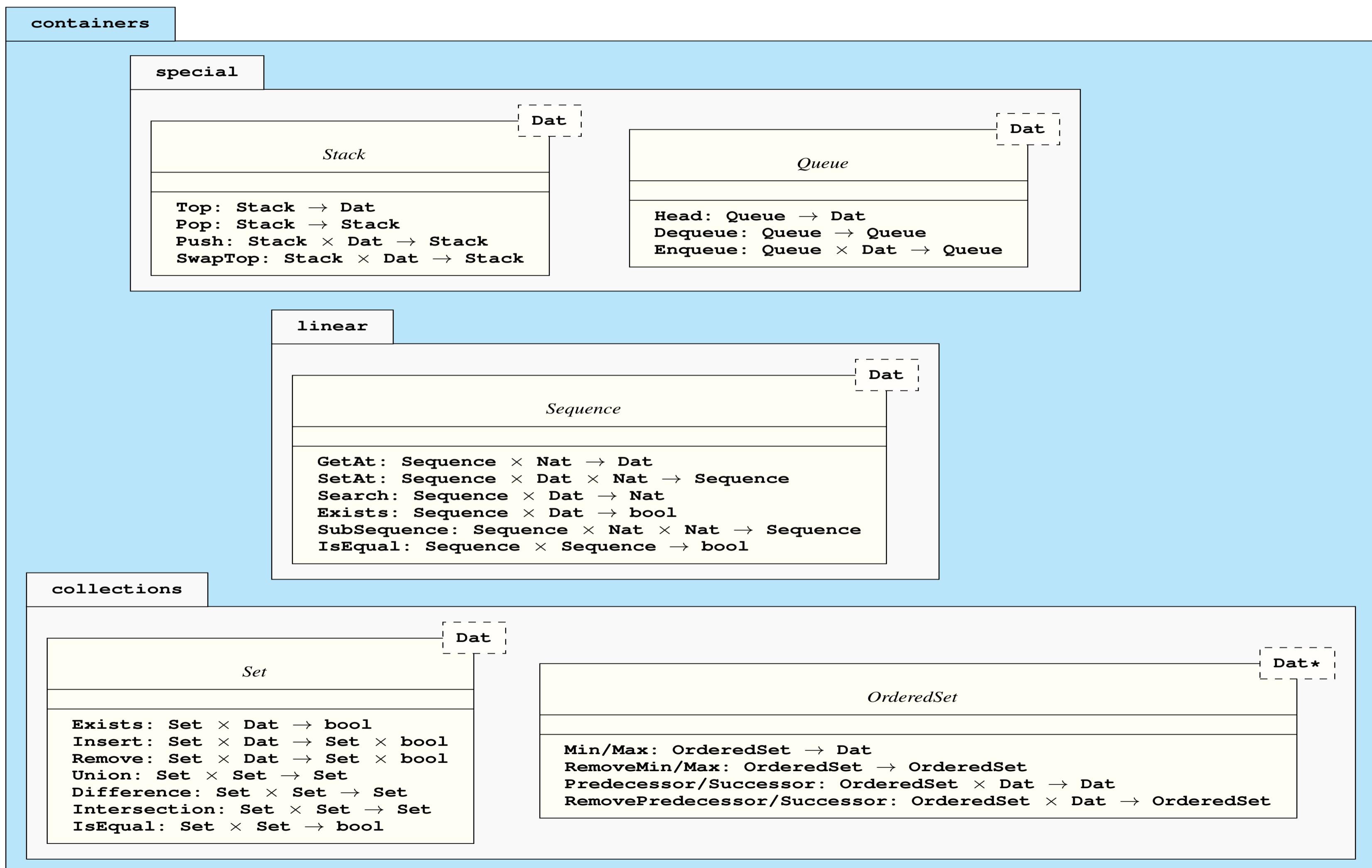


Analysis and Design of Data Structures

Massimo Benerecetti & Fabio Mogavero



containers

special

Stack

`Top: Dat`
`Pop: void`
`Push: Dat → void`
`SwapTop: Dat → void`

Queue

`Head: Dat`
`Dequeue: void`
`Enqueue: Dat → void`

linear

Sequence

`GetAt: Nat → Dat`
`SetAt: Dat × Nat → void`
`Search: Dat → Nat`
`Exists: Dat → bool`
`SubSequence: Nat × Nat → Seq`
`IsEqual: Sequence → bool`

collections

Dat

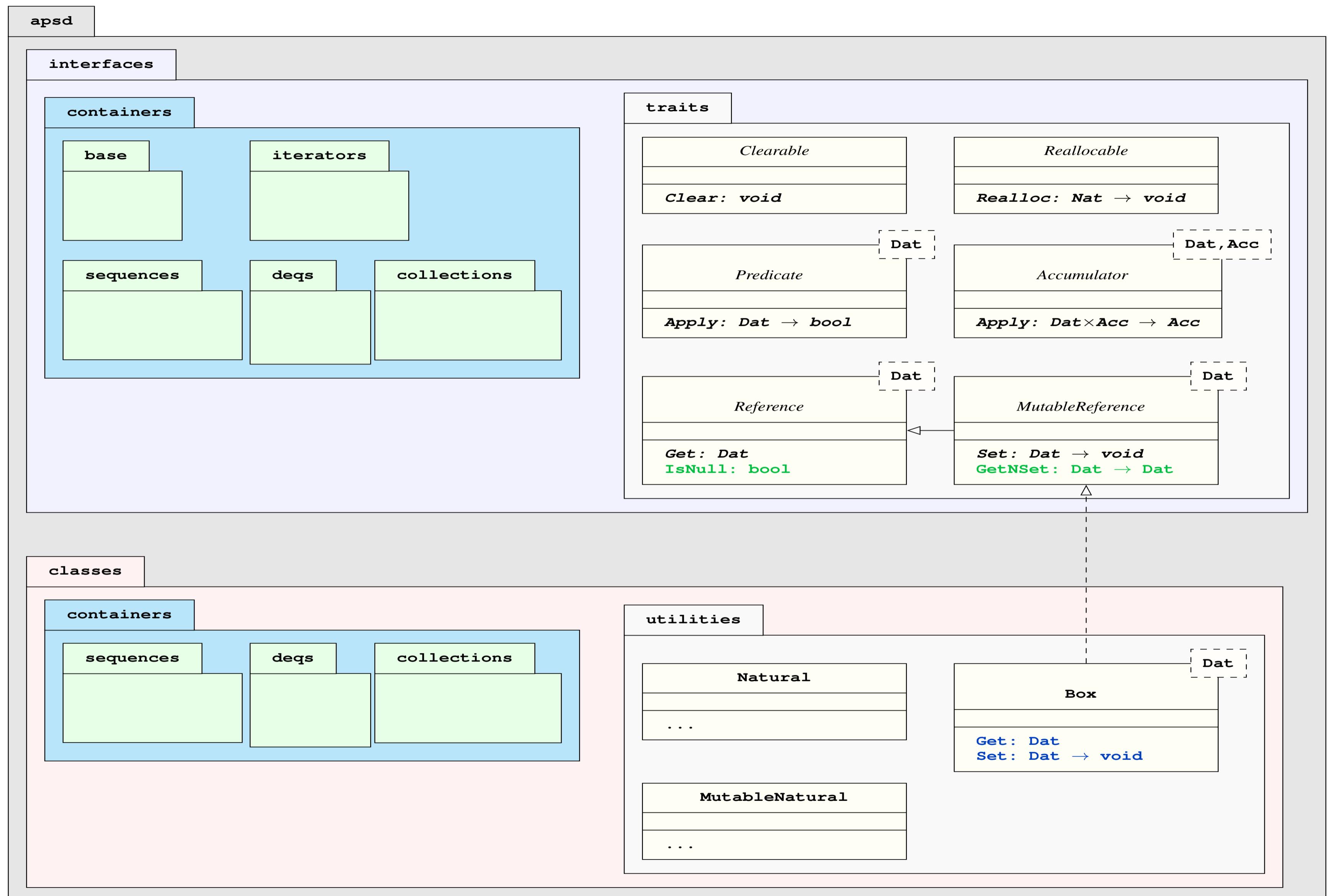
Set

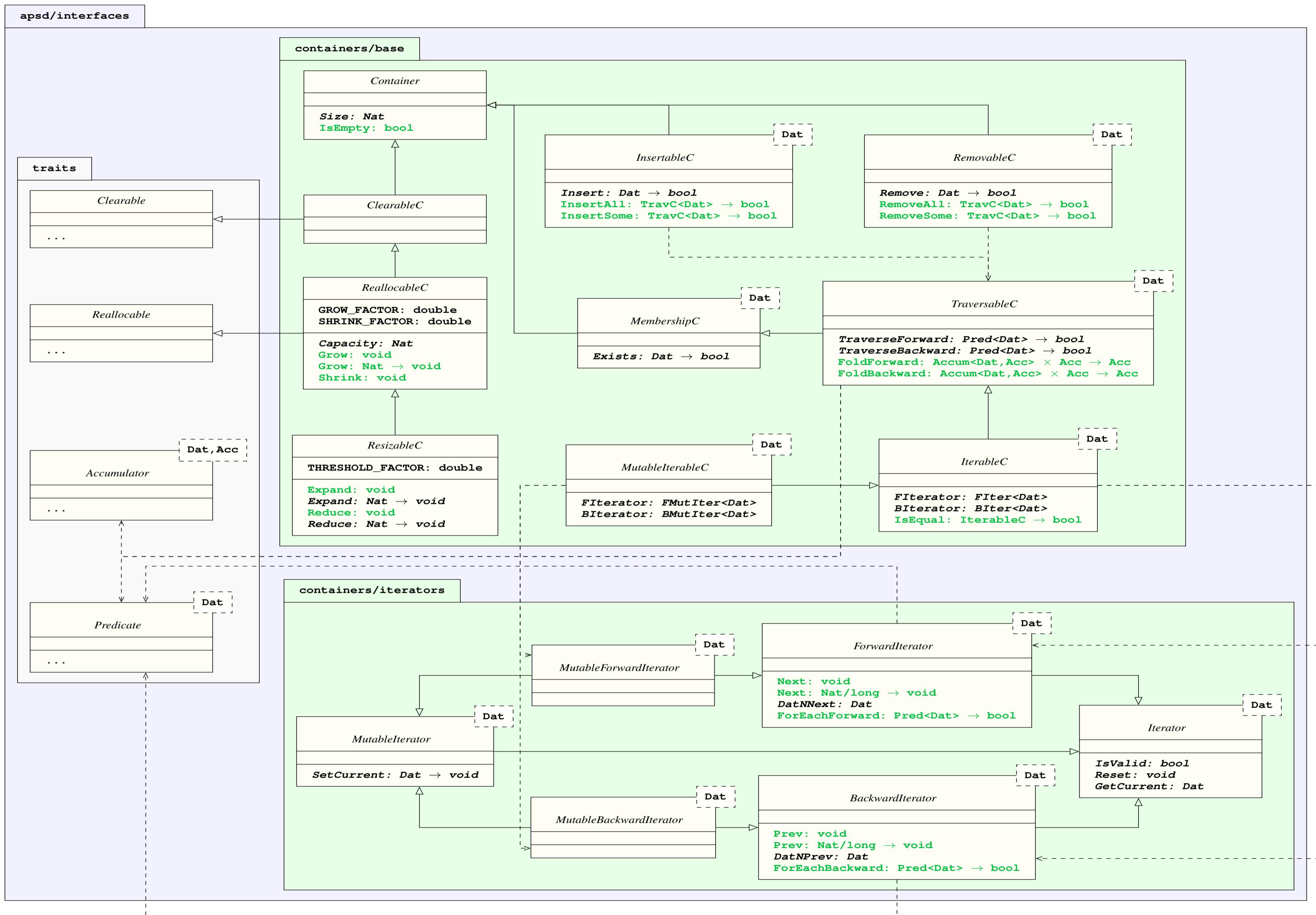
`Exists: Dat → bool`
`Insert: Dat → bool`
`Remove: Dat → bool`
`Union: Set → void`
`Difference: Set → void`
`Intersection: Set → void`
`IsEqual: Set → bool`

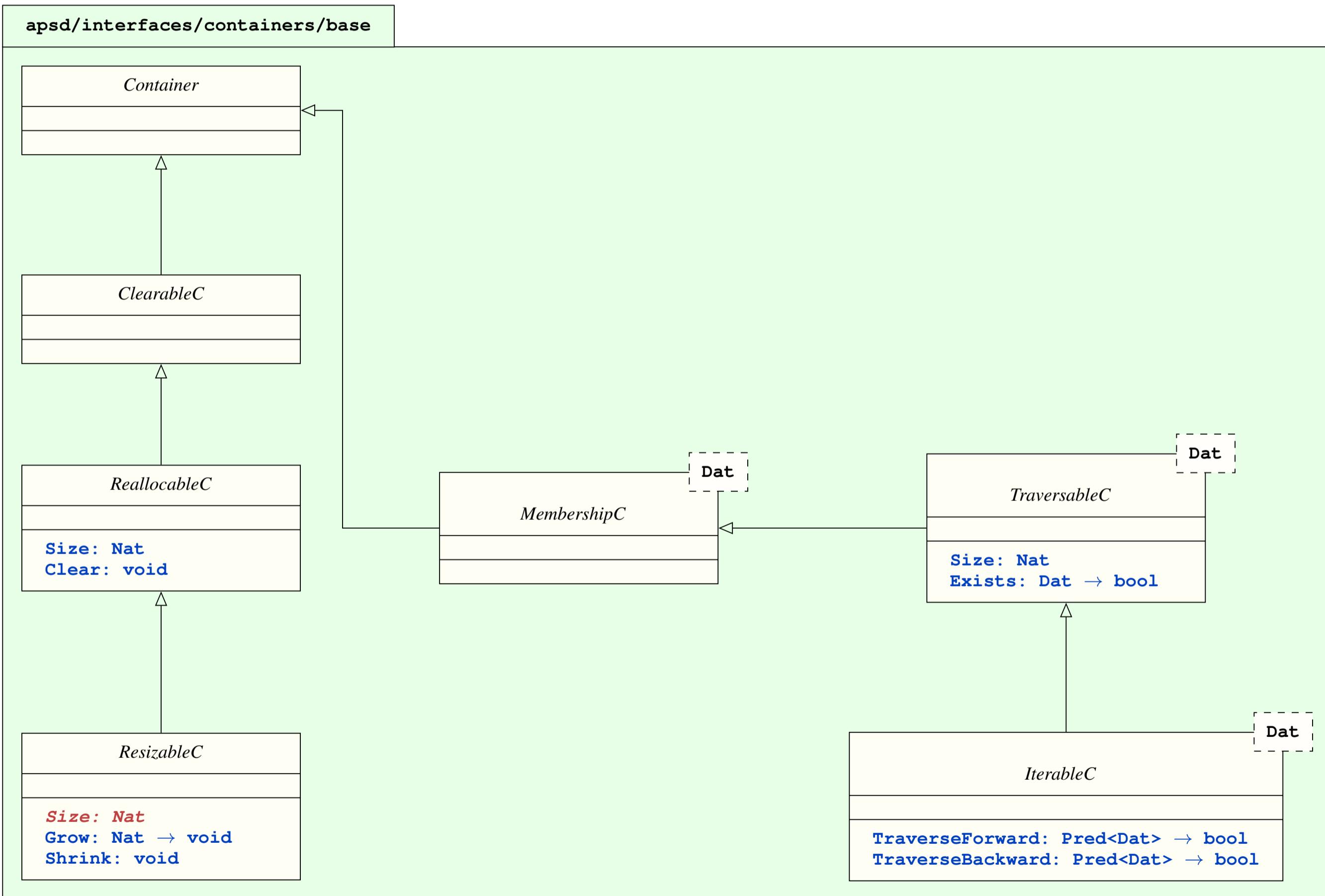
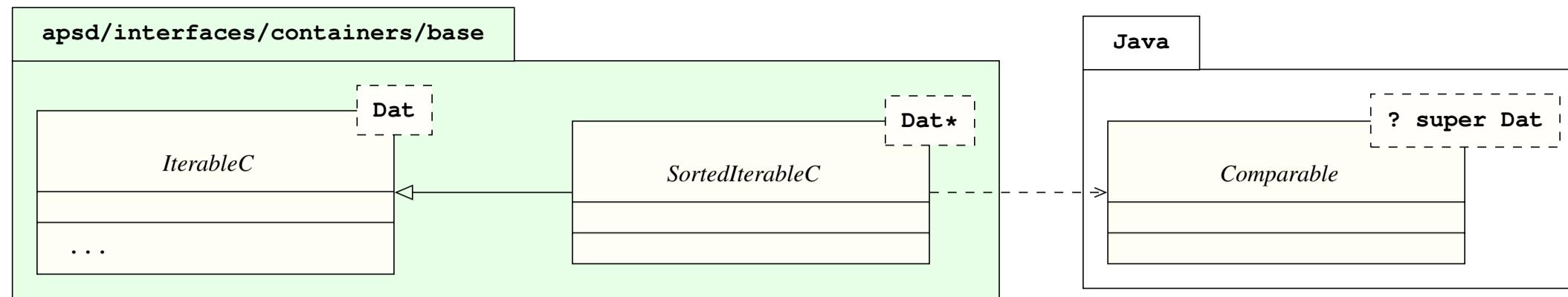
*Dat**

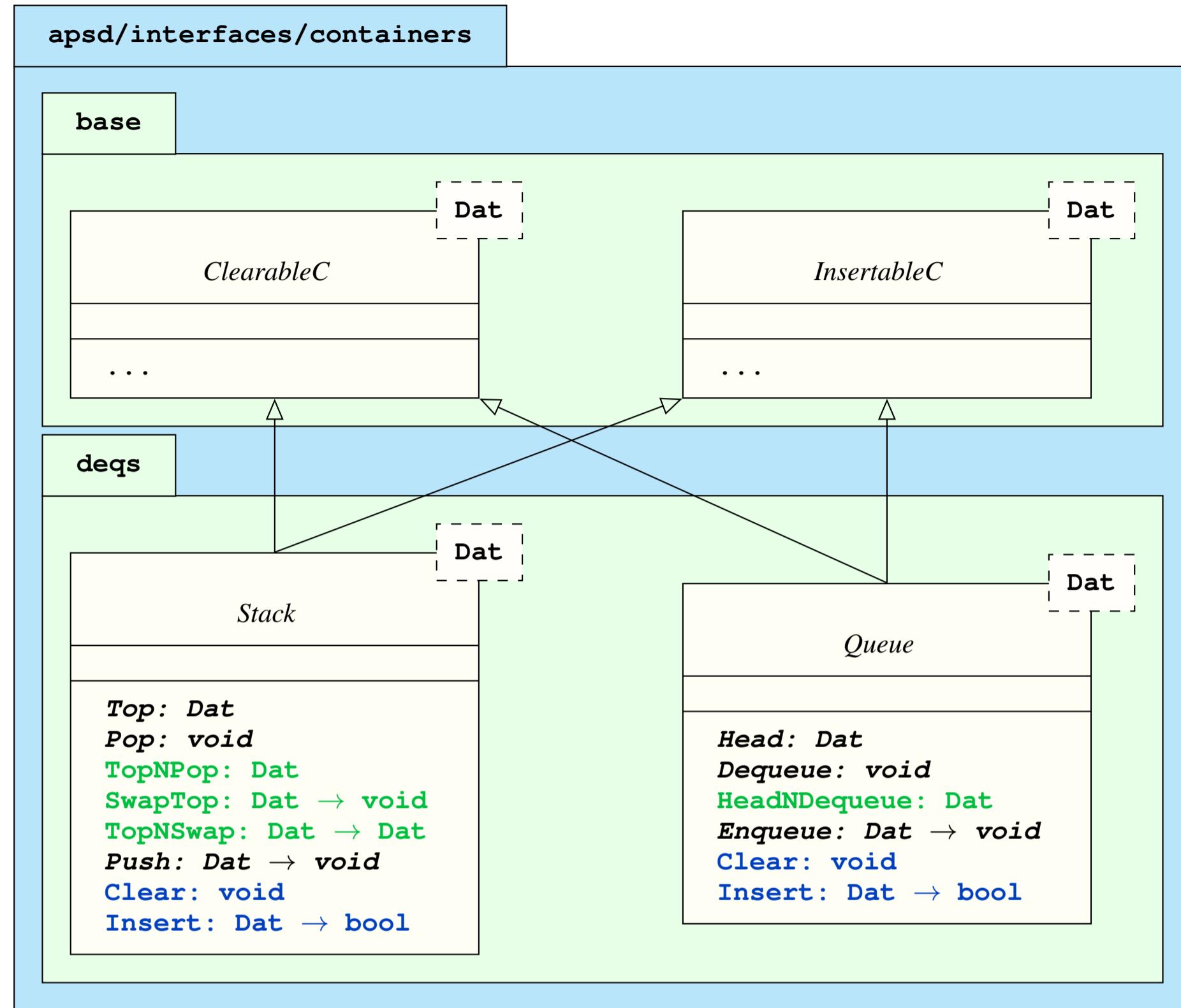
OrderedSet

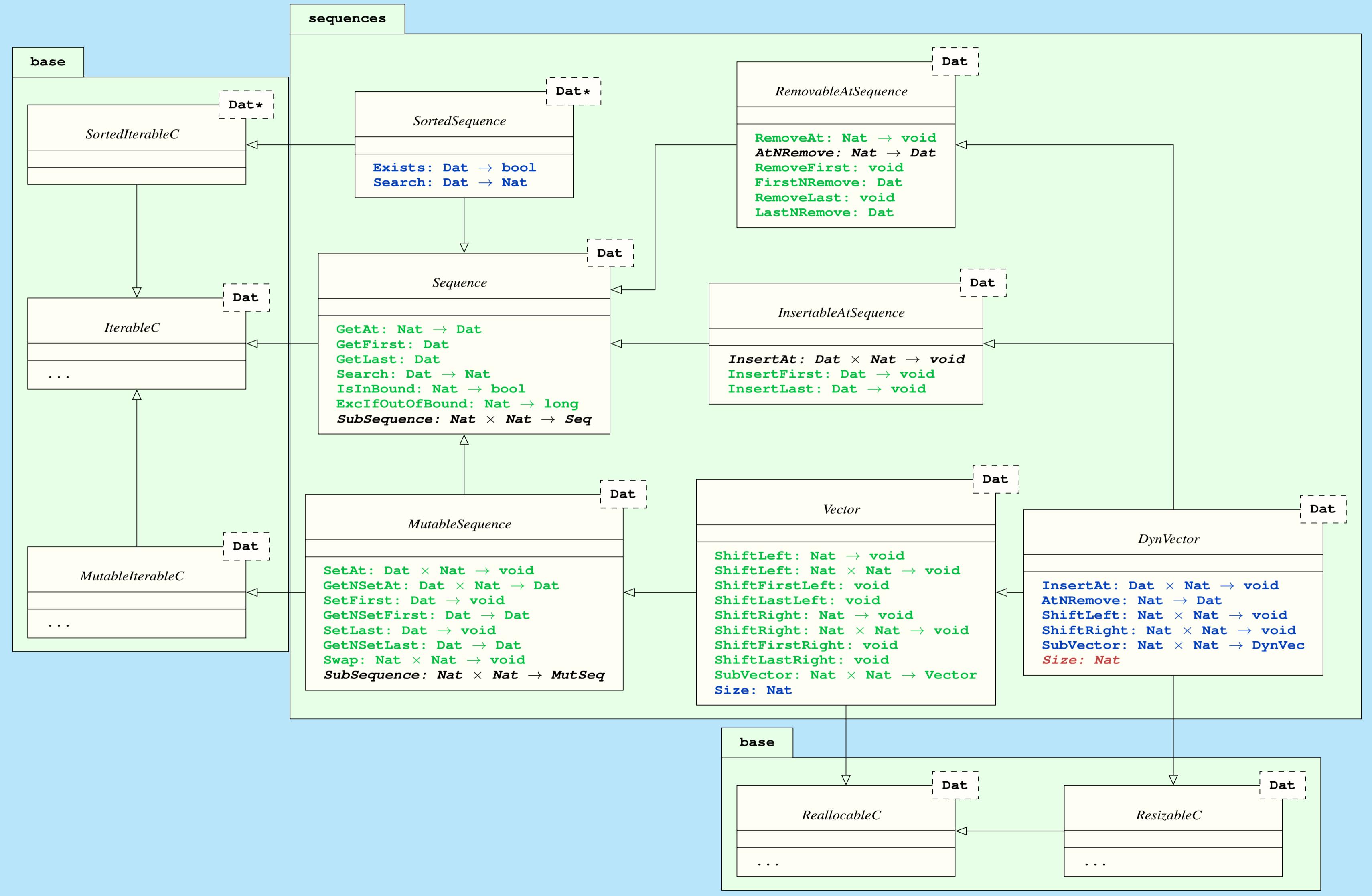
`Min/Max: Dat`
`RemoveMin/Max: void`
`Predecessor/Successor: Dat → Dat`
`RemovePredecessor/Successor: Dat → void`



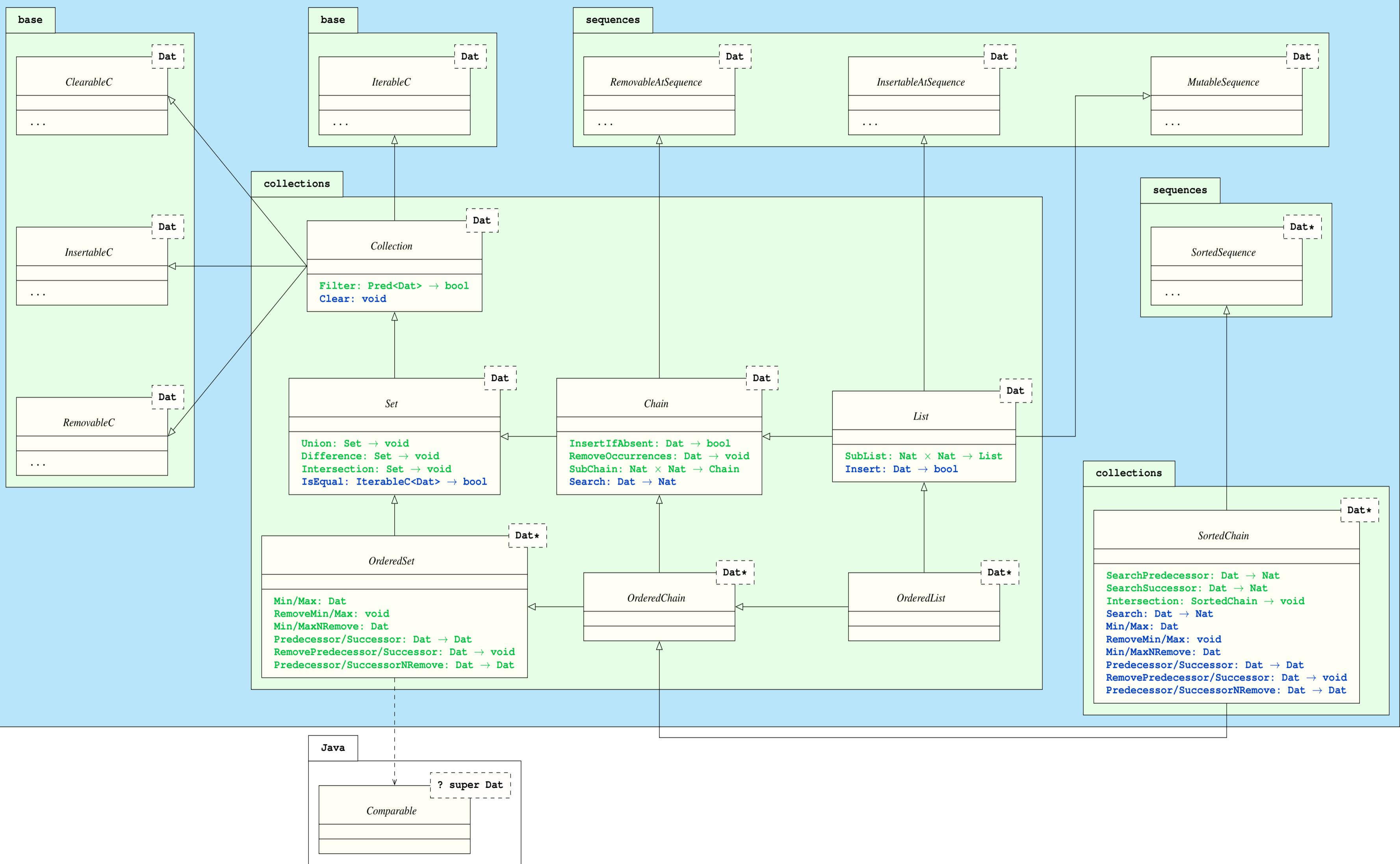


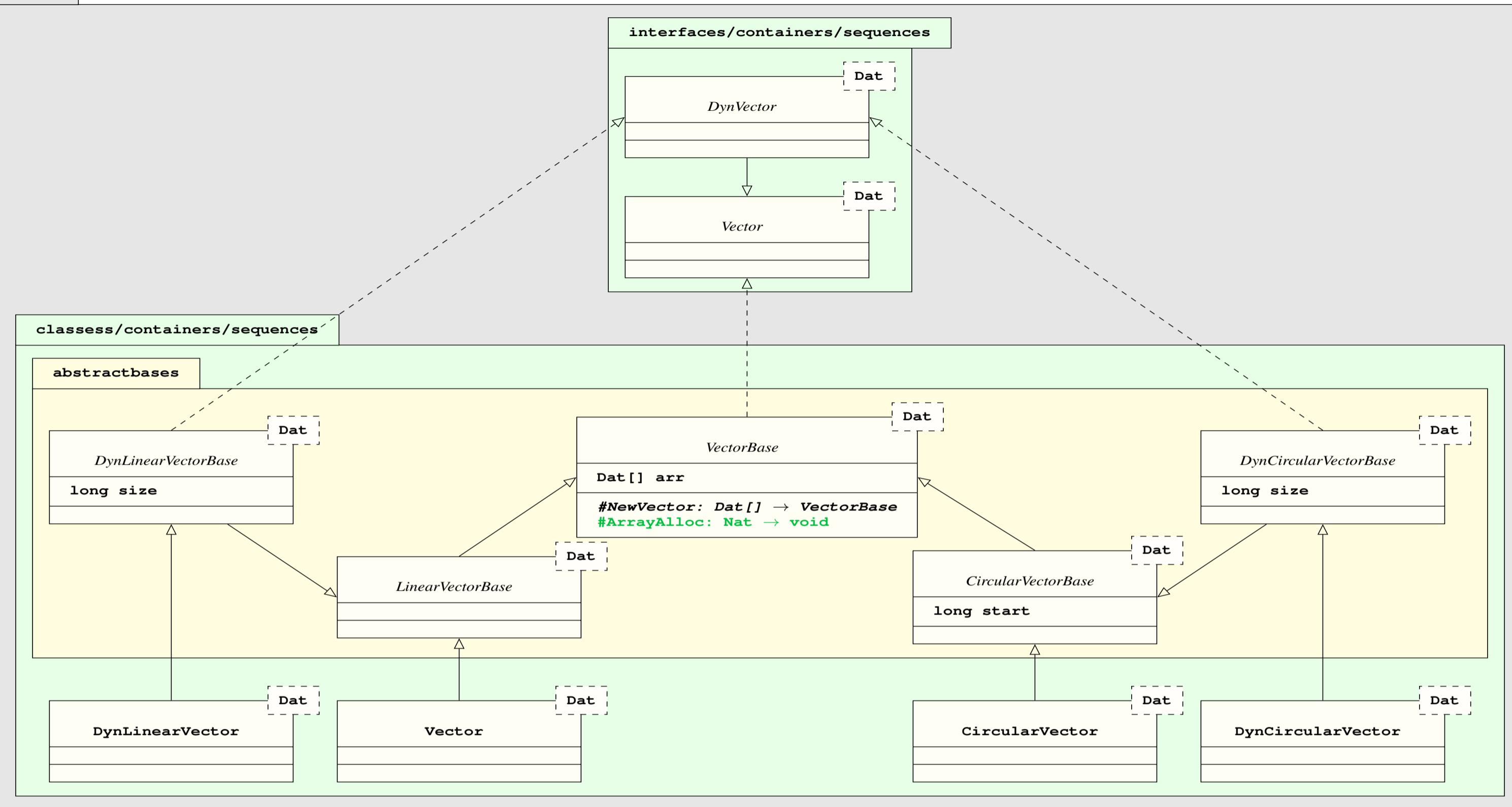




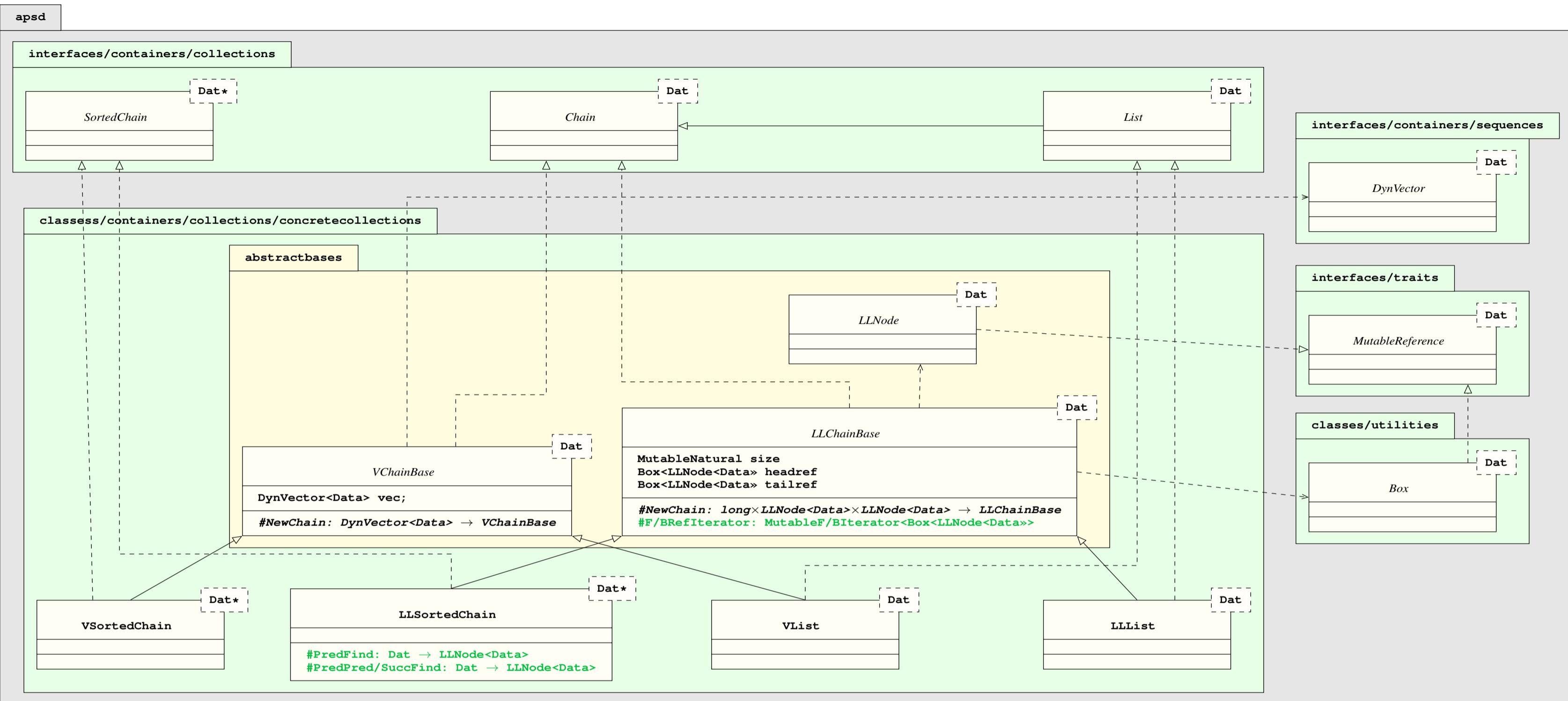


apsd/interfaces/containers





Methods	VecB	LinVecB	CirVecB	DLinVecB	DCirVecB
Size : Nat				✓	✓
Clear : void	✓			✓	✓
Realloc : Nat → void		✓	✓	✓	✓
Capacity : Nat	✓				
Expand : Nat → void				✓	✓
Reduce : Nat → void				✓	✓
F/BIterator : MutableForward/BackwardIterator	✓				
GetAt : Nat → Dat	✗	✓	✓		
SetAt : Dat × Nat → void	✗	✓	✓		
ShiftLeft/Right : Nat × Nat → void			✓		✓
SubSequence : Nat × Nat → MutableSequence	✓				
ArrayAlloc : Nat → void	✓		✓	✓	✓



Methods	VChainB	LLChainB
Size : Nat	✓	✓
Clear : void	✓	✓
Remove : Dat → bool	✓	✓
F/BIterator : Forward/BackwardIterator	✓	✓
GetAt : Nat → Dat	✓	
GetFirst/Last : Dat		✓
SubSequence : Nat × Nat → Sequence	✓	✓
AtNRemove : Nat → Dat	✓	✓
RemoveFirst/Last : void		✓
First/LastNRemove : Dat		✓
Filter : Pred<Dat> → bool	✓	✓

Methods	VSChain	LLSChain	VList	LLLList
F/BIterator : MutableForward/BackwardIterator			✓	✓
Insert : Dat → bool	✓	✓		
Remove : Dat → bool		✓		
Search : Dat → Nat		✓		
SearchPredecessor/Successor : Dat → Nat		✓		
SetAt : Dat × Nat → void			✓	✓
SetFirst/Last : Dat → void				✓
SubSequence : Nat × Nat → MutableSequence			✓	✓
InsertAt : Dat × Nat → void			✓	✓
InsertFirst/Last : Dat → void				✓
The six methods for Predecessor and Successor		✓		
InsertIfAbsent : Dat → bool	✓	✓		
RemoveOccurrences : Dat → void	✓	✓		

