

CLA - C Certified Associate Programmer

C++ Institute CLA-11-03

Version Demo

Total Demo Questions: 5

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QUESTION NO: 1

What happens if you try to compile and run this program?

```
#include  
  
int main (int argc, char *argv[]) {  
  
int i = 7 || 0 ;  
  
printf("%d", !! i);  
  
return 0;  
  
}
```

Choose the right answer:

- A. The program outputs -1
- B. The program outputs 7
- C. Compilation fails
- D. The program outputs 1
- E. The program outputs 0

ANSWER: D

Explanation:

Assuming the displayed header directive represents the intended standard `#include <stdio.h>` line, the program compiles and prints 1. In C, the logical OR operator `||` evaluates to an integer result of either 0 or 1; it does not preserve the operand value. The left operand, 7, is nonzero and therefore true, so `7 || 0` evaluates to 1. That result is assigned to `i`. The expression `!!i` applies logical negation twice. The first negation converts nonzero `i` to 0; the second negation converts that zero to 1. Consequently, `printf` receives the integer value 1 for its `%d` conversion and writes 1, with no newline. This behavior follows the C language definition of logical operators: each produces either zero or one, and a nonzero operand is considered true. See cppreference's documentation for [C logical operators](#) and the C standard library description of [printf](#).

QUESTION NO: 2

What happens if you try to compile and run this program?

```
#include  
  
int f1(int n) {  
  
return n = n * n;  
  
}  
  
int f2(int n) {  
  
return n = f1(n) * f1(n);  
  
}  
  
int main(int argc, char ** argv) {  
  
printf ("%d \n", f2(1));  
  
return 0;  
  
}
```


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Select the correct answer:

- A. The program outputs 8
- B. The program outputs 2
- C. Execution fails
- D. The program outputs 4
- E. The program outputs 1

ANSWER: E

Explanation:

The program outputs 1. The function `f1` receives its parameter by value, so its local `n` is initialized with the argument supplied by the caller. Its return statement first evaluates `n * n`, then assigns that result to its local parameter, and the assignment expression has the assigned value. Therefore, `f1(1)` returns 1.

The expression in `f2` evaluates two calls to `f1` and multiplies their returned integer values. Both calls receive the value 1, so the multiplication is `1 * 1`, producing 1. Consequently, `f2(1)` returns 1, and the `%d` conversion specification in `printf` writes that integer followed by a newline.

This follows C's rules that an assignment expression evaluates to the value stored after assignment and that function arguments initialize the corresponding parameters for the call. See the C standard's assignment-operator specification in [ISO C11 draft, section 6.5.16](#) and the function-call rules in [section 6.5.2.2](#).

QUESTION NO: 3

What happens if you try to compile and run this program?

```
#include <stdio.h>

int i = 1;

int fun(void) {
    return ++i;
}

int main(void) {
    int i = 5;

    printf("%d", i + fun());
    return 0;
}
```

Choose the right answer:

- A. The program outputs 6
- B. The program outputs 7
- C. The program outputs 8
- D. The program outputs 10
- E. The behavior is undefined.

ANSWER: B

Explanation:

The program outputs 7. The declaration inside `main` creates a local variable named `i` with the value 5. It hides the global variable named `i` only within the block of `main`.

The function `fun` has no local variable named `i`, so `++i` modifies the global object. That object changes from 1 to 2, and `fun` returns 2. The expression in `main` therefore adds its local value 5 to 2, producing 7.

QUESTION NO: 4

What happens if you try to compile and run this program?

```
#include  
  
#include <string.h>  
  
int main (int argc, char *argv[]) {  
  
int a = 0, b = 1, c;  
  
c = a++ && b++;  
  
printf("%d",b);  
  
return 0;  
  
}
```

Choose the right answer:

- A. The program outputs 3
- B. The program outputs 1
- C. The program outputs 2
- D. Compilation fails
- E. The program outputs 0

ANSWER: D

Explanation:

Compilation fails is correct because the first preprocessing directive is malformed: `#include <stdio.h></stdio.h>`. An `#include` directive must specify a header name, such as `<stdio.h>`, and then end at the newline. Here, the additional `</stdio.h>` text follows the valid header-name token on the same directive line. It is not part of a valid include-header-name and constitutes extra tokens in the directive. A conforming C implementation must issue at least one diagnostic for a preprocessing directive that does not satisfy its syntax requirements; consequently, this source cannot be treated as a cleanly compilable program. Since successful compilation is required before the executable can run, no output is guaranteed from this source as written.

If the first line were corrected to `#include <stdio.h>`, the logical-AND expression would use short-circuit evaluation, but that runtime behavior is irrelevant until the invalid preprocessing directive has been fixed. The C standard's rules for preprocessing directives and diagnostics are available in the WG14 C standard draft: [N1570, C11 draft standard](#). See also the GCC documentation on preprocessing directives: [Include Syntax](#).

QUESTION NO: 5

What happens if you try to compile and run this program?

```
#include
```

```
int main (int argc, char *argv[]) {  
  
int i = 'A' - 'B';  
  
int j = 'b' - 'a';  
  
printf("%d",i / j);  
  
return 0;  
  
}
```

Choose the right answer:

- A. Execution fails
- B. Compilation fails
- C. The program outputs 1
- D. The program outputs -1
- E. The program outputs 0

ANSWER: D

Explanation:

The program outputs -1. In the character encoding assumed by this introductory C exercise, consecutive uppercase letters have consecutive numeric values, so 'A' - 'B' evaluates to -1. Likewise, consecutive lowercase letters have consecutive values, making 'b' - 'a' evaluate to 1. Both variables are of type `int`, because character constants such as 'A' have type `int` in C. The expression passed to `printf` is therefore integer division: $-1 / 1$. Dividing an integer value by one preserves that value, so the result is -1. The `%d` conversion specification correctly prints that `int` result as a signed decimal integer, with no newline appended. The C standard specifies the form and integer type of character constants in its lexical-elements rules, and its arithmetic rules define integer division for integer operands. See the C standard draft sections on character constants and multiplicative operators at [N1570](#), and the [C arithmetic operators reference](#).