References

Question 1 CORRECT

What is the return value of f(p, p) if the value of p is initialized to 5 before the call? Note that the first parameter is passed by reference, whereas the second parameter is passed by value.

```
int f(int &x, int c) {
   c  = c - 1;
   if (c == 0) return 1;
   x = x + 1;
   return f(x, c) * x;
}
```

A 3024

6561

C 55440

D 161051

Discuss it

Question 1 Explanation:

Since c is passed by value and x is passed by reference, all functions will have same copy of x, but different copies of c. f(5, 5) = f(x, 4)*x = f(x, 3)*x*x = f(x, 2)*x*x*x = f(x, 1)*x*x*x*x = 1*x*x*x*x = x^4 Since x is incremented in every function call, it becomes 9 after f(x, 2) call. So the value of expression x^4 becomes 9^4 which is 6561. 1

Question 2 CORRECT

Which of the following is FALSE about references in C++

A References cannot be NULL

B A reference must be initialized when declared

C Once a reference is created, it cannot be later made to reference another object; it cannot be reset.

References cannot refer to constant value

Discuss it

Question 2 Explanation:

We can create a constant reference that refers to a constant. For example, the following program compiles and runs fine.

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

int main()
{
  const int x = 10;
  const int& ref = x;

  cout << ref;
  return 0;
}
```

Question 3 CORRECT

Which of the following functions must use reference.

A Assignment operator function

Copy Constructor

C Destructor

D Parameterized constructor

Discuss it

Question 3 Explanation:
A copy constructor is called when an object is passed by value. Copy constructor itself is a function. So if we pass argument by value in a copy constructor, a call to copy constructor would be made to call copy constructor which becomes a non-terminating chain of calls. Therefore compiler doesn't allow parameters to be pass by value. See http://geeksquiz.com/copy-constructor-in-cpp/ for details.

Question 4 CORRECT

Predict the output of following C++ program.

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

int &fun()
{
    static int x = 10;
    return x;
}
int main()
{
    fun() = 30;
    cout << fun();
    return 0;
}
```

Run on IDE

A Compiler Error: Function cannot be used as lvalue

B 10

30

Discuss it

Question 4 Explanation:
When a function returns by reference, it can be used as lvalue. Since x is a static variable, it is shared among function calls and the initialization line "static int x = 10;" is executed only once. The function call fun() = 30, modifies x to 30. The next call "cout << fun()" returns the modified value.

Question 5 CORRECT

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

int &fun()
{
    int x = 10;
    return x;
}
int main()
{
    fun() = 30;
    cout << fun();
    return 0;
}
```

Run on IDE

A Compiler Error: Function cannot be used as lvalue

B 10

C 30

D 0

Discuss it

Question 5 Explanation:
When a function returns by reference, it can be used as lvalue. Since x is a local variable, every call to fun() will have use memory for x and call “fun() = 30" will not effect on next call.

Question 6 CORRECT

Output of following C++ program?

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

int main()
{
  int x = 10;
  int& ref = x;
  ref = 20;
  cout << "x = " << x << endl ;
  x = 30;
  cout << "ref = " << ref << endl;
  return 0;
}
```

Run on IDE

A
```
x = 20
ref = 30
```

B
```
x = 20
ref = 20
```

C
```
x = 10
ref = 30
```

D
```
x = 30
ref = 30
```

Discuss it

Question 6 Explanation:
ref is an alias of x, so if we change either of them, we can see the change in other as well.

You have completed 6/6 questions .
Your score is 100%.

Join the discussion…

superman • 2 months ago

Q2:OptionA
Reference can be NULL. This program compiles well.
http://cpp.sh/5ll3z

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praful • 2 months ago

I think

According to the statement of option-D
The explanation should be as follows:

http://code.geeksforgeeks.org/...

This will produce compiler error.

http://code.geeksforgeeks.org/...

output:10

According to the explanation of Q-2
The statement of option-D should be as follows:
Constant References cannot refer to constant variable.
If i am making any error please identify me.

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Vinod • 5 months ago

Q5: The correct answer should be "garbage value" since we are returning reference to a local variable, which shall be invalid in the main function.

Depending upon the compiler optimization level, the output might be 0, 10, 30, or anything as such (you could try the below linux command with various optimization levels: O1, O2, O3).

g++ -O3 q5.cpp

@halfcoder @Joey @GeeksforGeeks

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Ganesh Kumar ➚ Vinod • 4 months ago

In Q5 answer can be garbage value if alias func() is overwritten .It means reference return by func() is to local variable which is point to address of local variable x after fun() x will go out of scope(become unreserved) but in main it still point to same address if that unreserved location is overwritten by any application then this value becomes garbage but if this unreserved location is

not overwritten by any other then the value remains same which means 10

1 • Reply • Share ›

halfcoder • 5 months ago

Q5 after compilation gives output as 0..Y??

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rudra • 6 months ago

question 2 explanation talks about a program but is not present..please make that available

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GeeksforGeeks Mod ➚ rudra • 6 months ago

Thanks for pointing this out. We have made the program visible here.

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Joey ➚ GeeksforGeeks • 5 months ago

Question 5 when compiled gives output 0.what is the correct ans..?

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