1. Basic control

1.1 Experimental purpose

In this course， we will learn how to control robot dog to forward and backward, left and right and left and right rotation.

1.2 Experimental preparation

The functions of dogzilla Python library involved in this course are:

The functions of the DOGZILLA Python library be used in this course:

forward(step)：Go forward, step is the step width. The larger the value, the larger the width of each step and the faster the speed. The step range is [0, 25].

back(step)：Back, step is the step width. The larger the value, the larger the width of each step and the faster the speed. The step range is [0, 25].

left(step)：Left translation, step is the step width. The larger the value, the larger the width of each step and the faster the speed. The step range is [0, 18].

right(step)：Right translation, step is the step width. The larger the value, the larger the width of each step and the faster the speed. The step range is [0, 18].

turnleft(step): Spin left, step is the step width. The larger the value, the larger the width of each step and the faster the speed. The step range is [0, 100].

turnright(step)：Spin right, step is the step width. The larger the value, the larger the width of each step and the faster the speed. The step range is [0, 100].

stop()：Stop.

1.3 Experimental process

Open the jupyterLab client and find following code path

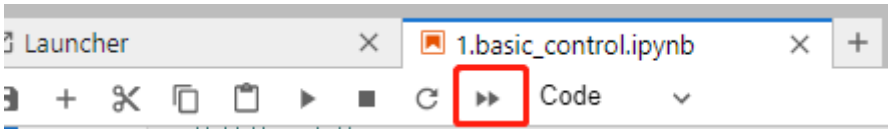
```
DOGZILLA/Samples/2_Control/1.basic_control.ipynb
```

By default g_ENABLE_CHINESE=False, if you need to display Chinese, please set g_ENABLE_CHINESE=True.

```
# 中文开关，默认为英文 Chinese switch. The default value is English
g_ENABLE_CHINESE = False

Name_widgets = {
    'Stop': ("Stop", "停止"),
    'Forward': ("Forward", "前进"),
    'Backward': ("Backward", "后退"),
    'Left': ("Left", "左平移"),
    'Right': ("Right", "右平移"),
    'TurnLeft': ("TurnLeft", "向左转"),
    'TurnRight': ("TurnRight", "向右转")
}
```

Click the following icon to run all cells, and then pull to the bottom to see the generated controls.



Click the different buttons to realize the corresponding function.

布局控件并显示 Layout widgets and display them

```
# 布局控件并显示  Layout widgets and display them
output = widgets.Output()
box_btn1 = widgets.VBox([button_forward, button_backward])
box_btn2 = widgets.VBox([button_move_left, button_move_right])
box_btn3 = widgets.VBox([button_turn_left, button_turn_right])
box_h = widgets.HBox([box_btn1, box_btn2, box_btn3, button_stop])
box_display = widgets.VBox([box_h, output])
display(box_display)
```


```
Button clicked: Forward
Button clicked: Stop
```

Each time a button is clicked, the corresponding function will be executed, and the key event processing is shown below.

```
# 按键按下事件处理   Key press event processing
def on_button_clicked(b):
    ALL_Uncheck()
    b.icon = 'check'
    with output:
        print("Button clicked:", b.description)
    if b.description == Name_widgets['Stop'][g_ENABLE_CHINESE]:
        g_dog.stop()
        b.icon = 'uncheck'
    elif b.description == Name_widgets['Forward'][g_ENABLE_CHINESE]:
        g_dog.stop()
        g_dog.forward(25)
    elif b.description == Name_widgets['Backward'][g_ENABLE_CHINESE]:
        g_dog.stop()
        g_dog.back(25)
    elif b.description == Name_widgets['Left'][g_ENABLE_CHINESE]:
        g_dog.stop()
        g_dog.left(18)
    elif b.description == Name_widgets['Right'][g_ENABLE_CHINESE]:
        g_dog.stop()
        g_dog.right(18)
    elif b.description == Name_widgets['TurnLeft'][g_ENABLE_CHINESE]:
        g_dog.stop()
        g_dog.turnleft(100)
    elif b.description == Name_widgets['TurnRight'][g_ENABLE_CHINESE]:
        g_dog.stop()
        g_dog.turnright(100)
```

1.4 Summary

In this course, we use JupyterLab controls to control the basic movement of DOGZILLA.

Since the step is set to the maximum value during the experiment, the walking is relatively fast, and it can be appropriately changed to a smaller value in the actual debugging process to compare the experimental effect.

Every time you finish modifying the code, click save and re-run all cells.