Forrest Edens

CS 499

7/20/2018

Artifact 1

For this milestone, I used code that I wrote for a robotics class, to develop a robot to aid the visually impaired. The original code (which I reviewed as part of Module 2) allowed the robot to sweep the room while beeping and avoiding obstacles. Thus making it possible for someone who is visually impaired to navigate a room and avoid obstacles. The robot also emits a beeping noise, the pitch of which varies based on light levels detected in the room. This allows a visually impaired person to detect when light levels have changed, hopefully making it possible to detect windows or doors into another room.

I selected this artifact because it showcases not only my skills, but also my feelings about the purpose and goal of writing code. The code is clear and well written, and executes properly, so it showcases my abilities to write clean and functioning code. However, because the code is written with the goal of improving the lives of others, it also showcases what I believe to be the reason that we write code. With everything I do, but especially with coding, I strive to make the lives of others better.

To improve this artifact, I decided to add additional functionality to my code. Although my original project functioned well, there were several aspects I felt could be added to improve the functionality and the benefit conveyed to an individual by the project. I added an LED component, to make the robot more visible to individuals who have limited sight, but are not fully visually impaired. Additionally, this makes the robot easier to avoid for others in the room as the visually impaired attempt to navigate the room. Additionally, I added a loud and long beep when the robot encounters an obstacle, to allow the visually impaired individual to recognize that an obstacle has been encountered. Finally, I altered the code, so that when the robot encounters an obstacle, it will turn based upon which side the obstacle is detected on.

I fully met what I intended to do based on Milestone 1. In addition to the enhancements listed above, I also thoroughly annotated the parts of code that I edited. This makes it easier for others to follow as well as for myself to edit as needed in the future.

While updating my code, I realized the importance of annotations. Adding the annotations while working on the code allowed me to follow what I was updated as I was updating it. It will also make it much easier to follow in the future if I need to change anything. While adding the new functionality to the code, also realized how easy it was to update. Initially I had left these aspects out to simplify the project for initial submission in my course. However, I believe I could easily have added these aspects in initially. This is an important lesson not to be afraid to try to add the functionality I want initially, rather than waiting until later to add it.

Artifact 2

The artifact for this Enhancement is the same artifact I submitted previously, however I have focused on data structure concerns. As previously described, this code is from a robotics course, where I programmed a robot to “sweep” a room and avoid objects while beeping, thereby allowing a visually impaired individual to navigate the room. In the last milestone, I added functionality that allowed the robot to beep when backing up, as well as light up for added visibility. In this milestone, I updated the logic and loops used, to make the code cleaner and easier to follow.

I chose this artifact again, because in addition to the benefit this code could potentially provide to the visually impaired, it is a good demonstration of my algorithmic abilities. Because this code is continuous, and has multiple functions that must be performed simultaneously, but are dependent on a number of different factors, clear logic and neatly composed code are essential. The “beep” loop must coexist with the “sweep and avoid” loop, and neither one can inhibit the other. Therefore, this code is a good demonstration of my ability to make several loops work together in my code. Additionally, there were some superfluous and incorrect conditions that I was able to correct or remove as needed, to improve the program.

I did meet the course objectives I intended to meet, as outlined in Module 1. I streamlined my looping logic, fixed the errors in the conditions, and commented my code. These were the goals I outlined for myself, and all were successfully implemented. I did not update my plans, although I did slightly alter how I handled one of my enhancements. Rather than deleting superfluous code at the end of my final loop, I “commented it out.” Therefore, I still have the code available if I find a use for it later, but it is not being implemented. This final logic is only superfluous because the technology in the Finch does not make it useful. However, if I was working with different platform, this code could be helpful. Therefore, I did not delete it completely.

I feel as though creating this code greatly improved my skills with loops, as they were so instrumental to the implementation of my program. Loops are an incredibly powerful tool, but using many of them in a piece of code can be intimidating. This code helped me overcome that concern, but improving the code also taught me an important lesson. I assumed that my code was all correct, because It was functioning properly, however I had a mistake in my conditions for the “beep” loop. During my code review I noticed this error, which allowed me to fix it (very easily.) Updating this code taught me about the importance of thorough review, even when you believe your code is written correctly.