fsmlite Documentation

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Contents

template <**class** Derived, **class** State = int>
class fsm

Finite state machine (FSM) base class template.

Template Parameters

- `Derived`: the derived state machine class
- `State`: the FSM's state type, defaults to `int`

Public Types

typedef State **state_type**

The FSM's state type.

Public Functions

fsm(*state_type init_state* = *state_type*())

Create a state machine with an optional initial state.

Parameters

- `init_state`: the FSM's initial state

template <**class** Event>
void **process_event**(**const** Event &*event*)

Process an event.

Warning This member function must not be called recursively, e.g. from another `fsm` instance.

Template Parameters

- `Event`: the event type

Parameters

- `event`: the event instance

Exceptions

- `std::logic_error`: if a recursive invocation is detected

state_type **current_state**() **const**

Return the state machine's current state.

Protected Types

template<>
using table = detail::list<Rows...>

Transition table variadic class template.

Each derived state machine class must define a nested non-template type `transition_table` that's either derived from or a type alias of `table`.

Protected Functions

template <**class** Event>
state_type **no_transition**(**const** Event&)

Called when no transition can be found for the given event in the current state.

Derived state machines may override this to throw an exception, or change to some other (error) state. The default is to return the current state, so no state change occurs.

Return the FSM's new state

Template Parameters

- `Event`: the event type

Parameters

- `event`: the event instance

template <State *start*, **class** Event, State *target*, **class** Action = std::nullptr_t, Action *action* = nullptr, **class** Guard = st
struct basic_row : **public** fsmlite::*fsm*<start, Event, target>::row_base

Basic transition class template.

Template Parameters

- `start`: the start state of the transition
- `Event`: the event type triggering the transition
- `target`: the target state of the transition
- `Action`: an action function type, or `std::nullptr_t`
- `action`: a static `Action` instance
- `Guard`: a guard function type, or `std::nullptr_t`
- `guard`: a static `Guard` instance

template <State *start*, **class** Event, State *target*, void(Derived::*)(const Event &) *action* = nullptr, bool(Derived::*)(const E
struct mem_fn_row : **public** fsmlite::*fsm*<start, Event, target>::row_base

Member function transition class template.

Template Parameters

- `start`: the start state of the transition
- `Event`: the event type triggering the transition
- `target`: the target state of the transition
- `action`: an action member function, or `nullptr`
- `guard`: a guard member function, or `nullptr`

template <State *start*, **class** Event, State *target*, auto *action* = nullptr, auto *guard* = nullptr>
struct row : **public** fsmlite::*fsm*<start, Event, target>::row_base

Generic transition class template (requires C++17).

Template Parameters

- `start`: the start state of the transition

- `Event`: the event type triggering the transition
- `target`: the target state of the transition
- `action`: a static action function pointer, or `nullptr`
- `guard`: a static guard function pointer, or `nullptr`

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