Introduction to ARM-GCC through Pico

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Contents

Abstract—An introduction to embedded-C programming is provided using the pico-sdk.

1 Software

Download the codes used in this manual using the link below.

```
https://github.com/gadepall/vaman/
    tree/master/arm/codes/blink
```

2 Setup

2.1. There is a button adjacent to the USB port of the Raspberry Pi. Keep this button (BOOTSEL) pressed while connecting the RPi to the Pico through the USB cable.

2.2. Login to termux-ubuntu and execute the following commands.

```
cd ~
svn co https://github.com/
    gadepall/pico/trunk/arm/
    codes/setup/blink
mkdir build #Only once
cd build
cmake ..
make -j4
scp  main.uf2 pi@192.168.0.114:
```

Suitably modify the above ip address before sending main.uf2 .

2.3. Now login to the raspberry pi and execute the following commands.

```
sudo mkdir /mnt/pico #Only once
sudo fdisk -l
sudo mount /dev/sda1 /mnt/pico
sudo mv /mnt/pico
sudo umount /mnt/pico
```

You should now see the LED to the right of the USB port blinking.

2.4. Connect RUN on pico to GND. Keep pressing BOOTSEL while removing the RUN-GND wire from GND. The LED stops blinking. Pico is now ready to be flashed.

3 Delay

3.1. Note the followign lines in the C code below:

```
codes/setup/blink/main.c
```

```
        gpio_put(LED_PIN, 1);
        sleep_ms(250);
        gpio_put(LED_PIN, 0);
        sleep_ms(250);
```

It is obvious that the blink period is 500ms = 0.5s

3.2. Replace the below instruction in the C program in 3.1

```
        sleep_ms(250);
```

with

```
        sleep_ms(500);
```

Can you see any difference in the LED blinking frequency?

3.3. Now modify the above code to keep the LED on permanently.
Solution: Execute the following code.

```
codes/setup/onoff/main.c
```

3.4. Use GP2 as an output pin and drive an LED.
Solution: Connect the LED to pico as per Table 3.4.1 and Fig. 3.5.1

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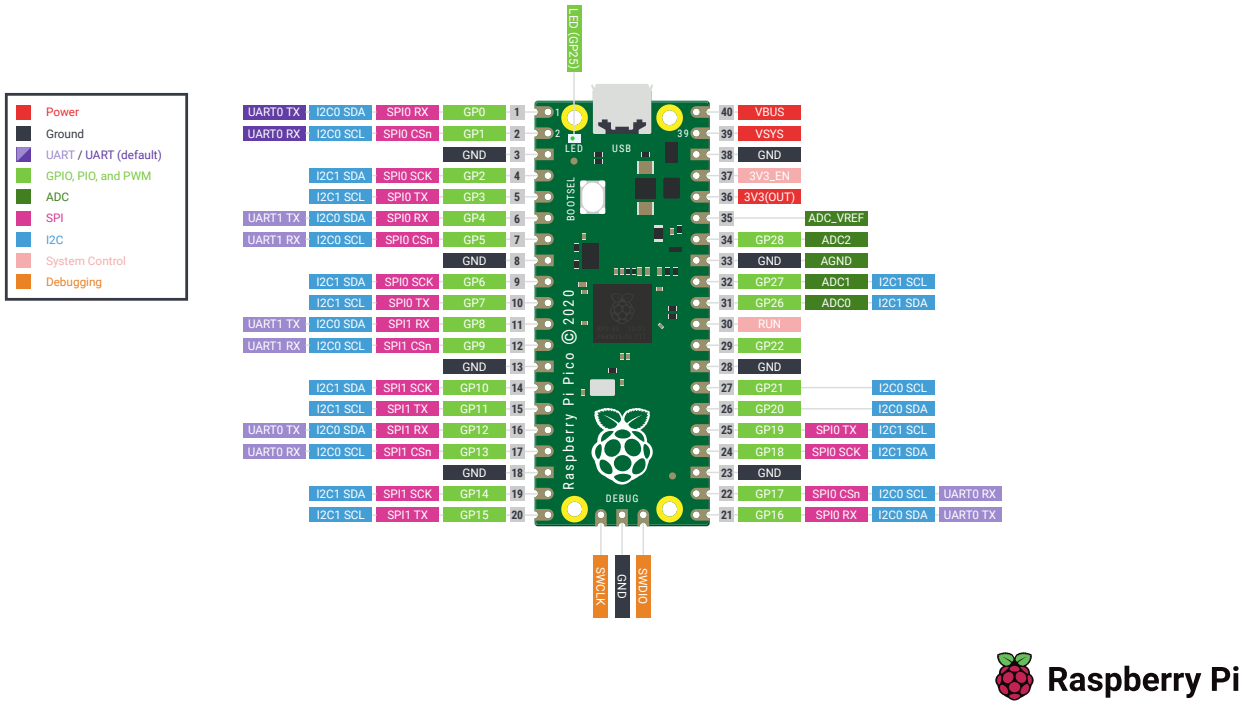

Fig. 3.5.1: pin आरेख

codes/setup/gpio/main.c

Type	pico pin	Destination
Output	3V3	LED
Output	GP2	LED

TABLE 3.4.1: Connection between LED and pico

3.5. Execute the following code. Connect a wire to GND and touch GP2 on the pico. The onboard LED will turn off. Repeat this exercise to blink the LED manually.

codes/setup/input/main.c