CS 350 Emerging Sys Arch & Tech

Final Project reflection report

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This project was initially created using a Raspberry Pi with a CC3220S MCU. As this was the hardware used to create the prototype, it can absolutely be said that this hardware architecture is up to the task of running this kind of device. It has 256K RAM but does not have any integrated flash memory and so requires an external flash source. However, the CC33220SF is essentially the same MCU, except it has an integrated 1MB Flash.

The Microchip PIC32MZ1025W104132 MCU is another viable option for this device when it comes to actual manufacturing. It has 1 MB integrated flash, which should absolutely be enough to run this machine, 256 KB RAM, which matches that of the CC3220S and integrated Wi-Fi for access to the cloud.

A third option is the NXP Semiconductor i.MX7D. It, like the previous two MCUs, has built in Wi-Fi capabilities for access to the cloud, comes with 256 KB SRAM, can have additional external memory added and has all of the necessary connectivity to run all of the peripherals used in the prototype of this device.

This all being said, while the Raspberry Pi was used to create the prototype device, I do not believe a finished product would require a full OS infrastructure that the Raspberry Pi has. Out of the two other options; the Microchip PIC32MZ1025W104132 and the NXP i.MX7D family, I would personally recommend the PIC32MZ1025W104132. While both of these have the capability to run such a device well enough, NXP’s microcontrollers seem to rely more on ethernet connections than WiFi, and they also seem to require more integration with other systems whereas Microchip appears to have many more available options for wireless connectivity and offer more standalone options.