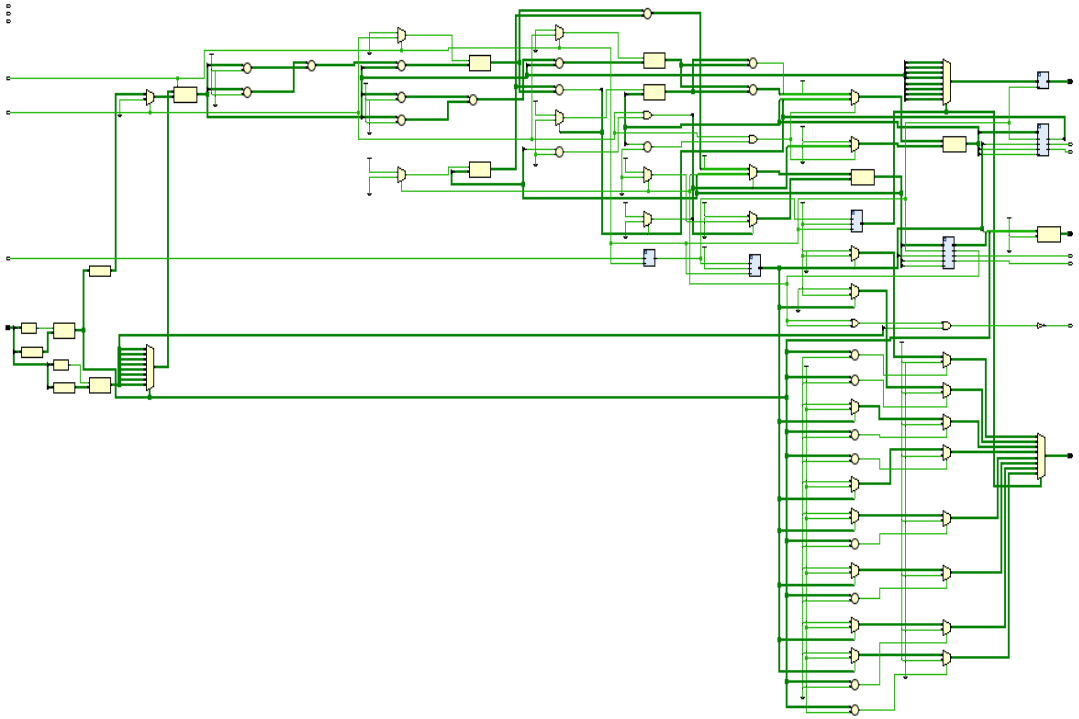
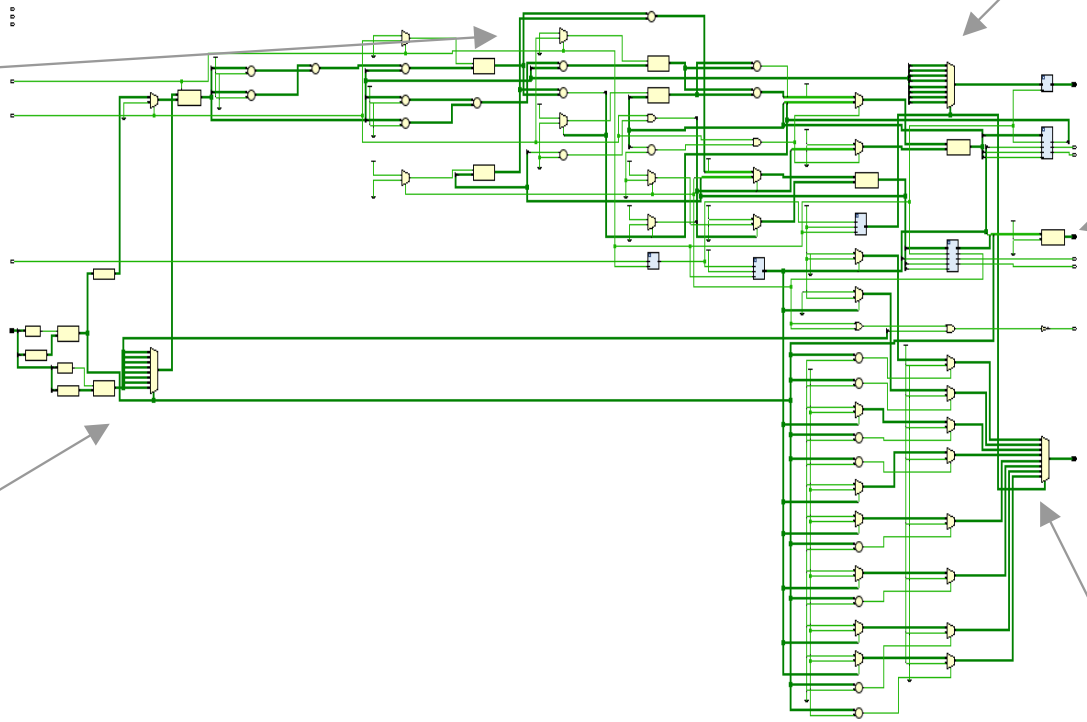
253050 – stepper driver

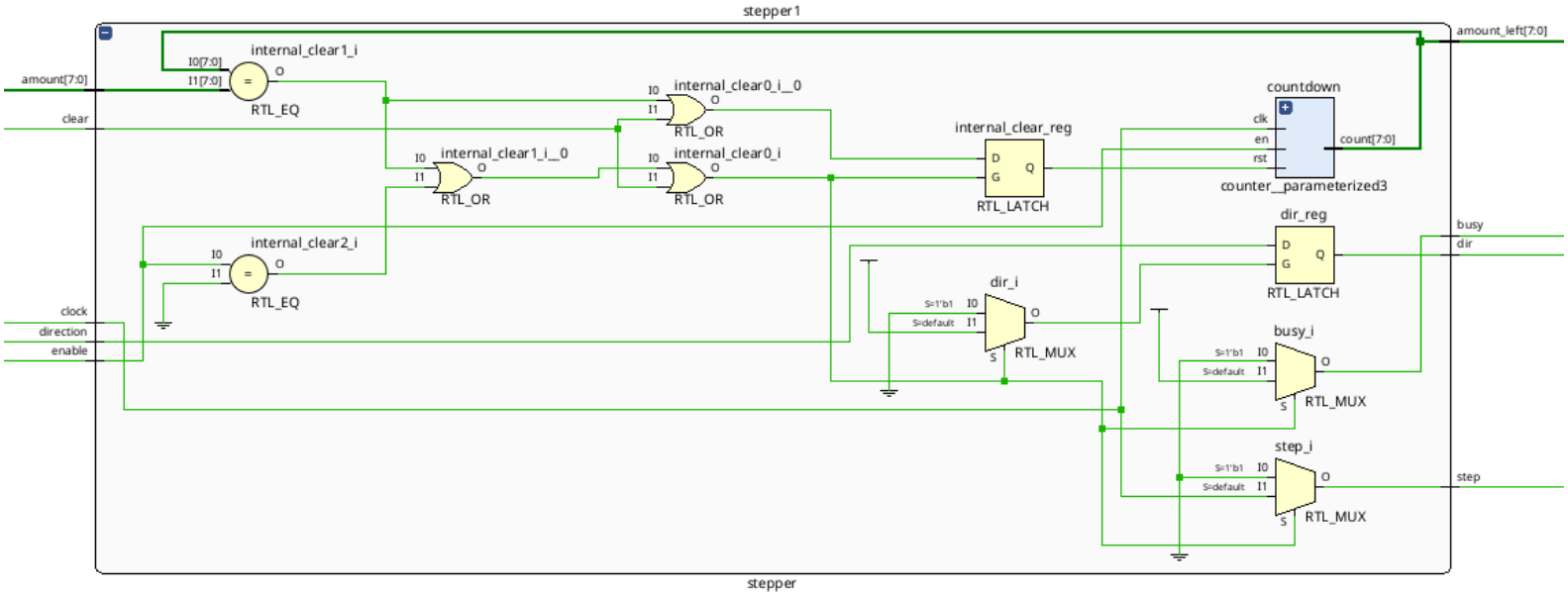
logic



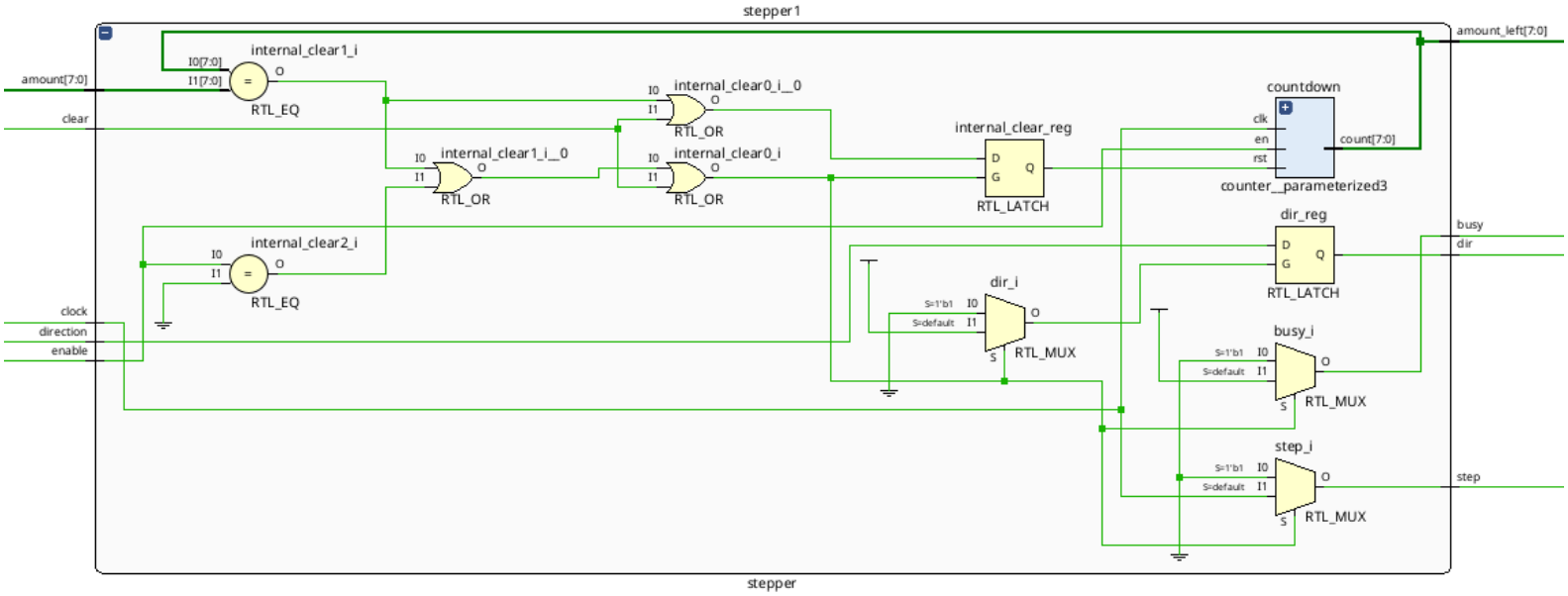
logic


Short term memory
Step calculation
Stepper logic
Target (believed) position register
Smart number display

Stepper logic



Stepper logic



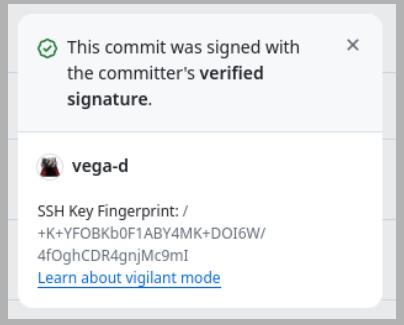
issues

- no auto-home function achieved
- the hardware fell apart before I could finish the software
- the number inputting system could be more intuitive
- math is done dirty-dirty

Bonus points (ig?)

- the project actually works
- I set a goal at the beginning of the project and I did achieve the goal
- everything is on github

Bonus bonus points (maaybe?)
- all git commits are signed with a public key using a smartcard HSM



Dirty Math

```
reg1_motor1(7 downto 0) <=
std_logic_vector(to_unsigned(to_inte
ger(unsigned(reg_targetposition_mot
or1))-
to_integer(unsigned(reg_currentposit
ion_motor1)), 8));
```

Dirty Math

```
reg1_motor1(7 downto 0) <=
    std_logic_vector(
        to_unsigned(
            to_integer(
                unsigned(reg_targetposition_motor1)
            )
            -
            to_integer(
                unsigned(reg_currentposition_motor1)
            ),
        8)
    );
```

Dirty Math

```
reg1_motor1(7 downto 0) <=
    std_logic_vector(
        to_unsigned(
            to_integer(
                unsigned(reg_targetposition_motor1)
            )
            -
            to_integer(
                unsigned(reg_currentposition_motor1)
            ),
        8)
    );
```

Convert std_logic_vector binary arrays into integers

Dirty Math

Do math

```
reg1_motor1(7 downto 0) <=
    std_logic_vector(
        to_unsigned(
            to_integer(
                unsigned(reg_targetposition_motor1)
            )
            -
            to_integer(
                unsigned(reg_currentposition_motor1)
            ),
        8)
    );
```

Dirty Math

```
reg1_motor1(7 downto 0) <=
    std_logic_vector(
        to_unsigned(
            to_integer(
                unsigned(reg_targetposition_motor1)
            )
            -
            to_integer(
                unsigned(reg_currentposition_motor1)
            ),
        8)
    );
```

Convert integer back into unsigned std_logic_vector binary array

End

“This presentation totally was not made 1h before you saw it”