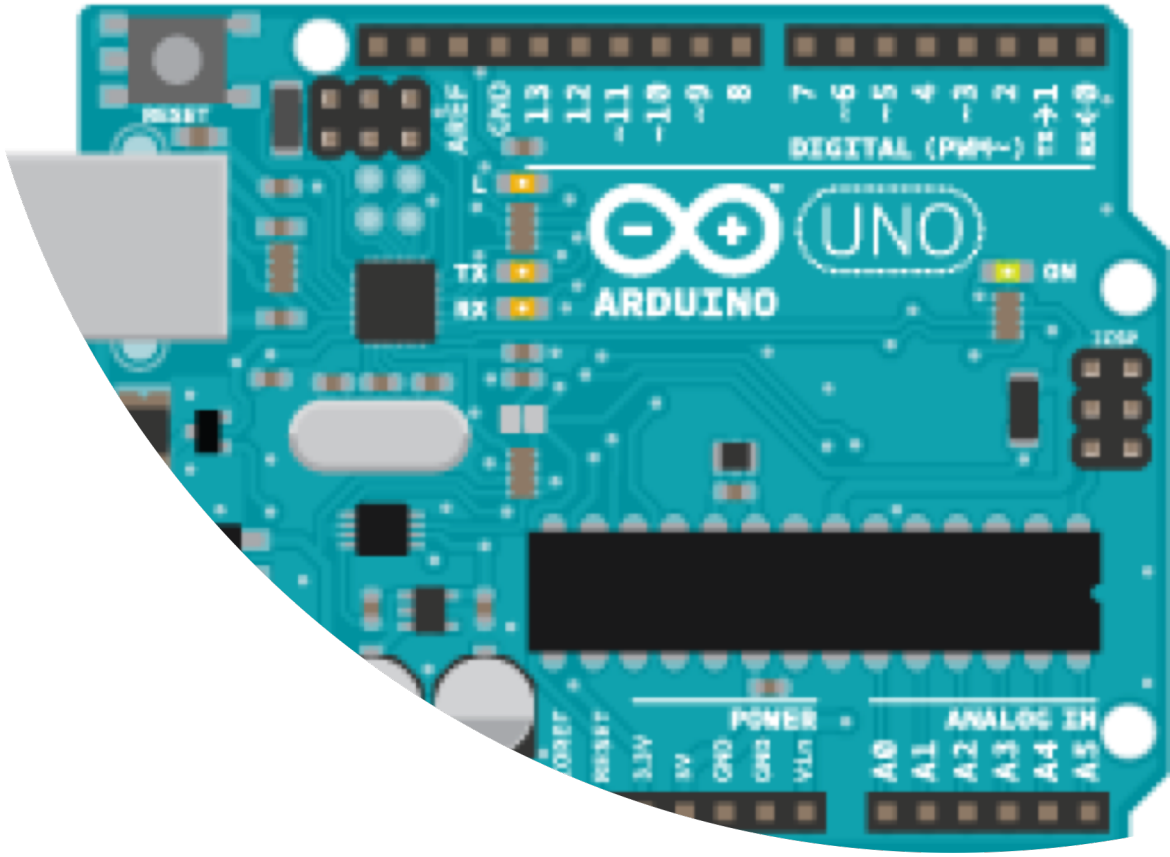
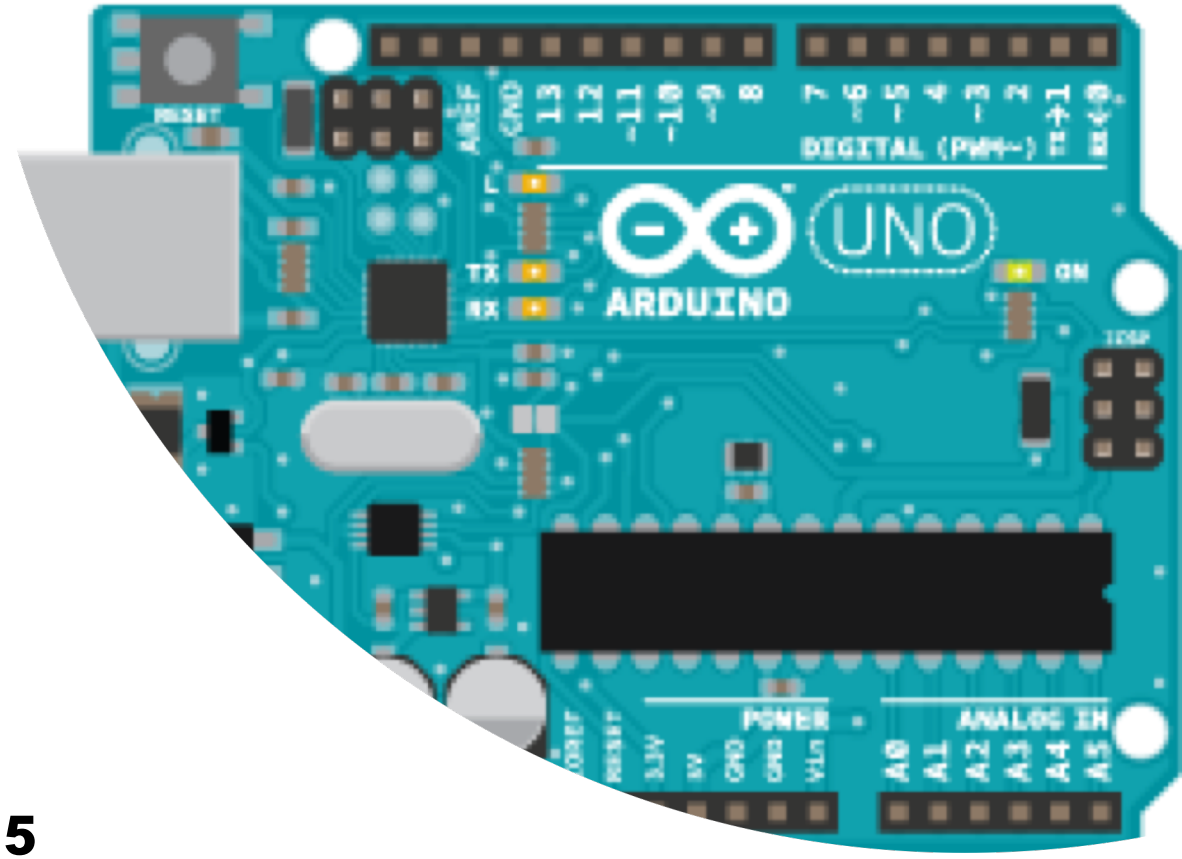


Sound Recorder (II)

Wai Keung, Hao, Min

Outline



- **Recap: Operations on Flash**
- **Buffer and Driver of DAC TI TLC5615**
- **Simple Examples**

Recap: Write Data into Flash

a. **void FlashStartWrite(uint32_t page);** (gives the starting address to write data in flash)
b. **void FlashStoreWord(uint16_t input);** (writes 10-bit analog data into flash)
c. **void FlashEndAction();** (tells flash the action "write" is finished)
d. **boolean CheckForFinish();** (ensures the flash is ready for another action)

Recap: Read Data from Flash

a. **void FlashStartRead(uint32_t page);** (gives the starting address to read data from flash)

b. **uint16_t FlashReadWord();**(reads 10–bit data)

c. **void FlashEndAction();** (tells flash the action "read" is finished)

Recap: Erase Flash

a. void DeleteAll();(erases the whole flash**)**

Buffer

uint16_t s_buffer[BUFFER_SIZE];

a. **void addBuffer(uint16_t temp);(**stores the data in buffer during flash preparing next page**)**

b. **bool popBuffer(uint16_t* output);(**pops stored data from a buffer and check whether the buffer is “empty”**)**

Driver of DAC TI TLC5615

```
class TLC5615 {
private:
        uint8_t  _ss; // GPIO pin used for the chip select for the DAC
public:
      TLC5615(uint8_t ss); // Initialize the TLC5615 driver
      void begin(void); // Initialize the SPI bus and the DAC chip
      void TLC5615::analogWrite(uint16_t value); // Write a value to the DAC
};

TLC5615 dac(10); // the instantiation of driver for TI TLC5615 DAC chip
dac.analogWrite(analogData); // write data into DAC chip
```

Example 1:

```
//When flash is available.
……
address_counter = 0;
FlashStoreWord(analogData);
address_counter  =  address_counter
+ 2;
new_data = false;
……
```

```
ISR(TIMER2_COMPA_vect) {
        analogData = analogRead(0);
        new_data = true; //A flag whether the new analog data is available
        // The new_data changes its status at the sampling speed
}
```

Example 2:

```
// when flash is not available
……
addBuffer(analogData);
new_data = false;
……
If (CheckForFinish())
{       ……
        dump = true; //a flag indicates starts to transferring data from buffer to flash
        FlashStartWrite(page_count);
        ……
}
……
```

Example 3:

```
//When flash is available again
……
uint16_t get_data;
If (popBuffer(&get_data)) {
        FlashStoreWord(get_data);
        address_counter = address_counter+2;
}
else{
        ……. // need to change the states of flags
}
……
```