

EV3 ASSINGMENT

by Abukhar Dahir cabdinuur

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INTEGRATING PROJECT

Introduction

The purpose of this task was to build and program an ev3 robot. The program was to navigate it from the start to the finish line as stated on our assignment brief. We were split into groups of three. In my group I had Fathi and Mahmoud. When we initially began the task, we split the task into three sections to make sure each group member was occupied with something to do to make the task easier.

My task was to write a program to divert the robot from the block in front. Therefore, to make this possible I had to use a software called Mindstorm which contained all the tools I needed to make this task possible. Getting use to the software was a bit challenging for me as I haven't use it before, so it took a while to familiarize myself with it. Once I had gotten comfortable with the software I began experimenting. I also used YouTube clips to guide me and give me more of an insight into how to use the software which was quite helpful.

My task

I was responsible for writing the program to make the ultrasonic sensors work. The ultrasonic sensors are used for measuring distance and to drive forward until it comes within a certain distance from the wall or object. I also had to figure out what distance would give the robot enough space to turn and not run into the wall. I also added a light sensor facing down. I put black tape on the floor, so the colour sensor could detect it and follow it.

I started off by creating a simple program to get the robot moving. I used the colour sensor and attached it to the moving steering icon to get the colour sensor functioning and to get the robot moving. after that I added a series of moving steering icons. The main aim of this is to try and make the get the robot moving and get it to move away from an object in front of it. I had to make a few adjustments by setting the distance to inches.

After creating my program, I asked for some equipment from my assessor. This was to test my program. After many attempts of testing my robot. I kept failing I couldn't get my robot to follow the making line. I tried adjusting my speed and getting tips from YouTube. I also had help from my group. Finally, I got there. The program worked. So, I added my program to my groups program to see if it was working together.

Groups contributions

My partners Fathi part in the task was at the beginning. He was to write a program from the start to the block. He had to make it go forward and bend to the right and to the block. Me and Mohammed gave him a hand as it was a bit difficult for all of us. We did our best to help each other as it was a group task. we asked for help from our assessors as much as we could my other partner Mohammed didn't put as much effort into the project as he could have. He did manage to help Fathi and I but

didn't focus on his. Most of the work was done by Fathi and me. But we got to finish it which was a relief given how hard it was for me to complete the task.

Recording

When we added our programs together we were ready to record. So, we called our assessor and told her we were ready to record. The recording went smoothly, and it was a success. We got the robot from point A to point B with no problems what's so ever. Unfortunately, we couldn't get to the maze as my group member Mahmoud didn't complete the maze bit. So, me and fathi only presented our bit. I took so pictures of the robot after the we complete the task.

Testing analysis

Initially I had done some research about the ev3 robot in detail to try and give me a full insight about what the ev3 robot can do. I had found out that the ev3 robot can operate at 5v given enough amperage it could even operate the motors. Another interesting fact I had found out while doing my research was the fact that the smaller motors didn't seem to offer much power savings. They seemed to be drawing as much power as the larger ones.

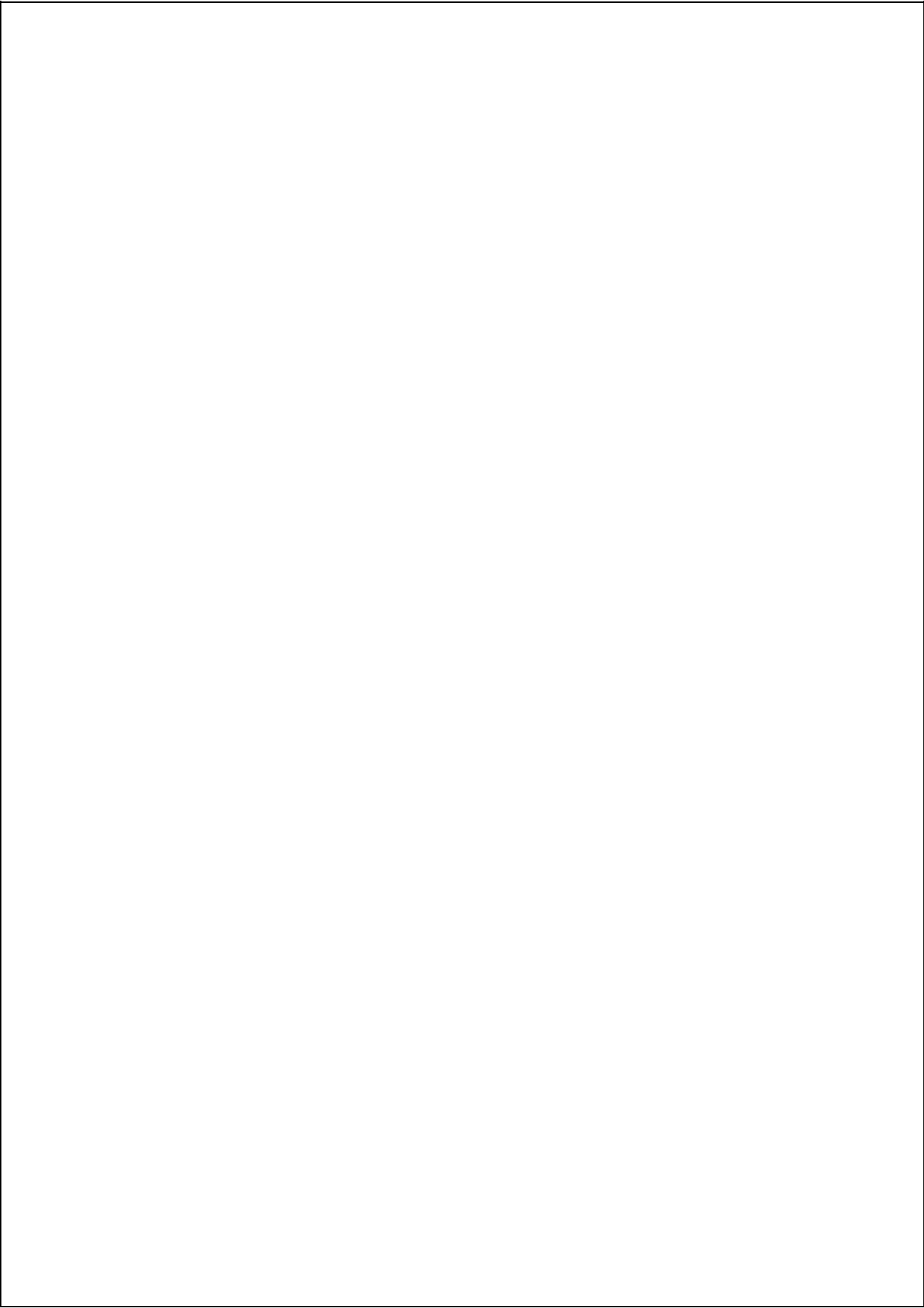
We also took the liberty of testing the sensors on the robot to see if they were functioning as they should. The purpose of the sensor was to detect the distance to different objects for example you can use the sensor to detect the distance from an object or line. Once we were sure the sensors were working as they should we decided to test the tyres to see if they were moving as they should.

We also tested the colour sensor. The colour sensor allows the robot to follow a specific colour and follow it till the line runs out. We used this sensor to guide the robot and follow the line. Or in our case a stripe of colours red and blue.

Conclusion

There are a variety of different ways that I could have extended the project. Perhaps the easiest way I could have done that was by going through everything I gave done step by step. I believe I had rushed into the assignment with limited knowledge of the topic. I also believe that there could be room for improvement when it came to team work. we could have communicated better amongst ourselves as this task was about working together in a group. Even though we had different tasks that we each had to carry out I believe we could have spent more time doing research together and finding out different things.

Looking back at the requirement I would consider that have been fulfilled of all the requirements. I believe we achieved most of the goals that were set for us. We had a fully functioning robot following the program that we set it for. We constructed a suitable environment in which we tested the robot and made sure it was ready to go.



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GRADEMARK REPORT

FINAL GRADE

57 /100

GENERAL COMMENTS

Instructor

Assessment Component 1 (Report):

Introduction: Quite clearly stated, but it would be better with a diagram to show what you're doing as it's quite a visual assignment overall.

4/5

Background Research: You need to put more detail into "tips from YouTube"! What did you read about, were there any approaches you adopted based on the background research.

6/15

Project Plan: There doesn't seem to be one? From the assignment brief "You need to include a plan of how you will allocate your time in completion of the project." ie tasks against time - any tasks going on at the same time, time for writing up etc

/10

Design Process: Actually, Mohammed did present the maze the following day! You have talked about what you did quite well, you need to include some pictures of the robot and add more detail in about the code. A bit on the short side.

20/40

Evaluation and results: A reasonable analysis, I would have liked to see some shots of the robot in progress on the course so you could illustrate your success! 18/30

Assessment 1 Total: 48%

Assessment Component 2 (Demo):

Technical knowledge/skill - 14/20

Analytical and Problem-solving skills 14 /20

Quality of result 42/60

Assessment 2 Total: 70%

Good overall, needs smoother transitions

between sections/end points.

OVERALL MARK FOR MODULE: 57%

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