

```

int main() {
    int num;
    printf("Enter any number :- ");
    scanf("%d", &num);
    int sum = 0;
    for (; num > 0; ) {
        num += (num % 10);
        num /= 10;
    }
    printf("%d is the sum of all digits.", num);
    return 0;
}

```

Annotations and Flow:

- Initialization:** `num` is initialized to 0.
- Limit & Condition:** The loop condition is `num > 0`.
- Update:** The loop body contains two update statements: `num += (num % 10);` and `num /= 10;`.
- Final Output:** The program prints the sum of all digits, which is 18.

1 2 3 4 5 6 7 8 9 10 11

for (int $i = 2$; $i \leq \sqrt{n}$; $i++$)

~~10~~

```
for (int i=0; i<5; i++)  
    printf(" * ");
```

~~*~~ ~~*~~ ~~*~~ ~~*~~ ~~*~~

```
if ( ) {
```

```
    if ( ) {
```

```
        //  
        //
```

```
    }
```

```
}
```

Nested If

```
for (int i=0; i<5; i++) {  
    for (int j=0; j<5; j++) {
```

```
        //  
        //  
        //
```

```
    }
```

```
}
```

Nested
for

```
for (int i=0; i<3; i++) {  
    for (int j=0; j<3; j++) {  
        printf(" * ");  
    }
```

~~i=0~~
~~j=0~~ ~~1~~ ~~2~~ ~~3~~

~~*~~ ~~*~~ ~~*~~
~~*~~ ~~*~~ ~~*~~
~~*~~ ~~*~~ ~~*~~

\hookrightarrow `printf(" \n");`
 $\}$

\textcircled{i}
 $0 \rightarrow$ ~~*~~ ~~*~~ ~~*~~
 $1 \rightarrow$ ~~*~~ ~~*~~ ~~*~~
 $2 \rightarrow$ ~~*~~ ~~*~~ ~~*~~
 \textcircled{j} \uparrow \uparrow \uparrow
 0 1 2

$0-2$ i

j $0-2$

\rightarrow row

\rightarrow column

`for (int $i=0$; $i < 5$; $i++$) {`

`for (int $j=0$; $j < 2$; $j++$) {`

`{ printf(" * ");`

`printf(" \n");`

`}`

$i = 0, 1, 2, 3, 4$

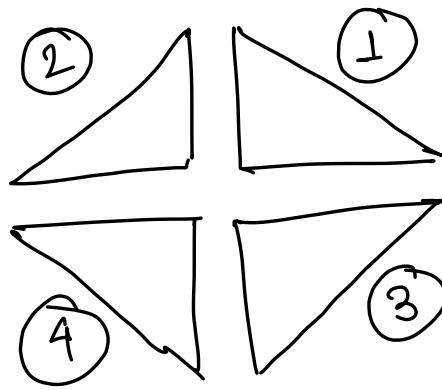
$j = 0, 1$

	0	1
0	*	*
1	*	*
2	*	*
3	*	*
4	*	*

\textcircled{i}

\textcircled{j}

Patterns



Pattern 1

	j	\downarrow	\downarrow	\downarrow	\downarrow	\downarrow
	0		1	2	3	4
i	0	*				
1	*	*				
2	*	*	*			
3	*	*	*	*		
4	*	*	*	*	*	

$j \leq i$

```
for (int i = 0; i < 5; i++) {  
    for (int j = 0; j <= i; j++) {  
        printf(" * ");  
    }
```

```
    printf("\n");  
}
```

}