Accessibility (1A)

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Private Access Specifier

private: default access specifier

- the members of the same class
- friend classes and functions

```
void main(void)  {
  CC C1;

  C1.mem1;
  C1.func1 ();
}
```

the main function

```
int foo(CC *X)  {

  X->mem1;
  X->func1 ();
}
```

C-style functions

```
class DD {
   int faa(CC *Y) {
        Y->mem1;
        Y->func1 ();
   }
} ;
```

member functions of other classes

```
class CC {
private:
      int mem1;
      int func1();

protected:
      int mem2;
      int func2();

public:
      int mem3;
      int func3();
} ;
```

```
   int func3( ) {
        mem1;
        func1 ();
   }
```

member functions of the same class

```
class EE : public CC {
   int func4( ) {
        mem1;
        func1 ();
   }
} ;
```

member functions of derived classes

Protected Access Specifier

protected:

- the members of the same class
- friend classes or functions
- the members of derived classes

```
void main(void)  {
  CC C1;

  C1.mem2;
  C1.func2 ();
}
```

the main function

```
int foo(CC *X)  {

  X->mem2;
  X->func2 ();
}
```

C-style functions

```
class DD {
   int faa(CC *Y) {
        Y->mem2;
        Y->func2 ();
   }
} ;
```

member functions of other classes

```
class CC {
private:
      int mem1;
      int func1();

protected:
      int mem2;
      int func2();

public:
      int mem3;
      int func3();
} ;
```

```
   int func3( ) {
        mem2;
        func2 ();
   }
```

```
class EE : public CC {
   int func4( ) {
        mem2;
        func2 ();
   }
} ;
```

member functions of derived classes

OK

Public Access Specifier

public:

also accessible whenever objects are visible

```
class CC {
private:
      int mem1;
      int func1();

protected:
      int mem2;
      int func2();

public:
      int mem3;
      int func3();
} ;
```

```
void main(void)  {          the main function
  CC C1;

  C1.mem3;
  C1.func3 ();
}
```

```
int foo(CC *X)  {           C-style functions

  X->mem3;
  X->func3 ();
}
```

```
class DD {                  member functions
   int faa(CC *Y) {         of other classes
        Y->mem3;
        Y->func3 ();
   }
} ;
```

```
   int func2( ) {
        mem3;
        func3 ();
   }
```

```
class EE : public CC {      member functions
   int func4( ) {           of derived classes
        mem3;               OK
        func3 ();
   }
} ;
```

Member Function Definition within a class

```
int func1( ) {
    mem2 = 10;
    func2 ();
    mem3 = 10;
    func3 ();
}
```

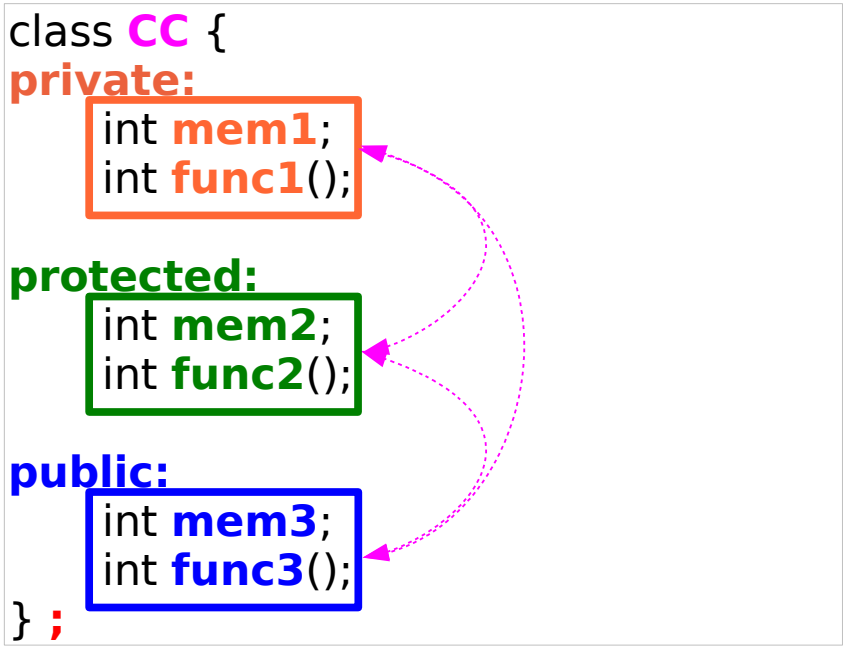
member functions of the same class

```
int func2( ) {
    mem1 = 10;
    func1 ();
    mem3 = 10;
    func3 ();
}
```

member functions of the same class

```
int func3( ) {
    mem1 = 10;
    func1 ();
    mem2 = 10;
    func2 ();
}
```

member functions of the same class



Each members can be accessed by other members of the same class

Member Function Definition within a derived class

```
class EE : public CC {
   int func4( ) {
        mem2;
        func2 ();
        mem3;
        func3 ();
   }
} ;
```

member functions of derived classes

```
class CC {
private:
      int mem1;
      int func1();

protected:
      int mem2;
      int func2();

public:
      int mem3;
      int func3();
} ;
```

The members of a derived class can access public and protected members of the base class

Member Function Call from objects

```
void main(void)  {          the main function
  CC C1;

  C1.mem3;
  C1.func3 ();
}
```

```
int foo(CC *X)  {           C-style functions

  X->mem3;
  X->func3 ();
}
```

```
class DD {                  member functions
   int faa(CC *Y) {         of other classes
        Y->mem3;
        Y->func3 ();
   }
} ;
```

```
class CC {
private:
      int mem1;
      int func1();

protected:
      int mem2;
      int func2();

public:
      int mem3;
      int func3();
} ;
```

Only public members can be accessed

Abstract Class (2)

Public Inheritance

```
class CC {
private:
      int mem1;
      int func1();

protected:
      int mem2;
      int func2();

public:
      int mem3;
      int func3();
} ;
```

```
class EE : public CC {
public:
      int mem4;
      int func4();
} ;
```

```
class EE : public CC {
private:
      int mem1;
      int func1();

protected:
      int mem2;
      int func2();

public:
      int mem3;
      int func3();

public:
      int mem4;
      int func4();
} ;
```

```
class FF :          EE {
          :
      int mem5;
      int func5();
} ;
```

Protected Inheritance

```
class CC {
private:
      int mem1;
      int func1();

protected:
      int mem2;
      int func2();

public:
      int mem3;
      int func3();
} ;
```

```
class EE : protected CC {
public:
      int mem4;
      int func4();
} ;
```

```
class EE : protected CC {
private:
      int mem1;
      int func1();

protected:
      int mem2;
      int func2();

protected:
      int mem3;
      int func3();

public:
      int mem4;
      int func4();
} ;
```

```
class FF :          EE {
          :
      int mem5;
      int func5();
} ;
```

Private Inheritance

```
class CC {
private:
      int mem1;
      int func1();

protected:
      int mem2;
      int func2();

public:
      int mem3;
      int func3();
} ;
```

```
class EE : private CC {
public:
      int mem4;
      int func4();
} ;
```

```
class EE : private CC {
private:
      int mem1;
      int func1();

private:
      int mem2;
      int func2();

private:
      int mem3;
      int func3();

public:
      int mem4;
      int func4();
} ;
```

```
class FF :          EE {
          :
      int mem5;
      int func5();
} ;
```

Abstract Class (2)

References

[1] W Savitch, “Absolute C++”
[2] P.S. Wang, “Standard C++ with objected-oriented programming”
[3] http://www.cplusplus.com