

Requests for Modification

Periodic Threads and Duration / Cycles

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Problem

- Numeric literals only in
 - periodic threads (#3220182)
 - durations / cycles (#3220223)
- Also
 - no sporadic threads (#3220324)
 - no intervals and probabilities in durations / cycles (#3220437)

Motivation

- Remove magic numbers / harcoding
- Improve useability, mantainability
- Improve reuseability
 - e.g. class libraries
- Improve automation
 - e.g. testing different behaviours automatically

Periodic Thread Definitions

- Current form

```
thread  
  periodic (period, delay, jitter, offset)
```

- e.g.

```
thread  
  periodic (1, 0, 0, 0) -- 1000Hz
```

Values

- Requested form (1)
 - values / simple expressions

```
values
```

```
FREQUENCY: nat1 = 1000 -- 1000Hz
```

```
thread
```

```
periodic (1000/FREQUENCY, 0, 0, 0)
```

Instance Variables (1)

- Requested form (2)
 - instance variables

```
class MyController

instance variables
  private frequency: nat1 := 1000 -- 1000Hz

thread
  periodic(1000/frequency, 0, 0, 0)

end MyController
```

Instance Variables (2)

- Object level (not class level)
 - configurable from constructors

```
class MyController

instance variables
  private frequency: nat1 := 1000 -- default

operations
  public MyController: nat1 ==> MyController
  MyController(freq) ==
    -- user-configurable frequency
    frequency := freq
```

Further Issues

- Function calls; operation calls?
 - issues with blocking
 - totality?
 - side effect freeness?
- When to evaluate
 - construction time / thread start time?
- Type: `nat1` becomes `real`?
- Sporadic threads
 - lower bound only

Duration / Cycles Statements

- Current form

```
cycles (10) ( x := 1; y := 2; z := true )
```

- and

```
duration (2) ( x := 1; y := 2; z := true )
```

Issues

- Expressions:
 - values, instance variables, function / operation calls?
- When to evaluate
 - every call?
- Interval and probabilities

Discuss 😊