**Access Modier**

**Private -Public & Public-Private**

**#include <iostream>**

**using namespace std;**

**class Sample**

**{**

**private:**

**void read(); // Private Member Function**

**public:**

**void display(); // Public Member Function**

**};**

**void Sample::read()**

**{**

**cout<<"I am private class";**

**}**

**void Sample::display()**

**{**

**cout<<"I am a public class";**

**}**

**int main()**

**{**

**Sample S;**

**S.display();**

**S.read(); // Generates Error as we are calling Private Member Function**

**return (0)**

**}**

**Explaination:-**

**Generates Error:-**

main.cpp:36:12: error: ‘void Sample::read()’ is private within this context

36 | S.read();

| ^

main.cpp:22:6: note: declared private here

22 | void Sample::read()

| ^~~~~~

**Solution:-**

**Solution 1:-**

**Private member Function should be called from Public Member Function.**

**For Example:-**

**void Sample::read() //Private Member Function**

**{**

**cout<<"I am private class"<<endl;**

**}**

**void Sample::display() // Public Member Function**

**{**

**read(); // Calling Private Member function from Public Member Function**

**cout<<"I am a public class"<<endl;**

**}**

**Output:-**

**I am private class**

**I am a public class**

**Solution 2:- Using Friend Function**

**#include <iostream>**

**using namespace std;**

**class Member**

**{**

**private:**

**int private\_mem=0; // private member**

**public:**

**friend int func (Member);//friend Function**

**};**

**int func (Member m)**

**{**

**m.private\_mem=5; // Friend Function Accessing Private Member**

**return m.private\_mem;**

**}**

**int main()**

**{**

**Member m;**

**cout<< "Friend Function changed value of Private Member::"<<func(m);**

**return(0);**

**}**

**Output of the following Program:-**

**Friend Function changed value of Private Member from 0 to :: 5**

**2)Protected -Public&Public-Protected**

**#include <iostream>**

**using namespace std;**

**class Sample**

**{**

**protected:**

**void read();//Protected Member Function**

**public:**

**void display();//Public Member Function**

**};**

**void Sample::read()**

**{**

**cout<<"I am protected class"<<endl;**

**}**

**void Sample::display()**

**{**

**cout<<"I am a public class"<<endl;**

**}**

**int main()**

**{**

**Sample S;**

**S.display();**

**S.read();// Generates Error as calling Protected Member Function**

**return (0);**

**}**

error: ‘void Sample::read()’ is protected within this context

37 | S.read();

| ^

main.cpp:22:6: note: declared protected here

22 | void Sample::read()

| ^~~~~~

**Solution**

**Solution 1:-Calling Protected Member function from Public Member Function**

**void Sample::read() // Protected Member Function**

**{**

**cout<<"I am protected class"<<endl;**

**}**

**void Sample::display() //Public Member Function**

**{**

**read(); // Calling Protected Member Function from Public Member Function**

**cout<<"I am a public class"<<endl;**

**}**

**Output of the following Program:-**

**I am protected class**

**I am a public class**

**Solution 2:- Using Friend Function**

**#include <iostream>**

**using namespace std;**

**class Member**

**{**

**protected:**

**int protected\_mem=0; //protected Member**

**public:**

**friend int func(Member);//friend Function**

**};**

**int func (Member m)**

**{**

**m.protected\_mem=5; //friend Function accessing Protected Member**

**return m.private\_mem;**

**}**

**int main()**

**{**

**Member m;**

**cout<<"Friend Function changed value of Protected Member::"<<func(m);**

**return(0);**

**}**

**Output:-**

**Friend Function changed value of Protected Member from 0 to :: 5**

**3) Private- Private**

**#include <iostream>**

**using namespace std;**

**class Sample**

**{**

**private:**

**void read();**

**void display();**

**};**

**void Sample::read()**

**{**

**cout<<"I am private class"<<endl;**

**}**

**void Sample::display()**

**{**

**cout<<"I am a public class"<<endl;**

**}**

**int main()**

**{**

**Sample S;**

**S.display();//Generates Error as calling Private Member Function**

**S.read();//Generated Error as Calling Private Member Function**

**return (0);**

**}**

error: ‘void Sample::display()’ is private within this context

34 | S.display();

| ^

main.cpp:25:6: note: declared private here

25 | void Sample::display()

| ^~~~~~

main.cpp:35:12: error: ‘void Sample::read()’ is private within this context

35 | S.read();

| ^

main.cpp:20:6: note: declared private here

20 | void Sample::read()

| ^~~~~~

**Solution:-**

**Program should contain 1 public function to access any Private Function**

**So, one of the Private Function should be converted into Public Member Function.**

**For Example:-**

**“FROM”**

**private:**

**void read();**

**void display();**

**“TO”**

**private:**

**void read();**

**public:**

**void display();**

**Outputs:-**

**I am private class**

**I am a public class**