Shane Tucci

Hardware and Software Systems

Homework 1

1/28/18

Technical Paper Summary

The technical paper that we were assigned to read was called *Trends and Implications in Embedded Systems Development* by Sukriti Jalali. It briefly summarized what exactly an embedded system is and the design and development of these systems. An embedded system is a combination of computer hardware, software, and other components designed to perform a dedicated function. Embedded systems are used in numerous fields including medical, automation, industrial, military, and automotive; So embedded systems need to keep improving with the improvements in all these fields. A few of the most notable improvements in embedded systems are the expansion of multi-core processors, from 8-bit to 16 and 32-bit processors making tasks run more efficiently. Other improvements include the advancement in wireless connectivity, embedded encryption and trusted computing for safer security, and the usage of open source platforms. It is important for product managers, architects, and engineers to understand the implications of this growth and what it means for the future of embedded systems. We also need to start looking at what embedded systems could potentially implement such as cloud computing. Changes in the embedded systems world is ever growing to be smaller, faster and efficient and will continue to excel as the industry becomes more superior.

Shane Tucci

Hardware and Software Systems

Homework 1

1/28/18

Comparative Study

The Texas Instrument EK-TM4C129EXL has some differences than the Arduino board that we have used in previous courses. The EK-TM4C129EXL has an ARM Cortex-M4 processor with speed up to 120MHz. With 1MB memory, and ethernet port, an LCD controller, and a USB port, this Texas Instrument has a lot to offer. This board is a powerhouse compared to the Arduino boards. Most Arduino board processors do not reach speeds near 120MHz and they lack an ethernet port. Both have a USB port, but the 1MB flash memory on the Texas Instrument is more than what most Arduino boards have to offer. You can also get a Booster Pack for the Texas Instrument which could potentially be useful given the circumstances, but I cannot find anything that Arduino offers as for accessories. The Texas Instrument is also at an affordable price of $24.99. Overall, it is hard to compare exact specifications because I do remember which Arduino board we exactly used previously, but ultimately the Texas Instrument EK-TM4C129EXL has proven to outrank all Arduino boards we potentially could have used.

Shane Tucci

Hardware and Software Systems

Homework 1

1/28/18

Part 3: Extra Credit

Decimal	Binary	Hexadecimal
15	0b0000 1111	0x0F
-35	0b0010 0011	0x23
236	0b1110 1100	0xEC
204	0b1100 1100	0xCC
240	0x1111 0000	0xF0
123	0b0111 1011	0x7B
118	0b0111 0110	0x76

a.

b. 127

c. 1

d. 255