Prize Winner

Programming, Apps & Robotics

Year R-2

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Targets

Aim

I like playing games where you control something on the screen, so I wanted to make one for myself. After thinking about what I could make, and talking with my family, I thought I could make a game that tests how well people of different ages can stop a bouncy ball on a target.

If enough people play the game then the averages will tell us if there is a difference between how well people of different ages can play games like mine.

If there is a difference, then this might mean that people's reflexes are different at different ages. Or it might mean that people of different ages have different ways of playing the game that makes them play better.

How to Play

Go to https://scratch.mit.edu/projects/1036181656/ to see the game.

To play properly you will need to sign in to Scratch, otherwise the averages won't update properly.

The game starts by asking the player to pick their age group. Once they have picked their age group, the tennis ball and target appear.

To start and stop the tennis ball the player presses any key, or taps the screen. The aim is to stop the ball as close to the middle of the target. The game shows the player how close they are to the target when they stop the ball. The player has three turns and then gets a total score.

Be careful though, you only have 20 seconds for each and the ball will change speed and direction without warning.

After working out the total score, the game compares it to the best score ever and the best score for the player's age and shows the player how they went.

The game then shows a scoreboard showing how the player went against their age group average score and then shows a scoreboard of all the age groups.

How it works

I made the game in Scratch, which is a programming language that uses blocks that I can join together to control things on the screen.

See https://scratch.mit.edu/projects/1036181656/editor/ to see the blocks I used.

To make the whole game was too hard for me to do, so my Dad helped me by doing some parts. I think that is ok as most computer games are made by more than one person, and I wanted my game to work in the end, so people could play it and it could get the averages numbers for me.

I did the main part of the game, which is the tennis ball that the player stops near the target.

When the green flag is started, I set up the tennis ball. I make it not draggable so players can't move the ball by tapping on it. I also used the ghost effect so the ball will be invisible, but later I can make it appear slowly, rather than just flashing up.

After the player picks their age, I make the ball appear and ask the player to tap a key to start the ball moving. My Dad helped me with the blocks to work out when the player tapped a key or the screen.

After tapping to start, I start a loop for three times or if there was a timeout. This is the number of plays a player gets. I thought three is a good number, enough plays so the player has a good go, but not too many so it is boring. The game then starts a play block.

I made some blocks that set up the speed and direction of the ball. These use the random block so the player won't know where the ball is going to go. The blocks then wait for a random amount of time, before changing the speed and direction again to make the game harder and more fun.

I made a play block to run one play. If the play block sets the speed and direction of the ball, and then starts moving it. If the ball hits the edge, I make it bounce back. I check to see if the player has tapped, or if the play has timed out.

If the player tapped, then I measure how far from the target they are, tell the player their score and add it to the total score.

After all the plays have been finished, I update the average score for the age group and get all the averages for all age groups. These use Scratch cloud variables so the numbers are stored across all players. Dad set up the blocks to use the cloud variables because Scratch would only let me have 10, which wasn't enough. Dad knew how to put them together so my averages could be stored.

I then make the player think I am working out the score, which is just for fun. I then compare the player's score to the best score ever and the best score for their age. If they are the best then I tell them, or just tell them their score.

I then send the update scoreboard message, which makes the scoreboard tell the player their score compared to their age range average and then ranks all the age ranges. Dad did the scoreboard blocks, using the ideas I had.

Learnings

Having played with my game a few times I have realised that people may not pick their age. This will make the scientific measurement of the age averages inaccurate.

I also learned a lot about how to make a game fun. Adding in the random changes made it harder and makes people want to keep playing it.

Putting up the age averages in the scoreboard makes people want to play again.

I also learned that it can be tricky to understand why a program isn't running properly. Dad helped me to go through it and see where the problem is.

Summary

I had fun making this game with my Dad. I hope lots of people will play it and I can see if there is any difference between them.

Acknowledgements

This game is too big for me to do on my own. I made the main part of the game, where the player tells the ball to move and to stop the ball.

My Dad helped me by doing the blocks to save the game data into cloud variables, and doing the scoreboard.