UML

Communication Diagrams

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Introduction

Types of Diagrams

In UML, there are two basic categories of diagrams:

- **Structure** diagrams show the static structure of the system being modeled: *class*, *component*, *deployment*, *object* diagrams, …
- **Behavioral** diagrams show the dynamic behavior between the objects in the system: *activity*, *use case*, **communication**, *state machine*, *sequence* diagrams, …

Communication Diagrams

Communication diagrams are a **simplified** version of a **sequence diagrams**.

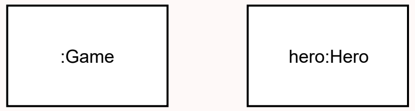
The main difference is that **sequence** diagrams are good at showing **sequential logic** but not that good at giving you a **big picture view**.

Objects

Objects

Objects are **named elements** which represent a **individual participants** in the interaction.

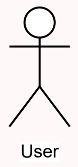
An object is represented by a rectangle that identifies the participant element.



The element can be an **anonymous** representative of a certain class, or a **named** one.

Actors

An **Actor** is always something (a system or person) that is **outside** the **scope** of the system.

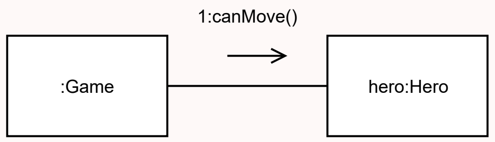


Actors are drawn as **stickman** figures (although they may not be users), and can be participants in communication diagrams.

Messages

Messages

Messages are represented by a **line** with an arrow above that indicates the direction of the message (and a sequence expression).



Sequence Expressions

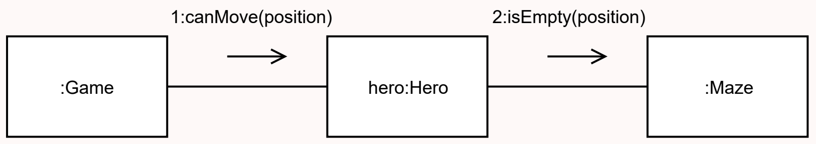
Sequence Expressions

The sequence expression is a dot (".") separated **list** of **sequence terms** followed by a colon (":") and **message name** after that:

```
term1.term2.term3:message
```

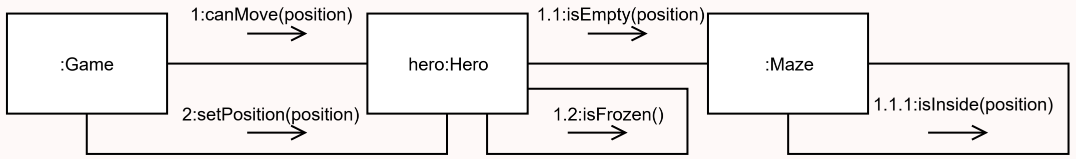
Each sequence term represents a **level** of procedural **nesting** within the **overall** interaction. Each sequence-term has the following syntax:

```
integer [ name ] [ recurrence ]
```



Sequence Order

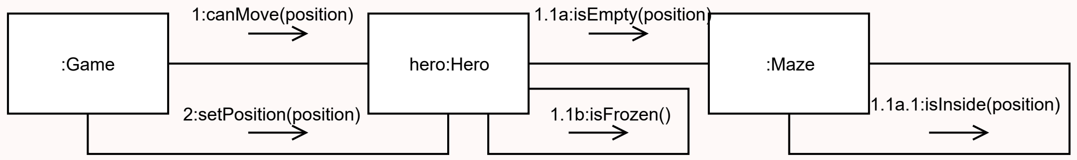
The integer represents the sequential order of the message within the next higher level of procedural calling (**activation**).



Messages that differ in one integer term are **sequential** at that **level of nesting**.

Sequence Name

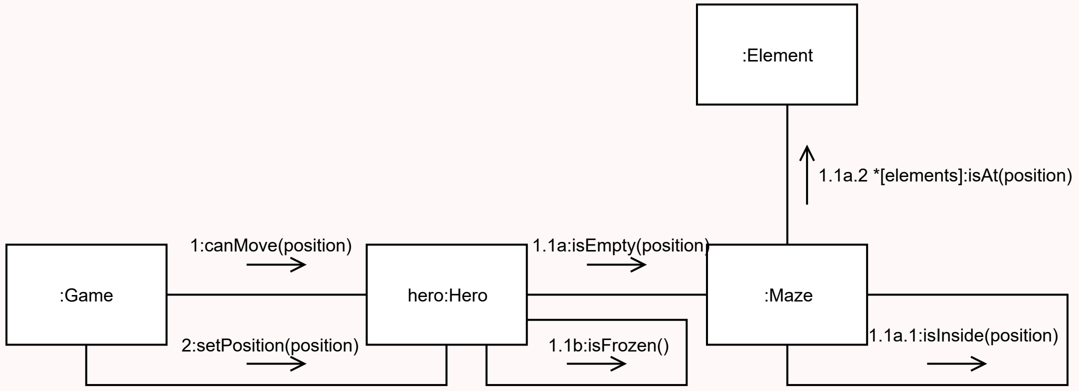
The **name** represents a **concurrent thread** of control. Messages that differ in the final name are **concurrent** at that level of nesting.



The hero instance send **both** requests (1.1a and 1.1b) to the Maze object **concurrently**.

Sequence Recurrence

The recurrence of a sequence term can be a **guard** (a condition inside **square brackets**) or a **loop** (an **asterisk** followed by a condition inside **square brackets**).


:Element
1.1a.2 *[elements]:isAt(position)
1:canMove(position)
1.1a:isEmpty(position)
:Game
hero:Hero
:Maze
2:setPosition(position)
1.1b:isFrozen()
1.1a.1:isInside(position)