

Intel® Arria® 10 FPGA - Helloworld Design on Nios® V/g Processor

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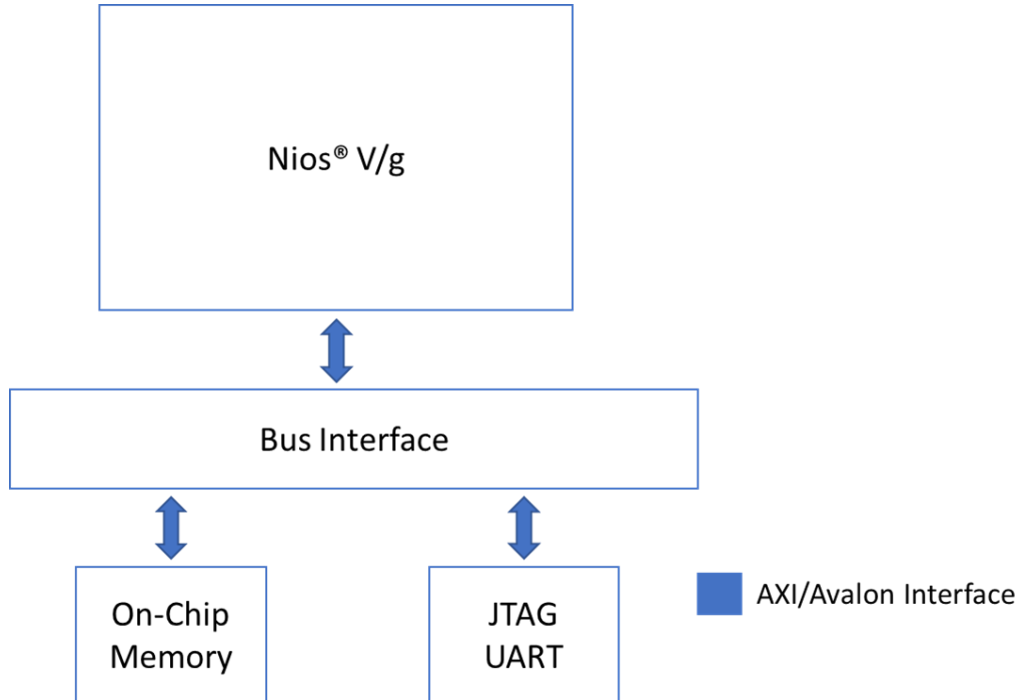
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1. Theory of Operation

Nios® V/g Processor-based Helloworld example design on the Intel Arria® 10 FPGA

a. Block Diagram



b. IP Cores used

The following IPs are used in this design.

- NIOSV/g soft processor core
- On Chip RAM
- JTAG UART

2. Executing the Design on Devkit

a. Creating the Design

Note: Please refer to the readme.txt file in the package for the steps to create the design, application and generate the programming files.

- Unpackage/extract the design in your working directory
- Locate the “ready_to_test” folder within the package
- The folder contains the necessary files for executing the application on the board. Refer to the readme file for the steps to program the application files on the board.
- Validate the design by observing the prints on the terminal

b. Expected Results

The following is the output as observed on the JTAG UART terminal. The output is analogous to the logic from the application code. Users should be able to observe same output on their terminal/setup.

HAL OS:

```
Hello world, this is the Nios V/g cpu checking in 0...
Hello world, this is the Nios V/g cpu checking in 1...
Hello world, this is the Nios V/g cpu checking in 2...
Hello world, this is the Nios V/g cpu checking in 3...
Hello world, this is the Nios V/g cpu checking in 4...
Hello world, this is the Nios V/g cpu checking in 5...
Hello world, this is the Nios V/g cpu checking in 6...
Hello world, this is the Nios V/g cpu checking in 7...
Hello world, this is the Nios V/g cpu checking in 8...
Hello world, this is the Nios V/g cpu checking in 9...
Hello world, this is the Nios V/g cpu checking in 10...
Hello world, this is the Nios V/g cpu checking in 11...
Hello world, this is the Nios V/g cpu checking in 12...
Hello world, this is the Nios V/g cpu checking in 13...
Hello world, this is the Nios V/g cpu checking in 14...
Hello world, this is the Nios V/g cpu checking in 15...
Hello world, this is the Nios V/g cpu checking in 16...
Hello world, this is the Nios V/g cpu checking in 17...
Hello world, this is the Nios V/g cpu checking in 18...
Hello world, this is the Nios V/g cpu checking in 19...
Hello world, this is the Nios V/g cpu checking in 20...
Hello world, this is the Nios V/g cpu checking in 21...
Hello world, this is the Nios V/g cpu checking in 22...
Hello world, this is the Nios V/g cpu checking in 23...
Hello world, this is the Nios V/g cpu checking in 24...
Hello world, this is the Nios V/g cpu checking in 25...
Hello world, this is the Nios V/g cpu checking in 26...
Hello world, this is the Nios V/g cpu checking in 27...
Hello world, this is the Nios V/g cpu checking in 28...
Hello world, this is the Nios V/g cpu checking in 29...
Hello world, this is the Nios V/g cpu checking in 30...
```

```
Hello world, this is the Nios V/g cpu checking in 970...
Hello world, this is the Nios V/g cpu checking in 971...
Hello world, this is the Nios V/g cpu checking in 972...
Hello world, this is the Nios V/g cpu checking in 973...
Hello world, this is the Nios V/g cpu checking in 974...
Hello world, this is the Nios V/g cpu checking in 975...
Hello world, this is the Nios V/g cpu checking in 976...
Hello world, this is the Nios V/g cpu checking in 977...
Hello world, this is the Nios V/g cpu checking in 978...
Hello world, this is the Nios V/g cpu checking in 979...
Hello world, this is the Nios V/g cpu checking in 980...
Hello world, this is the Nios V/g cpu checking in 981...
Hello world, this is the Nios V/g cpu checking in 982...
Hello world, this is the Nios V/g cpu checking in 983...
Hello world, this is the Nios V/g cpu checking in 984...
Hello world, this is the Nios V/g cpu checking in 985...
Hello world, this is the Nios V/g cpu checking in 986...
Hello world, this is the Nios V/g cpu checking in 987...
Hello world, this is the Nios V/g cpu checking in 988...
Hello world, this is the Nios V/g cpu checking in 989...
Hello world, this is the Nios V/g cpu checking in 990...
Hello world, this is the Nios V/g cpu checking in 991...
Hello world, this is the Nios V/g cpu checking in 992...
Hello world, this is the Nios V/g cpu checking in 993...
Hello world, this is the Nios V/g cpu checking in 994...
Hello world, this is the Nios V/g cpu checking in 995...
Hello world, this is the Nios V/g cpu checking in 996...
Hello world, this is the Nios V/g cpu checking in 997...
Hello world, this is the Nios V/g cpu checking in 998...
Hello world, this is the Nios V/g cpu checking in 999...
Bye world!
```

uCOS-II:

```
Hello from main...
Task1 -- TOS: 0x285d0, BOS: 0x265d4
Task2 -- TOS: 0x2a5d0, BOS: 0x285d4
Task3 -- TOS: 0x2c5d0, BOS: 0x2a5d4
Stat -- TOS: 0x2d448, BOS: 0x2cc4c
Idle -- TOS: 0x2dc48, BOS: 0x2d44c
Hello from task1: 0

Hello from task2: 0

Hello from task3: 0

Hello from task3: 1

Hello from task2: 1

Hello from task3: 2

Hello from task1: 1

Hello from task3: 3

Hello from task2: 2

Hello from task3: 4

Hello from task3: 5
```

FreeRTOS:

```
Hello FreeRTOS from main...
Hello from task1: 0

Hello from task2: 0

Hello from task3: 0
Hello from task3: 1
Hello from task2: 1
Hello from task3: 2
Hello from task1: 1
Hello from task3: 3
Hello from task2: 2
Hello from task3: 4
Hello from task2: 3
Hello from task1: 2
Hello from task2: 4
Hello from task1: 3
Hello from task1: 4
```