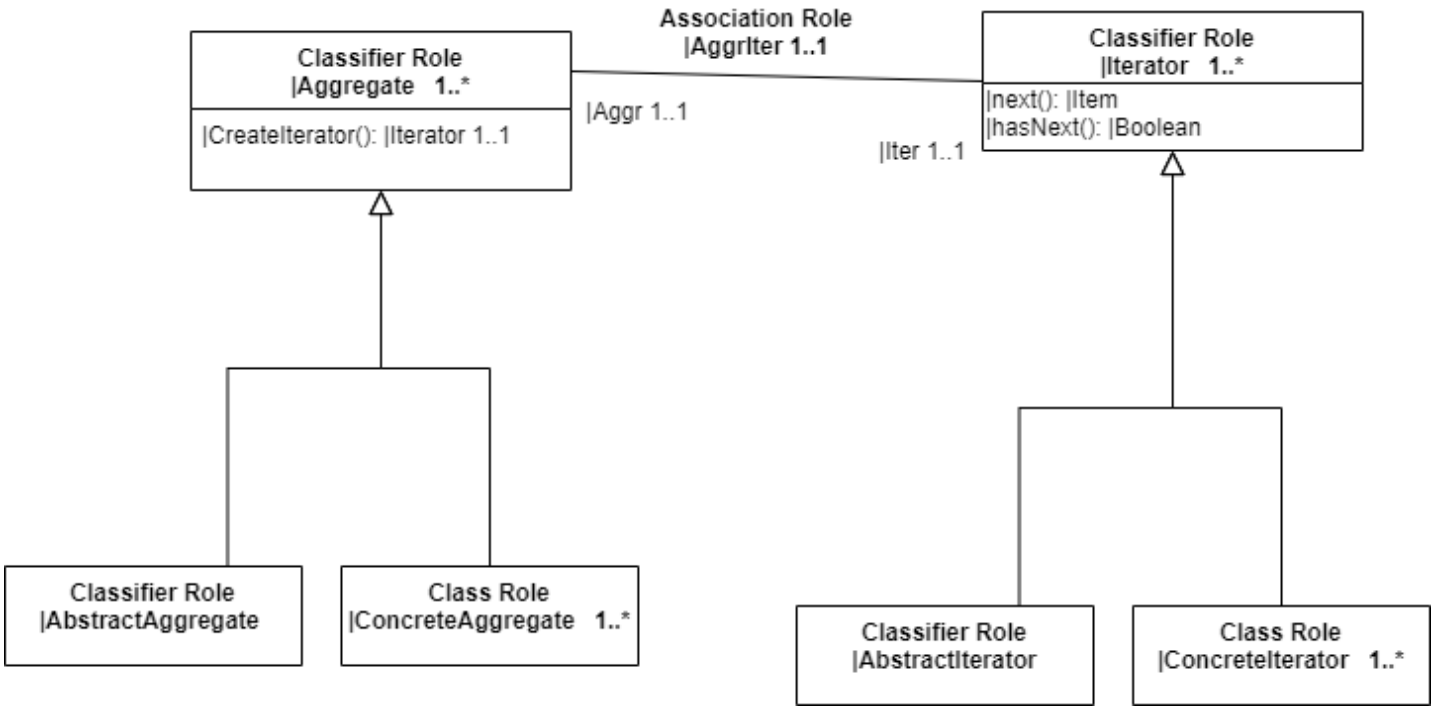
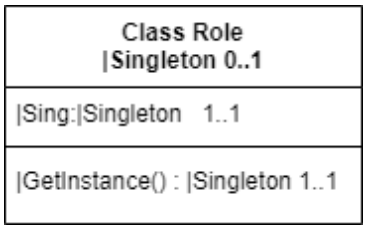
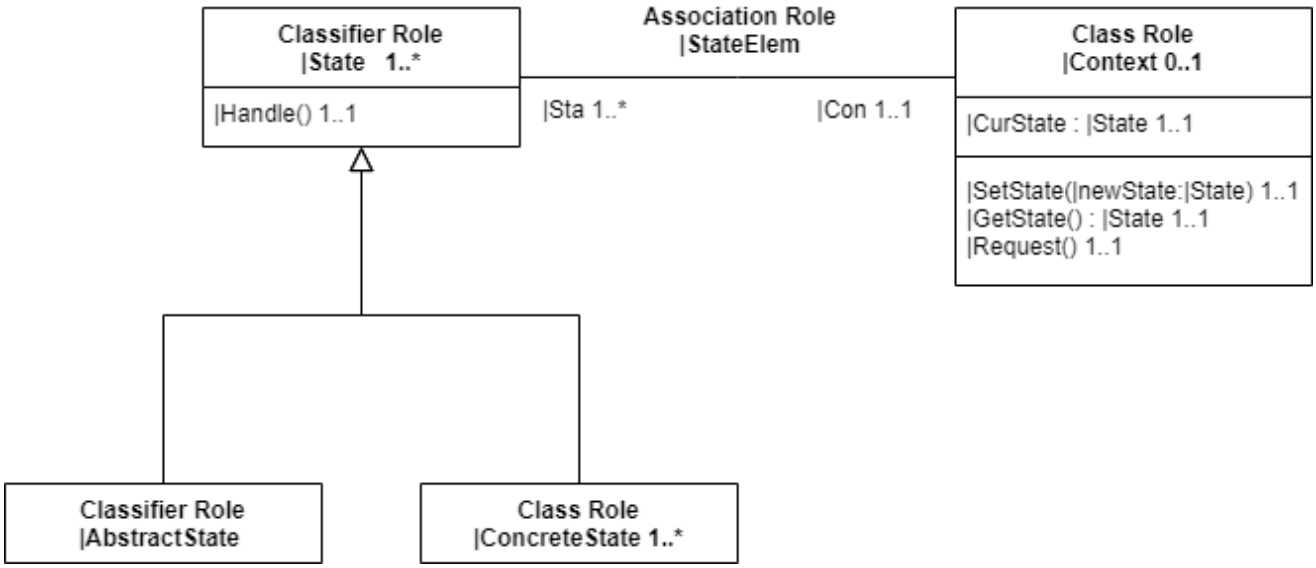
Logan Shy, Shelby Huston

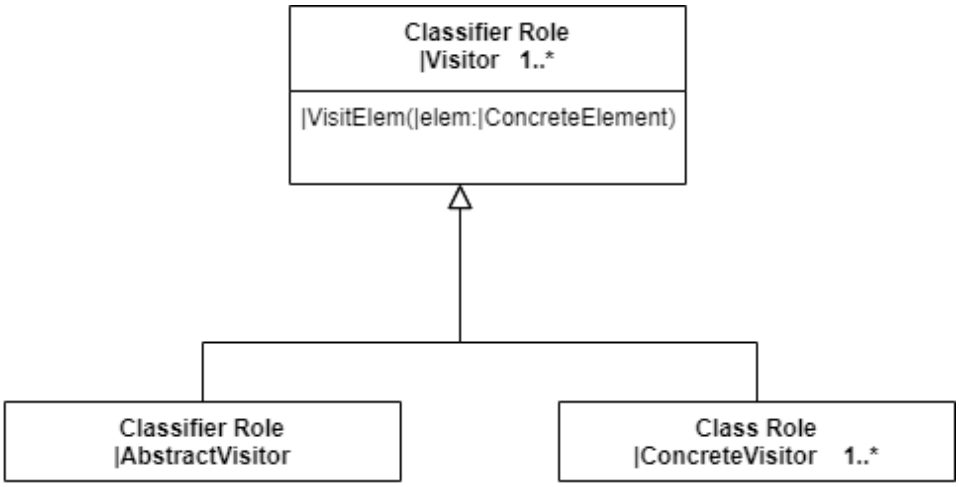
ESOF422-Advanced Software Engineering

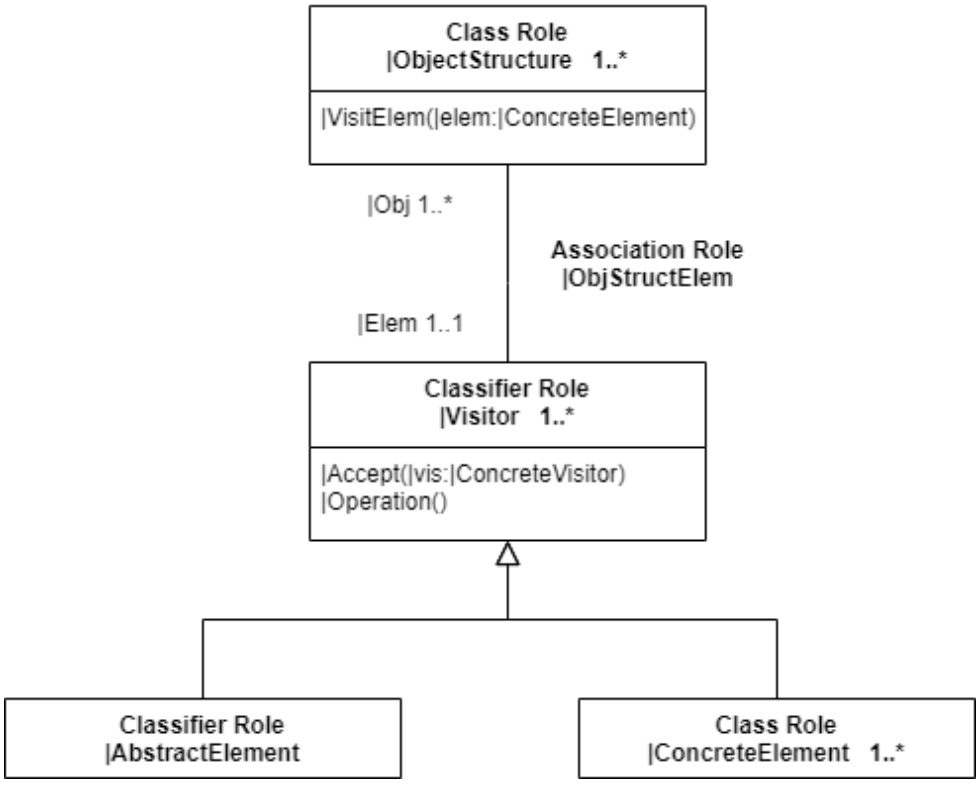
Homework #4

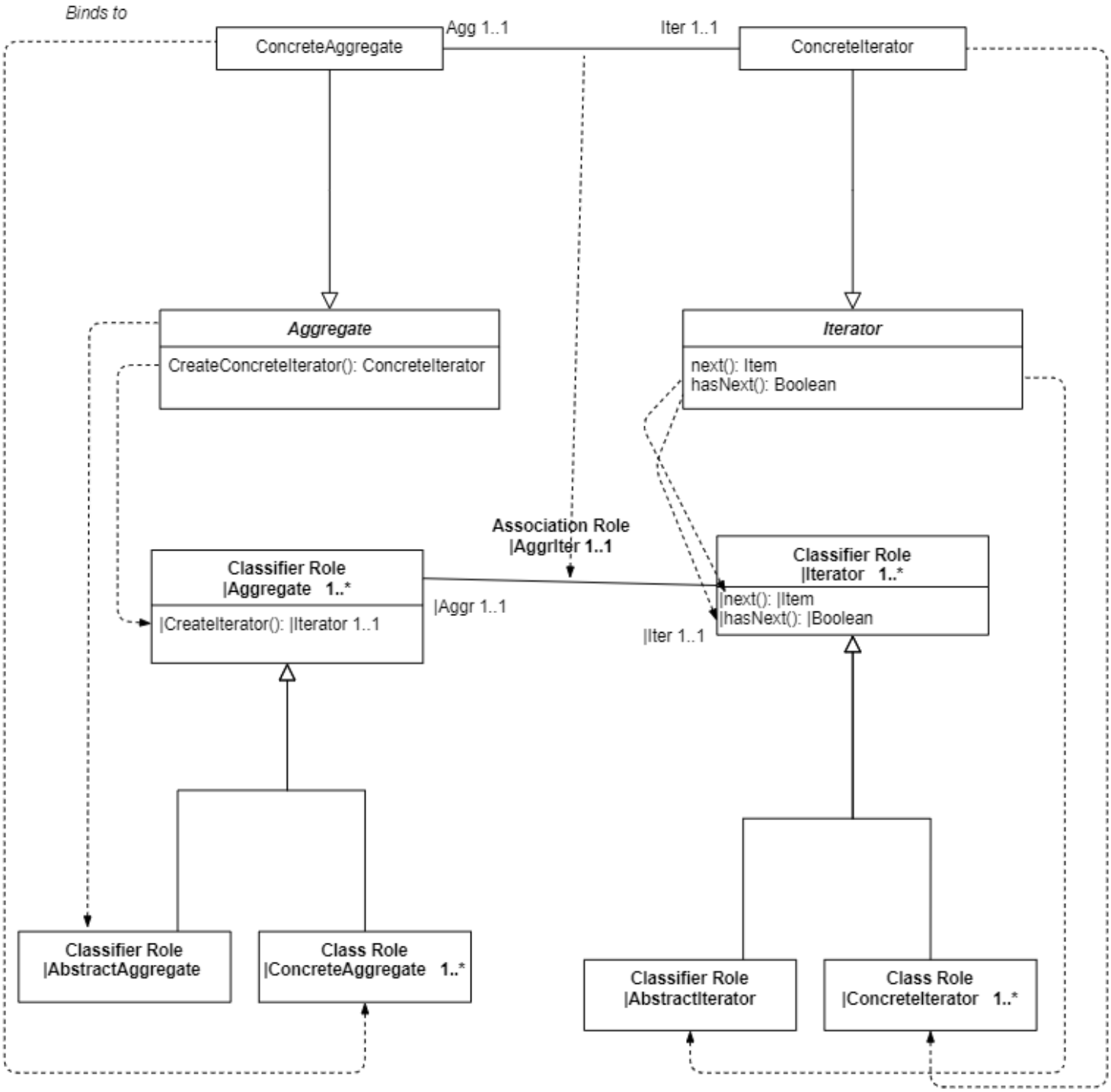

Association Role
|AggrIter 1..1
Classifier Role
|Aggregate 1..*
|CreateIterator(): |Iterator 1..1
|Aggr 1..1
|Iter 1..1
Classifier Role
|Iterator 1..*
|next(): |Item
|hasNext(): |Boolean
Classifier Role
|AbstractAggregate
Class Role
|ConcreteAggregate 1..*
Classifier Role
|AbstractIterator
Class Role
|ConcreteIterator 1..*

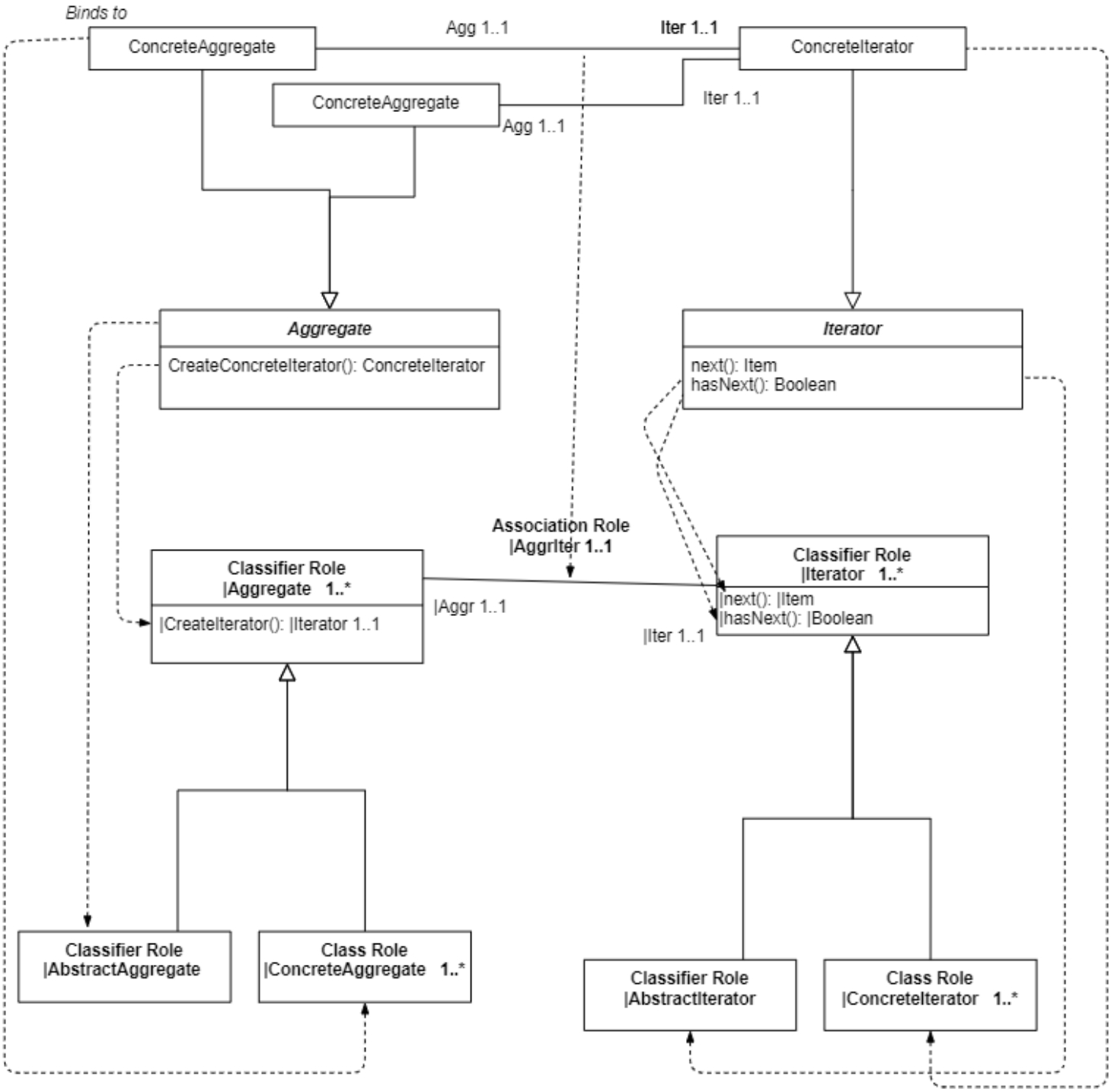

Class Role
|Singleton 0..1
|Sing:|Singleton 1..1
|GetInstance() : |Singleton 1..1

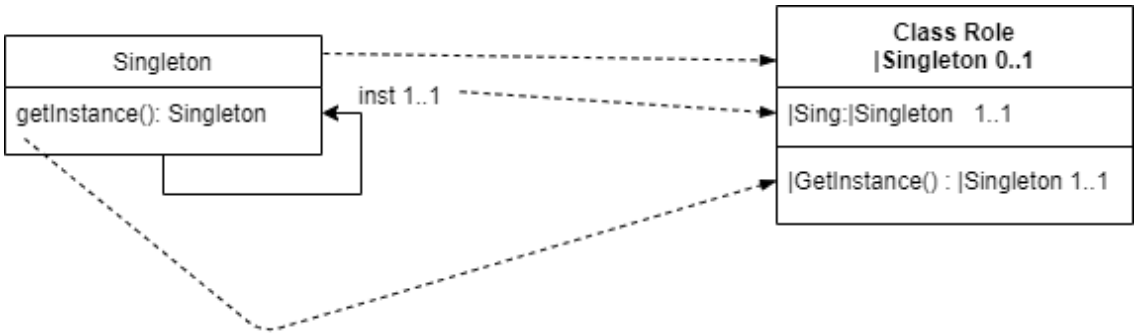

Classifier Role
|State 1..*
|Handle() 1..1
Association Role
|StateElem
|Sta 1..*
|Con 1..1
Class Role
|Context 0..1
|CurState : |State 1..1
|SetState(|newState:|State) 1..1
|GetState() : |State 1..1
|Request() 1..1
Classifier Role
|AbstractState
Class Role
|ConcreteState 1..*

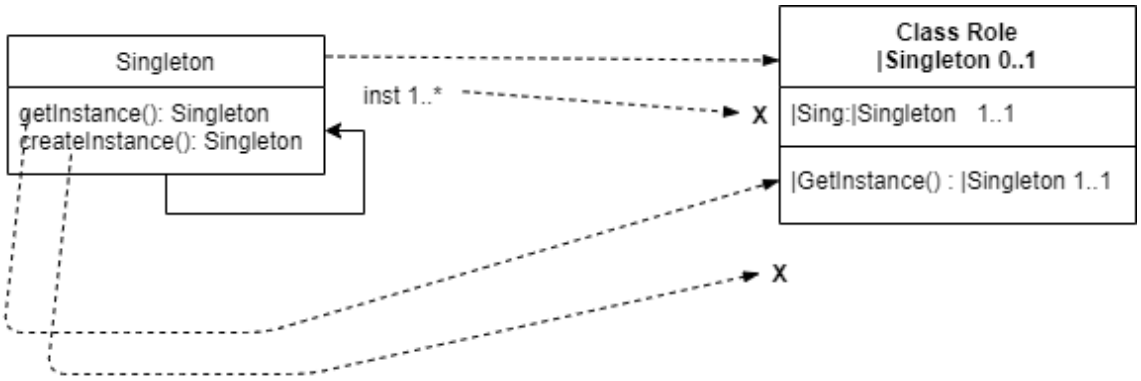

Classifier Role
|Visitor 1..*
|VisitElem(|elem:|ConcreteElement)
Classifier Role
|AbstractVisitor
Class Role
|ConcreteVisitor 1..*

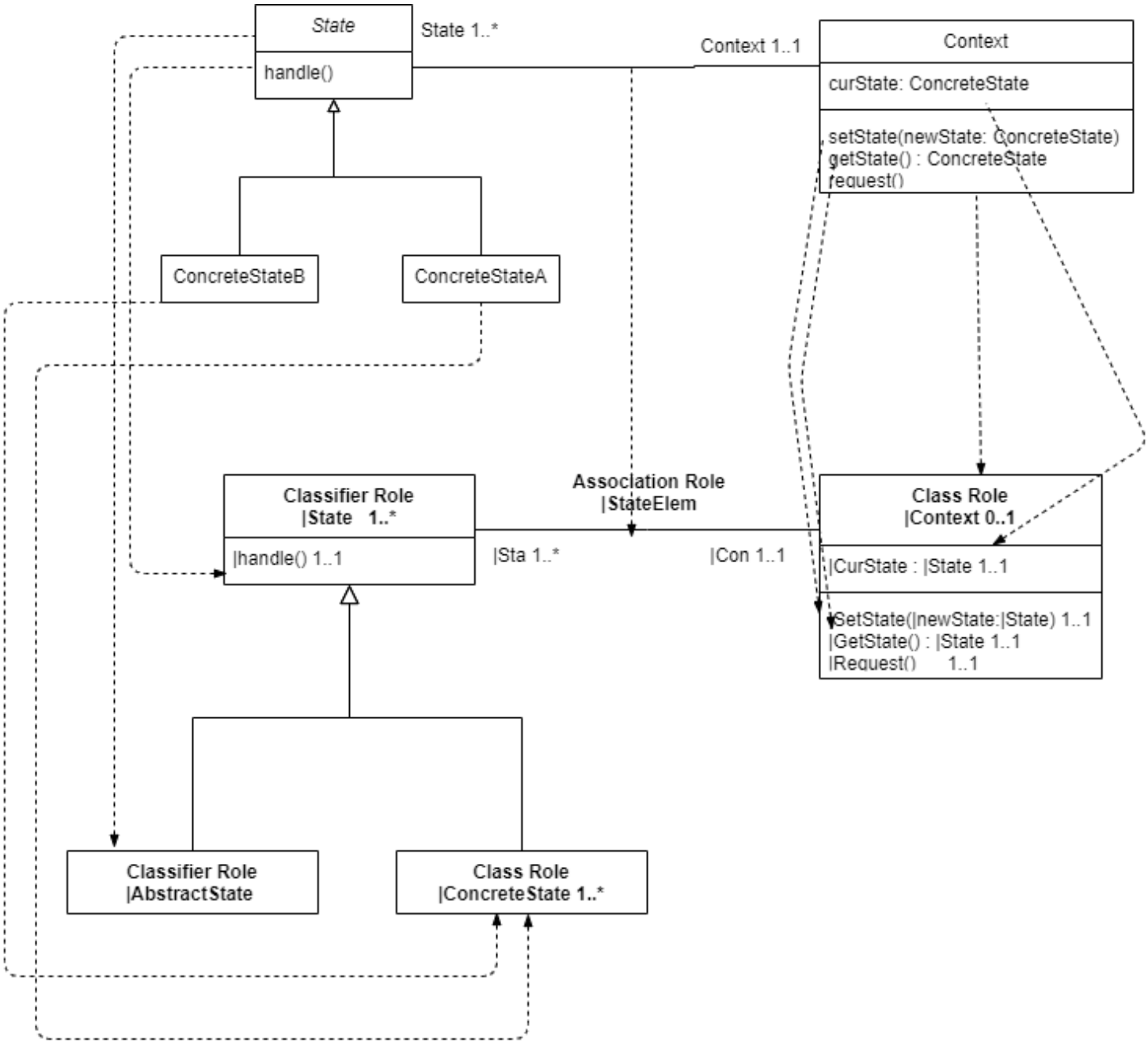

Class Role
|ObjectStructure 1..*
|VisitElem(|elem:|ConcreteElement)
|Obj 1..*
Association Role
|ObjStructElem
|Elem 1..1
Classifier Role
|Visitor 1..*
|Accept(|vis:|ConcreteVisitor)
|Operation()
Classifier Role
|AbstractElement
Class Role
|ConcreteElement 1..*

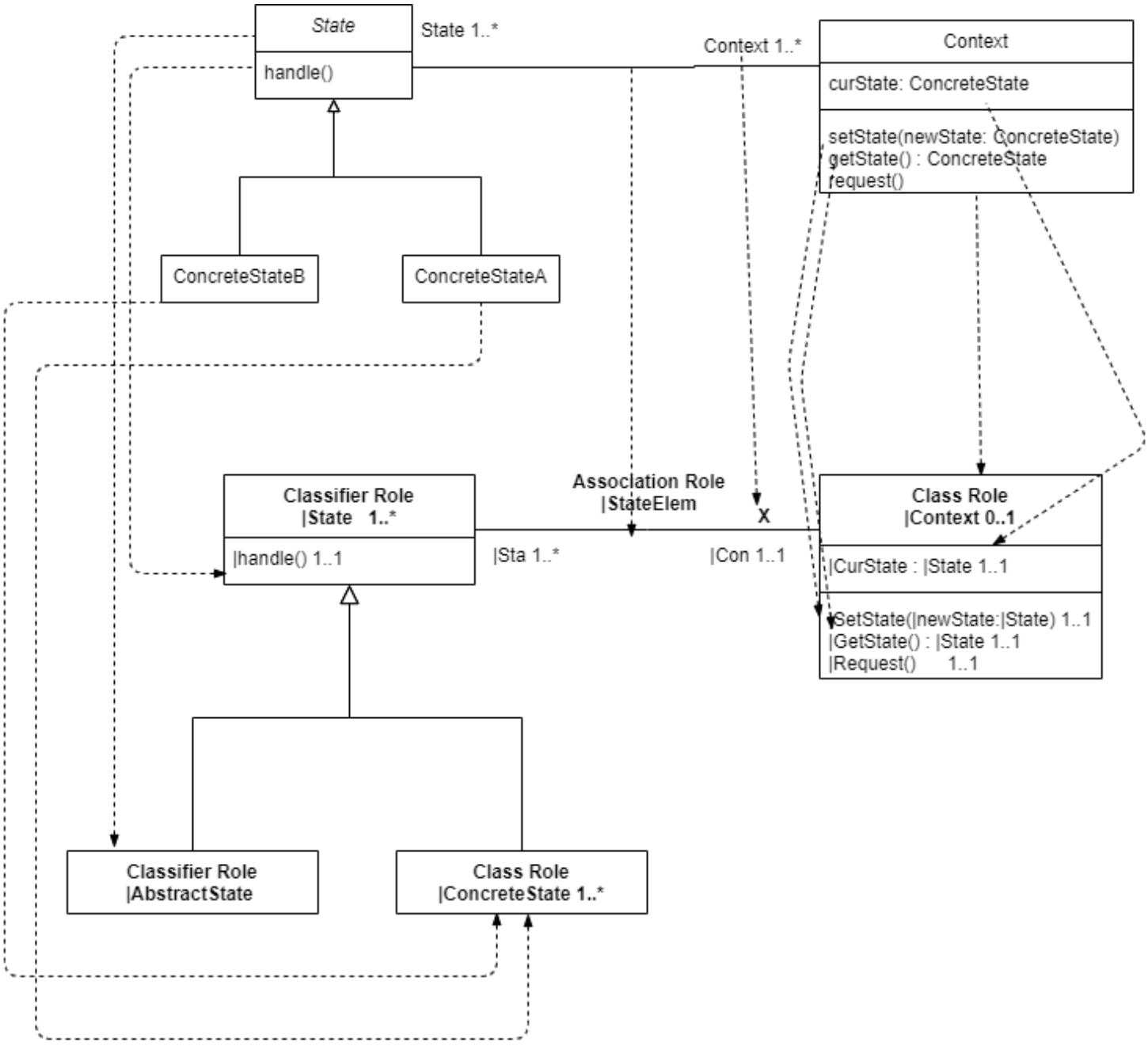

Binds to
ConcreteAggregate
Agg 1..1
Iter 1..1
ConcreteIterator
Aggregate
CreateConcreteIterator(): ConcreteIterator
Iterator
next(): Item
hasNext(): Boolean
Association Role
|AggrIter 1..1
Classifier Role
|Aggregate 1..*
|CreateIterator(): |Iterator 1..1
|Aggr 1..1
|Iter 1..1
Classifier Role
|Iterator 1..*
|next(): |Item
|hasNext(): |Boolean
Classifier Role
|AbstractAggregate
Class Role
|ConcreteAggregate 1..*
Classifier Role
|AbstractIterator
Class Role
|ConcreteIterator 1..*

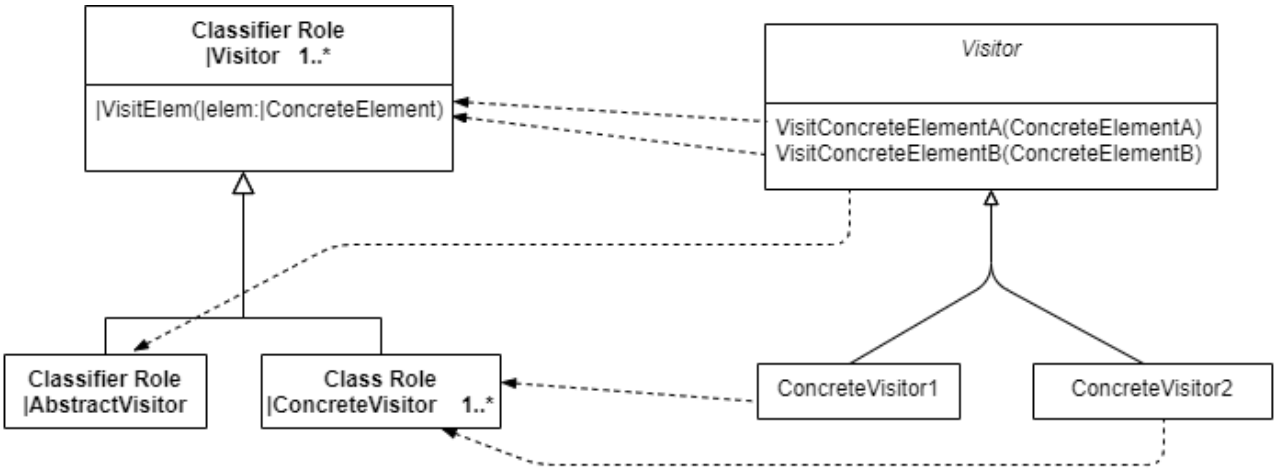

Binds to
ConcreteAggregate
Agg 1..1
Iter 1..1
ConcreteIterator
ConcreteAggregate
Iter 1..1
Agg 1..1
Aggregate
CreateConcreteIterator(): ConcreteIterator
Iterator
next(): Item
hasNext(): Boolean
Association Role
|AggrIter 1..1
Classifier Role
|Aggregate 1..*
|CreateIterator(): |Iterator 1..1
|Aggr 1..1
|Iter 1..1
Classifier Role
|Iterator 1..*
|next(): |Item
|hasNext(): |Boolean
Classifier Role
|AbstractAggregate
Class Role
|ConcreteAggregate 1..*
Classifier Role
|AbstractIterator
Class Role
|ConcreteIterator 1..*

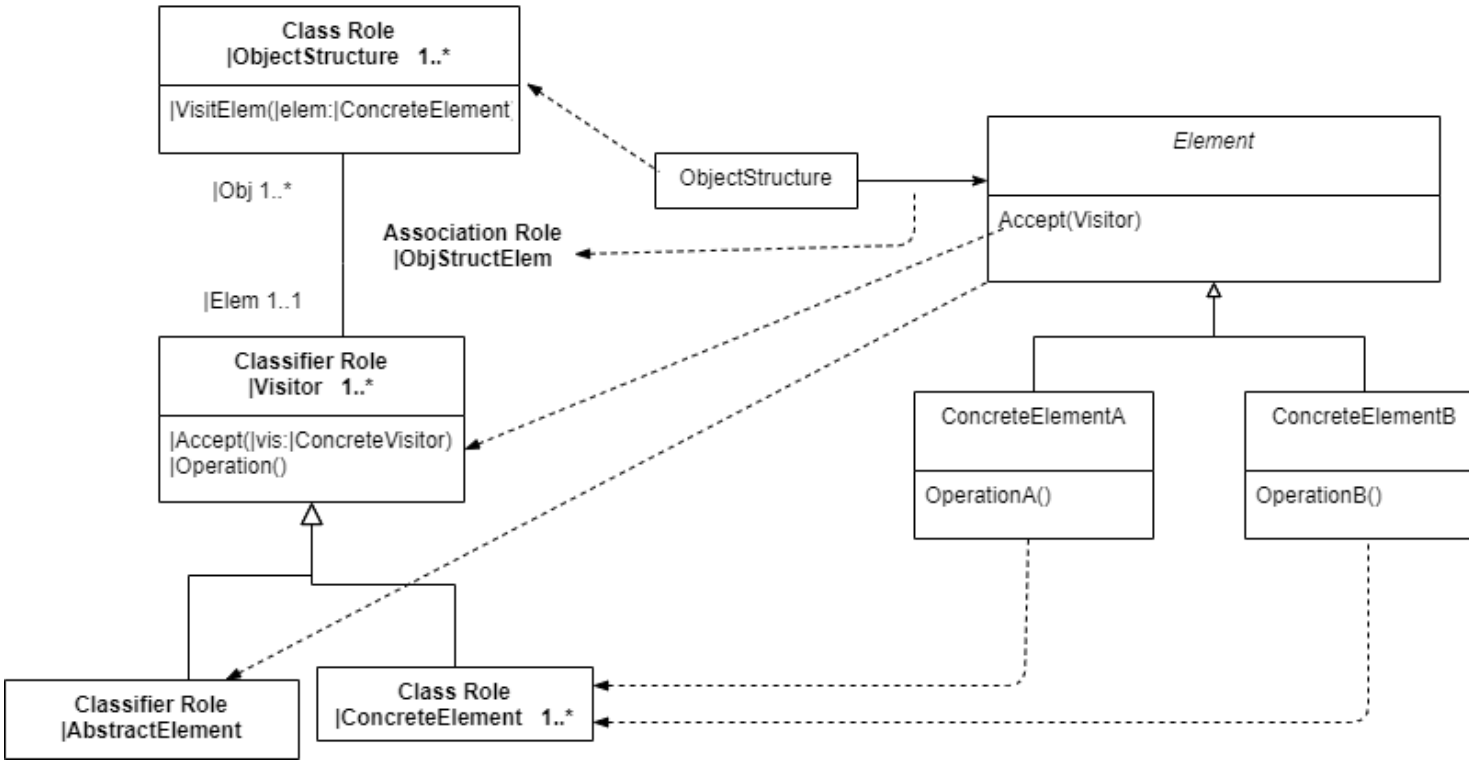

Singleton
getInstance(): Singleton
inst 1..1
Class Role
|Singleton 0..1
|Sing:|Singleton 1..1
|GetInstance() : |Singleton 1..1

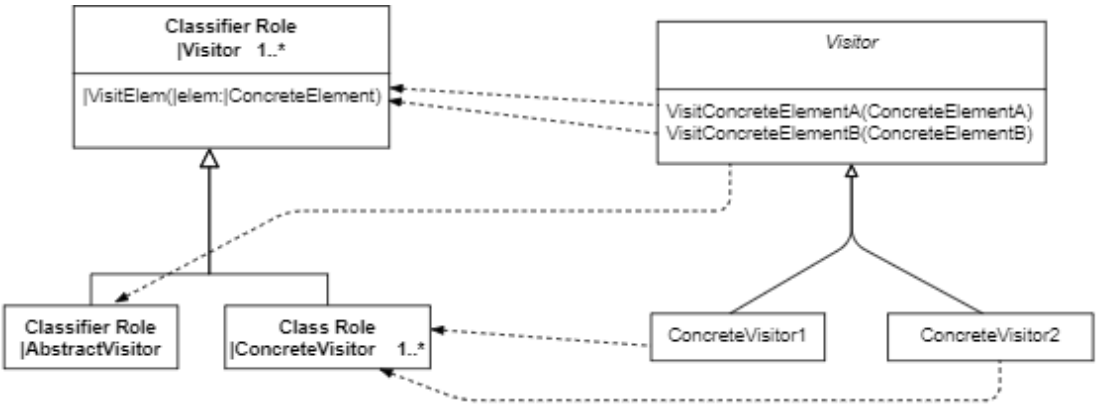

Singleton
getInstance(): Singleton
createInstance(): Singleton
inst 1..*
Class Role
|Singleton 0..1
|Sing:|Singleton 1..1
|GetInstance() : |Singleton 1..1
X
X

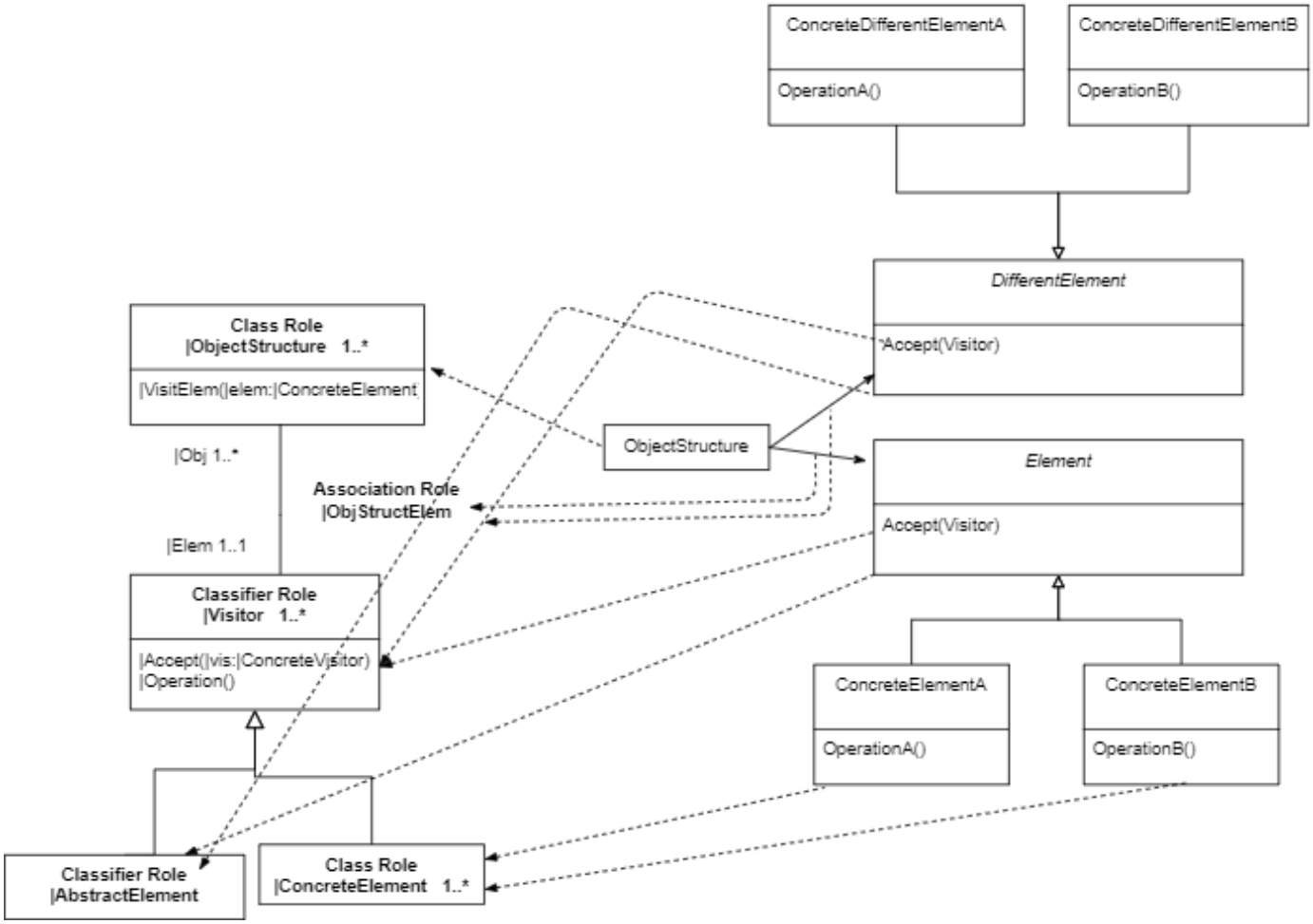

State
handle()
State 1..*
Context 1..1
Context
curState: ConcreteState
setState(newState: ConcreteState)
getState() : ConcreteState
request()
ConcreteStateB
ConcreteStateA
Classifier Role
|State 1..*
|handle() 1..1
Association Role
|StateElem
|Sta 1..*
|Con 1..1
Class Role
|Context 0..1
|CurState : |State 1..1
|SetState(|newState:|State) 1..1
|GetState() : |State 1..1
|Request() 1..1
Classifier Role
|AbstractState
Class Role
|ConcreteState 1..*

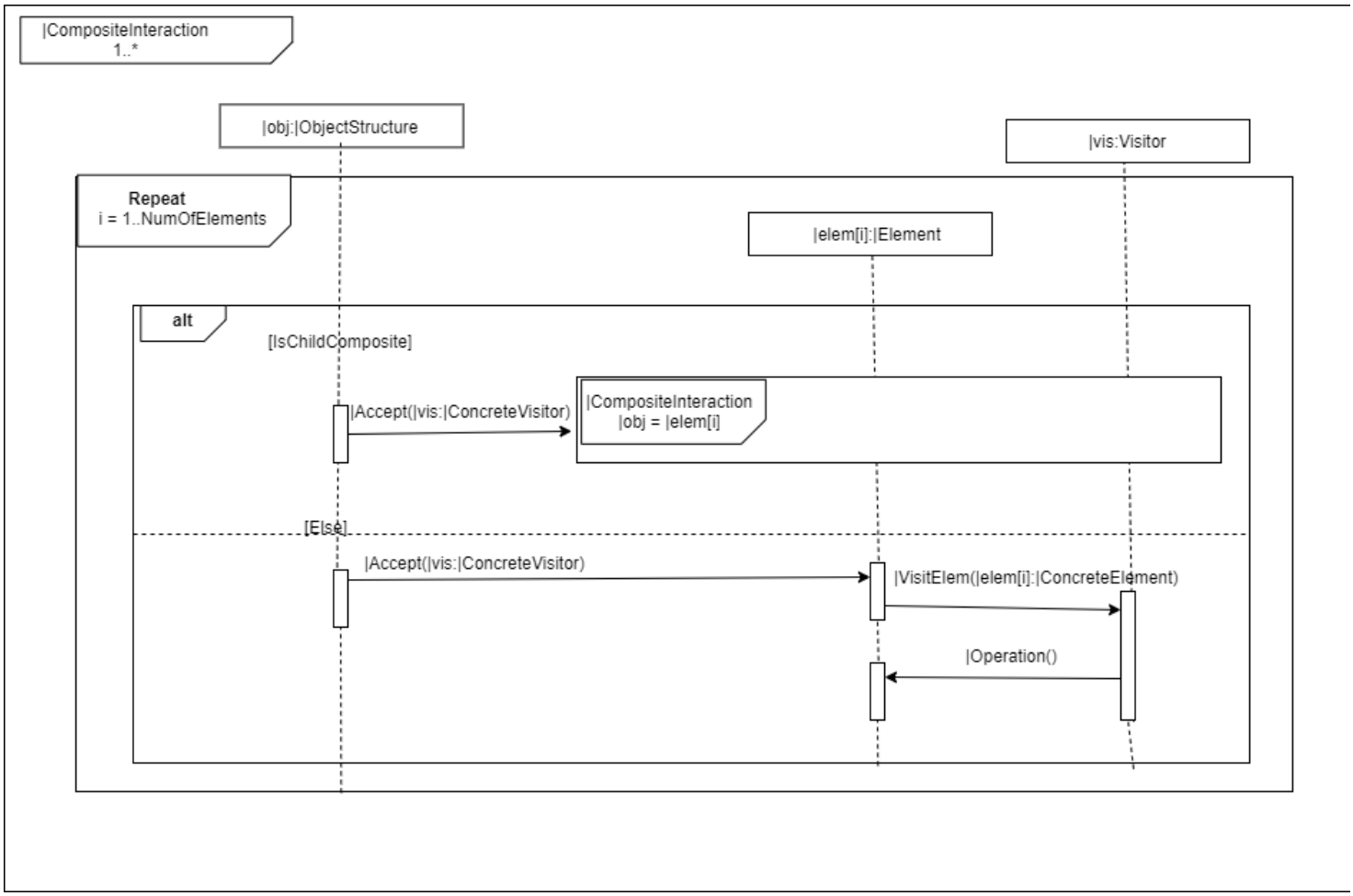

State
handle()
State 1..*
Context 1..*
Context
curState: ConcreteState
setState(newState: ConcreteState)
getState() : ConcreteState
request()
ConcreteStateB
ConcreteStateA
Classifier Role
|State 1..*
|handle() 1..1
Association Role
|StateElem
X
|Sta 1..*
|Con 1..1
Class Role
|Context 0..1
|CurState : |State 1..1
|SetState(|newState:|State) 1..1
|GetState() : |State 1..1
|Request() 1..1
Classifier Role
|AbstractState
Class Role
|ConcreteState 1..*


Classifier Role
|Visitor 1..*
|VisitElem(|elem:|ConcreteElement)
Visitor
VisitConcreteElementA(ConcreteElementA)
VisitConcreteElementB(ConcreteElementB)
Classifier Role
|AbstractVisitor
Class Role
|ConcreteVisitor 1..*
ConcreteVisitor1
ConcreteVisitor2


Class Role
|ObjectStructure 1..*
|VisitElem(|elem:|ConcreteElement
ObjectStructure
Element
Accept(Visitor)
|Obj 1..*
Association Role
|ObjStructElem
|Elem 1..1
Classifier Role
|Visitor 1..*
|Accept(|vis:|ConcreteVisitor)
|Operation()
ConcreteElementA
OperationA()
ConcreteElementB
OperationB()
Classifier Role
|AbstractElement
Class Role
|ConcreteElement 1..*


Classifier Role
|Visitor 1..*
|VisitElem(|elem:|ConcreteElement)
Visitor
VisitConcreteElementA(ConcreteElementA)
VisitConcreteElementB(ConcreteElementB)
Classifier Role
|AbstractVisitor
Class Role
|ConcreteVisitor 1..*
ConcreteVisitor1
ConcreteVisitor2


ConcreteDifferentElementA
OperationA()
ConcreteDifferentElementB
OperationB()
DifferentElement
Accept(Visitor)
Class Role
|ObjectStructure 1..*
|VisitElem(|elem:|ConcreteElement
|Obj 1..*
Association Role
|ObjStructElem
|Elem 1..1
ObjectStructure
Element
Accept(Visitor)
Classifier Role
|Visitor 1..*
|Accept(|vis:|ConcreteVisitor)
|Operation()
ConcreteElementA
OperationA()
ConcreteElementB
OperationB()
Classifier Role
|AbstractElement
Class Role
|ConcreteElement 1..*


|CompositeInteraction
1..*
|obj:|ObjectStructure
|vis:Visitor
Repeat
i = 1..NumOfElements
|elem[i]:|Element
alt
[IsChildComposite]
|Accept(|vis:|ConcreteVisitor)
|CompositeInteraction
|obj = |elem[i]
[Else]
|Accept(|vis:|ConcreteVisitor)
|VisitElem(|elem[i]:|ConcreteElement)
|Operation()

3.)

i.) RBML dictates what structure any instance of a given pattern should adhere to. The one thing that any pattern has in common is that it can bind somehow to its original RBML diagram. Therefore the RBML “Characterizes” a given instance, in that any characteristics of an instance will be derived from the RBML.

ii.) It means that RBML is a subtyped, more restrictive version of UML metamodels. Resulting Specialization produces abstract metamodel that captures the semantic properties of models of pattern solutions.

iii.) From Visitor SPS:

context |Context :: |SetState(|newState : |State)
Pre: self.|CurState != |newState
Post: self.|CurState = |newState

Context |Context :: |GetState() : |State
Pre: true
Post: result = |CurState