

Lab 2. Using Xilinx Platform System (XPS)

Objective

The aim of the lab is to become familiar with XPS, and use software (which will run on the PowerPC microprocessor on the FPGA) to control the LEDs.

In lab1, we used hardware (using Verilog to program the FPGA to control the LEDs). In this lab, we will use software (C code running on the PowerPC), in order to control the LEDs.

This lab is divided into two parts. The solutions to the problems at the end of Part A need to be submitted by the end of first week and the solutions to problems in Part B, by the end of the second week.

Overview

The block diagram for the complete system on the XUP board is shown in Figure 1.

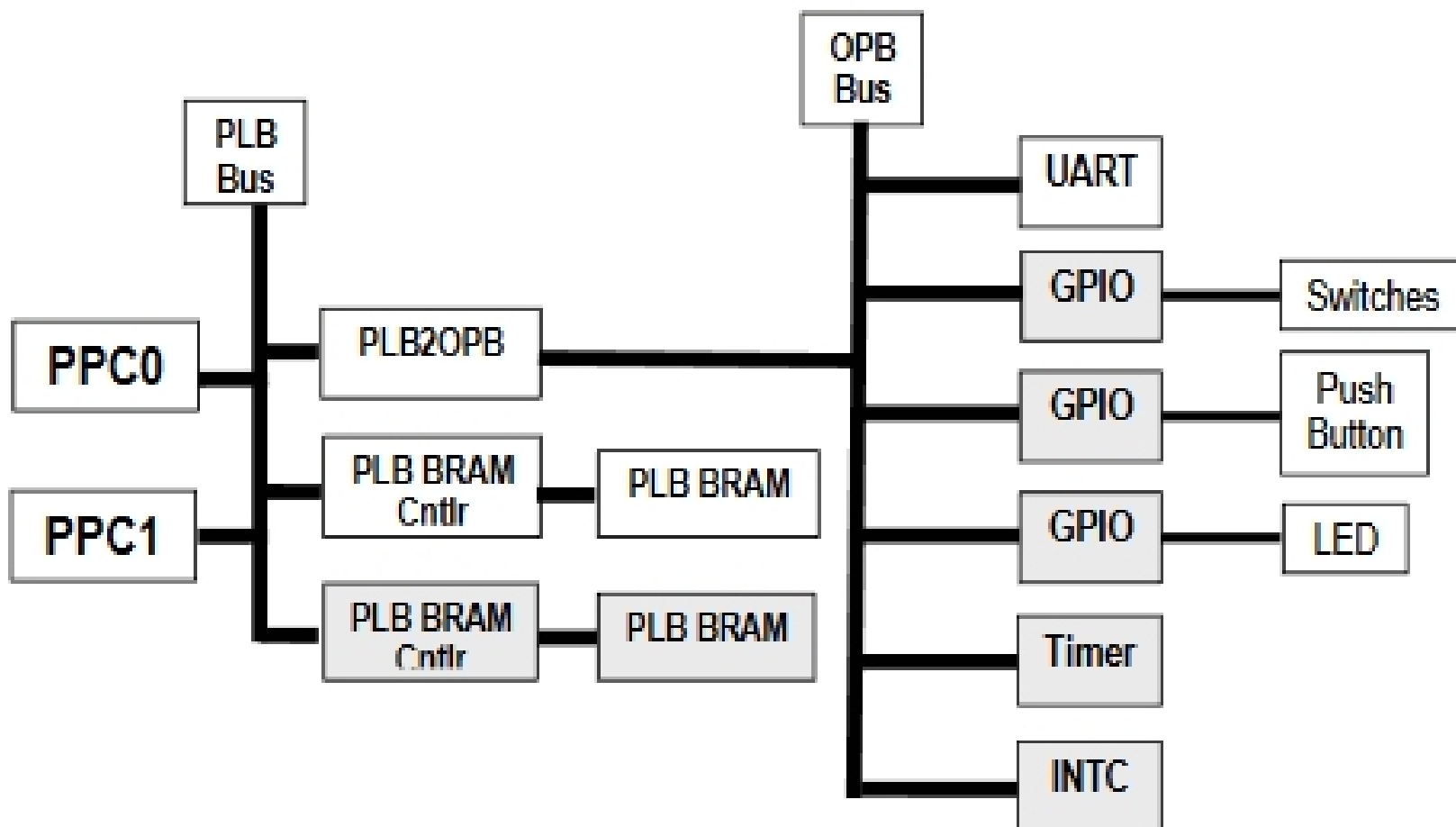


Figure 1. Complete System

The system consists of two buses – the Peripheral Local Bus (PLB) and the On-chip Peripheral Bus (OPB). The PowerPC and PLB BRAM (Block RAM) controllers are connected to the PLB Bus. A PLB2OPB Bridge connects the PLB Bus to the OPB Bus. The peripherals are connected to the OPB Bus.

Switches, push buttons, LEDs, etc are General Purpose input-output (GPIO) devices.

Procedure

Create an empty directory called 'lab2' (for example, in C:/449). In Step2, we will specify this directory as the location where all the project related files should be created and stored.

PART A: Base System Builder (BSB): We will use the BSB to set up the design environment.

1. Launch XPS and create a new project
Select **Start → Programs → Xilinx Platform Studio 8.2i → Xilinx Platform Studio** Alternatively, double click on the XPS icon on the desktop.

The XPS window, prompting to create or open an existing project pops up as shown in Figure 2.

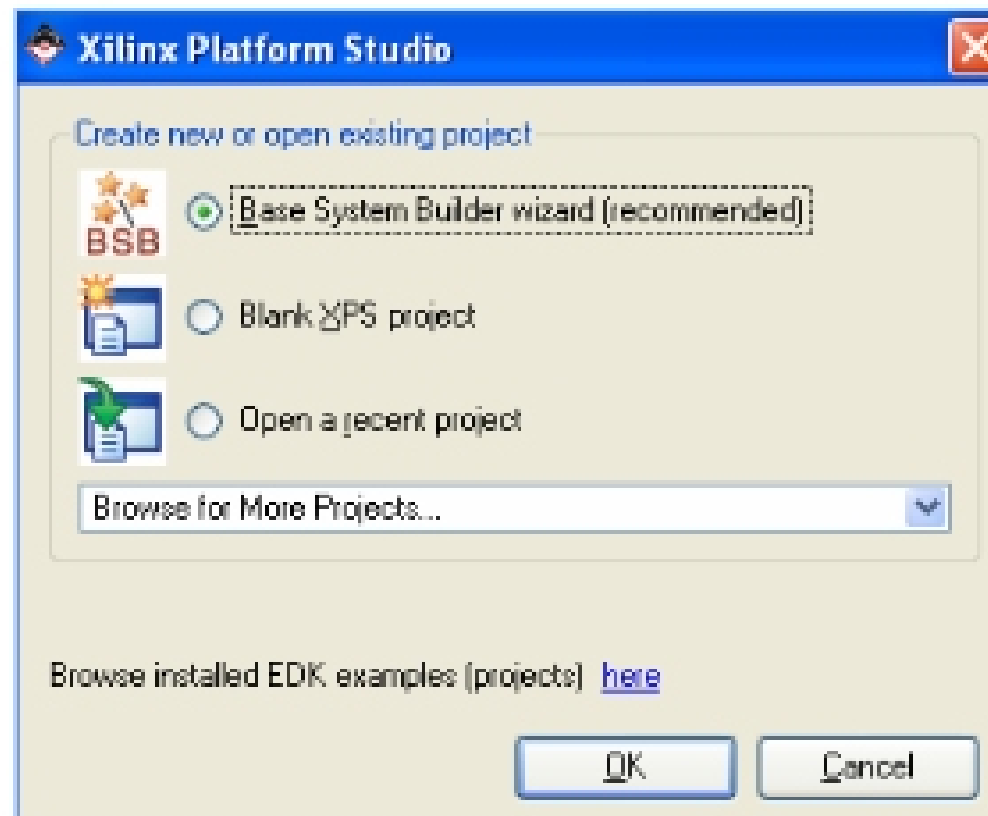


Figure 2. Select Base System Builder

Chose Base System Builder Wizard and click OK.

2. Select the path for 'lab2' directory followed by system.xmp in Project File.

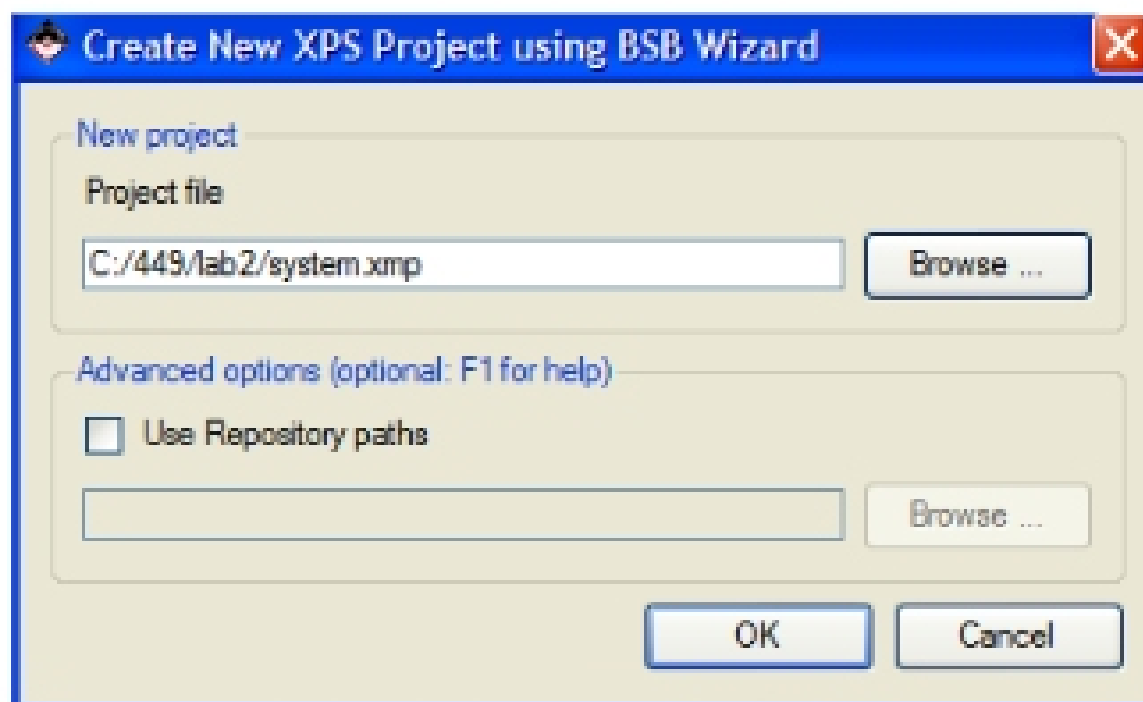


Figure 3. BSB

3. In the Select Board dialog, chose:
Board Vendor: Xilinx
Board Name: XUP Virtex-II Pro Development System
Click Next.

