



[1] Martin Fowler. *UML Distilled: A Brief guide to the Standard Object Modeling Language*. Addison-Wesley, third edition, 2004.

ENGI 9874 Software Design & Specification – Formula Sheet

a or b	a and b	a < b	a > b	a.mod(b)		
a xor b	not a	a <= b	a >= b	a.div(b)	s1.concat(s2)	if <i>bool expr</i> then <i>expr</i> else <i>expr</i> endif
a = b	a <> b	a + b	a - b	a.abs()	s1.size()	
a implies b		a * b	a / b	a.max(b)	s1.toLower()	
				a.min(b)	s1.toUpper()	
				a.round()	s1.substring(s, f)	
				a.floor()		

c->count(o)	Number of occurrences of o in c
c->excludes(o)	True iff o is not an element of c
c->excludesAll(c2)	True iff all of c2 are not in c
c->includes(o)	True iff o is an element of c
c->includesAll(c2)	True iff all of c2 are in c
c->isEmpty()	True if c contains no elements.
c->notEmpty()	True if c contains one or more elements.
c->size()	number of elements in c
c->sum()	Addition of all elements in c
c1 - c2	Remove elements in c2 from c1 if present
c->flatten()	Merge collection of collection into 'flat' collection.
c->excluding(o)	Remove all occurrences of o from c.
c->including(o)	Add o to c.
c1->union(c2)	Merge collections.
c1->intersection(c2)	Only elements in both c1 and c2.
c1->symmetricDifference(c2)	Gives collection of elements in exactly one of c1 or c2.
c->asBag()	Convert to bag (order is lost)
c->asOrderedSet()	Convert to ordered set
c->asSequence()	Convert to sequence.
c->asSet()	Convert to set.
c->append(o)	Append to end.
c->prepend(o)	Insert at beginning.
c->at(i)	i^{th} element.
c->first()	first element.
c->last()	last element.
c->indexOf(o)	Index of first occurrence of o (indexed from 1)
c->insertAt(i, o)	Insert o at index i.
c->subOrderedSet(l, u)	OrderedSet only.
c->subSequence(l, u)	Sequence only.
c->exists(exp)	True iff at least one element in c makes exp true.
c->forall(exp)	True iff exp is true for every element in c.
c->isUnique(exp)	True iff exp has a unique value for every element in c.
c->one(exp)	True iff there is exactly one element in c for which exp is true.
c->any(exp)	A random element for which exp is true.
c->collect(exp)	All objects resulting from exp on elements of c.
c->collectNested(exp)	Collection of collections resulting from exp on elements of c.
c->reject(exp)	Subcollection of c containing elements for which exp is false.
c->select(exp)	Subcollection of c containing elements for which exp is true.
c->sortedBy(exp)	Ordered Subcollection of c with elements ordered according to increasing exp.
a@pre	The value of a at the start of execution of the operation.
result	The value returned by the operation.
v->oclIsNew()	True iff v is constructed during execution of the operation.
a^op(arg)	<i>isSent</i> : True iff the operation has sent (called) op(arg) on a during its execution.
a^^op(arg)	<i>message operator</i> : The sequence of messages sent that match op(arg) during the execution of the operation.
m.hasReturned()	True iff m has finished executing.
m.result()	Return value of m.
m.isSignalSent()	True iff m is a signal.
m.isOperationCall()	True iff m is an operation call.
o.oclIsUndefined()	True iff o is undefined.
o.oclIsTypeOf(<Type>)	True iff o of type <Type>.
o.oclIsKindOf(<Type>)	True iff o.oclIsTypeOf(<Type>) or o is an instance of a subtype of <Type>.
o.oclInState(<sname>)	True iff o is in the state named <sname>. o must have associated state chart.
type::allInstances()	The set of all instances of type. (usage discouraged)