# Difference between C structures and C++ structures

In C++, struct and class are exactly the same things, except for that struct defaults to public visibility and class defaults to private visibility.

**Some important differences between the C and C++ structures:**

1. **Member functions inside structure**: Structures in C cannot have member functions inside structure but Structures in C++ can have member functions along with data members.
2. **Direct Initialization:** We cannot directly initialize structure data members in C but we can do it in C++.

C

```c
// C program to demonstrate that direct
// member initialization is not possible in C
#include<stdio.h>

struct Record
{
   int x = 7;
};

// Driver Program
int main()
{
    struct Record s;
    printf("%d", s.x);
    return 0;
}
/* Output :  Compiler Error
   6:8: error: expected ':', ',', ';', '}' or
  '__attribute__' before '=' token
  int x = 7;
        ^
  In function 'main': */
```

Run on IDE

C++

**Output:**

```
7
```

3. **Using struct keyword:** In C, we need to use struct to declare a struct variable. In C++, struct is not necessary. For example, let there be a structure for Record. In C, we must use “struct Record” for Record variables. In C++, we need not use struct and using ‘Record‘ only would work.

4. **Static Members:** C structures cannot have static members but is allowed in C++.

C

```c
// C program with structure static member
struct Record
{
    static int x;
};

// Driver program
int main()
{
    return 0;
}
/* 6:5: error: expected specifier-qualifier-l
   before 'static'
     static int x;
     ^*/
```

Run on IDE

C++

This will generate an error in C but no error in C++.

5. **sizeof operator:** This operator will generate **0** for an empty structure in C whereas **1** for an empty structure in C++.

```c
// C program to illustrate empty structure
#include<stdio.h>

//empty structure
struct Record
{
};

//Driver program
int main()
{
    struct Record s;
    printf("%d\n",sizeof(s));
    return 0;
}
```

Run on IDE

Output in C:

```
0
```

Output in C++:

```
1
```

6. **Data Hiding:** C structures does not allow concept of Data hiding but is permitted in C++ as C++ is an object oriented language whereas C is not.
7. **Access Modifiers:** C structures does not have access modifiers as these modifiers are not suppoted by the language. C++ structures can have this concept as it is inbuilt in the language.

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