



مراجعة الفاينل

C++



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رابط قناتي على يوتيوب:

[اشترك الان](#)



مراجعة :

Increment and Decrement

```
int x = 5;  
x++;  
--x;
```

Explanation: Increase or decrease the value of a variable by one.

cin followed by getline

```
int age;  
string name;  
  
char ch;  
cin >> age;  
cin.get(ch);  
getline(cin, name);
```

لتفادي مشاكل الإدخال cin.get يجب استخدام getline ثم cin شرح: عند استخدام

Explanation: When using cin followed by getline, use cin.get to avoid input issues.

Failure in Input

نوع البيانات (Data Type)	القيمة الافتراضية (Default Value)
int	0
double	0.0
char	'\u0000' (حرف فارغ)
string	"" (نص فارغ)
bool	false

File Handling (ifstream & ofstream)

```
ofstream outFile("data.txt");  
outFile << "Hello";  
outFile.close();
```

Explanation: Using ifstream and ofstream to read and write files.

Short Circuit in if Statement

```
if (x==0 && x++>3) {  
    cout << "Valid";  
}
```

Explanation: Short-circuit prevents the second part from executing if the first is false.

Switch Case and Break

```
switch(x) {  
    case 1: cout << "One"; break;  
    default: cout << "Default";  
}
```

Explanation: Order of cases and presence of break affects execution.

Ternary Operator

```
int result = (x > 0) ? 1 : -1;
```

Explanation: Ternary operator to shorten if statement.

Break and Continue

```
for (int i = 0; i < 10; i++) {  
    if (i == 5) continue;  
    if (i == 8) break;  
}
```

Explanation: break exits the loop, continue skips current iteration.

Loops Reminder

```
for (int i = 0; i < 5; i++) {}  
while (x < 5) {}  
do {} while (x < 5);
```

Explanation: Review of the three loop types.

Predefined and User-defined Functions

```
int add(int a, int b) { return a + b; }  
void greet() { cout << "Hi"; }
```

Explanation: Difference between predefined and user-defined functions.

Call by Value and Reference

```
void modify(int &x) { x = 10; }
```

Explanation: Call by reference modifies original value, call by value does not.

Function Overloading

```
int sum(int a, int b);  
double sum(double a, double b);
```

Explanation: Define multiple functions with same name but different parameters.

Scope and Variables

```
int x = 5;  
void func() { int x = 10; }
```

Explanation: Local variable inside function, global outside.

Default Values

```
void greet(string name = "Student") { cout << name; }
```

Explanation: Default values can be assigned to parameters.

Enumeration and String as Array

```
enum Color { RED, GREEN, BLUE };  
string name = "Ali";
```

Explanation: Using enum and string as character array.

Enum Arithmetic and Casting

```
enum Level { LOW = 1, MEDIUM, HIGH };  
int x = MEDIUM + 1;
```

Explanation: Some operations on enum require type casting.

One Dimensional Array

```
int arr[5] = {1, 2, 3, 4, 5};
```

Explanation: One-dimensional array to store multiple elements.

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مخططات وصور توضيحية من دوسية ايهم المحسيري على موقع

<https://kasitteam.com>

num	Function name	Parameter list	Result	Library
1	abs	(int)	int	cstdlib
2	ceil	(double)	double	cmath
3	floor	(double)	double	cmath
4	fmod	(double , double)	double	cmath
5	fabs	(double)	double	cmath
6	sqrt	(double)	double	cmath
7	pow	(double , double)	double	cmath
8	tolower	(int)	int	cctype
9	toupper	(int)	int	cctype

precedence	Symbol	Category
1	!, ++, --	Mathematic
2	()	
3	$\times \div \%$	
4	+, -	
5	<, <=, >, >=	Relation
6	==, !=	
7	&&	logical
8		
9	=	

Data type	Default Value
int	0
double	0.0
char	' '
string	" "
bool	false

- العنصر اللي صار بسببه ال failure بتخزن فيه القيمة ال default حسب نوعه .
- بعض الكومبايلر بخزن القيمة القديمة للعنصر لو في مش ال default
- كل متغير بعد هيك بتم اهمال عملية ال cin الـ .
- يعني لو كان الـ cin قبل الـ cin ف بحتفظ فيها، ولو ما كان الـ ف rubbish data يكون فيه

Symbol	Escape sequence	Description
\n	Newline	بتنزلنا سطر زي endl
\t	Tab	بتزيح المؤشر بمقدار tab
\b	Backspace	بترجع المؤشر بمقدار حرف واحد
\r	Return	برجع المؤشر لبداية السطر الحالي
\\	Backslash	بطبع \
\"	Double Quote	بطبع "
\'	Single Quote	بطبع '

C++ Final Exam Practice Questions

Qx) What is the output of the following C++ code, given the user input is: hello 25kb ?

(Assume the code is executed on a standard-compliant C++ implementation.)

```
string str;
char v1 = 'E', v2 = 'k';
int n1 = 15, n2 = 0;
cin >> str;
cin.get(v1);
```



```
cin.get(v2);  
  
cin >> v1 >> n1 >> n2;  
  
cout << str << " " << n1 << " " << v1 << endl;
```

A) hello 15 E

B) hello 15 5

C) hello k b

D) hello 0 k

Correct Answer:

B) hello 15 5

The C++ **standard** defines the behavior when a stream extraction operation fails:

`cin >> n1;` attempts to read an integer. It encounters the non-digit 'k' and fails. According to the C++ standard, if extraction fails, the value of the variable (n1) is left unchanged (n1 remains 15). The stream enters a fail state.

`cin >> n2;` is skipped and does not execute. n2 remains 0.

The final output is: hello (str), 15 (unchanged n1),

5 (v1).

Therefore, the correct, standard-compliant output is hello 15 5.

However, Microsoft's Visual C++ (MSVC) **compiler often exhibits different behavior**. On failure, it may set the integer variable to 0 instead of leaving it unchanged. This specific non-standard extension results in output C (**hello 0 5**).

is standard-compliant, C is a likely and valid result in a very common development environment (Visual Studio), making it the most probable output for many students

ملاحظات هامة:

سبب الأخطاء: (Failure) العنصر الذي قد يسبب خطأ في البرنامج، غالباً ما يتم تخزين القيمة الافتراضية فيه حسب نوعه إذا لم يتم إعطاؤه قيمة ابتدائية.

سلوك المترجم: (Compiler) بعض المترجمات (Compilers) قد تحتفظ بقيمة قديمة كانت مخزنة في الذاكرة للمتغير بدلاً من القيمة الافتراضية، مما ينتج عنه ما يسمى بالبيانات غير المرغوب فيها. (Rubbish Data)

تجاهل الإدخال: (cin) في بعض الحالات، إذا كان للمتغير قيمة سابقة قبل عملية الإدخال (cin)، فإنه قد يحتفظ بها ويتم تجاهل القيمة الجديدة

What is the output of the following C++ code and y value is ?

```
int y = 3 ;  
int i;  
for( i = 1 ; i < 25 ; i++);  
y*=i ;  
cout<<y++;
```

Answer:

Output=75

Y =76

What is the output of the following C++ code?

```
int number1, number2 =20;
```

Answer 4

```
number1 = ( !(number2%4 == 0)?30:12 );
```

```
cout<<number1/3;
```

What is the output of the following C++ code (Note: write your Answer without any spaces)

```
int x = 10;

    int sum = 0; int y = 3;

while (x > 4) {

    sum += x;

    y++;

    if (y > 5)

        x = 4;

        x--;

}cout << sum;
```

Answer 27

What is the output of the following C++ code?

```
#include <iostream>
using namespace std;
int main() {
    int a = 17;
    int b = 5;
    switch (a % 7 + 2) {
    case 0:
        b = b + 8;
    case 1:
        b++;
    case 2:
        break;
    case 3:
        b = b + 3;
    case 4:
        b = 2 * b + 1;
    case 5:
        break;
```

```

case 6:
    b = b - 4;
    break;
}
cout << b << endl;
return 0;
}

```

• A) 5 ☒ correct

• B) 11

• C) 12 D) 10

output ?

```

int s = 0, d, x = 45;
while (x > 0) {
    d = x % 10;
    s = s * 10 + d;
    x = x / 10;
}
cout << s << endl;

```

Answer 54

Iteration	x (start)	d = x % 10	s = s*10 + d	x = x / 10 (new x)
1	45	5	5	4
2	4	4	54	0

Consider the following C++ code:

```
#include <iostream>
```

```
using namespace std;
void updateValue(int a, int b) {
    a = a * 2 + b;
    b = a - b;
    a = a - b;
}
int main() {
    int x = 5, y = 10;
    updateValue(x, y);
    cout << x << " " << y << endl;    return 0;}
```

What will be the output after executing this program?

Options:

- A) 5 10
- B) 20 15
- C) 10 5
- D) 15 20

 **Correct Answer: A) 5 10**

Explanation:

- **Function parameters are call by value, so modifications inside updateValue do not affect x and y in main.**

Consider the following C++ code:

```
#include <iostream>
using namespace std;

void swapAndAdd(int &p, int &q) {
    p = p + q;
    q = p - q;
    p = p - q;
    q += 2;
}
```

```
int main() {
    int m = 7, n = 3;
    swapAndAdd(m, n);
    cout << m << " " << n << endl;
    return 0;
}
```

What will be the output after executing this program?

A) 3 7

B) 3 9 ☒ correct

C) 10 5

D) 7 3

What is the value of clr2 after this code?

```
enum clr1{red,blue,pink};
enum clr2{green , black};
clr2 x=static_cast<clr2>(black);
```

Blue, black value in clr2 is 1, and when casting 1 to clr1 it give blue

What is the output of the following code?

```
enum clr{red,blue,pink};
clr x=red+blue;
cout<<x<<endl;
```

red = 0 and blue = 1, 1 + 0 = 1

What is the output of the following code?

```
enum clr{red=4,blue=1,pink};
cout<<pink<<endl;}
```

2

What is the output of the following code?

```
enum Direction { NORTH, EAST, SOUTH, WEST };  
  
Direction d1;  
  
d1 =  
static_cast<Direction>(static_cast<int>(WEST) - 2);  
  
cout << d1 << endl;
```

1

1. Which of the following statements is valid?

- a) `int length = 5, int data[length];`
- b) `int length = 5, double values[length];`
- c) `double size = 5, double array[size];`

d) `int numbers[0];`

e) None of these

Answer: e) None of these

1. 2. What is the output of the following code?

```
string text = "C++ beats Java";  
for (int i = 0; i < text.length(); ++i)  
    text[i] = text[(i + 1) % text.length()];  
cout << text;
```

Answer: b) ++ beats JavaC

2. 3. What is the output of the following program?

```
const int size = 3;  
void update(double arr[]) {  
    for (int i = 0; i < size; ++i) {  
        if (i == size - 1) break;  
        arr[i] += arr[i + 1];  
    }  
}  
  
int main() {
```

```
double nums[size] = {1.0, 2.0, 3.0};  
update(nums);  
cout << nums[size - 2];  
}
```

Answer: c) 5

3. 19. Which of the following lines must end with a semicolon?

- a) The header of a function implementation
- b) Any comment statement
- c) Any assignment statement
- d) Any include statement
- e) None of the above

Answer: c) Any assignment statement

4. 20. Which of the following statements is valid?

- a) Boat size = 15; float Sample[size];
- b) int size = 15; int Sample[size];
- c) int Sample[-15];
- d) int size = 15; float Sample size;

e) None of the above

Answer: e) None of the above

5. 21. What is the output of the following code?

```
int value = 7, row;  
for (row = 1; row < 9; row++);  
cout << value * row;
```

Answer: 63

6. 22. What is the output of the following code?

```
int a = 6;  
int result = 0;  
int b = 4;  
do { --b; result += a; if (b < 2) break; ++a; } while (a < 21);  
cout << result;
```

Answer: 21

7. 23. What is the output of the following code?

```
int number = 2;  
while ((number += 4) <= 6)
```

```
cout << number * (number - 1);
```

Answer: 30

8. 24. What is the output of the following code?

```
string country = "Jordan";
```

```
cout << (country.substr(2, 8)).length();
```

Answer: 4

9. 25. What is the output of the following code?

```
int total = 0;
```

```
for (int i = 1; i <= 6; i++)
```

```
if (i % 4 == 0) continue; else total += i;
```

```
cout << total;
```

Answer: 17

10. 26. What is the output of the following code?

```
int x = 25, y = 30;
```

```
int* ptr = &y;
```

```
cout << ptr << " " << y++ << " " << *ptr;
```

Answer: B1300 30 31

11. 27. What is the output of the following code?

```
int sum = 0;
for (int i = 1; i <= 10; i++)
    if (i % 2 == 0) sum += i;
    if (sum >= 10) break;
cout << sum;
```

Answer: 12

12. 28. What is the output of the following code?

```
int count = 12;
switch (count-- / 4) {
    case 2: break;
    case 3: count *= 2; cout << count; break;
    case 4: cout << -count; break;
    default: cout << 231; }
```

Answer: 22

13. 29. What is the output of the following code?

```
int a = 15, b = 5;  
a -= b;  
b = a--;  
--b;  
cout << a << " " << b;
```

Answer: 9 6

14. 30. What is the output of the following code?

```
int num = 15;  
double gpa = 3.5;  
bool done;  
done = (num != static_cast<int>(2 * gpa + 9.3));  
cout << ((done < 10) ? num++ : num--) << " " << done;
```

Answer: 15 1

15. 31. What is the output of the following code?

```
int Var1 = 7, Var2 = 6;  
cout << Var1 << endl;  
cout << Var2 << endl;  
int Var1 = 3, Var2 = 4;
```

```
{ cout << Var1 << endl; cout << Var2 << endl; }
```

Answer: Not clearly provided

16. 32. What are the contents of the array after executing the following?

```
int array1[3][2];  
for (int i = 0; i < 3; i++)  
for (int j = 0; j < 2; j++)  
array1[i][j] = i - j;
```

Answer: 0 -1 1 0 2 1

17. 33. What is the value of var4 after the following input:
N B \n A E?

```
char var1, var2, var3, var4;  
cin.get(var1);  
cin >> var2;  
cin.get(var3);  
cin.get(var4);
```

Answer: A

Q34) What will be the output of the following C++ program if the file section4.txt contains the following 10 real numbers:

1.5 2.0 3.5 -4.0 6.0 7.0 8.0 9.0 10.0 11.0

```
#include<iostream>
#include<fstream>
#include <iomanip>
using namespace std;
void main() {
ifstream in;
in.open("section4.txt");
double x,sum =0.0;
for(int i = 1 ; i <= 40 ; ++i){
in>>x;
sum += x;
if(x == -4)
break;

}
```



```
cout<< fixed << setprecision(4) <<sum<<endl;  
in.close();  
}
```

a) 54.0000

b) 3.0000

c) -4.0000

d) 0.0000

☒ Correct Answer: b) 3.0000

Q35: What is the output after the following code fragment is executed?

```
#include <iostream>  
using namespace std;  
int main() {
```

```
int x = 300, y = 6;
while(x > 0) {
    cout << y << ",";
    do {
        if(x > 150) {
            x = x / 6;
            continue;
        }
        y--;
        if(y % 2 == 0) break;
    } while(true);
    x = x / 15;
    cout << x << endl;
}
cout << y << endl;
return 0;
}
```

Choices:

A)

6,50

4,0

3

B)

6,50

5,0

3

C)

6,50

5,0

2

D)

6,30

4,0

2

Correct Answer: D

Q36) What is the output after the following code fragment is executed if the user enters 5?

```
int num;  
  
cin >> num;  
  
switch(num % 4) {
```

```
case 3:
case 1:
    cout << "three\n";
case 2:
    cout << "two\n";
case 0:
    cout << "one\n";
    break;
default:
    cout << "cannot be!!\n"; }
```

A)

```
three
two
one
```

B)

```
three
```

C)

```
two
one
```

D)

one

✓ الإجابة الصحيحة A :

ملاحظة للطلاب:

- القيم case بدون break ستستمر في تنفيذ جميع الحالات التالية (fall-through) حتى تصل إلى break.
- هنا $5 \% 4 = 1$ ، لذلك يبدأ من case 1 ويطبق جميع الطباعة حتى break.

Q37) What is the value of the variable in each of the following code fragments? Assume that all needed libraries are included.

1)

```
double a = ceil(static_cast<double>(9) / 2 + 2 * 3);  
cout << a << endl;
```

Choices:

- A) 10
- B) 11
- C) 12
- D) 13

Answer: B) 11

Explanation:

• $9 / 2 = 4.5 \rightarrow 4.5 + 6 = 10.5 \rightarrow \text{ceil}(10.5) = 11$

2) (Assume the input is 4.25)

```
int p;  
double q;  
cin >> p >> q;  
p += pow(p, q*2);  
cout << p << endl;
```

Choices:

A) 5

B) 8

C) 6

D) 7

Answer: C) 6

Explanation:

- Input: $p = 4, q = 0.25$
 - $q*2 = 0.5 \rightarrow \text{pow}(4, .5) \approx 2$
 - $p += 2 \rightarrow 4 + 2 = 6$
-

3)

```
char c = 'B';
```

```
c = static_cast<char>(tolower(c++)) + 2;  
cout << c << endl;
```

Choices:

- A) 'd'
- B) 'D'
- C) 'c'
- D) 'C'

Answer: A) 'd'

Explanation:

- 'B'++ → 'B' used first, then increment → 'C'
- tolower('B') = 'b' → 'b' + 2 = 'd'

Q38) output?

```
int number=1;  
bool found=false;  
while(!found)  
{  
    if(number/5==0){  
        number++;  
        continue;}  
    if((number+=2)>=5)  
        found=true;
```

```
}
```

```
cout<<number;
```

A) 4

B) 5

C) 6

D) 7

E) 8

✓ الإجابة الصحيحة: D) 7

Iterat ion	num ber (star t)	number/ 5==0?	num ber after ++	(number+= 2)>=5?	fou nd	num ber (end)
1	1	true	2	-	fals e	2
2	2	true	3	-	fals e	3
3	3	true	4	-	fals e	4
4	4	true	5	true	tru e	7