9.2 Conditional statements

Description

A conditional statement is a statement that execute different statements depending on the value of a boolean expression.

If:then

The `if:then` statement used in previous sections is an example of a conditional statement. The code below shows a sketch of a definition of `if:then` as a control method.

```
if(cond: var boolean):then{thenPart:< Object}:
   ...
```

As mentioned, `if:then` is a built-in primitive control method in qBeta and cannot be defined in terms of other language mechanism.

Defining if:then:else

The `if:then:else` is an example of a control method that may be define as method in qBeta. You may find the following definition in the qBeta library:

```
if(cond: var boolean):then{thenPart:< Object}
                     :else{elsePart:< Object}:
   if (cond) :then
      thenPart
      leave(if:then:else)
   elsePart
```

The control method has the following structure:

- The name of the control method is `if:then:else`.
- It has three parameters, `cond`, which is a `boolean`, thenPart, which is a virtual `Object`, and `elsePart`, which also is a virtual `Object`.
- The parameters are specified using the fat-comma syntax as described in section .
- The first item in the main-part of the abstraction is an if-then statement.
- If the boolean `cond` is true then the virtual `thenPart` is executed followed by `leave(if:then:else),` which terminates the execution of `if:then:else`.
- If the boolean `cond` is false then the virtual `elsePart` is executed.

Consider an invocation of `if:then:else`:

```
if (amount <= balance) :then
   balance := balance - amount
 :else
   console.print("The balance is less than the amount")
```

Execution of the `if:then:else` takes place as follows:

- The expression (`amount <= balance`), the statement `balance := balance - amount`, and the statement `console.print("The balance is less than the amount")` are the actual parameters (arguments) of the invocation of `if:then:else`.
- The boolean expression `amount <= balance` is evaluated and assigned to the parameter `cond`.
- The statement `balance := balance - amount` is a further binding of the virtual `thenPart`.
- The statement `console.print("...")` is a further binding of the `elsePart`.