

Robot Advance

Learning objectives:

In this class, you will learn to use Python programming to make the robot move forward.

Code and analysis:

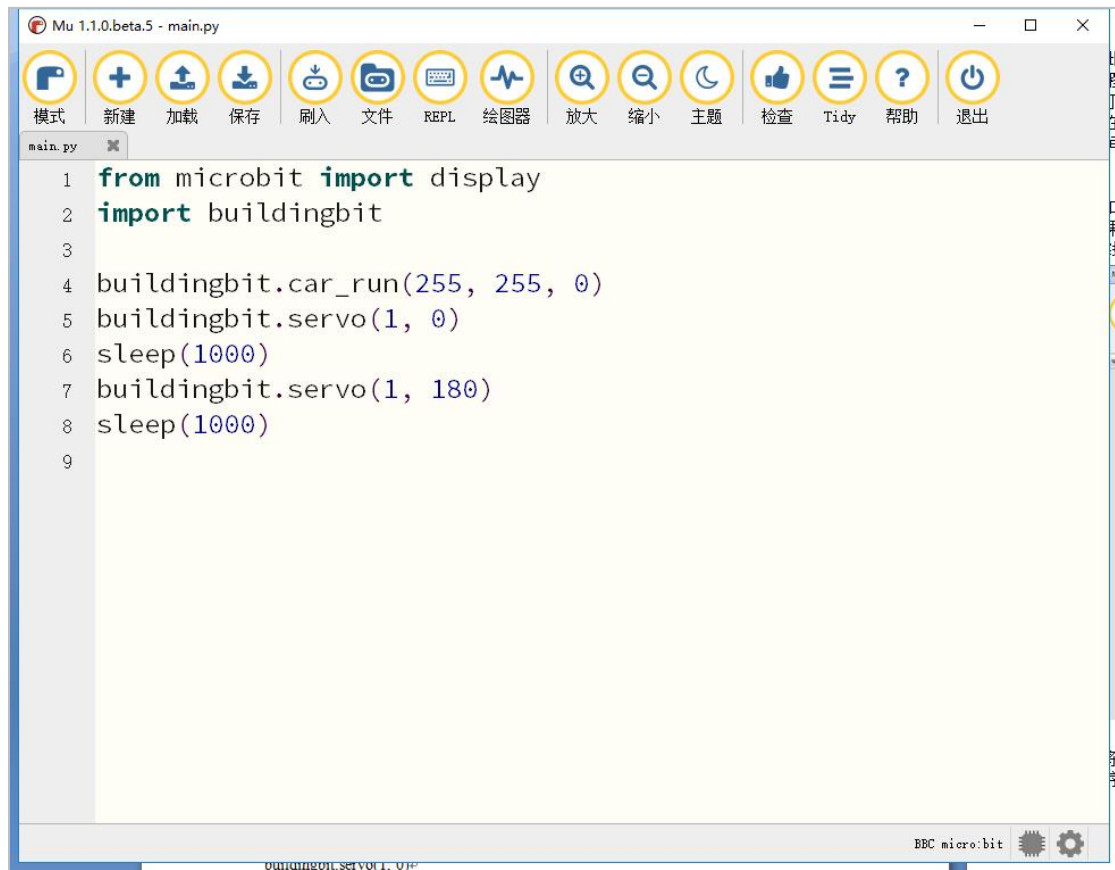
```
from microbit import display
import buildingbit

buildingbit.car_run(255, 255, 0)
buildingbit.servo(1, 0)
sleep(1000)
buildingbit.servo(1, 180)
sleep(1000)
```

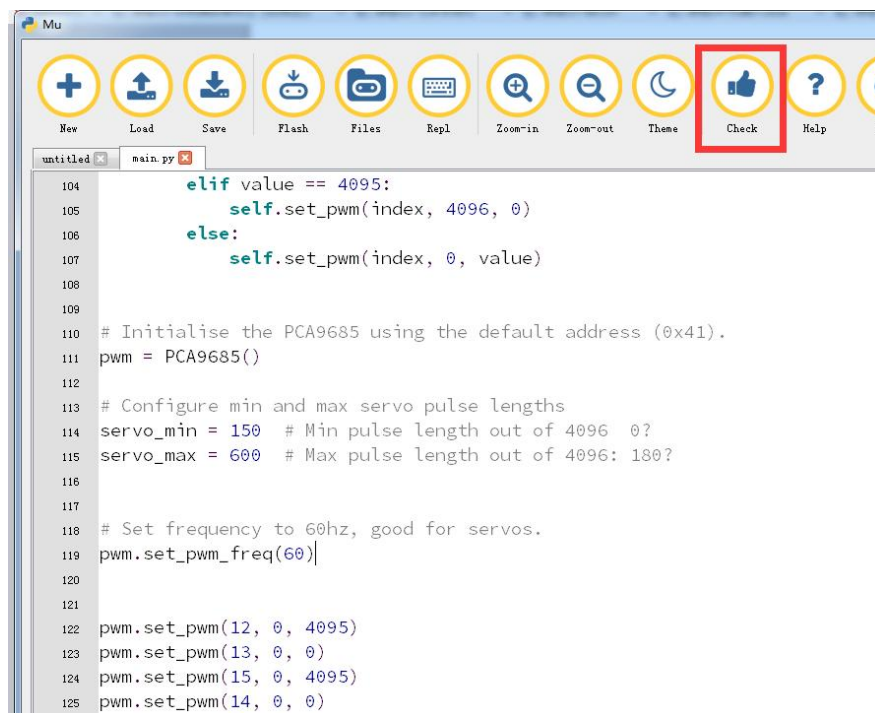
This experiment uses I2C communication. The PCA9685PW chip can output 16 PWM channels, so we can control the car to move forward by controlling the output of 4 PWM channels.

Programming and downloading:

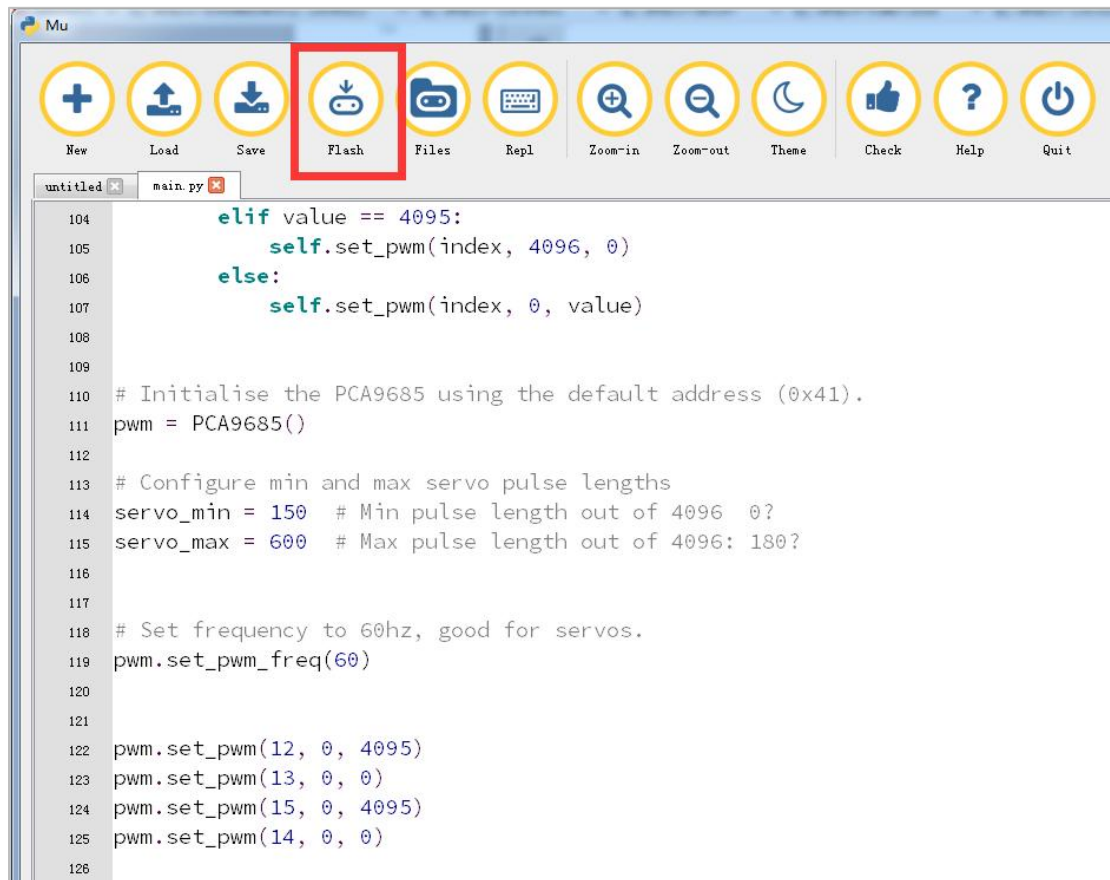
1. Open the Mu software and enter the code in the editing window as shown in Figure 18-1. Note! All English and symbols should be entered in English mode, and the Tab key should be used for indentation. There must be a space between keywords such as "," and the content. Two blank lines need to be reserved between functions, and the last line ends with a blank program.



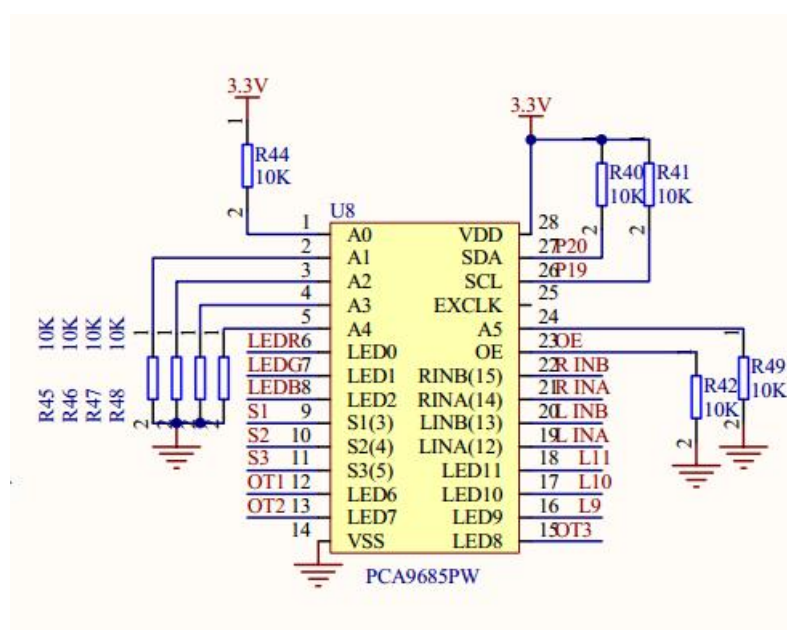
2. Click the Check button with the thumb icon to check if there are any errors in our code. If a cursor or underline appears on a line, it means that there is an error in the program on that line. If no cursor or underline appears, it means that there is no error in the code.

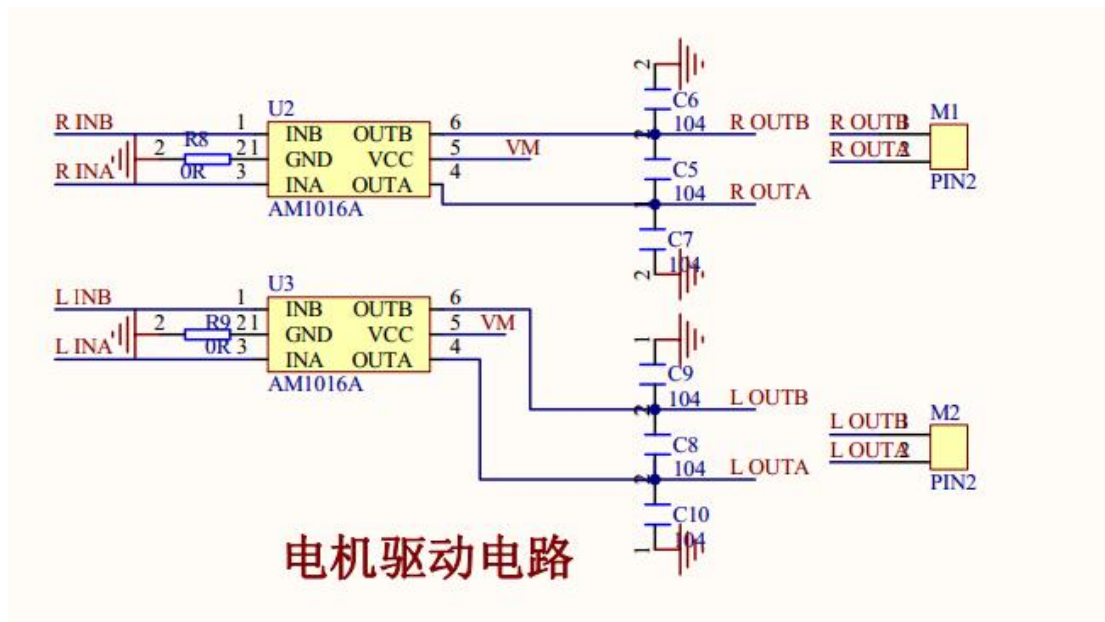


3. Connect the micro:bit to the computer via a micro USB cable, and then click the Flash button to download the program to the micro:bit as shown below.



4. The schematic diagram of the robot's PCA9685PW chip and motor is shown below. We can see that the robot's motor is connected to the LINA, LINB, RINA, and RINB pins of the PCA9685PW chip, while the SCL and SDA of the PCA9685PW are connected to the P19 and P20 pins of the micro:bit chip.





5. After downloading the program to micro:bit, you can see the car moving forward.

