

C-20 \Rightarrow Operators in C - Part 8 (Comma Operators)

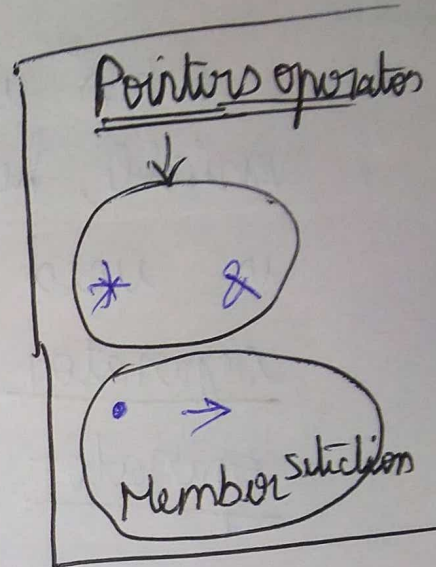
Comma operator (,)

- * It is used to separate operands or variables.
- * It has least precedence and is used as a separator.

Ex:

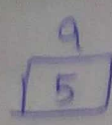
```
int a;  
int b;  
int c;  
}  $\iff$  int a, b, c;
```

- * Function of Comma operator \rightarrow First expression or operand is evaluated and rejected, then second operand or expression is evaluated and returns output, when enclosed within brackets.



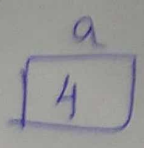
Ex: ①

✓ int a;
 $\xrightarrow{\quad}$
 a = 5, 4;
 prints a \Rightarrow 5



Ex: ②

✓ int a;
 a = (5, 4);
 prints a \Rightarrow 4



Ex: ③

✗ int a = 5, 4; \Rightarrow int a = 5, 4
Error
 When we declare a variable, here comma is used as a separator but not operator.
 It gives error, declaration terminated incorrectly.

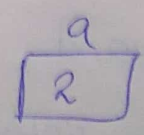
Note:

Ex: ④

int a = (5, 4) $\xrightarrow{\quad}$ <pre> graph TD a[a] --> 4 </pre>	(or) Same.	int a; a = (5, 4) $\xrightarrow{\quad}$ <pre> graph TD a[a] --> 4 </pre>
--	---------------	--

Ex: ⑤

int a;
 a = (printf("Jenny"), 2)
 1st operand
 \downarrow
 Evaluated & rejected



O/P:
 Jenny (Evaluated & prints)
 2

Ex (6)

int a;

a = (printf("Jenny"), 2, 3); → O/P: Jenny 3

// a = (2, 3, 4, printf("Jenny")); → O/P Jenny 5

Ex (7) // a = (2, 3, 4, printf("Jenny\n")); → O/P Jenny 6

int a;

a = (printf("Jenny"), 2, 3, 4) ⇒ O/P: Jenny 4

// a = (2, printf("Jenny"), 3, 4) ⇒ O/P 4 Jenny 4

Ex (8)

int a;

a = printf("Jenny"), 2, 3, 4; ⇒ O/P Jenny 5.

// a = printf("Jenny\n"), 2, 3, 4; ⇒ O/P Jenny 6

// a = 2, printf("Jenny"), 3, 4; ⇒ O/P Jenny 2

Ex (9)

int a = 8, b;

b = (a++, ++a); O/P → a: 8, b: 10

print a, b

// b = a++, ++a; O/P → a: 8, b: 8

print a, b.

Ex (10)

int a = 8, b;

b = (a++, ++a, a >> 2);

print a, b

// b = a++, ++a, a >> 2; print a, b

10 / 2 = 5
5 >> 2 = 1

```

1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6  int a=5,4,6; // comma acts as separator while variable declaration
7              // int a=5, int 4, int 6 gives error
8  printf("%d\n",a);
9  }
10

```

gs & others

Code::Blocks x Search results x Cccc x Build log x Build messages x CppCheck/Vera++ x CppCheck/Vera+

File	Line	Message
		=== Build: Debug in COMMA 1 (compiler: GNU GCC Compiler) ===
D:\COMPUTER...		In function 'main':
D:\COMPUTER...	6	error: expected identifier or '(' before numeric constant
		=== Build failed: 1 error(s), 0 warning(s) (0 minute(s), 0 second(s)) ===

```

1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a;
7      a=5,4,6; //a=5
8      //comma used as a separator since comma have least precedence compared to Equal
9      printf("%d\n",a);
10 }
11

```

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```

5
Process returned 0 (0x0)   execution time : 0.016 s
Press any key to continue.

```

```

1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a=(5,4,6);
7      /* int a;
8       a=(5,4,6); */
9      //comma have higher precedence compared to brackets, so comma acts as operator
10     //last operand value is returned to variable while rest are evaluated & rejected
11     printf("%d\n",a);
12 }
13

```

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```

5
Process returned 0 (0x0)   execution time : 0.016 s
Press any key to continue.

```

```

1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a;
7      a=(printf("Jenny\n"),2);
8      printf("%d\n",a);
9  }
10

```

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```


Jenny
2
Process returned 0 (0x0)   execution time : 0.016 s
Press any key to continue.

```

```

1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a;
7      a=(printf("Jenny\n"),2,3);
8      //a=(printf("Jenny\n"),2,3);
9      printf("%d\n",a);
10 }
11

```

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Jenny
3

Process returned 0 (0x0) execution time : 0.047 s
Press any key to continue.

```

1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a;
7      //a=(printf("Jenny\n"),2,3);
8      a=(printf("Jenny\n"),2,3,4);
9      printf("%d\n",a);
10 }
11

```

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Jenny

4

Process returned 0 (0x0) execution time : 0.038 s
Press any key to continue.

```
1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a;
7      a=printf("Jenny\n"),2,3,4;
8      //comma have least precedence when compared to equal to operator
9      //here comma acts as seperator
10     printf("%d\n",a);
11 }
12
```

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Jenny

6

Process returned 0 (0x0) execution time : 0.000 s
Press any key to continue.

```

1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a;
7      a=printf("Jenny"),2,3,4; // no new line
8      //comma have least precedence when compared to equal to operator
9      //here comma acts as seperator
10     printf("%d\n",a);
11 }
12

```

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Jenny5

Process returned 0 (0x0) execution time : 0.047 s
Press any key to continue.

```

1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a;
7      a=2,printf("Jenny"),3,4;
8      //comma have least precedence when compared to equal to operator
9      //here comma acts as seperator
10     printf("%d\n",a);
11 }
12

```

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Jenny2

Process returned 0 (0x0) execution time : 0.016 s
Press any key to continue.


```

1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a;
7      a=2,printf("Jenny\n"),3,4; // if new line
8      //comma have least precedence when compared to equal to operator
9      //here comma acts as seperator
10     printf("%d\n",a);
11 }
12

```

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```

Jenny
2

Process returned 0 (0x0)   execution time : 0.047 s
Press any key to continue.

```

```

1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a;
7      a=(2,printf("Jenny\n"),3,4); // if new line
8      //comma have higher precedence when compared to brackets
9      //here comma acts as operator
10     printf("%d\n",a);
11 }
12

```

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Jenny

4

Process returned 0 (0x0) execution time : 0.031 s

Press any key to continue.

```
1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a;
7      a=(2,printf("Jenny"),3,4); // if no new line
8      //comma have higher precedence when compared to brackets
9      //here comma acts as operator
10     printf("%d\n",a);
11 }
12
```

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Jenny4

Process returned 0 (0x0) execution time : 0.040 s

Press any key to continue.

```
1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a;
7      a=(2,3,4,printf("Jenny")); // if no new line
8      //comma have higher precedence when compared to brackets
9      //here comma acts as operator
10     printf("%d\n",a);
11 }
12
```

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Jenny5

Process returned 0 (0x0) execution time : 0.031 s
Press any key to continue.

```
1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a;
7      a=(2,3,4,printf("Jenny\n")); // if new line
8      //comma have higher precedence when compared to brackets
9      //here comma acts as operator
10     printf("%d\n",a);
11 }
12
```

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Jenny

6

Process returned 0 (0x0) execution time : 0.047 s
Press any key to continue.

```

1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a=8,b;
7      b=(a++, ++a);
8      printf("%d\n", a);
9      printf("%d\n", b);
10 }
11

```

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```

10
10

Process returned 0 (0x0)   execution time : 0.047 s
Press any key to continue.

```

```

1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a=8,b;
7      b=a++, ++a; //here comma has least precedence & act as separator
8      //comma operator will evaluate all the operands
9      printf("%d\n", a);
10     printf("%d\n", b);
11 }
12

```

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10

8

Process returned 0 (0x0) execution time : 0.047 s
Press any key to continue.

```
1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a=8,b;
7      b=(a++,++a,a>>2);
8      printf("%d\n",a);
9      printf("%d\n",b);
10 }
11
```

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10

2

Process returned 0 (0x0) execution time : 0.047 s
Press any key to continue.


```

1  #include <stdio.h>
2  #include <stdlib.h>
3
4  int main()
5  {
6      int a=8,b;
7      b=a++,++a,a>>2;
8      //here comma has least precedence & act as separator
9      //comma operator will evaluate all the operands
10     printf("%d\n",a);
11     printf("%d\n",b);
12 }
13

```

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10
8

Process returned 0 (0x0) execution time : 0.045 s
Press any key to continue.