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Home Quiz 2: Accelerometer

A Nexus 7 tablet was used to run the Accelerometer program, which calculated the acceleration in three dimensions over a small distance. I walked in a straight line in my house and recorded data. The surface was level throughout with no change in elevation. I tried to walk with a constant speed, but definitely changed speed several times throughout the small walk.

Shown below are my results:

I walked in a straight line across a room. Data was recorded using the code for the accelerometer for this period. This code basically calculated the changing acceleration in the x,y, and z components over a few seconds. As seen, the acceleration in the z direction remained between 8 m/s2 and 10 m/s2. This is because I didn’t try to drastically change the acceleration and this direction, so the acceleration will stay close to gravity (9.81 m/s2). If the Nexus 7 was on a flat surface with no other forces acting on it, the acceleration will be exactly 9.81 m/s2 in the z-direction. The acceleration in the x and y direction were very similar as they both remained between -1.7 m/s2 and 2.1 m/s2. This is so because I walked in a straight line and did not intentionally put any extra force in the x or y directions. Technically, the acceleration in the x and y direction would be 0 m/s2 in the scenario mentioned previously.