Speed Lab Writeup

Objective:

To take data on and visually represent the velocities of a group of students as they run 16 meters through a hallway by means of position vs. time graphs.

Materials:

* Meter sticks
* Tape
* Stopwatch
* Laptop

Procedure:

1. Create a racetrack with tape marks every 2 meters from 0 to 16 meters.
2. At each mark, assign a timer to time how long it takes for the runner to run from the start to their respective tape mark.
3. Have a runner line up at the 0-meter mark, ready to run.
4. Count down to 0 out loud, at this time, all timers will start, and the runner will take off.
5. Repeat steps 2-4 for all runners once.
6. Gather all times from each timer and place the data in a table (See Data)

Data:

Graphical user interface, application, table, Excel

Description automatically generated

Analysis:

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Conclusion:

The fastest student was student number 1, having an average velocity of 7.138m/s (slope of distance vs. time graphs). The greatest maximum instantaneous velocity was calculated to be infinite, as student number 8 was recorded as being at 2 positions at the same time, resulting from the imperfection of each individual timer.

Sources of Error:

* Numerous timers will result in variations due to individual reaction times affecting start time and time passing each mark
* Each runner did not start at the exact same time
* One trial was conducted for each runner, resulting in a limited data set
* Placement of tape marks is not perfectly equidistant
* Floor is not perfectly flat