete's height in inches. Using the .mean() function, the script calculated the average height for each team group. This allowed for direct comparison across genders and sports. The average values were printed to the terminal for verification and served as the foundation for the subsequent report and visualization.

The computed results were as follows: the average height for men's swimming was 71.43 inches, while men's volleyball came in slightly lower at 71.18 inches. For the women's teams, swimming averaged 64.35 inches, and volleyball averaged 68.15 inches. These numbers reveal some interesting patterns. Among men, the difference is minimal — suggesting similar physical requirements or recruitment trends across both sports. However, among women, volleyball players are substantially taller on average than swimmers. This may reflect the physical advantages of height in volleyball, especially for positions such as middle blockers and outside hitters, where reach and verticality are critical. In swimming, while height may help with reach and hydrodynamics, the range of competitive body types is often broader.

The observed results generally align with expectations based on sport-specific demands. Volleyball, particularly at higher levels of competition, tends to favor taller athletes due to the nature of the game — involving blocking, spiking, and jumping over a net. In contrast, swimming often includes successful athletes of various heights, with taller athletes possibly having an advantage in certain strokes but not dominating across the board. While the men's averages were very close, the women's data show a more significant difference, which supports

the hypothesis that volleyball may select more heavily for height, particularly on the women's side.

It is important to consider the representativeness of these findings. While the data is likely reflective of general trends, there are limitations. Sample sizes may be small or uneven, and the data is limited to a single collegiate environment. Also, variations in athlete positions (e.g., a libero vs. an outside hitter in volleyball, or sprinter vs. distance swimmer) are not captured in this analysis. These roles can influence height distributions significantly. Thus, while informative, the averages should be interpreted with caution when applied to broader athletic populations.

In conclusion, the data supports the idea that height plays a more defining role in volleyball than in swimming, especially among female athletes. Male swimmers and volleyball players show nearly identical average heights, while female volleyball players clearly stand taller than female swimmers. This aligns with the physical demands and skill emphases of each sport. These insights help confirm that physical attributes such as height are not uniformly advantageous across all sports, but instead have sport-specific impacts based on the nature of competition and performance requirements.