Structure vs class in C++

Difficulty Level : Easy ● Last Updated : 10 Jun, 2021

In C++, a structure is the same as a class except for a few differences. The most important of them is security. A Structure is not secure and cannot hide its implementation details from the end-user while a class is secure and can hide its programming and designing details. Following are the points that expound on this difference:

1) Members of a class are private by default and members of a structure are public by default.

For example program 1 fails in compilation and program 2 works fine

Related Articles

```
// Program 1
#include <stdio.h>

class Test {
    int x; // x is private
};
int main()
{
  Test t;
  t.x = 20; // compiler error because x is private
  getchar();
  return 0;
}
```

CPP

```
// Program 2
#include <stdio.h>

struct Test {
```

```
    int x; // x is public
};
int main()
{
  Test t;
  t.x = 20; // works fine because x is public
  getchar();
  return 0;
}
```

2) When deriving a struct from a class/struct, the default access-specifier for a base class/struct is public. And when deriving a class, the default access specifier is private.
For example program 3 fails in compilation and program 4 works fine.

CPP

```
// Program 3
#include <stdio.h>

class Base {
public:
    int x;
};

class Derived : Base { }; // is equivalent to class Derived : private Base {}

int main()
{
  Derived d;
  d.x = 20; // compiler error because inheritance is private
  getchar();
  return 0;
}
```

CPP

```
// Program 4
#include <stdio.h>

class Base {
public:
    int x;
};

struct Derived : Base { }; // is equiv  to struct Derived : public Base {}
```

```
int main()
{
  Derived d;
  d.x = 20; // works fine because inheritance is public
  getchar();
  return 0;
}
```

3) Class can have null values but the structure can not have null values.

4) Memory of structure is allocated in the stack while the memory of class is allocated in heap.

5) Class requires constructor and destructor but the structure can not require it.

6) Classes support polymorphism and also be inherited but the structure cannot be inherited.

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