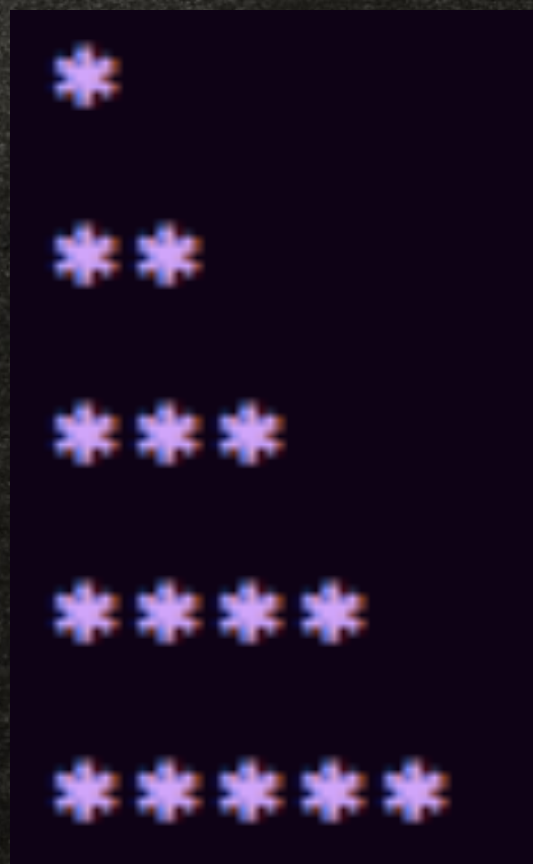


트리 만들기











오늘 할 일

Input 3

Output

No.1

No.2

No.3

No.4

No.5

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\*

[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

$\therefore \text{height} = 51 - 48$

$\text{height} = \text{getNumber()} - '0';$



```
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 }
17
18 char getNumber(){
19   while(!Serial.available());
20   if (Serial.available()){
21     char input = Serial.read();
22     return input;
23   }
24   return 0;
25 }
```

COM9 (Arduino Leonardo)

```
1
insert height of tree
3
insert height of tree
```

# 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 }

```

COM9 (Arduino Leonardo)

```

insert height of tree
1
+
insert height of tree
3
***
insert height of tree

```



## 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

```

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 void loop() {
11   Serial.println("insert height of tree");
12   height = getNumber() - '0';
13   Serial.println(height);
14
15   for (int i = 0; i < height; i++) {
16     for (int k = 0; k < i + 1; k++) {
17       Serial.print("+");
18     }
19     Serial.println();
20   }
21
22   Serial.println();
23 }
24
25 char getNumber() {
26   while (!Serial.available());
27   if (Serial.available()) {
28     char input = Serial.read();
29     return input;
30   }
31   return 0;
32 }

```

COM9 (Arduino Leonardo)

insert height of tree

5

+

++

+++

++++

+++++



**Input**

3

No.3

No.4

No.5

**Output**

\*

\*

\*

\*\*

\*\*\*

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\*\*\*

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\*

**실습. 직접 하기**

# No.3

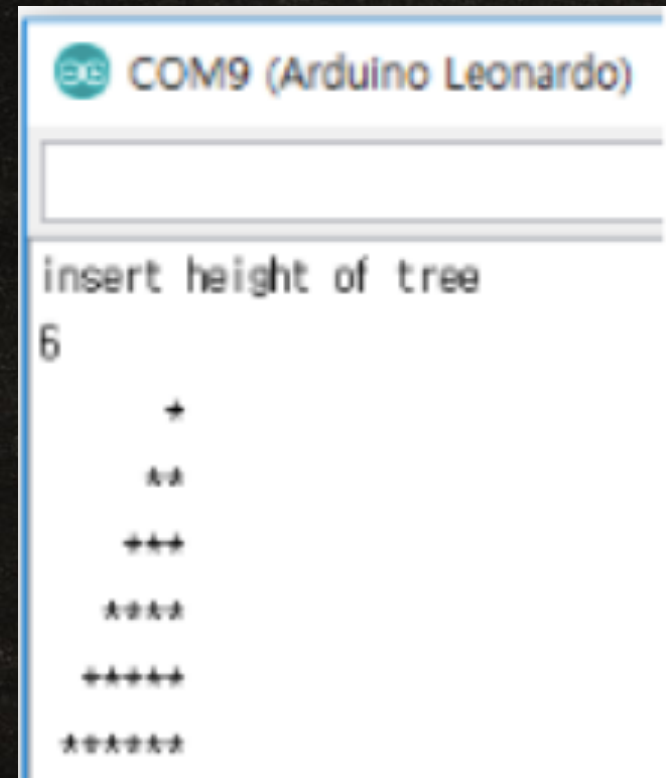
```
for(int i = height-1; i >= 0; i--){  
    for(int j=0; j < height; j++){  
        if(j<i){  
            Serial.print(" ");  
        }  
        else{  
            Serial.print("*");  
        }  
    }  
    Serial.println();  
}
```



```

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=height-1; i>=0 ; i--){
17     for(int j=0;j<height;j++){
18       if(j<i){
19         Serial.print(" ");
20       }
21       else{
22         Serial.print("*");
23       }
24     }
25   }
26   Serial.println();
27 }
28
29 char getNumber(){
30   while(!Serial.available());
31   if (Serial.available()){
32     char input = Serial.read();
33     return input;
34   }
35   return 0;
36 }

```



## 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();  
  
}
```



```

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     for(int j = 0; j < height - i - 1; j++){
18       Serial.print(" ");
19     }
20     for(int k = 0; k < 2*i+1; k++){
21       Serial.print("*");
22     }
23     Serial.println();
24   }
25
26   Serial.println();
27 }
28
29 char getNumber(){
30   while(!Serial.available());
31   if (Serial.available()){
32     char input = Serial.read();
33     return input;
34   }
35   return 0;
36 }

```

