

# EMBEDDED MULTIMEDIA

CODE: (ELDG-4M)

## 1. INTRODUCTION TO SOFTWARE DEVELOPMENT

- a. LIFE CYCLE OF SOFTWARE DEVELOPMENT
- b. COMPONENTS OF A DEVELOPMENT SYSTEM

## 2. EMBEDDED LINUX SYSTEM DEVELOPMENT

- a. WHAT ARE EMBEDDED SYSTEMS?
- b. INTRODUCTION TO CROSS PLATFORM DEVELOPMENT PROCESS
- c. LINUX AS AN EMBEDDED OPERATING SYSTEM
- d. EMBEDDED SYSTEM DEVELOPMENT HARDWARE AND EMULATORS

## 3. HARDWARE BASICS FOR EMBEDDED SYSTEM

- a. INTRODUCTION TO DEVELOPMENT BOARDS AND HARDWARE
- b. INTRODUCTION TO PROCESSORS, PERIPHERAL COMPONENTS , BUSES AND MEMORY
- c. INTRODUCTION TO ARM PROCESSOR, ARM ARCHITECTURE AND ARM PROGRAMMER'S MODEL.
- d. UNDERSTANDING THE INTERGRATORCP AND VERSATILEPB DEVELOPMENT BOARD BOARDS
- e. COMPONENTS OF A DEVELOPMENT BOARD.

## 4. DEVELOPING COMPLETE EMBEDDED SYSTEM FROM SCRATCH

- a. EMBEDDED LINUX
- b. CONFIGURATION OF THE CROSS DEVELOPMENT ENVIRONMENT
- c. EMBEDDED SOFTWARE ARCHITECTURE AND COMPONENTS
- d. INTRODUCTION TO CROSS DEVELOPMENT TOOL CHAIN AND UTILITIES.
- e. LINUX BOOT LOADERS & COMPILATION

- i. UBOOT
- ii. REDBOOT
- f. LINUX KERNEL DIRECTORY HIERARCHY
- g. LINUX KERNEL DEVELOPMENT ACTIVITY
  - i. KERNEL SELECTION
  - ii. KERNEL CUSTOMIZATION
  - iii. KERNEL COMPILATION (MAKING ZIMAGE FOR BOARD)
  - iv. KERNEL PORTING
- h. INTRODUCTION TO EMBEDDED FILE SYSTEM (MAKING ROOT FILE SYSTEM)
- i. PREPARING BUSYBOXES AND CROSS COMPILING
- j. BOARD BRING UP ACTIVITY (USING UBOOT, ZIMAGE, ROOTFS)

## **5. INTRODUCTION TO COMPUTER GRAPHICS**

- a. GRAPHICAL SYSTEM
- b. PIXEL AND FRAMEBUFFER
- c. DIFFERENT OUTPUT DEVICES AND GRAPHICS HARDWARE
- d. 2-D GEOMETRIC TRANSFORMATION ( TRANSLATION , ROTATION AND SCALING)
- e. CO-ORDINATE SYSTEM
- f. GENERIC COLOR MODEL
- g. DIGITAL COMPOSITION, ALPHA BLENDING, IMAGE EDITION.
- h. ANIMATION

## **6. EMBEDDED GUI (DIRECTFB)**

- a. GRAPHICS IN AN EMBEDDED SYSTEM
- b. DESIGN GOALS
- c. DIRECTFB
- d. FRAMEBUFFER DEVICE AND ENABLING FRAMEBUFFER
- e. ACCELERATED GRAPHICS DRIVER

- f. DIRECTFB OVERALL STRUCTURE
- g. ACCESS TO FRAMEBUFFER
- h. SURFACES, DISPLAY LAYERS
- i. WINDOWS AND IT'S CONFIGURATION
- j. DIRECTFB API CONCEPT

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