

Classes & Objects

Class

A C++ class is a user-defined data type that encapsulates information and behavior about an object. It serves as a blueprint for future inherited classes.

Class Members

A class is comprised of class members:

- *Attributes*, also known as member data, consist of information about an instance of the class.
- *Methods*, also known as member functions, are functions that can be used with an instance of the class.

```
class Person {  
  
};
```

```
class City {  
  
    // Attribute  
    int population;  
  
public:  
    // Method  
    void add_resident() {  
        population++;  
    }  
  
};
```

Access Control Operators

C++ classes have access control operators that designate the scope of class members:

- `public`
- `private`

`public` members are accessible everywhere; `private` members can only be accessed from within the same instance of the class or from friends classes.

```
class City {  
  
    int population;  
  
public:  
    void add_resident() {  
        population++;  
    }  
  
private:  
    bool is_capital;  
  
};
```

Objects

In C++, an *object* is an instance of a class that encapsulates data and functionality pertaining to that data.

Constructor

For a C++ class, a *constructor* is a special kind of method that enables control regarding how the objects of a class should be created. Different class constructors can be specified for the same class, but each constructor signature must be unique.

Destructor

For a C++ class, a *destructor* is a special method that handles object destruction, generally focused on preventing memory leaks. Class destructors don't take arguments as input and their names are always preceded by a tilde ~ .

```
City nyc;
```

```
#include "city.hpp"
```

```
class City {
```

```
    std::string name;
```

```
    int population;
```

```
public:
```

```
    City(std::string new_name, int  
    new_pop);
```

```
};
```

```
City::~City() {
```

```
    // Any final cleanup
```

```
}
```