**Chapter 16 Notes**

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1. File scope examples

//file1.cpp

#include<iostream>

using std::cout;

int a;

int myfun(void);

int main(void){

a = 123; //a is a

cout<<"a="<<a<<"\n";

cout<<"myfun="<<myfun()<<"\n"; //123 or 456

return 0;

}

//file2.cpp

extern int a; //Find variable a in somewhere

int myfun(void){

a = 456; //a is a

return a;

}

//file3.cpp

//int a=789; //Error: redef

int b=789;

1. Pointer to obj

//main.cpp

#include<iostream>

#include "test.h"

using std::cout;

int main(void){

Test a;

cout<<"Print obj a.a"<<"\n";

a.disp();

Test \*b;

b=&a;

cout<<"Print obj b.a"<<"\n";

b->disp();

return 0;

}

//test.h

#pragma once

class Test{

public:

void disp(void);

private:

int a=123;

};

//test.cpp

#include<iostream>

#include "test.h"

using std::cout;

void Test::disp(void){

cout<<"a="<<a<<"\n";

}

% g++ main.cpp test.cpp -o out

1. Function return by reference

// C++ program to illustrate return by reference

#include <iostream>

using std::cout;

using std::endl;

// Function to return as return by reference

int& returnValue(int& x)

{

// Print the address

cout << "x = " << x

<< " The address of x is "

<< &x << endl;

// Return reference

return x;

}

// Driver Code

int main(void){

int a = 20;

int& b = returnValue(a);

// Print a and its address

cout << "a = " << a

<< " The address of a is "

<< &a << endl;

// Print b and its address

cout << "b = " << b

<< " The address of b is "

<< &b << endl;

// We can also change the value of

// 'a' by using the address returned

// by returnValue function

// Since the function returns an alias

// of x, which is itself an alias of a,

// we can update the value of a

returnValue(a) = 13;

// The above expression assigns the

// value to the returned alias as 3.

cout << "a = " << a

<< " The address of a is "

<< &a << endl;

return 0;

}

// C++ program to illustrate return

// by reference

#include <iostream>

using namespace std;

// Global variable

int x=123;

// Function returns as a return

// by reference

int& retByRef()

{

return x;

}

// Driver Code

int main()

{

// Function Call for return

// by reference

retByRef() = 10;

// Print X

cout << x <<"\n";

return 0;

}