Exercise 1_Morse

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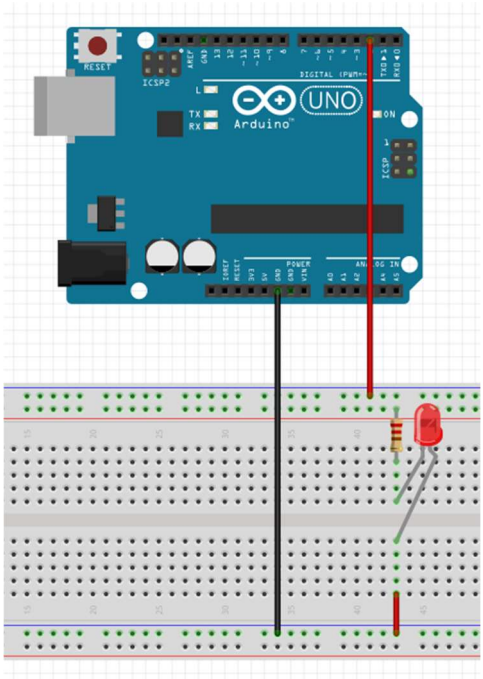
```ino
int unit = 200; // length of a unit of lenght given in ms
void setup() {
  // initialize digital pin LED_BUILTIN as an output.
  pinMode(2, OUTPUT);
}

void loop() {
  Morse('L');
  delay(2*unit); // delay between each character
  Morse('U');
  delay(2*unit);
  Morse('K');
  delay(2*unit); // delay between each character
  Morse('A');
  delay(2*unit);
  Morse('S');
  delay(6*unit); // delay between each word

  for(int i = 0; i < 10; i++){
    Morse('S');
    delay(2*unit); // delay between each character
    Morse('O');
    delay(2*unit);
    Morse('S');
    delay(6*unit); // delay between each word
  }
}

// make a dot in morse code (1 unit of length)
void dot(){
  digitalWrite(2, HIGH);
  delay(unit);
  digitalWrite(2, LOW);
  delay(unit);
}

// make a dash in morse code (3 units of length)
void dash(){
  digitalWrite(2, HIGH);
  delay(3*unit);
  digitalWrite(2, LOW);
  delay(unit);
}

// A case for each morse character
// Each character has a determinted
// number of dots and dashes in a paticular order
void Morse(char character) {
switch (character) {
  case 'A':
    dot();
    dash();
    break;
  case 'B':
    dash();
    dot();
    dot();
    dot();
    break;
  case 'C':
    dash();
    dot();
    dash();
    dot();
    break;
```



Questions

- 1a: Morse code uses 5 ”bits” for representing numbers 0-9, how many bits are needed if you would use binary? Why is this not possible in Morse code?

4 bits are needed for the numbers 0-9. 4 bits actually represent the numbers 0-15.

It is not possible because the 4 bits are reserved for the whole alphabet, so there are not enough bits for both the alphabet and the numbers 0-9.

- 1b: Try setting ledpin = LED BUILTIN, what happens?

The built in LED on the Arduino lights up instead of the external LED

- 1c: What is the value of a after the loop?

```
int a = 1;
for(int i = 0; i < 5; i++){
    a += a;
}
```

The value of a after the loop is 32, each equation in the loop is given as:

1+1=2

2+2=4

4+4=8

8+8=16

16+16=32