**Product Perspective**

The product that we are designing is a new self-contained product which will be used to monitor a set of key water quality parameters in both the hydroponic and aquaponic systems. The main objective of our product is to use sensors to monitor these parameters connected to a raspberry pi and the data that is produced would be made available to the user running on a Linux command line and the user can then assess whether the system is running okay or if any parameters need to be altered. The details of the interfaces have been provided in section 2.5.

**Operating Environment**

This project will be integrated using a raspberry pi zero which will have connected sensors that will test the Hydroponic system parameters: pH; Electrical Conductivity (EC); nutrient solution temperature; nutrient solution depth. Aquaponic system parameters: pH; dissolved oxygen (DO); ammonia, nitrite and nitrate; water temperature.The raspberry pi zero will have a cat5e to usb cable which will be connected to a computer to run 2 python scripts (one on each system) to set the parameters of the system, a while loop will be used to control the elements of the system and the user can be alerted if any parameters go above or below the specific set. The raspberry pi zero also has a mini HDMI connection port so a monitor can be connected to it to display the live data which would shown in a Linux command line, the system would be run on either Raspbian or Ubuntu as these operating systems work best on raspberry pi’s operating Linux.

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