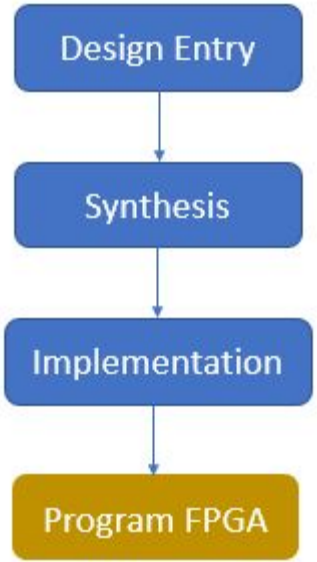
Lab - 3

Downloading to the FPGA Board

Review - FPGA Flow

- It is a Multi-step process



Bitstream Generation

- Design must be converted to a format so that the FPGA can accept it.
- Contains information to configure the FPGA to required Digital Logic.

Programming the FPGA

- Can be done in 3 different ways
  - Quad-SPI (Serial Peripheral Interface)
  - JTAG
  - USB
-

Quad-SPI

It is a two step process (slower)

- Upload the program to the Flash Memory
- FPGA loads the configurations from the Flash Memory upon “Power On” or “Reset”.

- JP1 in QSPI Position
- Requires a **.bin** file
- “Be careful with the Memory Device Selection”
  - If IC has inscription MXIC - choose mx25l3233f-spi-x1_x2_x4 / mx25l3273f-spi-x1_x2_x4
  - If IC has inscription Spansion - choose s25fl032p-spi-x1_x2_x4

For deploying Applications

JTAG

It is a faster way of programming the FPGA

- JP1 in JTAG Position
- Requires a **.bit** file
- **FPGA loses configurations upon “Reset”**

Used for developing applications (constant/incremental design changes)

USB

Similar to JTAG but using a USB Stick

- JP1 in USB Position
- USB device that you select to program the Basys3 must be formatted in Fat32
- Only look through the USB's root for a file with a .bit extension
    - So it is important that the **only .bit file** in root is the one that you want to be used to program the Basys3.

References

[1] Basys 3 Programming Guide

END

Any Questions?