Lab 1: Hammerhead quick start
Assigned 1/6. Show functioning robot to TAs on 1/13

The goal of our first lab is to get you building and debugging robot behavior very quickly. Please review the software and electronics for spinning a motor and reading a switch. Then review and fully understand Casey’s robot “Hammerhead.” Write software and build a robot that has 2 motors and 2 switches, using the Hammerhead code (below). Your robot should progress forward until it hits an object, then back up and turn away from the object before continuing forward. Build this robot and debug it’s behavior. Your robot should be able to move around the room and avoid many objects (after a collision, of course).

Hammerhead code:

```c
/*
When start button is pressed go forward until an object is hit. Then back up and hit it again... and again...
*/

#define DEBUG 1

int MOTOR = 0;
int SWITCH = 15;

int FAST = 100;
int MED = 50;
int SLOW = 15;
int SPEED = MED;

void forward()
{
    #ifdef DEBUG
        printf("going forward\n");
    #endif
    motor(MOTOR, SPEED);
}

void backward()
{
    #ifdef DEBUG
        printf("going backward\n");
    #endif
    motor(MOTOR, -1 * SPEED);
}

void stop()
{
    #ifdef DEBUG
        printf("Stop all motors\n");
    #endif
```
void main(){
    int go = 0;
    while (1){
        if (start_button()){
            go = 1;
            #ifdef DEBUG
                printf("Start Pressed... Go Hammerhead!\n");
            #endif
        }
        if (!go){
            #ifdef DEBUG
                printf("Hammerhead is waiting.\n");
            #endif
            msleep(250L);
        }
        if (go){
            forward();
            if (digital(SWITCH)){
                stop();
                #ifdef DEBUG
                    tone(500.0, 0.1);
                #endif
                backward();
                msleep(2000L);
            }
            if (stop_button()){
                stop();
                go = 0;
            }
        }
    }
}