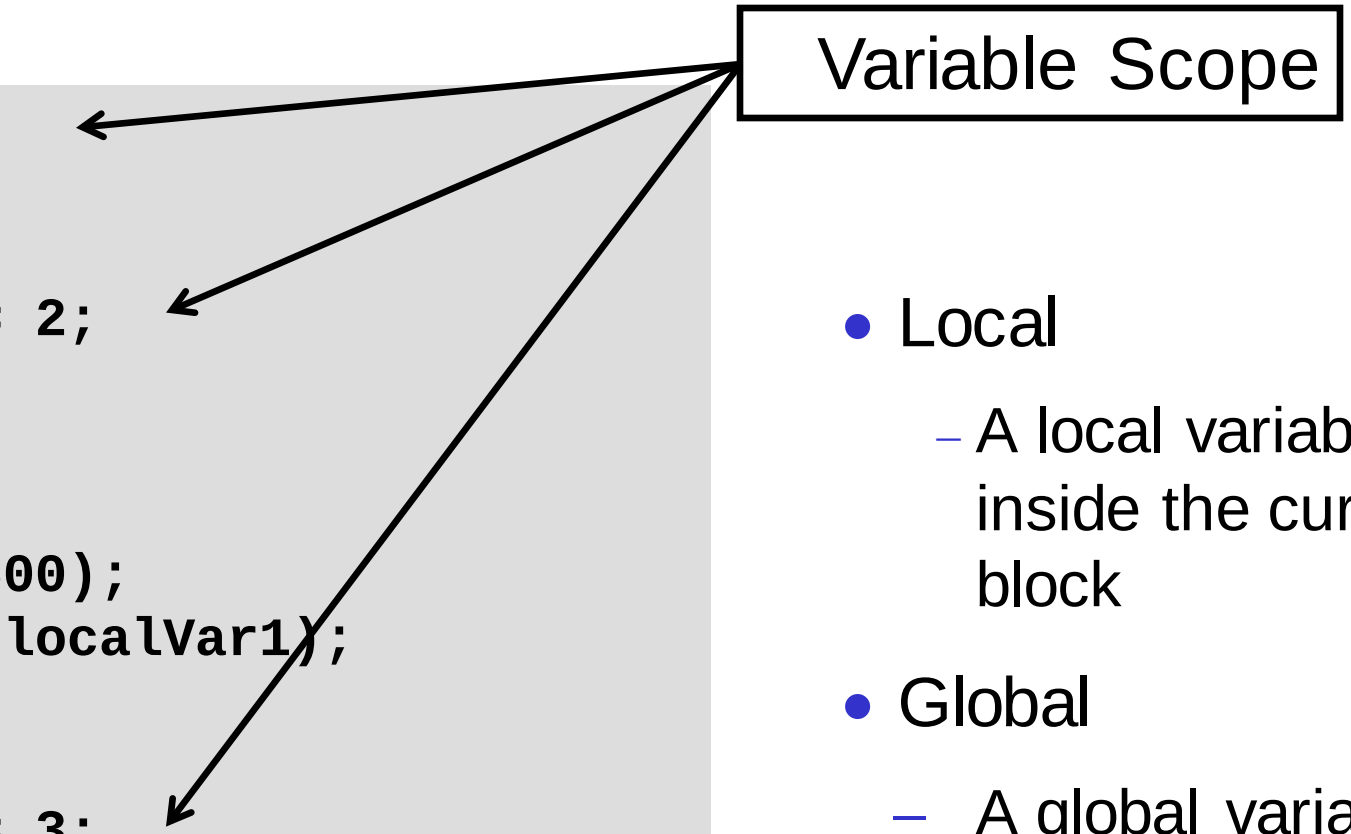
Engineering Technology (ENGR 101)

Variable Scope

Variable scope

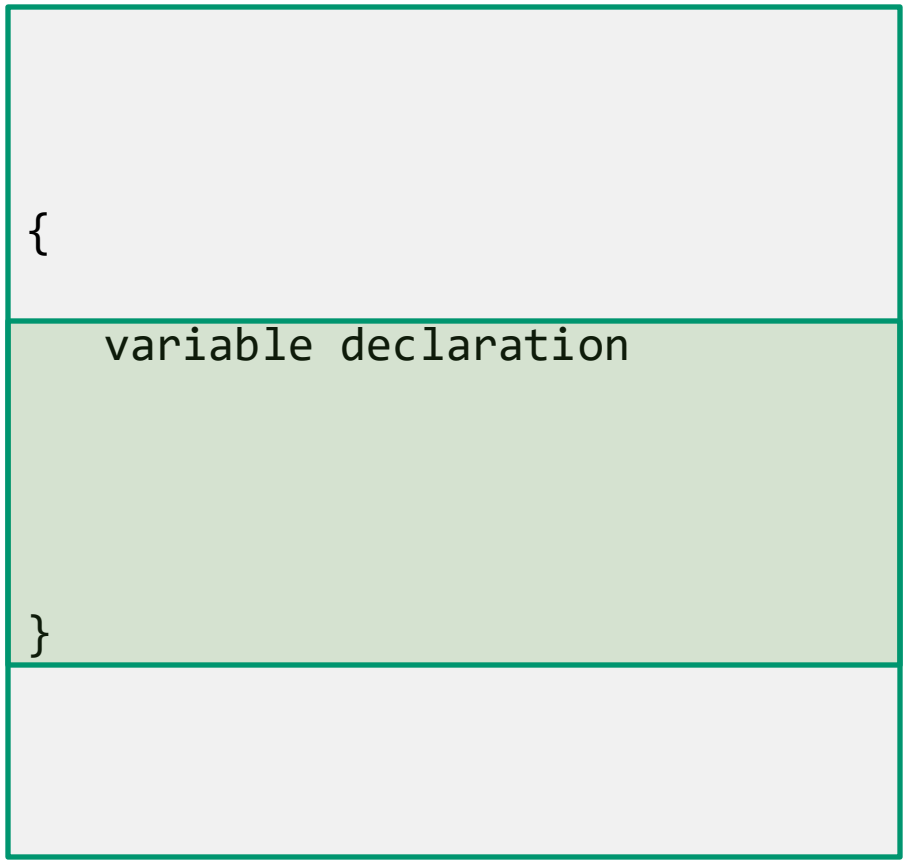
```
int globalVar = 3;

void setup() {
   int localVar1 = 2;

   globalVar =4;

   Serial.begin(9600);
   Serial.println(localVar1);
}
void loop() {
   int localVar2 = 3;

   Serial.println(localVar2);
   Serial.println(globalVar);
}
```



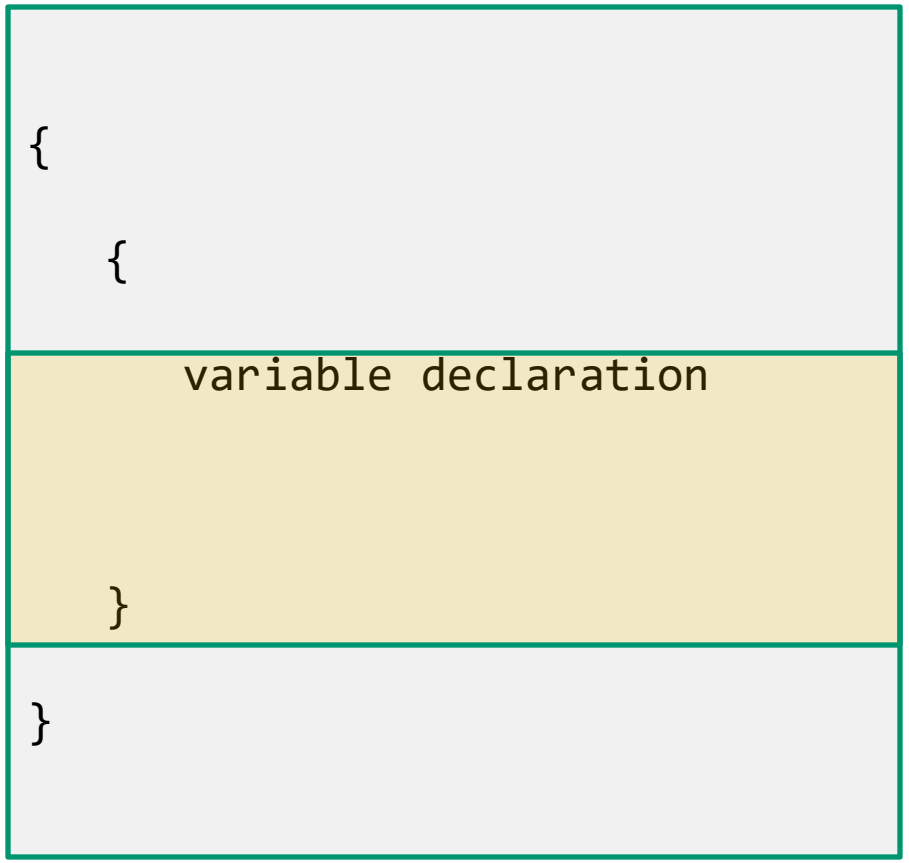
- Local
  - A local variable is only visible inside the current, innermost block
- Global
  - A global variable is visible in the *whole* compilation unit, from the line of declaration to the end of file

Local Scope

file1.ino

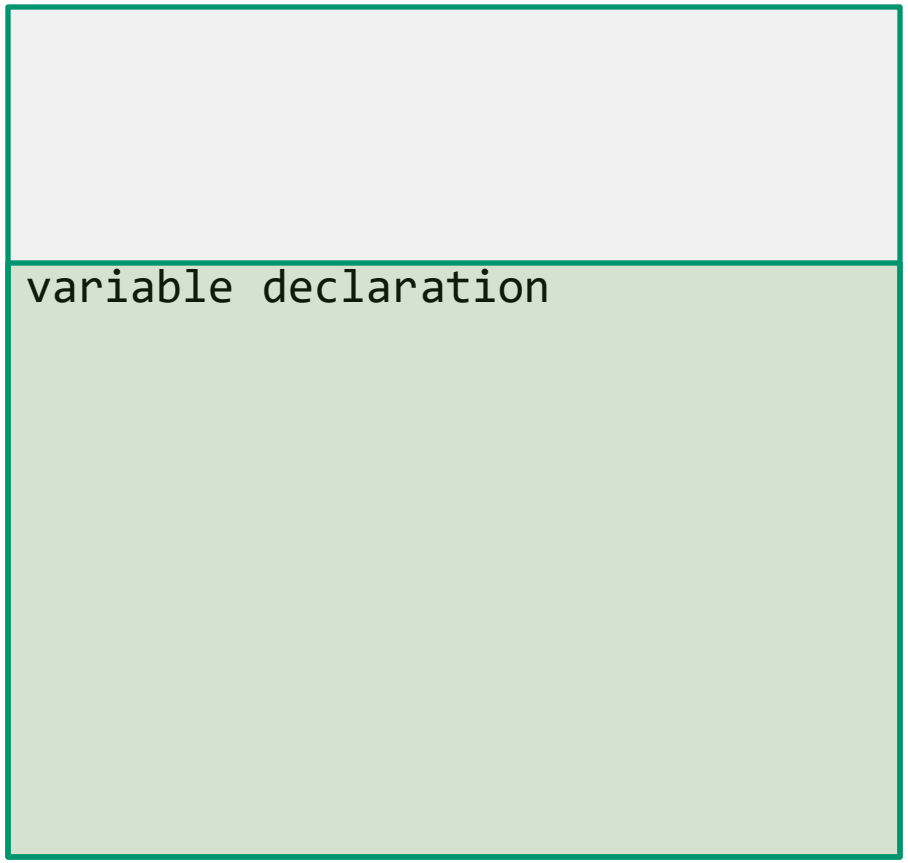


file2.ino

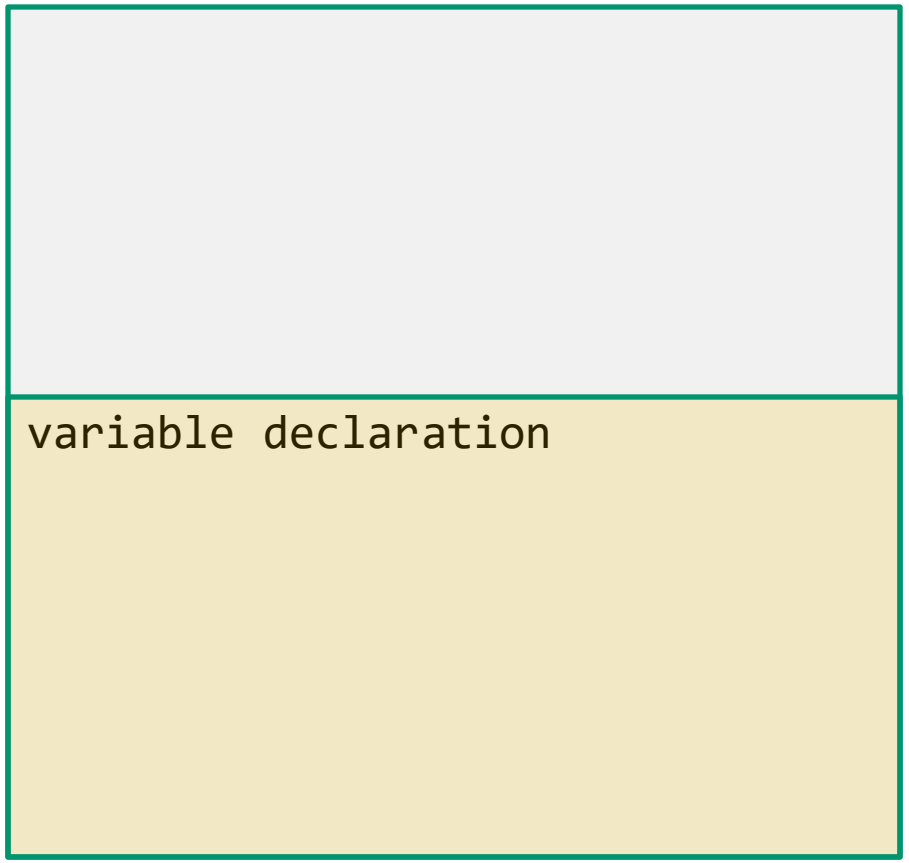


Global Scope

file1.ino

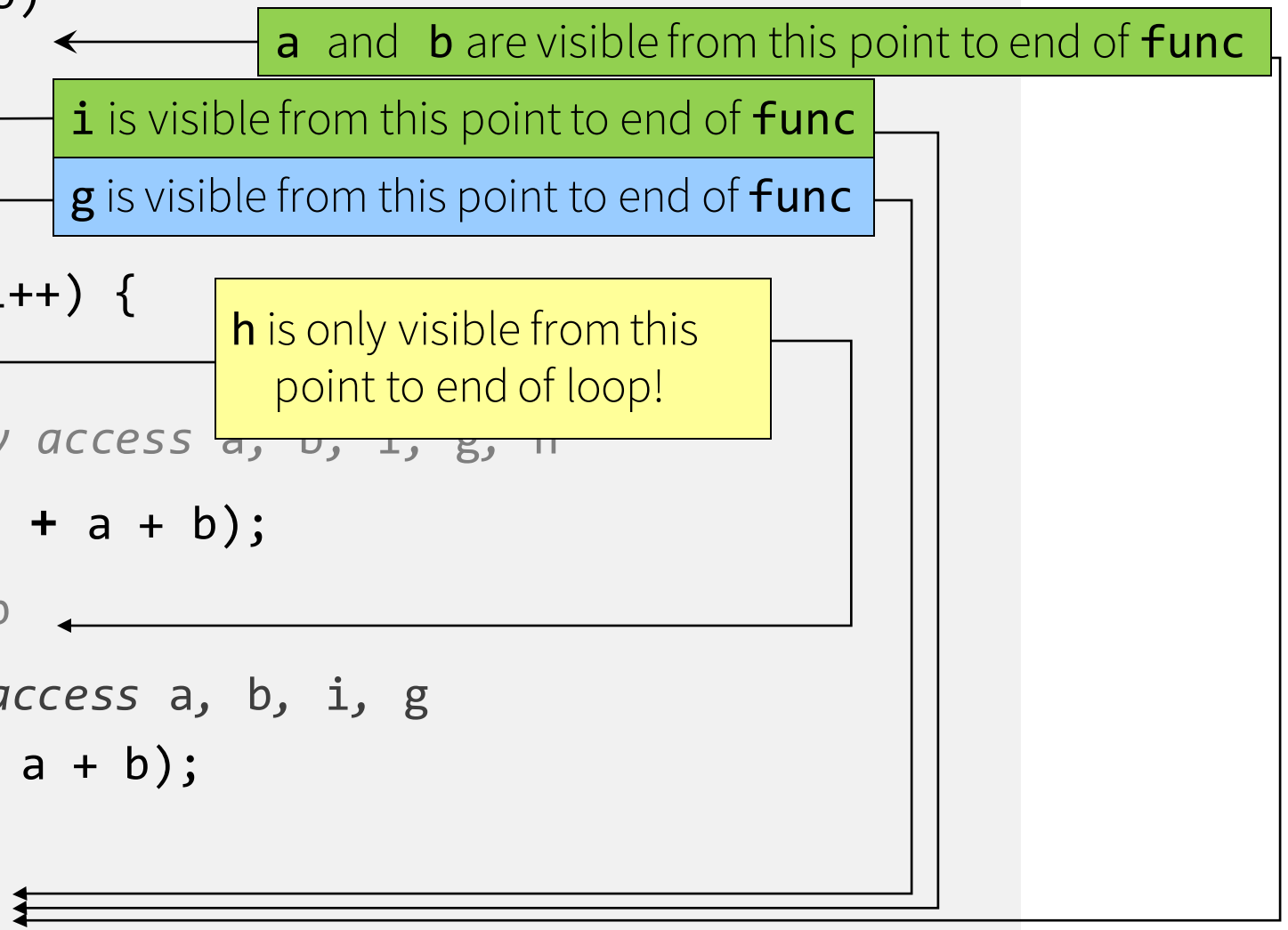


file2.ino



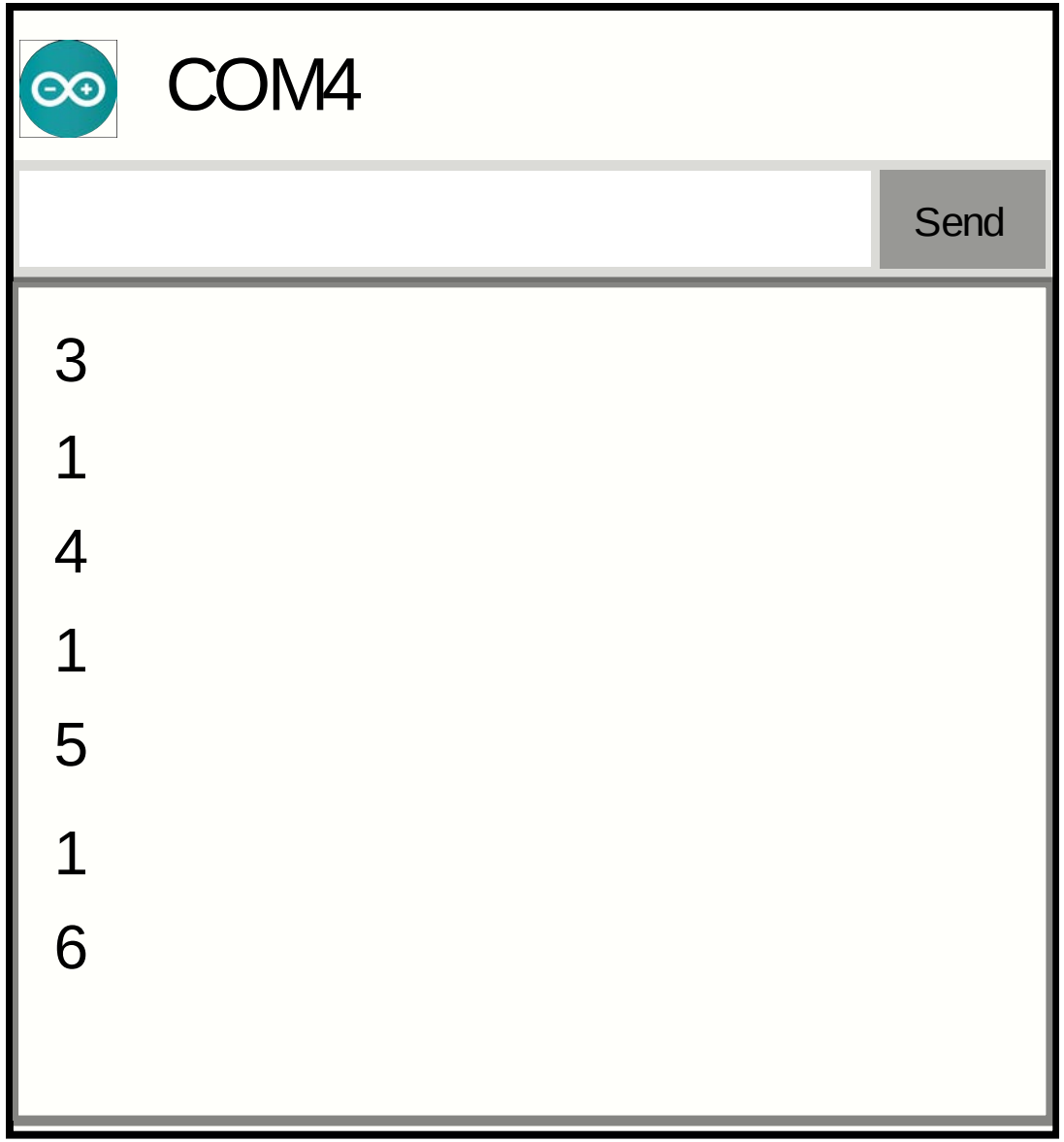
Variable Scope Example

```
int func(float a, int b)
{
   int i;
   double g = 0;

   for (i = 0; i < b; i++) {
     double h = i*g;
     // loop body – may access a, b, i, g, h
     Serial.println(h + a + b);
   } // end of for-loop

   // func body – may access a, b, i, g
   Serial.println(i + a + b);
   return g;
} //  end of func()
```



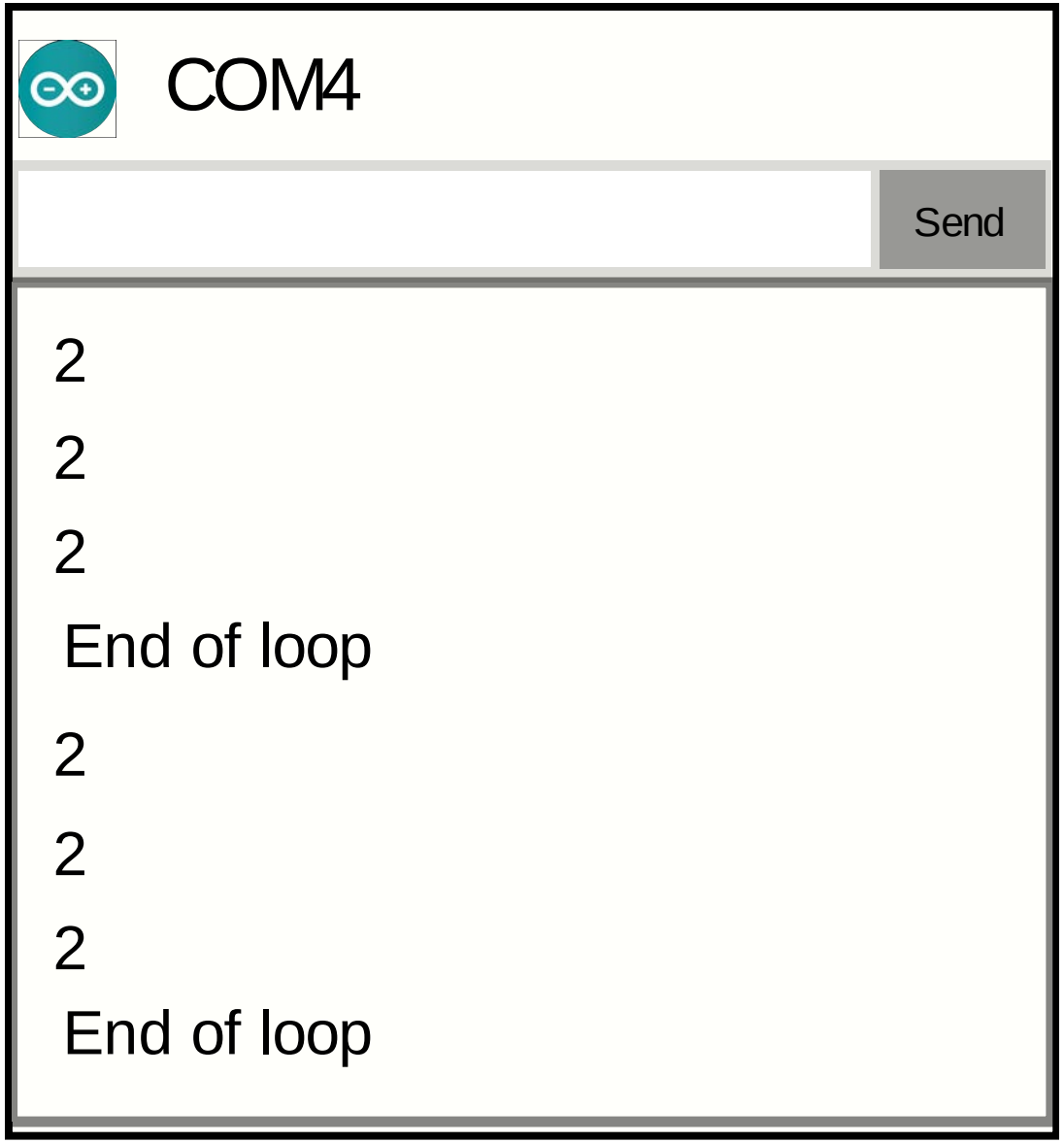
Variable scope

```
int i = 3;

void setup() {
   Serial.begin(9600);
   Serial.println(i);
}
void loop() {
   int a = 0;
   a++;
   i++;
   Serial.println(a);
   Serial.println(i);
}
```



Variable scope

```
void setup() {
   Serial.begin(9600);
}
void loop() {
   int a = 0;
   int b = 2;

   for( a = 0; a < 3; a++){
      Serial.println(b);
   }
   b = 4;
   Serial.println("End of loop");

}
```



Variable scope

```
void setup() {
   Serial.begin(9600);
}
void loop() {
   int a = 0;
   int b = 2;

   for( a = 0; a < 3; a++){
      Serial.println(b);
   }
}
```

```
void setup() {
   Serial.begin(9600);
}
void loop() {
   int a = 0;

   for( a = 0; a < 3; a++){
      int b = 2;
      Serial.println(b);
   }
   Serial.println(b);
}
```

Variable scope

```
void setup() {
   Serial.begin(9600);
}
void loop() {
   int a = 0;
   int b = 2;

   for( a = 0; a < 3; a++){
      Serial.println(b);
   }
}
```

```
void setup() {
   Serial.begin(9600);
}
void loop() {
   int b = 2;

   for(int a = 0; a < 3; a++){
      Serial.println(b);
   }
   Serial.println(a);
}
```

Variable scope

```
void setup() {
   Serial.begin(9600);
}
void loop() {
   int a = 0;
   int b = 2;
   int sum = add(a, b);
   Serial.println( sum );
}

int add(int x, int y){
   Serial.print(x);
   Serial.print("+");
   Serial.print(y);

   return (x + y);
}
```

```
void setup() {
   Serial.begin(9600);
}
void loop() {
   int a = 0;
   int b = 2;
   int sum = add(a, b);
   Serial.println( sum );
}

int add(int x, int y){

   Serial.print(a);

   Serial.print(x);
   Serial.print("+");
   Serial.print(y);

   return (x + y);
}
```