Classes, inheritance, and modifiers in C++

class <class name>: <inheritance modifier> <inherited class>

{

private: // private members (= internal to the class)

<declaration of data members>

<declaration of member functions>

protected: // members that are not visible to outside classes except for classes that inherit from this one

<declaration of data members>

<declaration of member functions>

public: // public methods, which make up the class’s interface as only they are accessible to outside classes

<declaration of member functions>

};

|  |  |  |  |
| --- | --- | --- | --- |
|  | Visibility | | |
| *<access modifier>* | In a class | In a descendant class | Outside the class |
| **public** | yes | yes | yes |
| **protected** | yes | yes | no |
| **private** | yes | no | no |

fig. 1: accessibility of members according to their access modifiers

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **class A**  **{**  ***<access modifier>* member;**  **};**  **class B: *<inheritance modifier>* A**  **{**  **};** | |  |  |  |  | | --- | --- | --- | --- | |  | *< inheritance modifier >* | | | | *< access modifier >* | **public** | **protected** | **private** | | **public** | public | protected | private | | **protected** | protected | protected | private | | **private** | private | private | private | |

fig. 2: accessibility of an inherited member according to its access modifier and the inheritance modifier of its class