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Compiler Construction Lab 11

Task 1 (Code of Non-Fusable & Fusable Loops)

prog1.cc

```
#include <iostream>


using namespace std;
```

```
int main(){
```

```
int N = 100;
int A[N], B[N], C[N], D[N];
```

```
for(int i=0 ; i<N;i++){
B[i] = rand()%100;
}
```

```
for(int i=0; i<N; i++){
A[i] = B[i] + 1;
}
for(int i=0; i<N; i++){
C[i] = A[i] / 2;
}
```

```
for(int i=0; i<N; i++){
D[i] = 1 / (C[i]+1); // C[i+1] is INDEX OUT OF BOUND, HENCE CHANGED
}
```

```
}
```

prog2.cc

```
#include <iostream>
```

```
using namespace std;

int main(){

int N = 100;
int A[N], B[N], C[N], D[N];

for(int i=0 ; i<N;i++){
B[i] = rand()%100;
A[i] = B[i] + 1;
C[i] = A[i] / 2;
D[i] = 1 / (C[i]+1); // C[i+1] is INDEX OUT OF BOUND, HENCE CHANGED
}

}
```

Task 2 (Script of million executions of Non-Fusable & Fusable Loops Programs)

script.cc

```
#include <iostream>

using namespace std;

int main(){


cout<<"\n\t { Program to compare two programs million executions }\n";

int T = 1000000;


clock_t begin_time = clock();

cout<<"\n[+] Program 1 (Loop Non-Fusion) - No. of Executions : "<<T<<" :-\n";
for(int i = 0; i<T; i++){
system("./prog1");

if(i%100000==0){
cout<<"\n< 1/10th Part Covered >\n";
}

}

float duration = float( clock () - begin_time ) / CLOCKS_PER_SEC;
```

```
cout<<"\n\t>Processor Time Taken = "<<duration<<" seconds\n";

begin_time = clock();

cout<<"\n[+] Program 2 (Loop Fusion) - No. of Executions : "<<T<<" :-\n";

for(int i = 0; i<T; i++){
system("./prog2");

if(i%100000==0){
cout<<"\n< 1/10th Part Covered >\n";
}
}

duration = float( clock () - begin_time ) / CLOCKS_PER_SEC;

cout<<"\n\t>Processor Time Taken = "<<duration<<" seconds\n\n";

}
```

Terminal Output:

```
slash@slash-gt73vr-6re ~/Local Disk Egg/University/Debian Semester 7/Compiler Construction/Labs/Lab 11/Code g++ prog2.cc -o prog2
slash@slash-gt73vr-6re ~/Local Disk Egg/University/Debian Semester 7/Compiler Construction/Labs/Lab 11/Code g++ prog1.cc -o prog1
slash@slash-gt73vr-6re ~/Local Disk Egg/University/Debian Semester 7/Compiler Construction/Labs/Lab 11/Code g++ script.cc -o script
slash@slash-gt73vr-6re ~/Local Disk Egg/University/Debian Semester 7/Compiler Construction/Labs/Lab 11/Code ./script ✔ 6 1681 19:44:49

        { Program to compare two programs million executions }

[+] Program 1 (Loop Non-Fusion) - No. of Executions : 1000000 :-

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

       >Processor Time Taken = 183.494 seconds
[+] Program 2 (Loop Fusion) - No. of Executions : 1000000 :-

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

< 1/10th Part Covered >

        >Processor Time Taken = 188.752 seconds
slash@slash-gt73vr-6re ~/Local Disk Egg/University/Debian Semester 7/Compiler Construction/Labs/Lab 11/Code
```