Software Quality Assurance Lab (ITD14)

Assignment (Practical 6 & Practical 7)

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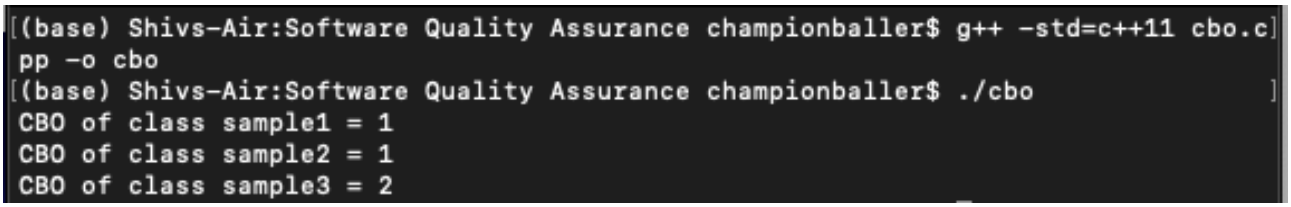
Practical 6 : Write a Program for finding the coupling between objects(CBO).

```
#include<bits/stdc++.h>

using namespace std;

class sample1{
	public :
		int a;
		int b;
		int c;
		static int ua;

		sample1()
		{
			a=0;
			b=0;
			c=0;
		}

		static void incua(int uinc)
		{
			ua+=uinc;
		}

		static int retua()
		{
			return ua;
		}
};

class sample2{
	public :
		int x;
		int y;
		int z;
		static int ub;

		sample2()
		{
			x=10;
			y=10;
			z=10;
		}

		static void incub(int uinc)
		{
			ub+=uinc;
		}

		static int retub()
		{
			return ub;
		}
};

class sample3{
		public :
			int p;
			int q;
```

```
                int r;
                static int uc;

                sample3()
                {
                        uc=0;
                        sample1 s1;
                        sample2 s2;
                        sample1::incua(1);
                        sample2::incub(1);
                        uc+=2;
                        p=s1.a+s2.x;
                        q=s1.b+s2.y;
                        r=s1.c+s2.z;
                }

                static int retuc()
                {
                        return uc;
                }

};

int sample1::ua=0;
int sample2::ub=0;
int sample3::uc=0;

int main(){
        sample1 s1;
        sample2 s2;
        sample3 s3;
        cout<<"CBO of class sample1 = "<<s1.retua()<<endl; cout<<"CBO of class sample2 =
"<<s2.retub()<<endl;

        cout<<"CBO of class sample3 = "<<s3.retuc()<<endl;
}
```

Output:



Practical 7 : Write a program for calculating the metric , Lack of cohesion in methods (LCOM)

```
#include<bits/stdc++.h>

using namespace std;

class sample {
public:
int a;
int b;
int c;
void inc_a(int& ua,int& m){
a++; ua++; m++;
}
void inc_b(int& ub,int& m){
b++; ub++;
m++;
}
void inc_c(int& uc,int& m){ c++;
uc++; m++;
}
sample(int& ua, int&ub, int& uc,int& m){
a=0; b=0; c=0; ua++; ub++; uc++; m++;
}};

int main(){
int m=0;
int ua=0;
int ub=0;
int uc=0;
double lcom = 0;
sample s(ua,ub,uc,m);
s.inc_a(ua,m);
s.inc_b(ub,m);
s.inc_c(uc,m);
// cout<<m<<" "<<ua<<" "<<ub<<" "<<uc<<endl;
int a=3;
lcom += ((double)(m-ua)+(m-ub)+(m-uc))/m; lcom /= a;
cout<<"attributes = "<<a<<endl; cout<<"methods = "<<m<<endl;
cout<<"ua = "<<ua<<endl;
cout<<"ub = "<<ub<<endl;
cout<<"lcom = "<<lcom<<endl;
}
```

Output:

```
[(base) Shivs-Air:Software Quality Assurance championballer$ g++ -std=c++11 lcom.]
cpp -o lcom
[(base) Shivs-Air:Software Quality Assurance championballer$ ./lcom             ]
attributes = 3
methods = 4
ua = 2
ub = 2
lcom = 0.5
```