**Computer Science project weekly log**

Week 1:

Was given the brief and started looking at different embedded systems to inspire my own. Taking inspiration from my own devices, I decided to look into the concept of a heart rate monitor for the duration of the user’s workout. This could then also allow me to calculate other data to do with the user’s physical health.

Week 2:

Decided on my system and started listing different requirements that would be involved in my project. I also completed my investigation and created some code that would send the data from my microbit to firebase, starting with my digital input of whether it has been started or finished.

Week 3:

On the third week I started my design plan. I firstly went through my design in detail explaining how the system worked. Then I created a flowchart to show how my project runs in a simple manner. After that, I used thinkercad to make a model of my embedded system.

Week 4 and 5:

Worked on thinking about implementing user feedback and any other systems I would need. Also thought about the what-if questions and weather my system would be able to answer them or not.

Week 6:

On the fourth week I completed my design plan, outlining the technologies and software being used by the project.

Week 7:

Worked on the microbit, focusing on how to read in rapid results from the pulse sensor

Week 8:

After the micro bit had been finalised, moved onto Thonny in order to read in the microbit’s data and store it in Firebase Realtime Database.

Week 9:

Worked on the ChartJS code to visually display the results gotten from the pulse rate sensor, reading them in from Firebase and automatically updating the graph with new data.

Week 10:

Having finished the coding aspects, moved onto creating the video.

Unit Testing:

For my unit testing I got a variety of people to test my system both male and female in order to see how my system would work for various people. As well as this I manually inputted data to test both the what if questions and the graphing tool that I used. This allowed for the variations and calculations of the what if questions to be thoroughly investigated and tested, ensuring that the user could get the information and statistics that they sought.

Problems Faced:

A major problem that I faced during this project was the limitations brought on by the microbit and the heart rate monitor. Due to these limitations it was difficult to find readings of the standard heart rate form; beats per minute. This problem could have been solved by the use of an Arduino micro controller and the many in-built libraries it contains for a pulse monitor. However, through much testing, I managed to create calculations for the bpm format and was satisfied with the results.

Key Code:

While there were many pieces of code that I deemed to be incredibly important to my model, in my opinion the most important was definitely the python code that begins my system. This code not only connects to both the microbit and firebase, but also collects and decodes key data, while also running calculations on it in order to format it in a more user-friendly way.