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Output of C++ Program | Set 17



Predict the output of following C++ programs.

Question 1

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

class A
{
    public:
    A& operator=(const A&a)
    {
        cout << "A's assignment operator called" << endl;
        return *this;
    }
};

class B
{
    A a[2];
};

int main()
{
    B b1, b2;
    b1 = b2;
    return 0;
}
```

Output:

```
A's assignment operator called
A's assignment operator called
```

The class B doesn't have user defined assignment operator. If we don't write our own assignment operator, compiler creates a default assignment operator. The default assignment operator one by one copies all members of right side object to left side object. The class B ha



2 members of class A. They both are copied in statement "b1 = b2", that is why there are two assignment operator calls.

Question 2

```
#include<stdlib.h>
#include<iostream>

using namespace std;

class Test {
public:
    void* operator new(size_t size);
    void operator delete(void*);
    Test() { cout<<"\n Constructor called"; }
    ~Test() { cout<<"\n Destructor called"; }
};

void* Test::operator new(size_t size)
{
    cout<<"\n new called";
    void *storage = malloc(size);
    return storage;
}

void Test::operator delete(void *p )
{
    cout<<"\n delete called";
    free(p);
}

int main()
{
    Test *m = new Test();
    delete m;
    return 0;
}
```



```
new called
Constructor called
Destructor called
delete called
```

```
new called
Constructor called
Destructor called
delete called
```

Let us see what happens when below statement is executed.

```
Test *x = new Test;
```



When we use new keyword to dynamically allocate memory, two things happen: memory allocation and constructor call. The memory allocation happens with the help of operator new. In the above program, there is a user defined operator new, so first user defined operator new is called, then constructor is called.

The process of destruction is opposite. First, destructor is called, then memory is deallocated.

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