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# Range-based for loop

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# Classic for loop

```
typedef
```

```
    std::list<mitk::FileWriterWithInformation::Pointer>  
    FileWriterList;
```

```
for (mitk::CoreObjectFactory::FileWriterList::const_iterator it =  
     writers.begin(); it != writers.end(); it++)  
{  
    // ...  
}
```

## auto to the rescue?

```
// Caution: non-const iterators
for (auto it = writers.begin(); it != writers.end(); it++)
{
    // ...
}

// Keep const iterators
for (auto it = writers.cbegin(); it != writers.cend(); it++)
{
    // Still a few flaws left:
    //   cend() is called in each and every iteration
    //   post-increment operator used >:-(
}

for (auto it = cbegin(writers); it != cend(writers); it++)
{
    // ...
}
```

## std::for\_each()

```
#include <algorithm>

static void DoSomething(mitk::FileWriterWithInformation::Pointer ptr)
{
    // ...
}

std::for_each(cbegin(writers), cend(writers), DoSomething);

// Need to keep state between iterations? – Use functor instead.
```

## std::for\_each() with lambda

```
#include <algorithm>

std::for_each(cbegin(writers), cend(writers),
    [](mitk::FileWriterWithInformation::Pointer ptr) {
        // ...
    });

std::for_each(cbegin(writers), cend(writers),
    [](decltype(*cbegin(writers)) ptr) {
        // ...
    });
```

# Range-based for loop

```
typedef
    std::list<mitk::FileWriterWithInformation::Pointer>
    FileWriterList;

for (mitk::CoreObjectFactory::FileWriterList::const_iterator it =
    writers.begin(); it != writers.end(); it++)
{
    // ...
}
```

**VS.**

```
for (auto it : writers)
{
    // ...
}
```

## Remember const references

```
for (auto it : writers)
{
    // access by value okay as values are pointers here
}

std::vector<std::string> strings;

for (const auto& string : strings)
{
    // access by const ref as we don't want to unnecessarily copy stuff
}
```

Thank you for  
your attention!

Further  
information  
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