

# Realtime I/O using Icoboard

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**Abstract—This manual shows how to balance chemical equations using matrices.**

Download python codes using

```
svn co https://github.com/gadepall/FPGA/trunk/
realtime/pyexam/codes
```

## 1 COMPONENTS

The necessary components for this manual are listed in Table 0

Component	Quantity
Icoboard	1
Raspberry Pi 4	1
Male-Male Jumper Wires	20
Breadboard	1
Seven segment display	1

TABLE 0

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## 2 HARDWARE SETUP

### 2.1 4 bit binary input

- The hardware connections between the Icoboard and Raspberry Pi 4 are available in below figures.
- In figure 2 and 3 the Icoboard and raspberry pi connections are shown. And fig 4 shows the Raspberry Pi pin configuration.
- Place icoboard on Raspberry Pi 4 and make the connections according to following steps:
- Take the wires and connect them to A5,A2,C3,B4 of the icoboard . These pins are used to give input manually.
- Similarly make connection to GND pin and 3.3V pin of Icoboard
- Connect GND and 3.3V pin on the bread board
- Give the binary input using input pins .
- For example connect all the input pins to GND pin on bread board
- Now open the terminal give the following commands

```
cd icoboard
cd trunk
cd codes
cd Binary
make v_fname=binary
python binary.py
```

- The output is displayed on terminal as 0
- Similarly you can change the values.

- If 1 is to be given as input connect it to 3.3V pin and if 0 is to be given as input then connect it to GND pin.

## 2.2 Seven segment display

Make the connections according to the Tabel II. The pin configuration of seven segment display is shown in fig 1.

Seven segment display	Icoboard
a	A5
b	A2
c	C3
d	B4
e	B7
f	B6
g	B3
COM	3.3v

TABLE 0

- Open the terminal and execute the following commands

```
cd icoboard
cd codes
cd trunk
cd seven
make v_fname=seven
python seven.py
```

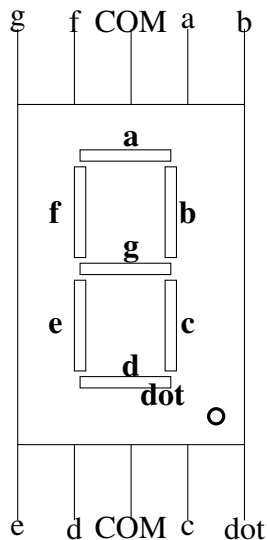


Fig. 0: SSD pin configuration

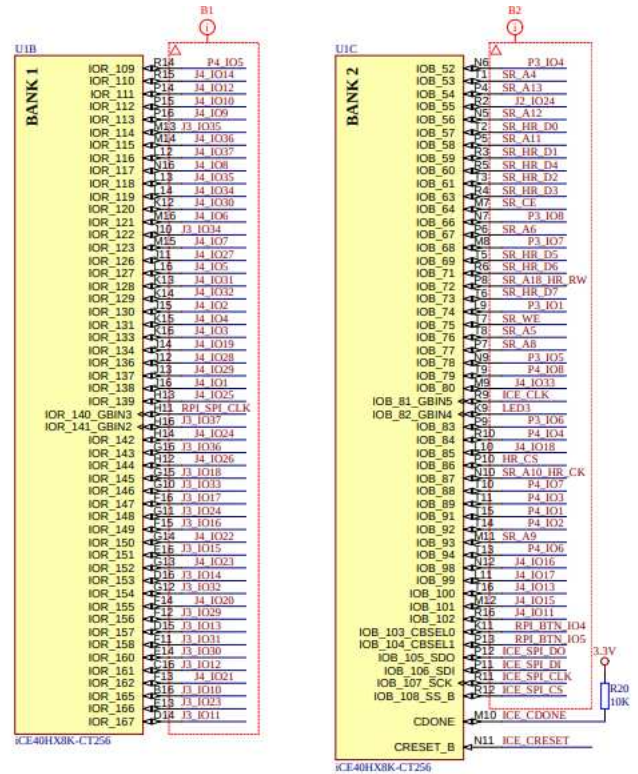


Fig. 0: Icoboard pin configuration

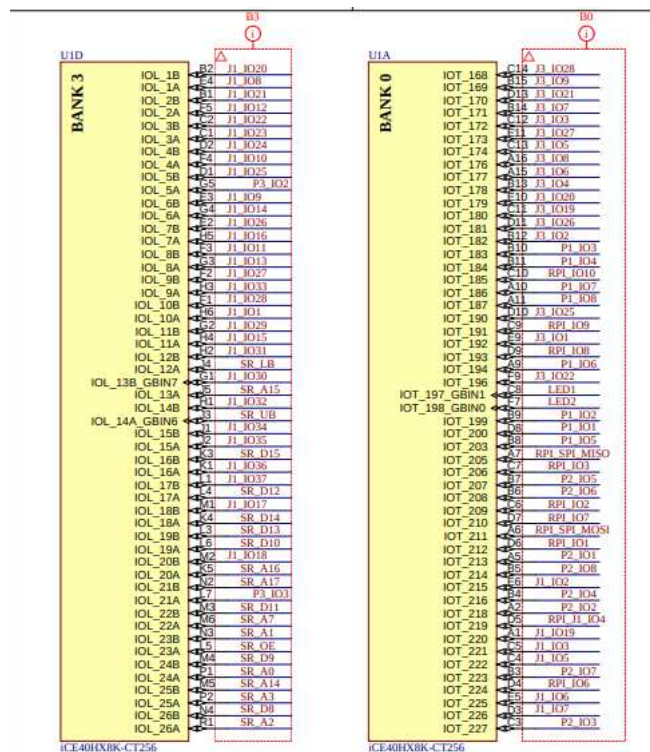


Fig. 0: Icoboard pin configuration

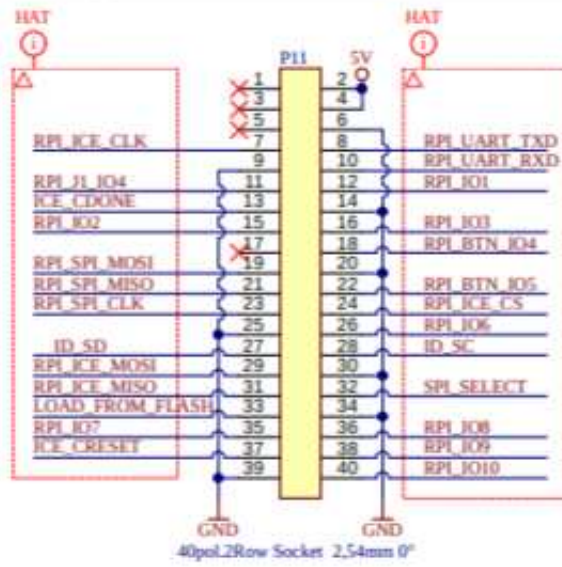


Fig. 0: RaspberryPi pin configuration