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## Compiler Construction Lab 10

### Task 1:

### Code:

< task1\_sloppy.cc >

```
#include <iostream>

using namespace std;

int main(){

cout<<"\nAverage of Power of Two Numbers Program\n\n";
int a,b;

int x = 1+1;

cout<<"Enter number A : ";
cin>>a;

int j = 12;
int o = 113;
int y = 23;

cout<<"Enter number B : ";
cin>>b;

a = a*(1+a)-a;
b = b*(1+b)-b;

int z = (a+b)/x;

cout<<"\nSum Z : "<<z<<endl;

return 0;

cout<<"I am part of code as well ?";
}
```

## < task1\_optimized.cc >

```
#include <iostream>

using namespace std;

int main(){

    cout<<"\nAverage Program\n\n";
    int a,b;

    int x = 2; // CONSTANT FOLDING : EVALUATED

    cout<<"Enter number A : ";
    cin>>a;

    // DEAD CODE : REMOVED

    cout<<"Enter number B : ";
    cin>>b;

    // ALGEBRAIC SIMPLIFICATION
    a = a*a;
    b = b*b;
    int z = (a+b)/2; // CONSTAMT PROPAGTION : SUBSTITUTED

    cout<<"\nSum Z : "<<z<<endl;

    return 0;

    // UNREACHABLE CODE : REMOVED
}
```

## Output:

```
slash@slash-gt73vr-6re:~/Local Disk Egg/University/Debian Semester 7/...
slash@slash-gt73vr-6re > ~/Local Disk Egg/University/Debian Semester 7/Compiler
Construction/Labs/Lab 10/Code > g++ task1_sloppy.cc -o task
slash@slash-gt73vr-6re > ~/Local Disk Egg/University/Debian Semester 7/Compiler
Construction/Labs/Lab 10/Code > ./task ✓ 1375 15:50:53

Average of Power of Two Numbers Program

Enter number A : 4
Enter number B : 5

Sum Z : 20
slash@slash-gt73vr-6re > ~/Local Disk Egg/University/Debian Semester 7/Compiler
Construction/Labs/Lab 10/Code > g++ task1_optimized.cc -o task
slash@slash-gt73vr-6re > ~/Local Disk Egg/University/Debian Semester 7/Compiler
Construction/Labs/Lab 10/Code > ./task ✓ 1377 15:51:13

Average Program

Enter number A : 4
Enter number B : 5

Sum Z : 20
slash@slash-gt73vr-6re > ~/Local Disk Egg/University/Debian Semester 7/Compiler
Construction/Labs/Lab 10/Code > ✓ 1378 15:51:16
```

## Task 2:

### Code:

< task2.cc >

```
#include <iostream>
#include <fstream>
#include <string.h>

using namespace std;

int main(){

    fstream my_file;
    fstream new_file;

    my_file.open("task1_sloppy.cc", ios::in);
    new_file.open("task2_resultant.cc",ios::out);
    if (!my_file) {
        cout << "[-]File not found.!\n";
    }
    cout << "[+] File opened successfully!\n";
```

```
string line;  
string new_line = "";
```

```
int mode = 0;  
while(getline (my_file, line)){
```

```
    for (int i=0; i<line.length(); i++){  
        if(mode==-2){  
            if(line[i]==';')  
            {  
                new_line+=';';  
                mode = -1;  
            }  
        }  
        else if (mode == -1){  
            if(line[i]=='}'){  
                mode=0;  
            }  
        }  
        else if(line[i] == ' ' ){  
            mode = 1;  
        }  
        else if(line.substr(i,6) == "return"&& mode == 1){  
            mode = -2;  
            new_line+="return";  
            i=i+5;  
            continue;  
        }  
        if(mode!=-1)  
            new_line+=line[i];  
        }  
        new_line+="\n";  
    }
```

```
new_file<<new_line;  
my_file.close();  
new_file.close();
```

```
cout<< "[+] New File Written successfully!\n";
```

```
}
```

## Screenshot:

< task1\_sloppy.cc >

```
#include <iostream>

using namespace std;

int main(){

cout<<"\nAverage of Power of Two Numbers Program\n\n";
int a,b;

int x = 1+1;

cout<<"Enter number A : ";
cin>>a;

int j = 12;
int o = 113;
int y = 23;


cout<<"Enter number B : ";
cin>>b;

a = a*(1+a)-a;
b = b*(1+b)-b;

int z = (a+b)/x;

cout<<"\nSum Z : "<<z<<endl;

return 0;

cout<<"I am part of code as well?";
}
```

## < CONSOLE OUTPUT>

```
Construction/Labs/Lab 10/Code > g++ task2.cc -o task ✓ 1440 18:55:17
slash@slash-gt73vr-6re > ~/Local Disk Egg/University/Debian Semester 7/Compiler
Construction/Labs/Lab 10/Code > ./task ✓ 1441 18:56:56
[+] File opened successfully!
[+] New File Written successfully!
slash@slash-gt73vr-6re > ~/Local Disk Egg/University/Debian Semester 7/Compiler
Construction/Labs/Lab 10/Code > ✓ 1442 18:56:56
```

## < task2\_resultant.cc >

```
#include <iostream>

using namespace std;

int main(){

cout<<"\nAverage of Power of Two Numbers Program\n\n";
int a,b;

int x = 1+1;

cout<<"Enter number A : ";
cin>>a;

int j = 12;
int o = 113;
int y = 23;

cout<<"Enter number B : ";
cin>>b;

a = a*(1+a)-a;
b = b*(1+b)-b;

int z = (a+b)/x;

cout<<"\nSum Z : "<<z<<endl;

return 0;

}
```