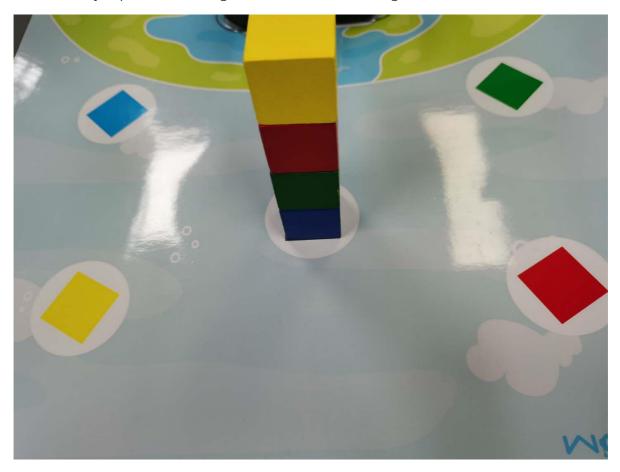# 6.10 Porter

1.Introduction to gameplay

    The purpose of this experiment is to stack four building blocks of different
    colors from bottom to top in the order of blue, green, red and yellow, place them
    on the middle gray square, and then run the code.

The robot arm will pick up the fourth layer of blocks and place them in the yellow area, pick up the third layer blocks and place them in the red area, pick up the second layer blocks and put them in the green area, and pick up the bottom blocks and place them in the blue area,Execute in order.The way to place the building blocks is as shown in the figure below:

After executing the code, the robot arm will carry the building blocks to the corresponding position. The final effect is as shown in the figure below:

2.Code content

Code path：/home/dofbot/Dofbot/3.ctrl_Arm/10.move_block.ipynb

```python
#!/usr/bin/env python3
#coding=utf-8
import time
from Arm_Lib import Arm_Device
# Create robot arm object
Arm = Arm_Device()
time.sleep(.1)
```

```python
# Define the function of clamping building blocks, enable=1: clamp, =0: release
def arm_clamp_block(enable):
    if enable == 0:
        Arm.Arm_serial_servo_write(6, 60, 400)
    else:
        Arm.Arm_serial_servo_write(6, 130, 400)
        time.sleep(.5)
# Define the mobile robot arm function and control the movement of servos No. 1-5
at the same time, p=[S1,S2,S3,S4,S5]
def arm_move(p, s_time = 500):
    for i in range(5):
        id = i + 1
        if id == 5:
            time.sleep(.1)
            Arm.Arm_serial_servo_write(id, p[i], int(s_time*1.2))
```

```python
        else :
            Arm.Arm_serial_servo_write(id, p[i], s_time)
        time.sleep(.01)
    time.sleep(s_time/1000)
# Robotic arm moves up
def arm_move_up():
    Arm.Arm_serial_servo_write(2, 90, 1500)
    Arm.Arm_serial_servo_write(3, 90, 1500)
    Arm.Arm_serial_servo_write(4, 90, 1500)
    time.sleep(.1)
```

```python
# Define variable parameters at different locations
p_mould = [90, 130, 0, 0, 90]
p_top = [90, 80, 50, 50, 270]
p_Yellow = [65, 22, 64, 56, 270]
p_Red = [117, 19, 66, 56, 270]
p_Green = [136, 66, 20, 29, 270]
p_Blue = [44, 66, 20, 28, 270]
p_layer_4 = [90, 72, 49, 13, 270]
p_layer_3 = [90, 66, 43, 20, 270]
p_layer_2 = [90, 63, 34, 30, 270]
p_layer_1 = [90, 53, 33, 36, 270]
```

```python
# Let the robotic arm move to a position ready to grab
arm_clamp_block(0)
arm_move(p_mould, 1000)
time.sleep(1)
# Move the building blocks on the fourth floor to the yellow area
arm_move(p_top, 1000)
arm_move(p_layer_4, 1000)
arm_clamp_block(1)
arm_move(p_top, 1000)
arm_move(p_Yellow, 1000)
arm_clamp_block(0)
time.sleep(.1)
arm_move_up()
arm_move(p_mould, 1100)

# time.sleep(1)
```

```python
# Move the third layer of building blocks to the red area
arm_move(p_top, 1000)
arm_move(p_layer_3, 1000)
arm_clamp_block(1)
arm_move(p_top, 1000)
arm_move(p_Red, 1000)
arm_clamp_block(0)
time.sleep(.1)
arm_move_up()
arm_move(p_mould, 1100)

# time.sleep(1)
```

```python
# Carry the second layer of building blocks to the green area
arm_move(p_top, 1000)
arm_move(p_layer_2, 1000)
arm_clamp_block(1)
arm_move(p_top, 1000)
arm_move(p_Green, 1000)
arm_clamp_block(0)
time.sleep(.1)
arm_move_up()
arm_move(p_mould, 1100)

# time.sleep(1)
```

```python
# Move the first layer of building blocks to the blue area
arm_move(p_top, 1000)
arm_move(p_layer_1, 1000)
arm_clamp_block(1)
arm_move(p_top, 1000)
arm_move(p_Blue, 1000)
arm_clamp_block(0)
time.sleep(.1)
arm_move_up()
arm_move(p_mould, 1100)

# time.sleep(1)
```

```python
del Arm #Release Arm object
```