Caravel Sky 130nm Precheck Guide

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Information Current as of 10/26/2024

Setup and Running Guide

In order to run precheck you have to have a caravel project already created. To get a project you can clone our repository.

```
$ git clone https://github.com/AidenPetersen/ReRAM_Crossbar
```

Once the repository is cloned you can enter the project directory by executing:

```
$ cd ReRAM_Crossbar
```

To set up the project's necessary environment variables we need to set PDK_ROOT, CARAVEL_ROOT, SIM, and MCW_ROOT to the values we want them to be. We have a script that is able to set these to sensible values. You can run this script by running the command:

```
$ source setup.sh
```

No we need to download the dependencies in the location specified by our setup script. To do this we can run

```
$ make setup
```

Which installs of lot of the necessary dependencies. The primary ones of our concern are the Sky130 PDK, Caravel, and MCW.

Now you should be ready to run precheck on the design. First you need to install precheck by running:

```
make precheck
```

Then you can run it by running:

```
make run-precheck
```

Troubleshooting

Assuming everything is working properly it should pass. If it doesn't pass, here are a few problems and how to fix them:

1. If you are failing an XOR check, then there is a chance you made a modification that is out of bounds of the wrapper. You can look at the file

```
precheck_results/<run-date>/outputs/user_analog_project_wrapper.xor.gds
```

   To see the difference generated.
2. The title of the README.md file must be changed otherwise it will fail precheck
3. By default all of the USER_CONFIG_GPIO configurations are set to GPIO_MODE_INVALID. It will not pass precheck if any of these are set to invalid. To fix this edit

```
verilog/rtl/user_defines.v
```

4. Sometimes precheck is unable to parse SPICE comments. If you are receiving errors related to spice comments in precheck, remove all of the comments inside of the problematic file.