**Questions**

printf

scanf

Precedence table

lvalue

rvalue

1. Write in the resulting output of printf, let i = 5, j = 23.461

Example:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| printf | ( | “ | % | d | a | b |  | c | | | “ | , | i | ) | ; |  |  |  |  |  |  |  |  |  |  |  |  |
| output: | 5 | a | b |  | c | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| printf | ( | “ | | | 2 | % | 8 | . | 1 | f | , | % | 3 | . | 4 | d | | | “ | , | j | , | i | ) | ; |  |  |  |
| output: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| printf | ( | “ | | | 5 | % | 8 | f | , | % | 3 | d | } | “ | , | j | , | i | ) | ; |  |  |  |  |  |  |  |
| output: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| printf | ( | “ | | | % | 2 | d | ] | 5 | 6 | 7 | | | “ | , | 1 | 2 | 3 | 4 | ) | ; |  |  |  |  |  |  |  |
| output: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| printf | ( | “ | | | % | 4 | . | 8 | f | | | “ | , | 1 | 2 | . | 3 | 4 | 5 | ) | ; |  |  |  |  |  |  |  |
| output: |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

2a. Write down all the stages of compiling a program

|  |
| --- |
|  |

2b. I have a file name “haato.c”, write down the command to generate an assembly file named “haachama”

|  |
| --- |
|  |

2c. I have a file name “lulu.c”, write down the command to generate an object file named “suzuhara”

|  |
| --- |
|  |

2d. I have a file name “hahaha.c”, I need a program named “peko”

|  |
| --- |
|  |

**3.** Let i = 1, j = 2, k = 3.33

**Write the NEWLY output of i and j, if applicable, after scanf is called together with INPUT values**

a.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| scanf | ( | “ |  | % | d | , | | | a | b | “ |  | , | & | j | ) | ; |  |  |  |  |  |  |  |  |  |  |
| input: |  | 2 | 0 | , | | | a | b |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| Current value of i |  |
| Current value of j |  |

b.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| scanf | ( | “ | % | d | % | d | “ | , | & | i | , | & | j | ) | ; |  |  |  |  |  |  |  |  |  |  |  |
| input: | 3 | 0 | 0 |  |  |  | 4 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| Current value of i |  |
| Current value of j |  |

c.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| scanf | ( | “ | % | d | % | d | “ | , | & | i | , | & | j | ) | ; |  |  |  |  |  |  |  |  |  |  |  |
| input: | 3 | 0 | 0 | , |  |  | 4 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| Current value of i |  |
| Current value of j |  |

d.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| scanf | ( | “ | % | d | \_ | % | d | “ | , | & | i | , | & | j | ) | ; |  |  |  |  |  |  |  |  |  |  |
| input: |  |  | 3 |  |  |  | 4 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| Current value of i |  |
| Current value of j |  |

e.

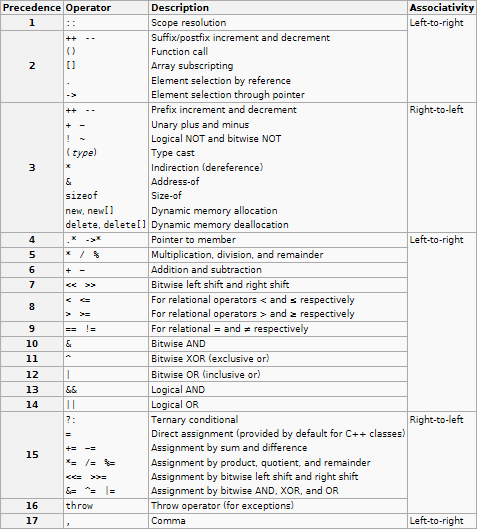
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| scanf | ( | “ |  | \_ | % | d | 4 | 4 | % | d | “ | , | & | i | , | & | j | ) | ; |  |  |  |  |  |  |  |
| input: |  | \_ | 3 |  |  | 4 | 4 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| Current value of i |  |
| Current value of j |  |

f.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| scanf | ( | “ | \* | \_ | % | d | 4 | 4 | % | d | “ | , | & | i | , | & | j | ) | ; |  |  |  |  |  |  |  |
| input: |  | \* | \_ | 6 |  | 4 | 4 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| Current value of i |  |
| Current value of j |  |

****

**4. Insert Parentheses to represent the precedence and associativity of the C expression:**

Example:

1. a / b + c \* d - f

|  |
| --- |
|  |

1. a \* b % c / d - - f

|  |
| --- |
|  |

1. a + b ++ + c -- - d

|  |
| --- |
|  |

1. a -- + b \* ++ c / -- d

|  |
| --- |
|  |

1. a - - b + + c

|  |
| --- |
|  |

**5. Evaluate the expression (s) if possible, if not, write ERROR**

Let i = 5, j = 20, **EACH QUESTION IS INDEPENDENT** from each other!

|  |  |
| --- | --- |
| ++i - 4 |  |
| i + + - - -j |  |
| i = j ++ = ++ i |  |
| i = j + 5 + i |  |
| i = j += 2 \* ++j |  |
| j = 1 - 2 + 3 \* 2 + i++ = 2 |  |
| i / 5 \* j |  |
| j -= j / i -- \* i |  |
| ++ i -- |  |
| + + j ++ + - - i -- |  |
| i++i-- |  |
| i+++j |  |
| i+ + + j |  |
| i + ++ j |  |

**Answers**

1. **Write in the resulting output of printf, let i = 5, j = 23.461**

Example:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| printf | ( | “ | % | d | a | b |  | c | | | “ | , | i | ) | ; |  |  |  |  |  |  |  |  |  |  |  |  |
| output: | 5 | a | b |  | c | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| printf | ( | “ | | | 2 | % | 8 | . | 1 | f | , | % | 3 | . | 4 | d | | | “ | , | j | , | i | ) | ; |  |  |  |
| output: | | | 2 |  |  |  |  | 2 | 3 | . | 4 | , | 0 | 0 | 0 | 5 | | |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| printf | ( | “ | | | 5 | % | 8 | f | , | % | 3 | d | } | “ | , | j | , | i | ) | ; |  |  |  |  |  |  |  |
| output: | | | 5 |  |  | 2 | 3 | . | 4 | 6 | 1 | , |  |  | 5 | } |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| printf | ( | “ | | | % | 2 | d | ] | 5 | 6 | 7 | | | “ | , | 1 | 2 | 3 | 4 | ) | ; |  |  |  |  |  |  |  |
| output: | | | 1 | 2 | 3 | 4 | ] | 5 | 6 | 7 | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| printf | ( | “ | | | % | 4 | . | 8 | f | | | “ | , | 1 | 2 | . | 3 | 4 | 5 | ) | ; |  |  |  |  |  |  |  |
| output: | | | 1 | 2 | . | 3 | 4 | 5 | 0 | 0 | 0 | 0 | 0 | | |  |  |  |  |  |  |  |  |  |  |  |  |  |

2a. Write down all the stages of compiling a program

|  |
| --- |
| Pre-processing, Compiling, Assembling, Linking |

2b. I have a file name “haato.c”, write down the command to generate an assembly file named “haachama”

|  |
| --- |
| gcc -S haato.c -o haachama.s |

2c. I have a file name “lulu.c”, write down the command to generate an object file named “suzuhara”

|  |
| --- |
| gcc -c lulu.c -o suzuhara.o |

2d. I have a file name “hahaha.c”, I need a program named “peko”

|  |
| --- |
| gcc hahaha.c -o peko.exe |

**3. Let i = 1, j = 2, k = 3.33**

Write the NEWLY output of i and j, if applicable, after scanf is called together with INPUT values

a.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| scanf | ( | “ |  | % | d | , | | | a | b | “ |  | , | & | j | ) | ; |  |  |  |  |  |  |  |  |  |  |
| input: |  | 2 | 0 | , | | | a | b |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| Current value of i | 1 |
| Current value of j | 20 |

b.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| scanf | ( | “ | % | d | % | d | “ | , | & | i | , | & | j | ) | ; |  |  |  |  |  |  |  |  |  |  |  |
| input: | 3 | 0 | 0 |  |  |  | 4 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| Current value of i | 300 |
| Current value of j | 44 |

c.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| scanf | ( | “ | % | d | % | d | “ | , | & | i | , | & | j | ) | ; |  |  |  |  |  |  |  |  |  |  |  |
| input: | 3 | 0 | 0 | , |  |  | 4 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| Current value of i | 300 |
| Current value of j | 2 |

d.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| scanf | ( | “ | % | d | \_ | % | d | “ | , | & | i | , | & | j | ) | ; |  |  |  |  |  |  |  |  |  |  |
| input: |  |  | 3 |  |  |  | 4 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| Current value of i | 3 |
| Current value of j | 2 |

e.

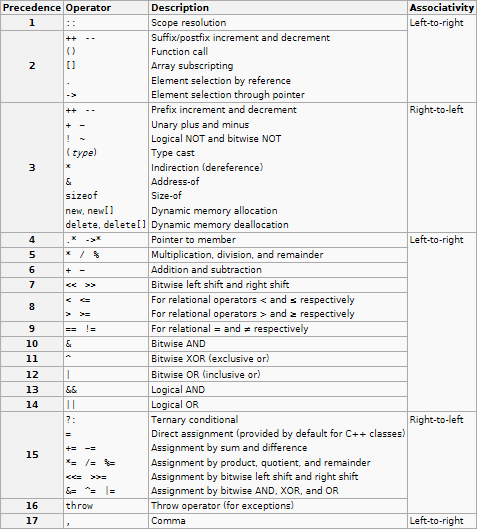
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| scanf | ( | “ |  | \_ | % | d | 4 | 4 | % | d | “ | , | & | i | , | & | j | ) | ; |  |  |  |  |  |  |  |
| input: |  | \_ | 3 |  |  | 4 | 4 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| Current value of i | 3 |
| Current value of j | 4 |

f.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| scanf | ( | “ | \* | \_ | % | d | 4 | 4 | % | d | “ | , | & | i | , | & | j | ) | ; |  |  |  |  |  |  |  |
| input: |  | \* | \_ | 6 |  | 4 | 4 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

|  |  |
| --- | --- |
| Current value of i | 1 |
| Current value of j | 2 |

****

**4. Insert Parentheses to represent the precedence and associativity of the C expression:**

Example:

1. a / b + c \* d - f

|  |
| --- |
| ( ( ( a / b ) + (c \* d) ) - f ) |

1. a \* b % c / d - - f

|  |
| --- |
| ( ( ( ( ( a \* b ) % ) c ) / d ) - ( - f ) ) |

1. a + b ++ + c -- - d

|  |
| --- |
| (a + ( b ++ ) + ( c -- ) - d |

1. a -- + b \* ++ c / -- d

|  |
| --- |
| ( ( a -- ) + ( ( b \* ( ++ c ) ) / ( -- d ) ) ) |

1. a - - b + + c

|  |
| --- |
| ( ( a - ( - b ) ) + ( + c ) ) |

**5. Evaluate the expression (s) if possible, if not, write ERROR**

Let i = 5, j = 20, **EACH QUESTION IS INDEPENDENT** from each other!

|  |  |
| --- | --- |
| ++i - 4 | 2 |
| i + + - - -j | -15 |
| i = j ++ = ++ i | ERROR |
| i = j + 5 + i | 30 |
| i = j += 2 \* ++j | 63 |
| j = 1 - 2 + 3 \* 2 + i++ = 2 | ERROR |
| i / 5 \* j | 20 |
| j -= j / i -- \* i | 4 |
| ++ i -- | ERROR |
| + + j ++ + - - i -- | 25 |
| i++i-- | ERROR |
| i+++j | 25 |
| i+ + + j | 25 |
| i + ++ j | 26 |