

# **C++ Club UK Meeting 108**

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## What computer and software is used by the Falcon 9

- [Stack Overflow](#)

The flight software is written in C/C++ and runs in the x86 environment.

They use Chromium and JavaScript for the Dragon 2 flight interface. The actual flight computers still run on C++.

- [Falcon 9 and Crew Dragon launch video \(YouTube\)](#)

- Michele Caini
  - Reddit

- Jonathan Müller
  - Reddit

- Tristan Brindle
  - [Reddit](#)

- Jussi Pakkanen
  - Reddit

## Starting C++ today with a strong Java background

- **Reddit**

## The C++ preprocessor doesn't understand anything about C++, and certainly not templates

- Raymond Chen
  - [Reddit](#)



## How to modify a key in C++17 with `std::map::extract`

### How to modify a key in C++17 with `std::map::extract`

```
std::map<int, std::string> m {  
    {1, "dog"},  
    {2, "cat"},  
    {3, "cow"}};
```

Changing a **key** of an element e.g. `{2, "cat"}` isn't trivial, as it involves changes to the internal structure of the map's self-balancing binary tree.

```
auto it = m.find(2);  
if(it != m.end()) {  
    auto s = it->second;  
    m.erase(it);  
    m.insert({7, s});  
}
```



**Before C++17**, we had to erase the node and insert a new one. That required an **extra allocation** and **deallocation**.

```
auto nh = m.extract(2);  
if(!nh.empty()){  
    nh.key() = 7;  
    m.insert(std::move(nh));  
}
```



**C++17** introduced `extract()` which unlinks the node and returns the node handle **nh** that can modify the key. No elements are copied or moved, only internal pointers get repointed.

More info: H.Sutter, More Exceptional C++, Item 8; P0083

@walletfox

- [GitHub](#) (Header-only, MIT, C++11)
  - [V1.6.0](#)
  - [Reddit](#)

- GitHub
  - Reddit: Catch2 now uses statically compiled library as its distribution model



'No Bugs' Hare @NoBugsHare

Don't code today  
what you can't  
debug tomorrow.

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