

C++ code 5.5.1: MeshFunction wrapper class FunctionMFWrapper

```
2 template <typename MESHFUNCTION, typename FUNCTION>
3 class FunctionMFWrapper {
4     public:
5         static_assert(If::mesh::utils::MeshFunction<MESHFUNCTION>);
6         using mf_vector_t = decltype(std::declval<MESHFUNCTION>())(
7             std::declval<const If::mesh::Entity>(),
8             std::declval<const Eigen::MatrixXd>()));
9         using mf_result_t = typename mf_vector_t::value_type;
10        // Return type of the function F
11        using F_result_t =
12            decltype(std::declval<FUNCTION>()(std::declval<mf_result_t>()));
13
14        explicit FunctionMFWrapper(MESHFUNCTION mf, FUNCTION F)
15            : mf_(std::move(mf)), F_(std::move(F)) {}
16        FunctionMFWrapper(const FunctionMFWrapper &) = default;
17        FunctionMFWrapper(FunctionMFWrapper &&) noexcept = default;
18        FunctionMFWrapper &operator=(const FunctionMFWrapper &) = delete;
19        FunctionMFWrapper &operator=(FunctionMFWrapper &&) = delete;
20        ~FunctionMFWrapper() = default;
21
22        std::vector<F_result_t> operator()(const If::mesh::Entity &e,
23                                           const Eigen::MatrixXd &local) const {
24            LF_ASSERT_MSG(e.RefEl().Dimension() == local.rows(),
25                          "mismatch between entity dimension and local.rows()");
26            const std::vector<mf_result_t> mf_result = mf_(e, local);
27            std::vector<F_result_t> result(local.cols());
28            for (long i = 0; i < local.cols(); ++i) {
29                result[i] = F_(mf_result[i]);
30            }
31            return result;
32        }
33
34    private:
35        MESHFUNCTION mf_;
36        FUNCTION F_;
37};
```