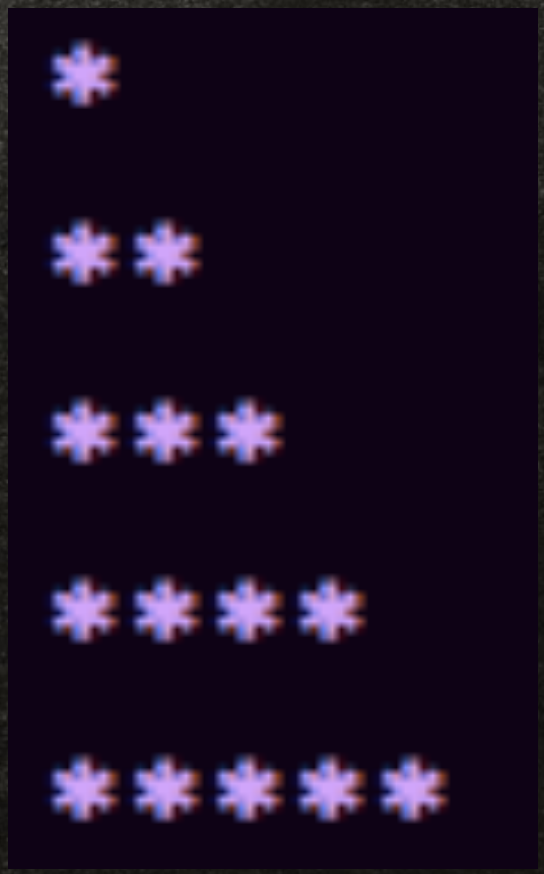
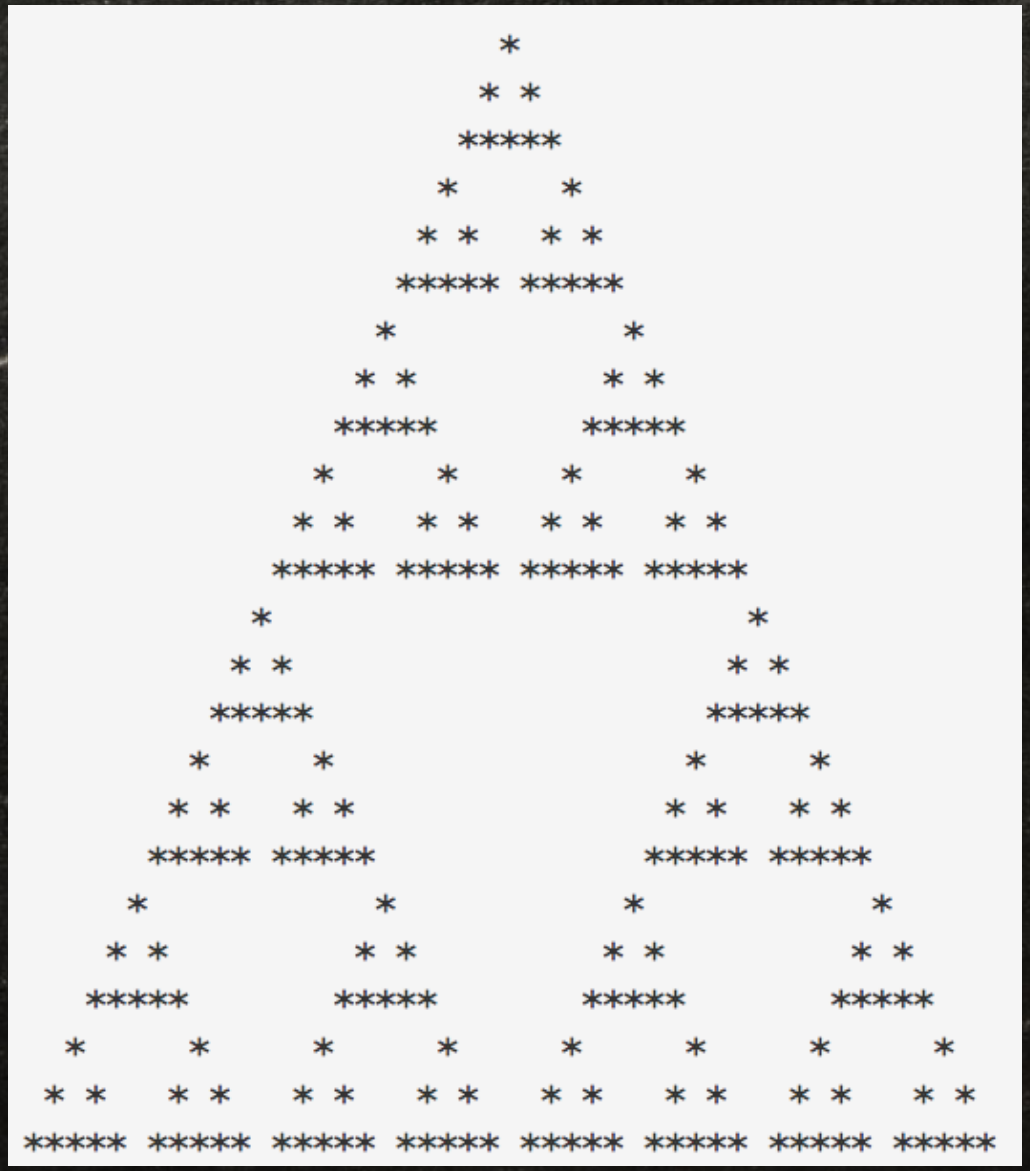
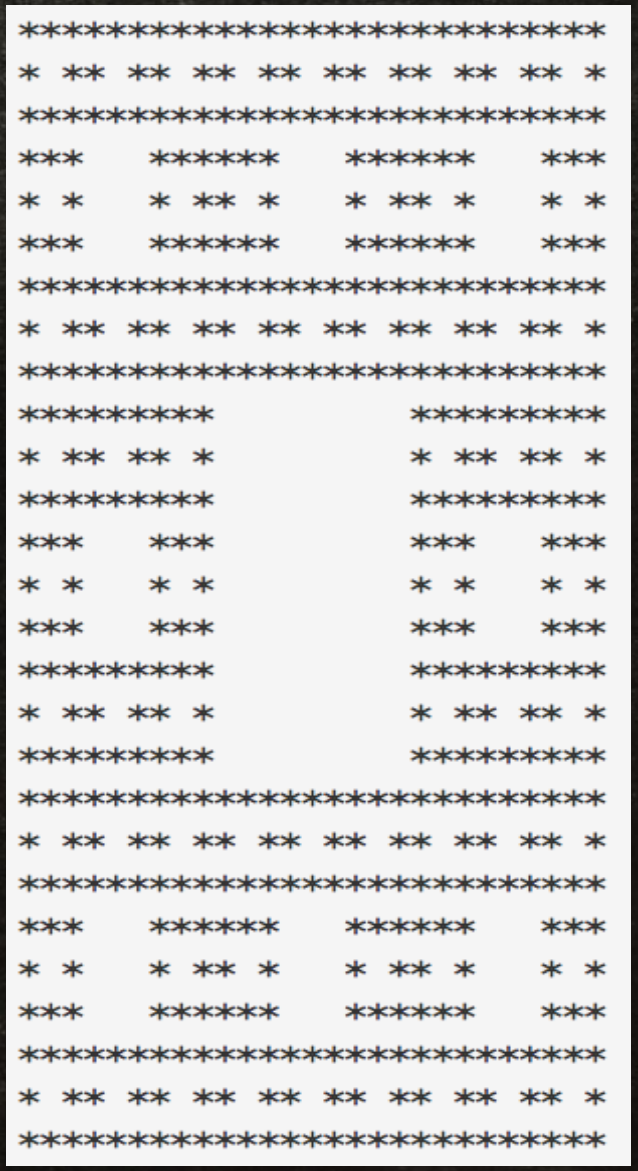
트리 만들기







오늘 할 일

Input 3

Output

No.1

```
***
```

No.2

```
*
**
***
```

No.3

```
  *
 **
***
```

No.4

```
  *
 ***
*****
```

No.5

```
  *
 ***
*****
  *
```

[원하는 개수 Input 받는 방법]

```
int height = 0; // 트리의 높이

getNumber() // 숫자 받을 함수
```

```
char getNumber(){
      while( !Serial.available() );   //입력x
      if ( Serial.available() ){      //입력
            char input = Serial.read(); //인풋
            return input;
      }
       return 0;
}
```

48	0x30	0
49	0x31	1
50	0x32	2
51	0x33	3
52	0x34	4
53	0x35	5
54	0x36	6

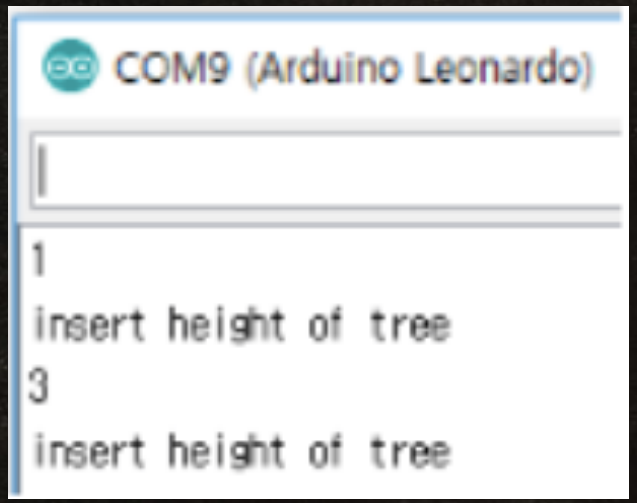
ex)

3의 아스키 코드 값 : 51

∴ height = 51 - 48

```
height = getNumber() - '0';
```

```ino
int height = 0;

void setup() {
  Serial.begin(9600);
  pinMode(3,OUTPUT);
  pinMode(2,INPUT);
  delay(3000);

}

void loop() {
  Serial.println("insert height of tree : ");
  height = getNumber()-'0';
  Serial.println(height);

}

char getNumber(){
    while(!Serial.available());
    if (Serial.available()){
        char input = Serial.read();
        return input;
      }
    return 0;
  }
```



No.1

Input 3

Output ***

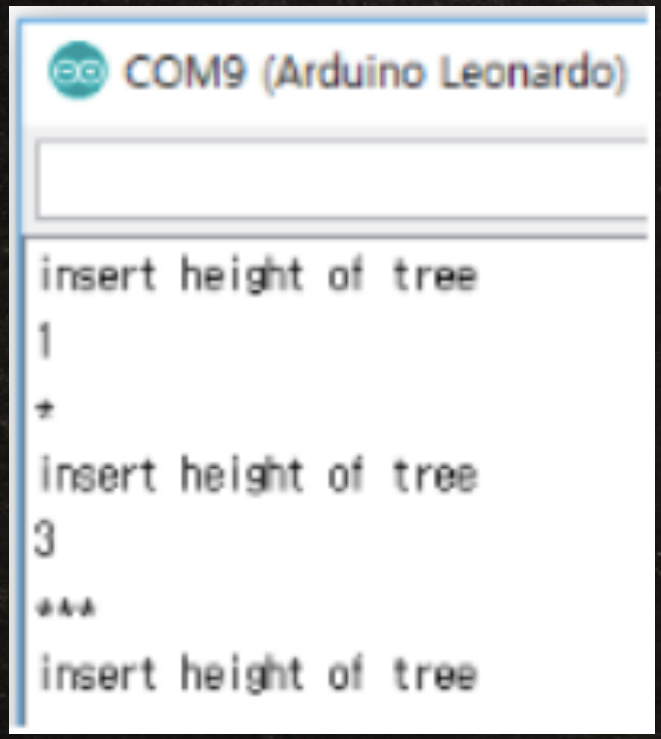
No.1

Input 3

Output ***

```
for(int i = 0; i < height; i++){
        Serial.print("*");
}
```

```
1  int height = 0;
2
3  void setup() {
4    Serial.begin(9600);
5    pinMode(3,OUTPUT);
6    pinMode(2,INPUT);
7    delay(3000);
8
9  }
10
11 void loop() {
12   Serial.println("insert height of tree : ");
13   height = getNumber()-'0';
14   Serial.println(height);
15
16   for(int i=0; i<height ; i++){
17       Serial.print("*");
18     }
19     Serial.println();
20
21 }
22
23 char getNumber(){
24     while(!Serial.available());
25     if (Serial.available()){
26         char input = Serial.read();
27         return input;
28       }
29     return 0;
30   }
```



No.2

Input 3

Output
*
**
***

이중 for문

```
for(int i = 0; i < height; i++){
        for(int j=0; j < height; j++){
                Serial.print("*");
        }
        Serial.println();
}
```

```
for(int i = 0; i < height; i++){
        for(int j=0; j < height; j++){
                Serial.print("*");
        }
        Serial.println();
}
```

```
***
***
***
```

Input **3**

i = 0	j = 0	i = 1	j = 0	i = 2	j = 0
	j = 1		j = 1		j = 1
	j = 2		j = 2		j = 2

No.2

Input 3

Output

*

**

***

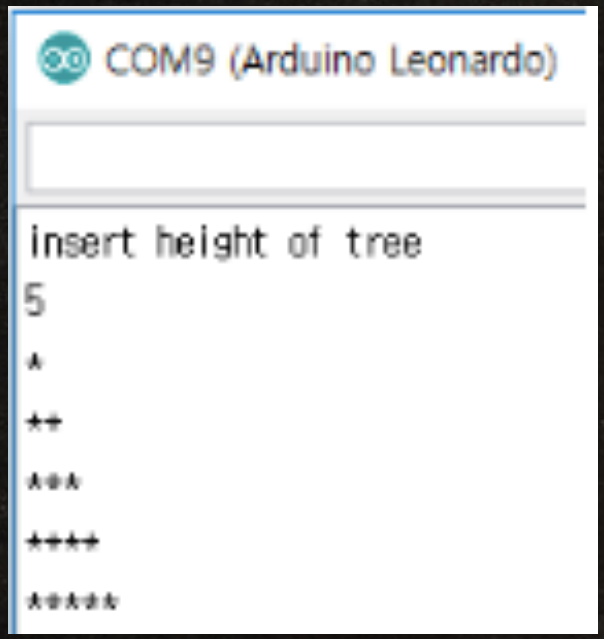
```
for(int i = 0; i < height; i++){
        for(int j=0; j < i+1; j++){
                Serial.print("*");
        }
        Serial.println();
}
```

i = 0 j = 0

i = 1 j = 0
j = 1

i = 2 j = 0
j = 1
j = 2

```ino
int height = 0;

void setup() {
  Serial.begin(9600);
  pinMode(3, OUTPUT);
  pinMode(2, INPUT);
  delay(3000);
}

void loop() {
  Serial.println("insert height of tree");
  height = getNumber() - '0';
  Serial.println(height);

  for (int i = 0; i < height; i++) {
    for (int k = 0; k < i + 1; k++) {
      Serial.print("*");
    }
    Serial.println();
  }

  Serial.println();
}

char getNumber() {
  while (!Serial.available());
  if (Serial.available()) {
    char input = Serial.read();
    return input;
  }
  return 0;
}
```



Input 3

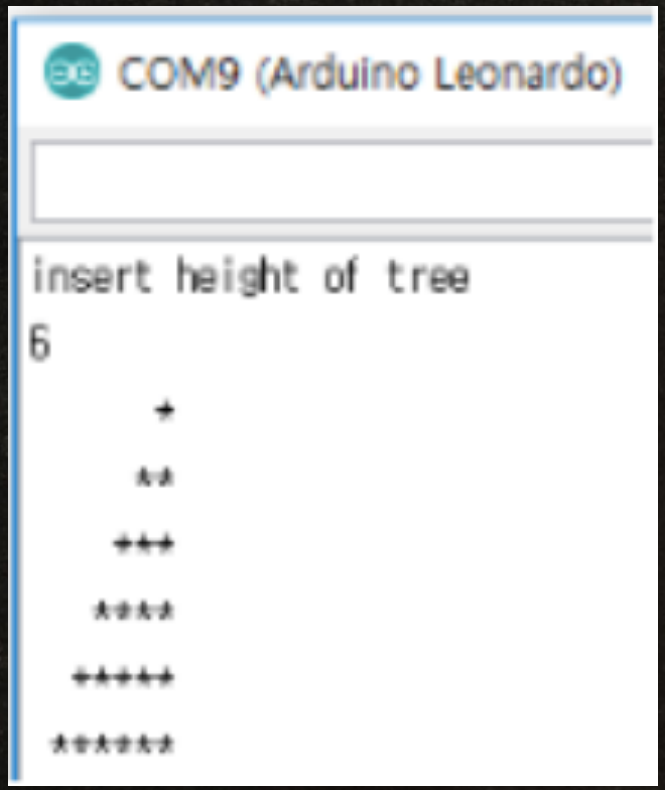
	No.3	No.4	No.5
Output	*	*	*
	**	***	***
	***	*****	*****
			*

실습. 직접 하기

No.3

```
for(int i = height-1; i >= 0; i--){
        for(int j=0; j < height; j++){
                if(j<i){
                        Serial.print(" ");
                }
                else{
                        Serial.print("*");
                }
        }
        Serial.println();
}
```

```ino
int height = 0;

void setup() {
  Serial.begin(9600);
  pinMode(3,OUTPUT);
  pinMode(2 ,INPUT);
  delay(3000);

}

void loop() {
  Serial.println("insert height of tree : ");
  height = getNumber()-'0';
  Serial.println(height);

  for(int i=height-1; i>=0 ; i--){
    for(int j=0;j<height;j++){
      if(j<i){
        Serial.print(" ");
      }
      else{
        Serial.print("*");
      }
    }
  }
}

char getNumber(){
    while(!Serial.available());
    if (Serial.available()){
        char input = Serial.read();
        return input;
      }
    return 0;
  }
```



No.4

```
for(int i = 0; i <height; i++){
        for(int j = 0; j < height - i - 1 ; j++){
                Serial.print(" ");
        }
        for(int k = 0; k < 2*i+1; k++){
                Serial.print("*");
        }
        Serial.println();

}
```

```
int height = 0;

void setup() {
  Serial.begin(9600);
  pinMode(3,OUTPUT);
  pinMode(2 ,INPUT);
  delay(3000);

}

void loop() {
  Serial.println("insert height of tree : ");
  height = getNumber()-'0';
  Serial.println(height);

  for(int i = 0; i <height; i++){
   for(int j = 0; j < height - i - 1 ; j++){
     Serial.print(" ");
   }
   for(int k = 0; k < 2*i+1; k++){
     Serial.print("*");
   }
   Serial.println();
  }

    Serial.println();
}

char getNumber(){
    while(!Serial.available());
    if (Serial.available()){
        char input = Serial.read();
        return input;
      }
    return 0;
  }
```