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Quiz#1

1. The *Time* class definition as shown on the handout cannot be used to default construct a *Time* object because the two default constructors in the class *Time* will cause the error: "Call of an overloaded function is ambiguous". This error happens when a constructor function can accept either way of the default parameter. Therefore, the compiler can not decide which default constructor to follow, which leads to overloading. To fix this, we need to decide and imply only one default constructor, which means we can have:

   ```
   Time( int h = 0, int m = 0, int s = 0 );
   ```

   or :

   ```
   Time();
   ```

   However, they cannot go together in the class *Time*.

2. When a return type, even *void*, is specified for a constructor or destructor, it is treated as a method and thus it is not considered to be a constructor or destructor anymore. Since the constructor or destructor does not have any return type, assigning one of the return types will change the constructor/destructor into a method/function of the class.

   We take this source code as an example:

```
#include <iostream>
using namespace std;
```

```cpp
class Time{
    public:
    int hour, minute, second;
    Time(int h = 0, int m = 0, int s = 0): hour(h), minute(m), second(s){
        cout << "Time object constructed" << endl;
        }
    void print(){
        cout << "Time: " << hour << ":" << minute << ":" << second << endl;
    };
    ~Time(){
        cout << "Time object destroyed" << endl;
    }
};

int main(){
    Time t1;
    t1.print();
    return 0;
}
```

When running the program, we have:

```
> cd "d:\VS C
Time object constructed
Time: 0:0:0
Time object destroyed
PS D:\VS CODE>
```

Now let's assign the type *void* to the constructor/destructor, we will have the error:

```
tempCodeRunnerFile.cpp:7:5: error: return type specification for constructor invalid
    7 |     void Time(int h = 0, int m = 0, int s = 0): hour(h), minute(m), second(s){
      |     ^~~~
```

```
tempCodeRunnerFile.cpp:13:5: error: return type specification for destructor invalid
   13 |     void ~Time(){
      |     ^~~~
```

It shows the error of "return type specification for constructor/destructor invalid".