# Experiment -1

# Building an SoC by interfacing GPIO-LED with ARM Cortex M0

## Introduction

The purpose of this experiment is to build a System on Chip-Integrating the GPIO-LED peripheral with ARM Cortex M0 processor using AHB Lite Bus.

## Objective

Toggle the LEDs for the data 55 and AA with equal duration for both data

## Software tools Requirement

**Modelsim (Siemens)/ Xilinx Vivado/ Icarus Verilog**

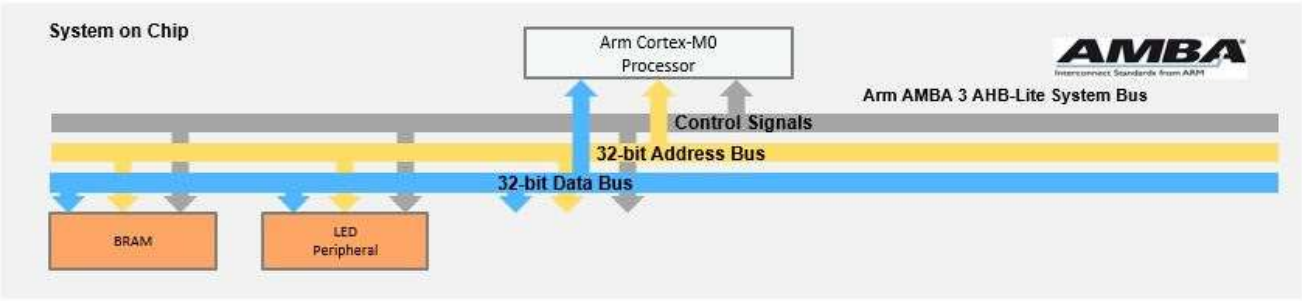
**arm Keil µvision 5.37**



## Software programming:

Program the Cortex-M0 processor using arm assembly language and generate the hex file using **arm Keil µvision 5.37**

## Block Diagram:



## Memory Map of Peripherals

| Peripheral | Base address | End address | Size |
|---|---|---|---|
| MEM | 0x0000_0000 | 0x0000_FFFF | 16MB |
| LED | 0x5000_0000 | 0x50FF_FFFF | 16MB |

## Outcome

After this experiment, the learner would get a basic idea about designing a simple SoC based on arm cores, how to interface peripherals to the core using the AHB Lite bus, and how to program the processor using Assembly language.

## Reference

Demo video in session 10