Chips-2.0 Demo for ATLYS and NEXYS3 Development Card

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This project is intended to demonstrate the capabilities of the Chips-2.0 development environment. The project is targets the Xilinx Spartan 6 device, and more specifically, the Digilent ATLYS and NEXYS3 development platform. The demo implements a TCP/IP socket interface, and a simple web application. So far the demonstration has been tested on a Ubuntu Linux only. Some users have reported success using windows.

Dependencies

You will need:

- Xilinx ISE 12.0 or later (webpack edition is free)
- Python 2.7 or later (but not Python 3)
- Chips-2.0 (Included)
- Digilent ATLYS Spartan 6 Development Kit.
- or Digilent NEXYS3 Spartan 6 Development Kit.
- Digilent ADEPT2 utility
- git

Install

Clone the git the repository with git:

```
$ git clone https://github.com/dawsonjon/Chips-Demo.git
$ cd Chips-Demo
$ git submodule init
$ git submodule update
```

Chips Compile

To compile the c code in chips, issue the following command in the project folder:

```
$ ./atlys.py compile
```

or:

```
$ ./nexys3.py compile
```

Build in ISE

Edit the Xilinx variable in the scripts/user_settings to point to the Xilinx ISE install directory. Then build the design using the following command:

```
$ ./atlys.py build
```

or:

```
$ ./nexys3.py build
```

Download to ATLYS

Power up the ATLYS, and connect the JTAG USB cable to your PC. Run the download command:

```
$ ./atlys.py download
```

or:

```
$ ./nexys3.py download
```

You can complete all three steps in one go using the *all* option:

```
$ ./atlys.py all
```

or:

```
$ ./nexys3.py all
```

Setup and Test

```
+----------------+                 +----------------+
| PC             |                 | Digilent ATLYS |
|                |   POWER =======>o                |
|                |                 |                |
|          USB   o<===============>o JTAG USB       |
|                |                 |                |
|          ETH0  o<===============>o ETHERNET       |
|                |                 |                |
| 192.168.1.0    |                 | 192.168.1.1    |
+----------------+                 +----------------+
```

Connect the Ethernet port to ATLYS, using a crossed over Ethernet cable.

Using the script, configure Ethernet port with IP address 192.168.1.0 and subnet mask 255.255.255.0. Turn off TCP Window Scaling and TCP time stamps:

```
$ ./configure_network
```

Verify connection using ping command:

```
$ ping 192.168.1.1
PING 192.168.1.1 (192.168.1.1) 56(84) bytes of data.
64 bytes from 192.168.1.1: icmp_req=1 ttl=255 time=0.253 ms
64 bytes from 192.168.1.1: icmp_req=2 ttl=255 time=0.371 ms
64 bytes from 192.168.1.1: icmp_req=3 ttl=255 time=0.382 ms
```

```
64 bytes from 192.168.1.1: icmp_req=4 ttl=255 time=0.250 ms
^C
--- 192.168.1.1 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3000ms
rtt min/avg/max/mdev = 0.250/0.314/0.382/0.062 ms
```

Connect to 192.168.1.1 using your favourite browser.