

Real Time Operating Systems Lab

This lab is offered to M.Tech., VLSI & Embedded System students and it is specially designed and developed for the students to study the real time operating system architecture, kernel objects and real time application development design flow using RTOS. This lab is well provided with equipment like Zynq FPGA board, MCB2300 boards with NXP LPC2378 ARM microcontroller. This lab gives practical knowledge on how to port linux on zynq FPGA and development of real time embedded system. This gives a good foundation on real time application development to the students. At the end of the semester the student will handle any real time operating system to build embedded system. We also encourage students to take main projects by providing necessary specifications. The Budget of this lab is around Rs.9,36,000/-.



Major Equipment:

S.No.	Name of the Equipment	Qty.	Cost in Rs.
1.	HP desktop-intel(R) COR(TM) i 3- 3240CPU@3.09GHZ,18.5'' LED	36	3,50,000.00
2.	Xilinx Vivado 2017.2	36	1,17,747.00
3.	ARM Microcontrollers teaching Kit-ARM 7 Academic Only - (777448-79) Keil 4.7 Software	--	57,420-00
4.	ARM Microcontrollers teaching Kit-CORTEXM3 Academic only- (777448-80)	--	86,130-00
5.	Virtex-5FT ML 506 Kit	1	1,17,170-00
6.	SPARTAN 6 Evaluation Board	2	1,00,670-00
7.	XUP Virtex 5 Open SPARC Board with USB cable and PCI Interface	1	69,170-00
8.	Xilinx Zynq Zed Board	5	37,661.39
Total (Nine Lakh thirty six Thousand Rupees only)			9,36,000.00

List of Experiments (As per curriculum):

S.No.	Name of the Experiment
1	Create an application that creates two tasks that wait on a timer whilst the main task loops.
2	Write an application that creates a task which is scheduled when a button is pressed, which illustrates the use of an event set between an ISR and a task
3	Write an application that Demonstrates the interruptible ISRs(Requires timer to have higher priority than external interrupt button)
4	a).Write an application to Test message queues and memory blocks. b).Write an application to Test byte queues
5	Write an application that creates two tasks of the same priority and sets the time slice period to illustrate time slicing.
6	Interfacing Programs: Write an application that creates a two task to Blinking two different LEDs at different timings
7	Write an application that creates a two task to Blinking two different LEDs at different timings
8	Write an application that creates a two task displaying two different messages in LCD display in two lines.
9	Sending messages to mailbox by one task and reading the message from mailbox by another task.
10	Sending message to PC through serial port by three different tasks on priority Basis.
11	Porting Linux and developing simple application on Xilinx Zed board
12	Developing image processing application with Linux OS on Xilinx Zynq FPGA

List of Experiments (Beyond the Syllabus):

S.No.	Name of the Experiment
1	Simulating a stepper-motor driver
2	Write simple applications using RTX (ARM Keil's real time operating system, RTOS).

Lab Mentor : Dr. P. Latchi Reddy, Professor
Lab Incharge : Mr. K. Sasi Bhushan, Associate Professor
Lab Co-Incharge : Mr. K. V. Ashok, Assistant Professor
Lab Technician : Mr. Y. Srinivasa Reddy.