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STEM 1B

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Speed and Accuracy

The project that was assigned gave us instructions on how to make your robot follow a closed path that was created with wide tape. In order to do this we had to design a program that would enable the robot to detect the difference between light and dark while tracing the line. In order to do this we had to calculate threshold value. The threshold value is the average of the robot when it is tracking the difference between light and dark. In order to do this we had to take the number we found when the robot was sensing dark and the number we found when the robot was sensing light. We took the two numbers that we had gotten, added them and then divided to get the average. The number for when the robot was sensing light was 46 and the number for sensing dark was 29, when adding the two numbers together and divided it by two the outcome was 37.5. With this we created a program that included these thresholds and different power levels that would help our program move faster. We looked back from the earlier program that we made named “Line Track” which helped us get a base for what our project should look like.

Some decisions that we made about our robot were how fast each wheel was going to move, if we were going for speed, accuracy, or both, and if we were going to add in sound or display something on the brick of your robot. The decision of figuring out how fast each wheel was going to go was a tough decision to make. If you put the power of both the B and the C wheel close together the robot would go to fast and not the turns accurate. If you put the power of both the B and C wheel too far away the robot would go slower but make sharper and quicker turns. We decided to put our B wheel at 10 and our C wheel at 50. This made our robot go at a slow pace but be more accurate. This led into our other decision whether or not we were going for speed, accuracy, or both. We decided accuracy because when we tried speed it messed up or program and we also realized that “Slow and steady wins the race”. We decided not to show anything on the screen because when we tried it earlier in the process it messed up our program. We added in a smiley face which didn’t work well with our program because of the way it was added into the program.

In our program there are four blocks inside of two different loops. The four blocks shows that we have both C and B wheel going backwards at a certain power. The infinity sign in the four blocks shows that they wheels will continue to go until we stop the program. The first loop around the four blocks is the light sensor. The light sensor determines whether or not the robot detects light and at what average. Our average was 37.5 %. Lastly, the second loop around everything is the continue loop. This loop says that the whole program will repeat over and over again until the program is stopped. Here is our program.

