NEW HORIZON COLLEGE OF ENGINEERING
New Horizon Knowledge Park, Ring Road, Marathalli
Autonomous College Permanently Affiliated to VTU, Approved by AICTE & UGC
Accredited by NAAC with 'A' Grade, Accredited by NBA

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

HANDS ON WORKSHOP ON FIRMWARE DEVELOPMENT FLOW

Date	: 26-09-2024
Duration	: 10:00 AM - 12:00 noon
Workshop topic	: Hands on Workshop on "Introduction to STA"
Number of Participants	: 43
Resource person	: Mr. Mahesh Devagiri, Engineering Manager, Qualcomm

Introduction

A one-day workshop on **"Firmware Development Flow"** was conducted in the VLSI PD Lab on September 26, 2024. The event aimed to provide insights into the firmware development process for embedded systems, particularly in VLSI applications. It attracted participants from various academic institutions, research centers, and industry sectors interested in understanding the intricacies of firmware design and implementation.

Objectives

The primary objective of the workshop was to equip participants with:

- A comprehensive understanding of the firmware development process.
- Practical knowledge of tools and techniques involved in firmware design.
- Hands-on experience in writing and debugging firmware for VLSI systems.

Workshop Overview

The workshop was structured into four key sessions, each focusing on a different aspect of firmware development:

1. **Session 1: Introduction to Firmware Development Flow**:
    - The session began with an overview of what firmware is and how it interacts with hardware in embedded systems.
    - The instructor, Mr. Mahesh Devagiri, emphasized the significance of firmware in VLSI systems and its role in enabling efficient communication between hardware components.
    - The topics discussed included:
        - The basics of embedded firmware.
        - Layers of firmware and their functions.
        - The process of developing firmware for specific hardware designs.
2. **Session 2: Tools and Techniques for Firmware Development**:
    - This session introduced participants to the tools commonly used for firmware development, such as Integrated Development Environments (IDEs) like Keil and IAR, along with debugging tools.
    - A demonstration of the setup and configuration of these tools was provided, helping participants understand how to integrate firmware with hardware.
    - Participants were shown how to compile and load firmware onto microcontroller-based VLSI systems.

3. **Session 3: Hands-on Firmware Development**:
    - In this practical session, participants were guided through writing their first firmware code using the tools demonstrated earlier.
    - They were divided into groups and tasked with writing simple code to interact with hardware peripherals like LEDs and sensors.
    - Debugging techniques were demonstrated, allowing participants to troubleshoot issues and test their firmware on VLSI systems.
4. **Session 4: Firmware Optimization for Performance and Efficiency**:
    - The final session was focused on optimizing firmware code for better performance and lower power consumption, which is critical in VLSI systems.
    - Techniques such as using interrupts, Direct Memory Access (DMA), and code minimization strategies were discussed.
    - Participants learned how to optimize their code to enhance the efficiency of embedded VLSI systems while ensuring reliable performance.

Outcomes

The workshop achieved the following outcomes:

1. Enhanced Knowledge: Participants gained a deep understanding of the firmware development process, from writing and debugging to optimizing firmware for embedded VLSI systems.
2. Hands-on Experience: Attendees had the opportunity to work with real-world tools and hardware, gaining practical experience in writing and testing firmware.
3. Improved Skills in Debugging: Participants learned how to identify and resolve issues in firmware, enhancing their ability to develop reliable and efficient systems.
4. Understanding of Optimization: The participants developed an understanding of techniques to optimize firmware, which is essential for enhancing the performance of VLSI systems.
5. Collaborative Learning: The interactive nature of the workshop allowed participants to collaborate, share insights, and learn from one another, fostering a community of embedded system enthusiasts.

Conclusion

The one-day workshop on "Firmware Development Flow" was a resounding success. It provided valuable insights into the firmware development process, with a perfect blend of theoretical knowledge and practical application. The workshop fulfilled its objective of empowering participants to understand and engage in firmware development for VLSI systems.

FACULTY CORDINATOR

Dr. Monika Gupta

HOD-ECE

Capgemini Engineering VLSI Centre of Excellence

Attendance for One Day Workshop
on
Introduction to Firmware Development Flow

26/9/2024
10:00 to 12:00 noon

S. No.	Name	USN	Department	Section	Signature
01	Yeddula Reethu	INH22EC186	ECE	5C	
02	S. Nisisha	INH22EC145	ECE	5 C	Nisisha
03	Rhamana. H. K.	INH22EC028	ECE	5 A	
04	Lokhana. M	INH22EC083	ECE	5 B	Lokhana.M
05	Chandan. V	INH23EC403	ECE	5 A	
06	Abuzar Yaseen	INH22EC004	ECE	5 A	Abuzar
07	KEERTHAN. J. S	INH23EC408	ECE	5 A	Keerthan JS
08	Irfan ALI. B	1NH23EC407	ECE	5 B	Irfan
09	Praveen. Patil	INH22EC118	ECE	5 B	
10	Dibyendu Patnaik	INH21EC046	ECE	7 A	
11	Somshekhar	INH22EC159	ECE	5 C	
12	Shashank M Gn	INH22EC151	ECE	5 C	
13	Anshika	INH22EC018	ECE	5 A	Anshika
14	Avantika Nellu	INH22EC026	ECE	5 A	Avantika
15	Harshini	INH22EC031	ECE	5 A	Harshini
16	Raghunandan K	INH21EE091	EEE	7 B	
17	Krathik S Patil	1NH22EE403	EEE	5 A	
18	Sanjeeva kumar	1NH22EE411	EEE	5 A	
19	Harshitha S	INH22EC061	ECE	5 B	Harsh
20	Lishaahid ali	INH22EC081	ECE	5 B	
21	M. V. Nithwik reddy	INH22EC094	ECE	5 B	
22	Saqib Hussain Dar	INH22EC147	ECE	5 C	Saqib
23	Rohit. Y. Patil	INH22EC138	ECE	5C	
24	Druva. S	INH22EC047	ECE	5 A	
25	Pranitha. C. N	INH21EE083	EEE	7 B	Pranitha.C.N
26	shashank.	INH21EE406	EEE	7 B	
27	Mukundha. G	INH21EE067	EEE	7 B	Mukund
28	Kpranay kumar reddy	INH22EC079	ECE	5 B	K.pranay
29	Muraghanajendra. B. P	INH22EC097	ECE	5 B	
30	Darshan. M	INH22EC042	ECE	5 A	
31	Darshan. P	INH23EC405	ECE	5 A	Darshan. P
32	Raghavendra. H	INH23EC411	ECE	5 A	Raghavendra
33	Harish. S	INH22EC059	ECE	5 A	
34	Hari Sai Nikhil. S	INH22EC056	ECE	5 A	Sai Nikhil
35	MANOJ U.K	INH22EC091	ECE	5 B	
36	Balaji. S	INH23EC402	ECE	5 B	Balaji
37	Varun Anbalagan	INH22EC177	ECE	5 C	
38	R. LAKSHMAN	INH22EC123	ECE	5 C	
39	Manoj. K. S	INH23EC409	ECE	5 A	
40	Thanushree R	INH22EC170	ECE	5 C	Thanu
41	Rolly krishnan	INH22EC140	ECE	5 C	Rkrishnan
42	Varsha Yadav BH	INH22EC176	ECE	5 C	Varsha
43	SRIYA. A	INH22EC161	ECE	5 C	Sriya