INTERNSHIP REPORT

Name: Sidharth K
Internship duration: 9 June - 30 June
Company: Z-Crossing Solutions

My internship at Z-Crossing Solutions, an electronics-focused company specializing in Printed Circuit Boards (PCBs), was a valuable opportunity to bridge theoretical knowledge with practical experience. The program spanned multiple domains within electronics and embedded systems, offering both conceptual insights and hands-on technical training. The internship was designed to give exposure to various aspects of PCB design, firmware introduction, embedded systems, and the product development lifecycle.

The internship began with foundational sessions focused on voltage regulators and their various types, where we explored linear regulators, switching regulators, and their respective applications in electronic circuits. Following the theoretical sessions, we delved into PCB design using OrCAD and Allegro software. We learned how to create symbols, design schematics, assemble components, and perform routing—giving us a complete view of the PCB design process. In addition to design, we had an introductory session on firmware, where we were familiarized with how firmware interacts with hardware to form a complete embedded system. This was followed by a detailed discussion on embedded systems, their architecture, and real-world applications. We also covered communication protocols, including both serial and parallel communication methods. The session helped us understand different standards (like UART, SPI, and I2C) and their relevance in various applications. One of the highlights of the internship was a session on the product development process, where we studied its multiple stages—ideation, design, prototyping, testing, and deployment—as well as methodologies like Agile and Waterfall. As part of our project work, we developed a presentation on a "Health Ring", identifying suitable microprocessors, sensors, and interface components that could be used in the design. This exercise encouraged us to apply our knowledge in a practical, solution-driven way. We also had a session on supply chain management, which offered insight into how components are sourced, managed, and delivered throughout the product lifecycle. In the latter part of the internship, we gained hands-on experience in manual soldering of components onto PCBs and learned how to operate a function generator and oscilloscope, further strengthening our technical proficiency.

Overall, the internship at Z-Crossing Solutions was a well-rounded and enriching experience. It combined theoretical learning with practical exposure to real-world tools and industry-standard workflows. From circuit design to product development and hands-on hardware interaction, each module contributed significantly to our understanding of the electronics and embedded systems domain. This internship has laid a strong foundation for our future endeavors in the field of electronics and technology.