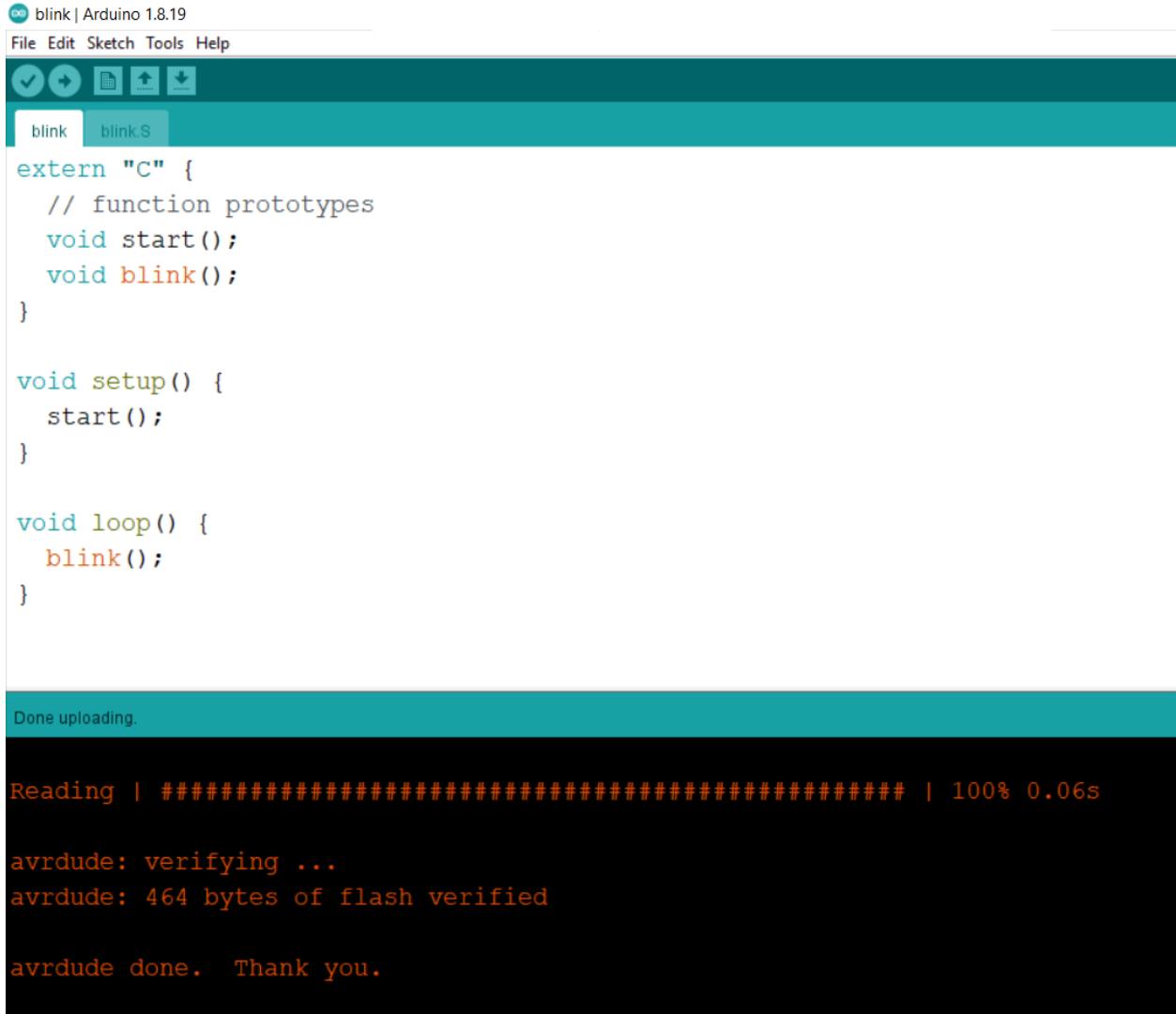


BME 393L: Prelab 5

The following code shown in Figures 1 and 2 was uploaded to the Arduino.



The screenshot shows the Arduino IDE interface. The top bar indicates the file is 'blink' and the Arduino version is 1.8.19. The menu bar includes File, Edit, Sketch, Tools, and Help. The toolbar shows icons for opening, saving, and uploading. The main text area contains the following C++ code:

```
extern "C" {  
  // function prototypes  
  void start();  
  void blink();  
}  
  
void setup() {  
  start();  
}  
  
void loop() {  
  blink();  
}
```

Below the code editor, a teal progress bar indicates 'Done uploading.' The bottom console shows the following output:

```
Reading | ##### | 100% 0.06s  
  
avrdude: verifying ...  
avrdude: 464 bytes of flash verified  
  
avrdude done.  Thank you.
```

Figure 1: blink.ino file



The screenshot shows the Arduino IDE interface. At the top, the title bar reads "blink - blink.S | Arduino 1.8.19". Below it is a menu bar with "File", "Edit", "Sketch", "Tools", and "Help". The main editor area displays the contents of the "blink.S" file. The code is as follows:

```
; Blink LED on PB5 (Arduino Uno pin 13)
; http://forum.arduino.cc/index.php?topic=159572#msg1194604

#define __SFR_OFFSET 0

#include "avr/io.h"

.global start
.global blink
;----- Do NOT change anything above this line
start:
    ret

blink:
    ldi r16, 0xFF ; Load register 16 with 0xFF (all bits 1)
    out DDRB, r16 ; Write 0xFF to Data Direction Register for port B. This defines all pins on port B as output.
    ldi r16, 0x0 ; Load register 16 with 0x00 (all bits 0)
    out PORTB, r16 ; Write 0x00 to port B. This sets all pins to 0.
    sbi PORTB, 0 ; Sets bit 0 on port B to 1.
```

Below the editor, a status bar indicates "Done uploading." and a terminal window shows the output of the upload process:

```
avrdude: 464 bytes of flash verified
avrdude done. Thank you.
```

Figure 2: blink.S file

Figure 3 shows the code running on the Arduino board with a red LED connected to pin 8 and two 50 Ω resistors in series with GND.

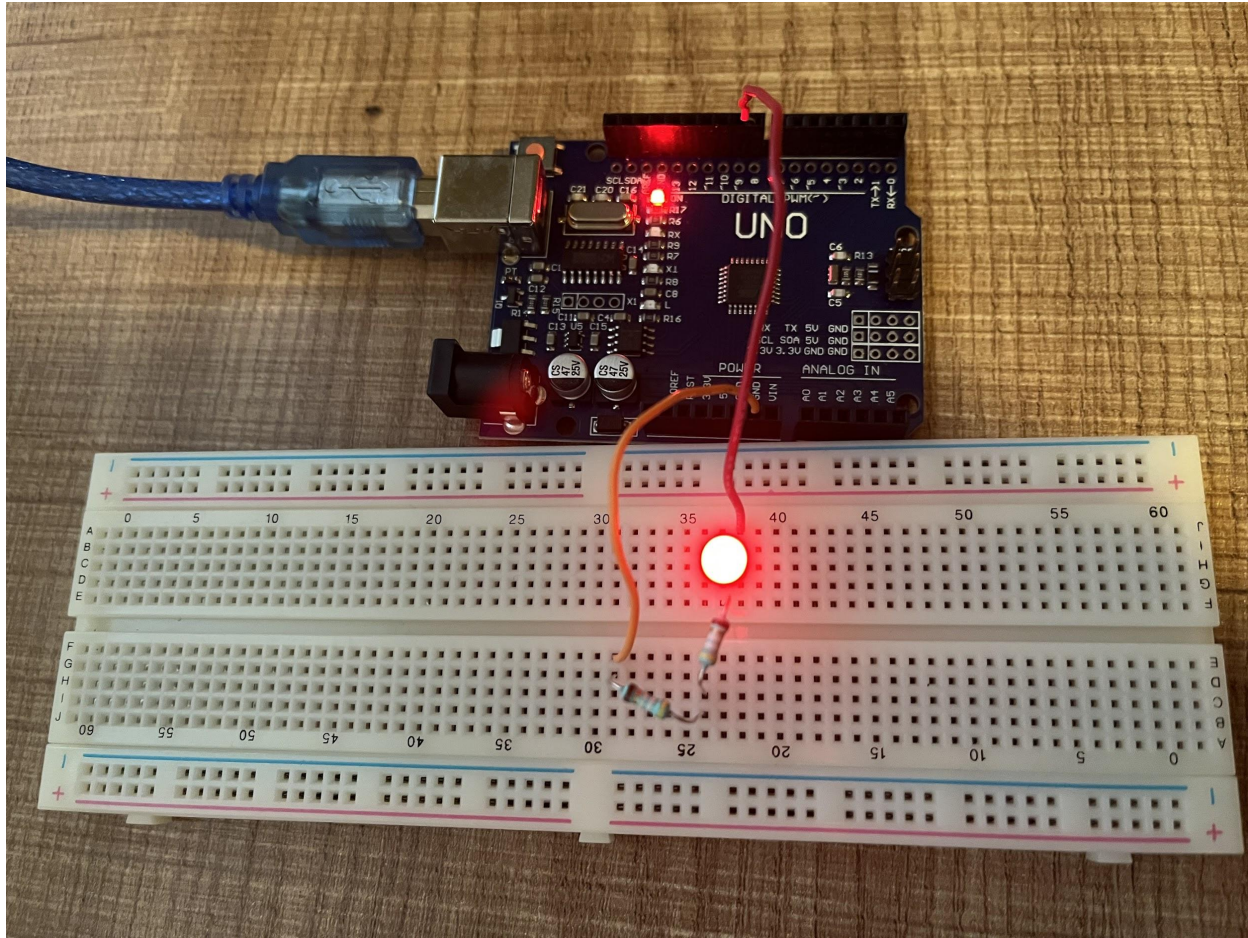


Figure 3: A red LED connected to pin 8 on the Arduino with two 50 Ω resistors in series to GND

1. Were you able to download and install either the Arduino or the Microchip Studio IDE on a laptop/computer? **Yes.**
2. Were you able to turn the LED on and off using the given codes? **Yes.**