CAP444
OBJECT ORIENTED PROGRAMMING USING C++

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Overloading binary operators using friend function

Friend function takes two parameters in case when we want to overload binary operators using friend function

Ex:

friend A operator +(A &x, A &y);

Example:

What will be output for following code?

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

class Sub
{
private:
    int a;
    int b;
public:
    Sub()
    {
        a=10;
        b=20;
    }
friend Sub operator -(Sub &x, Sub &y);
    void getresult()
    {
        cout<<a<<endl;
        cout<<b<<endl;
    }
};
```

```cpp
Sub operator -(Sub &x,Sub &y)
{
    Sub z;
    z.a=x.b-x.a;
    z.b=y.b-y.a;
    return z;
}
int main()
{
    Sub a1,a2,a3;
    a3=a1-a2;
    a3.getresult();
    return 0;
}
```

A.

10
10

B.

-10
-10

C.

0
0

D.   None

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Situation??

Type Conversion

- Basic data types conversion done automatic by compiler

- User define data type conversion not done automatically

- User define data type conversion done by using either constructor or by using casting operator

What will be output?

```cpp
#include <iostream>
using namespace std;
int main()
{
    double a = 21.09399;
    float b = 10.20;
    int c ;
    c = a;
    cout << c ;
    c = b;
    cout << c ;
    return 0;
}
```

A) 2110
B) 1210
C) 21
D) 121

Three type of situation occurs during user define type conversion:

- 1. basic type to class type(using constructor)

- 2. class type to basic type(using casting operator function)

- 3. class type to class type (using constructor and casting operator function both)

basic type to class type(using constructor)

```cpp
#include <iostream>
using namespace std;
class A
{

};
int main()
{
A a1;
int  x=8;
a1=x ;//basic to class type
   return 0;
}
```

Basic type to class type achieved by using constructor.

class type to basic type(using casting operator function)

Class type to basic type done by using casting operator function

1. It must be a define inside in class.
2. It must not specify a return type in function signature.
3. **It must not have any arguments.**

class A

{};

A a1;

int x;

x=a1 //class type to basic type

Go through: cplusplus/Class to basic type conversionEx.pdf at master · vishalamc/cplusplus (github.com)

casting operator function

Syntax:

operator dest_typename()

{

  return type;

}

operator int()

{

  return a;

}

class type to class type (using constructor and casting operator function both)

Ex: A obj1; B obj2;

obj1 = obj2 ;   // obj1 and obj2 are objects of different classes

➢ First approach using Constructor:-

Left side of assignment operator(=) which is class object we have to create constructor in that class here in Class A.

➢ Second approach using casting operator function:

Right side of assignment operator(=) which is class object we have to create casting operator function in that class here class B.

What is the return type of the casting operator function?
a) void
b) int
c) float
d) no return type

Any Query?