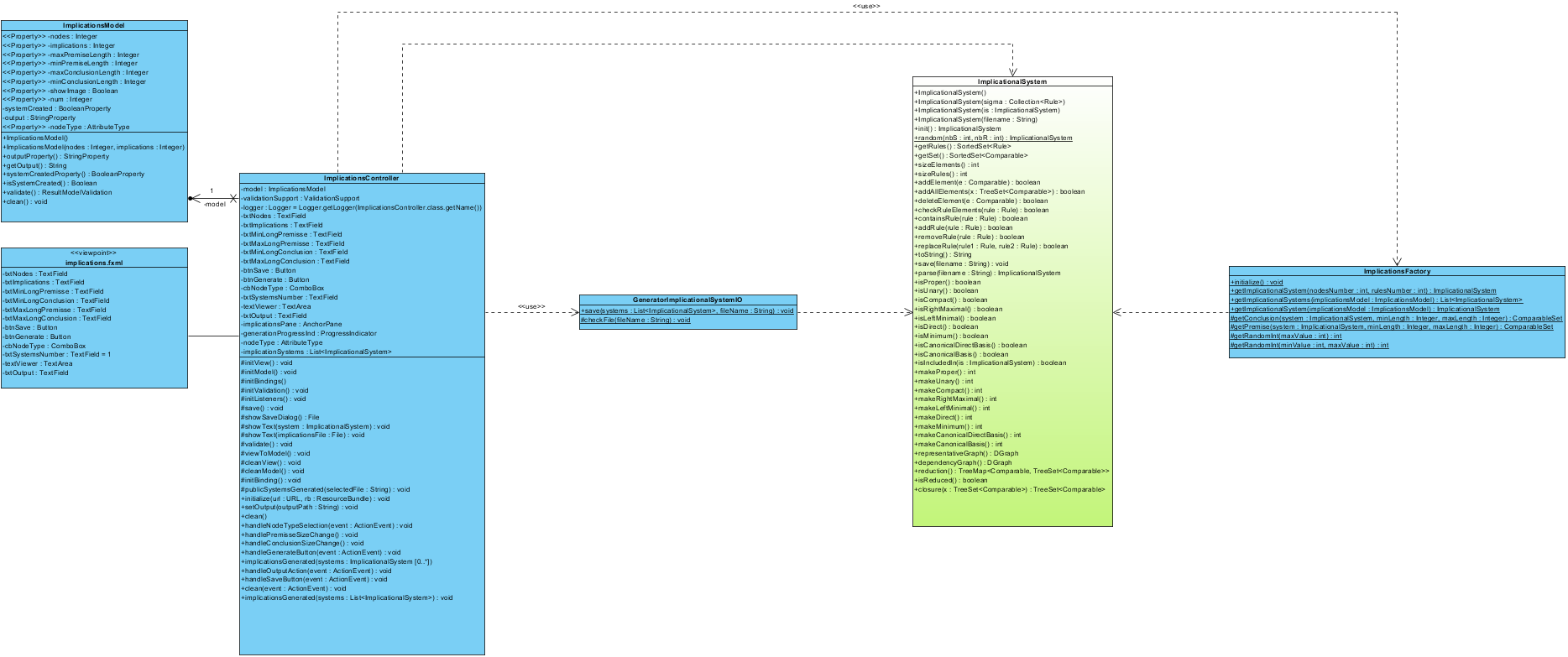
# Generar un sistema aleatorio



## Summary

|  |  |
| --- | --- |
| **Name** | **Description** |
| Image1.png [ImplicationsModel](#ENqwS_KGAqACIT7U) | Clase que representa las caracterÃ­sticas de un sistema de implicaciones.    @since  @author Dora CalderÃ³n |
| Image1.png [ImplicationalSystem](#dpzOq_KGAqACIUvy) | This class gives a representation for an implicational system (ImplicationalSystem), a set of rules.    An ImplicationalSystem is composed of a TreeSet of comparable elements, and a TreeSet of rules  defined by class {@link Rule}.    This class provides methods implementing classical transformation of an implicational system :  make proper, make minimum, make right maximal, make left minimal, make unary,  make canonical basis, make canonical direct basis and reduction.    An implicational system owns properties of a closure system, and thus extends the abstract class  {@link ClosureSystem} and implements methods {@link #getSet} and {@link #closure}.    Therefore, the closed set lattice of an ImplicationalSystem can be generated by invoking method {@link #closedSetLattice} of a closure system.    An implicational system can be instancied from and save to a text file in the following format:  - a list of elements separated by a space in the first line ;  - then, each rule on a line, written like [premise] -> [conclusion]  where elements are separated by a space.    ~~~  a b c d e  a b -> c d  c d -> e  ~~~    ![ImplicationalSystem](ImplicationalSystem.png)    @uml ImplicationalSystem.png  !include resources/fr/kbertet/lattice/ImplicationalSystem.iuml  !include resources/fr/kbertet/lattice/ClosureSystem.iuml    hide members  show ImplicationalSystem members  class ImplicationalSystem #LightCyan  title ImplicationalSystem UML graph |
| Image1.png [ImplicationsController](#JkuwS_KGAqACIT8E) | Implications generator view's controller.    @author Dora Calderón |
| Image1.png [implications.fxml](#PqGwS_KGAqACIT7o) | Implications generator main view. |
| Image1.png [ImplicationsFactory](#5rHIS_KGAqACIT9e) | Implicational systems factory. |
| Image1.png [GeneratorImplicationalSystemIO](#d5jiq_KGAqACIT_9) | Implements the methods to save implicational systems in files. |

## Details

### Image2.png ImplicationsModel

|  |  |
| --- | --- |
| **Name** | **Value** |
| Description | Clase que representa las caracterÃ­sticas de un sistema de implicaciones.    @since  @author Dora CalderÃ³n |
| Active | false |
| Business Key Mutable | true |
| Java Detail | N/A |
| Business Model | false |
| Visibility | public |
| Leaf | false |
| Root | false |

#### Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **private nodes : Integer** | | | |
| Description | NÃºmero de nodos. | | |
| Stereotypes | Property | | |
| Type | Integer | | |
| Allow Empty Name | false | | |
| Getter | true | Setter | true |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private implications : Integer** | | | |
| Description | NÃºmero de implicaciones. | | |
| Stereotypes | Property | | |
| Type | Integer | | |
| Allow Empty Name | false | | |
| Getter | true | Setter | true |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private maxPremiseLength : Integer** | | | |
| Description | NÃºmero mÃ¡ximo de atributos en la premisa. | | |
| Stereotypes | Property | | |
| Type | Integer | | |
| Allow Empty Name | false | | |
| Getter | true | Setter | true |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private minPremiseLength : Integer** | | | |
| Description | NÃºmero mÃ­nimo de atributos en la premisa. | | |
| Stereotypes | Property | | |
| Type | Integer | | |
| Allow Empty Name | false | | |
| Getter | true | Setter | true |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private maxConclusionLength : Integer** | | | |
| Description | NÃºmero mÃ¡ximo de atributos en la conclusiÃ³n. | | |
| Stereotypes | Property | | |
| Type | Integer | | |
| Allow Empty Name | false | | |
| Getter | true | Setter | true |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private minConclusionLength : Integer** | | | |
| Description | NÃºmero mÃ­nimo de atributos en la conclusiÃ³n. | | |
| Stereotypes | Property | | |
| Type | Integer | | |
| Allow Empty Name | false | | |
| Getter | true | Setter | true |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private showImage : Boolean** | | | |
| Description | Si se dibuja el grafo. | | |
| Stereotypes | Property | | |
| Type | Boolean | | |
| Allow Empty Name | false | | |
| Getter | true | Setter | true |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private num : Integer** | | | |
| Description | NÃºmero de conjuntos a generar\* | | |
| Stereotypes | Property | | |
| Type | Integer | | |
| Allow Empty Name | false | | |
| Getter | true | Setter | true |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private systemCreated : javafx.beans.property.BooleanProperty** | | | |
| Type | javafx.beans.property.BooleanProperty | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private output : javafx.beans.property.StringProperty** | | | |
| Type | javafx.beans.property.StringProperty | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private nodeType : AttributeType** | | | |
| Description | Tipo de los nodos. | | |
| Stereotypes | Property | | |
| Type | Image2.png AttributeType | | |
| Allow Empty Name | false | | |
| Getter | true | Setter | true |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

#### Operations

|  |  |
| --- | --- |
| **public ImplicationsModel ()** | |
| Description | Constructor. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public ImplicationsModel (nodes : Integer, implications : Integer)** | |
| Parameters | |  |  | | --- | --- | | **nodes** | | | Description | NÃºmero de nodos. | | Multiplicity | Unspecified | | Type | Integer | | Direction | inout | | Java Detail | N/A |  |  |  | | --- | --- | | **implications** | | | Description | NÃºmero de implicaciones. | | Multiplicity | Unspecified | | Type | Integer | | Direction | inout | | Java Detail | N/A | |
| Description | Constructor. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public outputProperty () : javafx.beans.property.StringProperty** | |
| Description | Output property. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | Output property. |
| Query | false |

|  |  |
| --- | --- |
| **public getOutput () : String** | |
| Description | Output file path. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | Ouptut file path. |
| Query | false |

|  |  |
| --- | --- |
| **public systemCreatedProperty () : javafx.beans.property.BooleanProperty** | |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public isSystemCreated () : Boolean** | |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public validate () : ResultModelValidation** | |
| Description | Comprueba que el modelo es correcto para la generaciÃ³n de un sistema de implicaciones. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public clean () : void** | |
| Description | Limpia los valores de las propiedades. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

### Image2.png ImplicationalSystem

|  |  |
| --- | --- |
| **Name** | **Value** |
| Description | This class gives a representation for an implicational system (ImplicationalSystem), a set of rules.    An ImplicationalSystem is composed of a TreeSet of comparable elements, and a TreeSet of rules  defined by class {@link Rule}.    This class provides methods implementing classical transformation of an implicational system :  make proper, make minimum, make right maximal, make left minimal, make unary,  make canonical basis, make canonical direct basis and reduction.    An implicational system owns properties of a closure system, and thus extends the abstract class  {@link ClosureSystem} and implements methods {@link #getSet} and {@link #closure}.    Therefore, the closed set lattice of an ImplicationalSystem can be generated by invoking method {@link #closedSetLattice} of a closure system.    An implicational system can be instancied from and save to a text file in the following format:  - a list of elements separated by a space in the first line ;  - then, each rule on a line, written like [premise] -> [conclusion]  where elements are separated by a space.    ~~~  a b c d e  a b -> c d  c d -> e  ~~~    ![ImplicationalSystem](ImplicationalSystem.png)    @uml ImplicationalSystem.png  !include resources/fr/kbertet/lattice/ImplicationalSystem.iuml  !include resources/fr/kbertet/lattice/ClosureSystem.iuml    hide members  show ImplicationalSystem members  class ImplicationalSystem #LightCyan  title ImplicationalSystem UML graph |
| Active | false |
| Business Key Mutable | true |
| Java Detail | N/A |
| Business Model | false |
| Visibility | public |
| Leaf | false |
| Root | false |

#### Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **private set : java.util.TreeSet** | | | |
| Description | For the elements space of this component. | | |
| Template Type Bind Info | N/A | | |
| Type | java.util.TreeSet | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private sigma : Rule** | | | |
| Description | For the implicational rules of this component. | | |
| Type | Image2.png Rule | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | \* | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

#### Operations

|  |  |
| --- | --- |
| **public ImplicationalSystem ()** | |
| Description | Constructs a new empty component. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public ImplicationalSystem (sigma : java.util.Collection)** | |
| Parameters | |  |  | | --- | --- | | **sigma** | | | Description | the set of rules. | | Multiplicity | Unspecified | | Template Type Bind Info | N/A | | Type | java.util.Collection | | Direction | inout | | Java Detail | N/A | |
| Description | Constructs this component from the specified set of rules `sigma`. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public ImplicationalSystem (is : ImplicationalSystem)** | |
| Parameters | |  |  | | --- | --- | | **is** | | | Description | the implicational system to be copied | | Multiplicity | Unspecified | | Type | Image2.png [ImplicationalSystem](#855Oq_KGAqACIUZW) | | Direction | inout | | Java Detail | N/A | |
| Description | Constructs this component as a copy of the specified ImplicationalSystem `is`.    Only structures (conataining reference of indexed elements) are copied. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public ImplicationalSystem (filename : String)** | |
| Parameters | |  |  | | --- | --- | | **filename** | | | Description | the name of the file | | Multiplicity | Unspecified | | Type | Image3.png String | | Direction | inout | | Java Detail | N/A | |
| Description | Constructs this component from the specified file.    The file have to respect a certain format:    An implicational system can be instancied from and save to a text file in the following format:  - A list of elements separated by a space in the first line ;  - then, each rule on a line, written like [premise] -> [conclusion]  where elements are separated by a space.    ~~~  a b c d e  a b -> c d  c d -> e  ~~~    Each element must be declared on the first line, otherwise, it is not added in the rule  Each rule must have a non empty concusion, otherwise, it is not added in the component |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | @throws IOException When an IOException occurs |
| Query | false |

|  |  |
| --- | --- |
| **public init () : ImplicationalSystem** | |
| Description | Initialise the implicational system. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | this for chaining |
| Query | false |

|  |  |
| --- | --- |
| **public random (nbS : int, nbR : int) : ImplicationalSystem** | |
| Parameters | |  |  | | --- | --- | | **nbS** | | | Description | the number of nodes of the generated ImplicationalSystem | | Multiplicity | Unspecified | | Type | Image3.png int | | Direction | inout | | Java Detail | N/A |  |  |  | | --- | --- | | **nbR** | | | Description | the number of rules of the generated ImplicationalSystem | | Multiplicity | Unspecified | | Type | Image3.png int | | Direction | inout | | Java Detail | N/A | |
| Description | Generates a random ImplicationalSystem with a specified number of nodes and rules. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | a random implicational system with a specified number of nodes and rules. |
| Query | false |

|  |  |
| --- | --- |
| **public getRules () : java.util.SortedSet** | |
| Description | Returns the set of rules. |
| Leaf | false |
| Upper | 1 |
| Template Type Bind Info | N/A |
| Ordered | false |
| Unique | true |
| Return Type Description | the set of rules of this component. |
| Query | false |

|  |  |
| --- | --- |
| **public getSet () : java.util.SortedSet** | |
| Description | Returns the set of indexed elements. |
| Leaf | false |
| Upper | 1 |
| Template Type Bind Info | N/A |
| Ordered | false |
| Unique | true |
| Return Type Description | the elements space of this component. |
| Query | false |

|  |  |
| --- | --- |
| **public sizeElements () : int** | |
| Description | Returns the number of elements in the set S of this component. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | the number of elements in the elements space of this component. |
| Query | false |

|  |  |
| --- | --- |
| **public sizeRules () : int** | |
| Description | Returns the number of rules of this component. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | the number of rules of this component. |
| Query | false |

|  |  |
| --- | --- |
| **public addElement (e : Comparable) : boolean** | |
| Parameters | |  |  | | --- | --- | | **e** | | | Description | the comparable to be added | | Multiplicity | Unspecified | | Type | Comparable | | Direction | inout | | Java Detail | N/A | |
| Description | Adds the specified element to the set `S` of this component. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if the element has been added to `S` |
| Query | false |

|  |  |
| --- | --- |
| **public addAllElements (x : java.util.TreeSet) : boolean** | |
| Parameters | |  |  | | --- | --- | | **x** | | | Description | the treeset of comparable to be added | | Multiplicity | Unspecified | | Template Type Bind Info | N/A | | Type | java.util.TreeSet | | Direction | inout | | Java Detail | N/A | |
| Description | Adds the specified element to the set `S` of this component. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if the element has been added to `S` |
| Query | false |

|  |  |
| --- | --- |
| **public deleteElement (e : Comparable) : boolean** | |
| Parameters | |  |  | | --- | --- | | **e** | | | Description | the comparable to be added | | Multiplicity | Unspecified | | Type | Comparable | | Direction | inout | | Java Detail | N/A | |
| Description | Delete the specified element from the set `S` of this component and from all the rule containing it. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if the element has been added to `S` |
| Query | false |

|  |  |
| --- | --- |
| **public checkRuleElements (rule : Rule) : boolean** | |
| Parameters | |  |  | | --- | --- | | **rule** | | | Description | the rule to be checked | | Multiplicity | Unspecified | | Type | Image2.png Rule | | Direction | inout | | Java Detail | N/A | |
| Description | Checks if the set S of this component contains the elements of the specified rule. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if `S` contains all the elements of the rule |
| Query | false |

|  |  |
| --- | --- |
| **public containsRule (rule : Rule) : boolean** | |
| Parameters | |  |  | | --- | --- | | **rule** | | | Description | the rule to be tested | | Multiplicity | Unspecified | | Type | Image2.png Rule | | Direction | inout | | Java Detail | N/A | |
| Description | Checks if this component already contains the specified rule.    Rules are compared according to their premise and conclusion |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if `sigma` contains the rule |
| Query | false |

|  |  |
| --- | --- |
| **public addRule (rule : Rule) : boolean** | |
| Parameters | |  |  | | --- | --- | | **rule** | | | Description | the rule to be added | | Multiplicity | Unspecified | | Type | Image2.png Rule | | Direction | inout | | Java Detail | N/A | |
| Description | Adds the specified rule to this component. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true the rule has been added to if `sigma` |
| Query | false |

|  |  |
| --- | --- |
| **public removeRule (rule : Rule) : boolean** | |
| Parameters | |  |  | | --- | --- | | **rule** | | | Description | the rule to be removed | | Multiplicity | Unspecified | | Type | Image2.png Rule | | Direction | inout | | Java Detail | N/A | |
| Description | Removes the specified rule from the set of rules of this component. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if the rule has been removed |
| Query | false |

|  |  |
| --- | --- |
| **public replaceRule (rule1 : Rule, rule2 : Rule) : boolean** | |
| Parameters | |  |  | | --- | --- | | **rule1** | | | Description | the rule to be replaced by `rule2` | | Multiplicity | Unspecified | | Type | Image2.png Rule | | Direction | inout | | Java Detail | N/A |  |  |  | | --- | --- | | **rule2** | | | Description | the replacing rule | | Multiplicity | Unspecified | | Type | Image2.png Rule | | Direction | inout | | Java Detail | N/A | |
| Description | Replaces the first specified rule by the second one. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true the rule has been replaced |
| Query | false |

|  |  |
| --- | --- |
| **public toString () : String** | |
| Description | Returns a string representation of this component.    The following format is used:    An implicational system can be instancied from and save to a text file in the following format:  - A list of elements separated by a space in the first line ;  - then, each rule on a line, written like [premise] -> [conclusion]  where elements are separated by a space.    ~~~  a b c d e  a b -> c d  c d -> e  ~~~ |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | a string representation of this component. |
| Query | false |

|  |  |
| --- | --- |
| **public save (filename : String) : void** | |
| Parameters | |  |  | | --- | --- | | **filename** | | | Description | the name of the file | | Multiplicity | Unspecified | | Type | Image3.png String | | Direction | inout | | Java Detail | N/A | |
| Description | Save the description of this component in a file whose name is specified. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | @throws IOException When an IOException occurs |
| Query | false |

|  |  |
| --- | --- |
| **public parse (filename : String) : ImplicationalSystem** | |
| Parameters | |  |  | | --- | --- | | **filename** | | | Description | the name of the file | | Multiplicity | Unspecified | | Type | Image3.png String | | Direction | inout | | Java Detail | N/A | |
| Description | Parse the description of this component from a file whose name is specified. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | this for chaining @throws IOException When an IOException occurs |
| Query | false |

|  |  |
| --- | --- |
| **public isProper () : boolean** | |
| Description | Returns true if this component is a proper ImplicationalSystem.    This test is perfomed in O(|Sigma||S|) by testing conclusion of each rule |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if and only if this component is a proper implicational system. |
| Query | false |

|  |  |
| --- | --- |
| **public isUnary () : boolean** | |
| Description | Returns true if this component is an unary ImplicationalSystem.    This test is perfomed in O(|Sigma||S|) by testing conclusion of each rule |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if this component is an unary ImplicationalSystem. |
| Query | false |

|  |  |
| --- | --- |
| **public isCompact () : boolean** | |
| Description | Returns true if this component is a compact ImplicationalSystem.    This test is perfomed in O(|Sigma|^2|S|) by testing premises of each pair of rules |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if this component is a compact ImplicationalSystem. |
| Query | false |

|  |  |
| --- | --- |
| **public isRightMaximal () : boolean** | |
| Description | Returns true if conclusion of rules of this component are closed.    This test is perfomed in O(|Sigma||S|) by testing conclusion of each rule |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if conclusion of rules of this component are closed. |
| Query | false |

|  |  |
| --- | --- |
| **public isLeftMinimal () : boolean** | |
| Description | Returns true if this component is left minimal.    This test is perfomed in O(|Sigma|^2|S|) by testing conclusions of each pair of rules |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if this component is left minimal. |
| Query | false |

|  |  |
| --- | --- |
| **public isDirect () : boolean** | |
| Description | Returns true if this component is direct.    This test is perfomed in O(|Sigma|^2|S|) by testing if closure of  the premisse of each conclusion can be obtained by only one iteration  on the set of rules. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if this component is direct. |
| Query | false |

|  |  |
| --- | --- |
| **public isMinimum () : boolean** | |
| Description | Returns true if this component is minimum.    This test is perfomed in O(|Sigma|^2|S|) by testing if closure of  the premisse of each conclusion can be obtained by only one iteration  on the set of rules. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if this component is minimum. |
| Query | false |

|  |  |
| --- | --- |
| **public isCanonicalDirectBasis () : boolean** | |
| Description | Returns true if this component is equal to its canonical direct basis.    The canonical direct basis is computed before to be compare with this component.    This test is performed in O(d|S|), where d corresponds to the number of rules  that have to be added by the direct treatment. This number is exponential in the worst case. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if this component is equal to its canonical direct basis. |
| Query | false |

|  |  |
| --- | --- |
| **public isCanonicalBasis () : boolean** | |
| Description | Returns true if this component is equal to its canonical basis.    The canonical basis is computed before to be compare with this component.    This treatment is performed in (|Sigma||S|cl) where O(cl) is the  computation of a closure. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if this component is equal to its canonical basis. |
| Query | false |

|  |  |
| --- | --- |
| **public isIncludedIn (is : ImplicationalSystem) : boolean** | |
| Parameters | |  |  | | --- | --- | | **is** | | | Description | another ImplicationalSystem | | Multiplicity | Unspecified | | Type | Image2.png [ImplicationalSystem](#855Oq_KGAqACIUZW) | | Direction | inout | | Java Detail | N/A | |
| Description | Compares by inclusion of the proper and unary form of this component with the specified one. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if really include in this componenet. |
| Query | false |

|  |  |
| --- | --- |
| **public makeProper () : int** | |
| Description | Makes this component a proper ImplicationalSystem.    Elements that are at once in the conclusion and in the premise are deleted from the conclusion.  When the obtained conclusion is an empty set, the rule is deleted from this component    This treatment is performed in O(|Sigma||S|). |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | the difference between the number of rules of this component before and after this treatment |
| Query | false |

|  |  |
| --- | --- |
| **public makeUnary () : int** | |
| Description | Makes this component an unary ImplicationalSystem.    This treatment is performed in O(|Sigma||S|)    A rule with a non singleton as conclusion is replaced with a sets of rule, one rule for each  element of the conclusion.    This treatment is performed in O(|Sigma||S|). |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | the difference between the number of rules of this component before and after this treatment |
| Query | false |

|  |  |
| --- | --- |
| **public makeCompact () : int** | |
| Description | Replaces rules of same premise by only one rule.    This treatment is performed in O(|sigma|^2|S|) |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | the difference between the number of rules of this component before and after this treatment |
| Query | false |

|  |  |
| --- | --- |
| **public makeRightMaximal () : int** | |
| Description | Replaces conclusion of each rule with their closure without the premise.    This treatment is performed in O(|sigma||S|cl), where O(cl) is the  computation of a closure. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | the difference between the number of rules of this component before and after this treatment |
| Query | false |

|  |  |
| --- | --- |
| **public makeLeftMinimal () : int** | |
| Description | Makes this component a left minimal and compact ImplicationalSystem.    The unary form of this componant is first computed: if two rules have the  same unary conclusion, the rule with the inclusion-maximal premise is deleted.    Then, the left-minimal treatment is performed in O(|sigma|^2|S|)) |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | the difference between the number of rules of this component before and after this treatment |
| Query | false |

|  |  |
| --- | --- |
| **public makeDirect () : int** | |
| Description | Makes this component a compact and direct ImplicationalSystem.    The unary and proper form of this componant is first computed.  For two given rules rule1 and rule2, if the conclusion of rule1 contains the premise of rule1,  then a new rule is addes, with rule1.premisse + rule2.premisse - rule1.conclusion as premise, and  rule2.conclusion as conlusion. This treatment is performed in a recursive way until no new rule  is added.    This treatment is performed in O(d|S|), where d corresponds to the number of rules  that have to be added by the direct treatment, that can be exponential in the worst case. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | the difference between the number of rules of this component before and after this treatment |
| Query | false |

|  |  |
| --- | --- |
| **public makeMinimum () : int** | |
| Description | Makes this component a minimum and proper ImplicationalSystem.    A rule is deleted when the closure of its premisse remains the same  even if this rule is suppressed.    This treatment is performed in O(|sigma||S|cl) where O(cl) is the  computation of a closure. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | the difference between the number of rules of this component before and after this treatment |
| Query | false |

|  |  |
| --- | --- |
| **public makeCanonicalDirectBasis () : int** | |
| Description | Replace this component by its canonical direct basis.    The proper, unary and left minimal form of this component is first computed,  before to apply the recursive directe treatment, then the left minimal treatment.    This treatment is performed in O(d), where d corresponds to the number of rules  that have to be added by the direct treatment. This number is exponential in the worst case. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | the difference between the number of rules of this component before and after this treatment |
| Query | false |

|  |  |
| --- | --- |
| **public makeCanonicalBasis () : int** | |
| Description | Replace this component by the canonical basis.    Conclusion of each rule is first replaced by its closure.  Then, premise of each rule r is replaced by its closure in ImplicationalSystem \ rule.  This treatment is performed in (|Sigma||S|cl) where O(cl) is the  computation of a closure. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | the difference between the number of rules of this component before and after this treatment |
| Query | false |

|  |  |
| --- | --- |
| **public representativeGraph () : DGraph** | |
| Description | Returns the representative graph of this component.    Nodes of the graph are attributes of this components.  For each proper rule X+b->a, there is an {X}-valuated edge from a to b.  Notice that, for a rule b->a, the edge from a to b is valuated by emptyset.  and for the two rules X+b->a and Y+b->a, the edge from a to b is valuated by {X,Y}. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | the representative graph of this component. |
| Query | false |

|  |  |
| --- | --- |
| **public dependencyGraph () : DGraph** | |
| Description | Returns the dependency graph of this component.    Dependency graph of this component is the representative  graph of the canonical direct basis.  Therefore, the canonical direct basis has to be generated before  to compute its representativ graph, and  this treatment is performed in O(d), as for the canonical direct basis generation,  where d corresponds to the number of rules  that have to be added by the direct treatment. This number is exponential in the worst case. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | the dependency graph of this component. |
| Query | false |

|  |  |
| --- | --- |
| **public reduction () : java.util.TreeMap** | |
| Description | Removes from this component reducible elements.    Reducible elements are elements equivalent by closure to others elements.  They are computed by `getReducibleElements` of `ClosureSystem`  in O(O(|Sigma||S|^2) |
| Leaf | false |
| Upper | 1 |
| Template Type Bind Info | N/A |
| Ordered | false |
| Unique | true |
| Return Type Description | the set of reducibles removed elements, with their equivalent elements |
| Query | false |

|  |  |
| --- | --- |
| **public isReduced () : boolean** | |
| Description | Return true if this component is reduced. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | true if this component is reduced. |
| Query | false |

|  |  |
| --- | --- |
| **public closure (x : java.util.TreeSet) : java.util.TreeSet** | |
| Parameters | |  |  | | --- | --- | | **x** | | | Description | a TreeSet of indexed elements | | Multiplicity | Unspecified | | Template Type Bind Info | N/A | | Type | java.util.TreeSet | | Direction | inout | | Java Detail | N/A | |
| Description | Builds the closure of a set X of indexed elements.    The closure is initialised with X. The closure is incremented with  the conclusion of each rule whose premise is included in it.  Iterations over the rules are performed until no new element has to be added  in the closure.    For direct ImplicationalSystem, only one iteration is needed, and the treatment is  performed in O(|Sigma||S|).    For non direct ImplicationalSystem, at most |S| iterations are needed, and this tratment  is performed in O(|Sigma||S|^2). |
| Leaf | false |
| Upper | 1 |
| Template Type Bind Info | N/A |
| Ordered | false |
| Unique | true |
| Return Type Description | the closure of X for this component |
| Query | false |

### Image2.png ImplicationsController

|  |  |
| --- | --- |
| **Name** | **Value** |
| Description | Implications generator view's controller.    @author Dora Calderón |
| Active | false |
| Business Key Mutable | true |
| Java Detail | N/A |
| Business Model | false |
| Visibility | public |
| Leaf | false |
| Root | false |

#### Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **private model : ImplicationsModel** | | | |
| Description | Model. | | |
| Type | Image2.png [ImplicationsModel](#I7pbi_KGAqACIQ7B) | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | 1 | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private validationSupport : org.controlsfx.validation.ValidationSupport** | | | |
| Description | Validation support. | | |
| Type | org.controlsfx.validation.ValidationSupport | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | 1 | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private logger : java.util.logging.Logger** | | | |
| Initial Value | Logger.getLogger(ImplicationsController.class.getName()) | | |
| Type | java.util.logging.Logger | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtNodes : javafx.scene.control.TextField** | | | |
| Type | javafx.scene.control.TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtImplications : javafx.scene.control.TextField** | | | |
| Type | javafx.scene.control.TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtMinLongPremisse : javafx.scene.control.TextField** | | | |
| Type | javafx.scene.control.TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtMaxLongPremisse : javafx.scene.control.TextField** | | | |
| Type | javafx.scene.control.TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtMinLongConclusion : javafx.scene.control.TextField** | | | |
| Type | javafx.scene.control.TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtMaxLongConclusion : javafx.scene.control.TextField** | | | |
| Type | javafx.scene.control.TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private btnSave : javafx.scene.control.Button** | | | |
| Type | javafx.scene.control.Button | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private btnGenerate : javafx.scene.control.Button** | | | |
| Type | javafx.scene.control.Button | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private cbNodeType : javafx.scene.control.ComboBox** | | | |
| Type | javafx.scene.control.ComboBox | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtSystemsNumber : javafx.scene.control.TextField** | | | |
| Type | javafx.scene.control.TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private textViewer : javafx.scene.control.TextArea** | | | |
| Type | javafx.scene.control.TextArea | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtOutput : javafx.scene.control.TextField** | | | |
| Type | javafx.scene.control.TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private implicationsPane : javafx.scene.layout.AnchorPane** | | | |
| Type | javafx.scene.layout.AnchorPane | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private generationProgressInd : javafx.scene.control.ProgressIndicator** | | | |
| Type | javafx.scene.control.ProgressIndicator | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private nodeType : AttributeType** | | | |
| Description | Nodes type. | | |
| Type | Image2.png AttributeType | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private implicationSystems : java.util.List** | | | |
| Description | Generated system. | | |
| Template Type Bind Info | N/A | | |
| Type | java.util.List | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | \* | | |
| Java Detail | N/A | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

#### Operations

|  |  |
| --- | --- |
| **public initialize (url : java.net.URL, rb : java.util.ResourceBundle) : void** | |
| Parameters | |  |  | | --- | --- | | **url** | | | Description | URL. | | Multiplicity | Unspecified | | Type | java.net.URL | | Direction | inout | | Java Detail | N/A |  |  |  | | --- | --- | | **rb** | | | Description | Resource Bundle. | | Multiplicity | Unspecified | | Type | java.util.ResourceBundle | | Direction | inout | | Java Detail | N/A | |
| Description | Initializes the controller class. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **protected initView () : void** | |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **protected initModel () : void** | |
| Description | Initializes the model. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **protected initBindings ()** | |
| Description | Inicializa el modelo. |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **protected initValidation () : void** | |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **protected initListeners () : void** | |
| Description | Initializes the listeners. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public setOutput (outputPath : String) : void** | |
| Parameters | |  |  | | --- | --- | | **outputPath** | | | Description | Output file path. | | Multiplicity | 1 | | Type | Image3.png String | | Direction | inout | | Java Detail | N/A | |
| Description | Sets the output file path into the output field. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public clean ()** | |
| Description | Limpia la vista y el modelo. |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public handleNodeTypeSelection (event : javafx.event.ActionEvent) : void** | |
| Parameters | |  |  | | --- | --- | | **event** | | | Description | Event. | | Multiplicity | Unspecified | | Type | javafx.event.ActionEvent | | Direction | inout | | Java Detail | N/A | |
| Description | Updates the node type to use form implications. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public handlePremisseSizeChange () : void** | |
| Description | Cleans the decorators of max and min premisse length. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public handleConclusionSizeChange () : void** | |
| Description | Método que se ejecuta cuando los campos txtMinLongPremisse y txtMaxLongPremisse han cambiado. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public handleGenerateButton (event : javafx.event.ActionEvent) : void** | |
| Parameters | |  |  | | --- | --- | | **event** | | | Description | Event. | | Multiplicity | 1 | | Type | javafx.event.ActionEvent | | Direction | inout | | Java Detail | N/A | |
| Description | Handles the event thrown when the Generate button is pressed.  Generates the implications with the inserted values. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public implicationsGenerated (systems : fr.kbertet.lattice.ImplicationalSystem)** | |
| Parameters | |  |  | | --- | --- | | **systems** | | | Description | Sistemas generados. | | Multiplicity | 0..\* | | Type Modifier | [0..\*] | | Type | fr.kbertet.lattice.ImplicationalSystem | | Direction | inout | |
| Description | Muestra el conjunto generado en el visor, si sólo ha sido uno.  Si han sido varios, muestra el cuadro de diálogo *Guardar* |
| Leaf | false |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public handleOutputAction (event : javafx.event.ActionEvent) : void** | |
| Parameters | |  |  | | --- | --- | | **event** | | | Description | Event. | | Multiplicity | Unspecified | | Type | javafx.event.ActionEvent | | Direction | inout | | Java Detail | N/A | |
| Description | Open the dialog box to select an output file, and copy the selected file path into Output field. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public handleSaveButton (event : javafx.event.ActionEvent) : void** | |
| Parameters | |  |  | | --- | --- | | **event** | | | Description | Evento. | | Multiplicity | Unspecified | | Type | javafx.event.ActionEvent | | Direction | inout | | Java Detail | N/A | |
| Description | Escucha el evento lanzado cuando se pulsa el botón btnOutput y muestra el cuadro de diálogo para seleccionar el fichero de destino.  Cuando se selecciona uno, muestra la ruta absoluta de éste en el campo txtOutput. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **protected save () : void** | |
| Description | Saves the generated implicational systems. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **protected showSaveDialog () : java.io.File** | |
| Description | Shows the "Save" dialog box and returns the selected path. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | Selected file. |
| Query | false |

|  |  |
| --- | --- |
| **protected showText (system : ImplicationalSystem) : void** | |
| Parameters | |  |  | | --- | --- | | **system** | | | Description | Implicational system. | | Multiplicity | Unspecified | | Type | Image2.png [ImplicationalSystem](#855Oq_KGAqACIUZW) | | Direction | inout | | Java Detail | N/A | |
| Description | Shows in the viewer an implicational system. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **protected showText (implicationsFile : java.io.File) : void** | |
| Parameters | |  |  | | --- | --- | | **implicationsFile** | | | Description | Implicational system. | | Multiplicity | 1 | | Type | java.io.File | | Direction | inout | | Java Detail | N/A | |
| Description | Muestra en el visor la representación en texto de un sistema implicacional. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **protected validate () : void** | |
| Description | Performs the model validation.  @throw RuntimeException If validation error exists. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **protected viewToModel () : void** | |
| Description | Reads the view values and saves them into the model. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **protected cleanView () : void** | |
| Description | Cleans the view fields. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **protected cleanModel () : void** | |
| Description | Limpia el modelo. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **protected initBinding () : void** | |
| Description | Inititalizes bindings. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public clean (event : javafx.event.ActionEvent) : void** | |
| Parameters | |  |  | | --- | --- | | **event** | | | Description | Event. | | Multiplicity | Unspecified | | Type | javafx.event.ActionEvent | | Direction | inout | | Java Detail | N/A | |
| Description | Handles the event thrown when the Clean button is pressed.  Cleans the form fields. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public implicationsGenerated (systems : java.util.List) : void** | |
| Parameters | |  |  | | --- | --- | | **systems** | | | Description | Implicaciones generadas. | | Multiplicity | Unspecified | | Template Type Bind Info | N/A | | Type | java.util.List | | Direction | inout | | Java Detail | N/A | |
| Description | Shows the generated system in the viewer, if was generated only one.  If was generated several, shows the *Save* dialog box. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **protected publicSystemsGenerated (selectedFile : String) : void** | |
| Parameters | |  |  | | --- | --- | | **selectedFile** | | | Description | Output file path. | | Multiplicity | Unspecified | | Type | Image3.png String | | Direction | inout | | Java Detail | N/A | |
| Description | Publishes a SystemSaved event by Eventbus. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

### Image2.png implications.fxml

|  |  |
| --- | --- |
| **Name** | **Value** |
| Description | Implications generator main view. |
| Active | false |
| Business Key Mutable | true |
| Business Model | false |
| Visibility | public |
| Leaf | false |
| Root | false |
| Stereotypes | viewpoint |

#### Attributes

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtNodes : TextField** | | | |
| Description | System nodes number field. | | |
| Type | TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | 1 | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtImplications : TextField** | | | |
| Description | Implications number field. | | |
| Type | TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | 1 | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtMinLongPremisse : TextField** | | | |
| Description | Premises min length field. | | |
| Type | TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | 1 | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtMinLongConclusion : TextField** | | | |
| Description | Conclusions min length field. | | |
| Type | TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | 1 | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtMaxLongPremisse : TextField** | | | |
| Description | Premises max length field. | | |
| Type | TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | 1 | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtMaxLongConclusion : TextField** | | | |
| Description | Conclusions max length field. | | |
| Type | TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | 1 | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private btnSave : Button** | | | |
| Description | Save button. | | |
| Type | Button | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | 1 | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private btnGenerate : Button** | | | |
| Description | Generate button. | | |
| Type | Button | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | 1 | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private cbNodeType : ComboBox** | | | |
| Description | Desplegable con los tipos de nodos posibles: númericos (0, 1,, 2, ...), alfabéticos (a, b, c, ...) o alfanuméricos (a0, a1, a2, ...).    Dropdown with the node types: numerics (0, 1,, 2, ...), alphabetics (a, b, c, ...) o alfanumerics (a0, a1, a2, ...). | | |
| Type | ComboBox | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | 1 | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtSystemsNumber : TextField** | | | |
| Description | Systems number field. | | |
| Initial Value | 1 | | |
| Type | TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | Unspecified | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private textViewer : TextArea** | | | |
| Description | Viewer. | | |
| Type | TextArea | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | 1 | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **private txtOutput : TextField** | | | |
| Description | Absolute path output file field. | | |
| Type | TextField | | |
| Allow Empty Name | false | | |
| Getter | false | Setter | false |
| Derived | false | | |
| Multiplicity | 1 | | |
| Aggregation | None | | |
| Derived Union | false | | |
| Read Only | false | | |
| Is ID | false | | |
| Leaf | false | | |

#### Tagged Values

|  |  |
| --- | --- |
| **Stakeholders** | |
| Description | The set of stakeholders. |
| Type | Text |
| Multiplicity | Unspecified |
| Tag Definition | Stakeholders |
| Tag Definition Stereotype | Image4.png viewpoint |

|  |  |
| --- | --- |
| **Purpose** | |
| Description | The purpose addresses the stakeholder concerns. |
| Type | Text |
| Multiplicity | Unspecified |
| Tag Definition | Purpose |
| Tag Definition Stereotype | Image4.png viewpoint |

|  |  |
| --- | --- |
| **Concerns** | |
| Description | The interest of the stakeholders. |
| Type | Text |
| Multiplicity | Unspecified |
| Tag Definition | Concerns |
| Tag Definition Stereotype | Image4.png viewpoint |

|  |  |
| --- | --- |
| **Languages** | |
| Description | The languages used to construct the viewpoint. |
| Type | Text |
| Multiplicity | Unspecified |
| Tag Definition | Languages |
| Tag Definition Stereotype | Image4.png viewpoint |

|  |  |
| --- | --- |
| **Methods** | |
| Description | The methods used to construct the views for this viewpoint. |
| Type | Text |
| Multiplicity | Unspecified |
| Tag Definition | Methods |
| Tag Definition Stereotype | Image4.png viewpoint |

### Image2.png ImplicationsFactory

|  |  |
| --- | --- |
| **Name** | **Value** |
| Description | Implicational systems factory. |
| Active | false |
| Business Key Mutable | true |
| Java Detail | N/A |
| Business Model | false |
| Visibility | public |
| Leaf | false |
| Root | false |

#### Operations

|  |  |
| --- | --- |
| **public initialize () : void** | |
| Description | Initializes the factory. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Query | false |

|  |  |
| --- | --- |
| **public getImplicationalSystem (nodesNumber : int, rulesNumber : int) : ImplicationalSystem** | |
| Parameters | |  |  | | --- | --- | | **nodesNumber** | | | Description | Nodes number. | | Multiplicity | Unspecified | | Type | Image3.png int | | Direction | inout | | Java Detail | N/A |  |  |  | | --- | --- | | **rulesNumber** | | | Description | Implications number. | | Multiplicity | Unspecified | | Type | Image3.png int | | Direction | inout | | Java Detail | N/A | |
| Description | Generates a random system with the nodes and implications number passed by parameter. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | Implicational system. |
| Query | false |

|  |  |
| --- | --- |
| **public getImplicationalSystems (implicationsModel : ImplicationsModel) : java.util.List** | |
| Parameters | |  |  | | --- | --- | | **implicationsModel** | | | Description | Restrictions of the systems to generate. | | Multiplicity | 1 | | Type | Image2.png [ImplicationsModel](#I7pbi_KGAqACIQ7B) | | Direction | inout | | Java Detail | N/A | |
| Description | Returns n implicational systems fulfilling the established restrictions in the parameter  {@code implicationsModel}. |
| Leaf | false |
| Upper | 1 |
| Template Type Bind Info | N/A |
| Ordered | false |
| Unique | true |
| Return Type Description | Lista de conjuntos de implicaciones aleatorios. |
| Query | false |

|  |  |
| --- | --- |
| **public getImplicationalSystem (implicationsModel : ImplicationsModel) : ImplicationalSystem** | |
| Parameters | |  |  | | --- | --- | | **implicationsModel** | | | Description | Restrictions of the systems to generate. | | Multiplicity | Unspecified | | Type | Image2.png [ImplicationsModel](#I7pbi_KGAqACIQ7B) | | Direction | inout | | Java Detail | N/A | |
| Description | Returns an implicational systems fulfilling the established restrictions in the parameter  {@code implicationsModel}. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | Sistema de implicaciones aleatorio. |
| Query | false |

|  |  |
| --- | --- |
| **protected getConclusion (system : ImplicationalSystem, minLength : Integer, maxLength : Integer) : ComparableSet** | |
| Parameters | |  |  | | --- | --- | | **system** | | | Description | Implicational system. | | Multiplicity | Unspecified | | Type | Image2.png [ImplicationalSystem](#855Oq_KGAqACIUZW) | | Direction | inout | | Java Detail | N/A |  |  |  | | --- | --- | | **minLength** | | | Description | Min nodes number. | | Multiplicity | Unspecified | | Type | Integer | | Direction | inout | | Java Detail | N/A |  |  |  | | --- | --- | | **maxLength** | | | Description | Max nodes number. | | Multiplicity | Unspecified | | Type | Integer | | Direction | inout | | Java Detail | N/A | |
| Description | Returns a conclusion with a max node number.If {@code maxLength} is null or less than 0, the max nodes number is th  system nodes number. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | Conclusiones.  Lanza RuntimeException si el valor del parámetro maxLength es mayor que el número de atributos. |
| Query | false |

|  |  |
| --- | --- |
| **protected getPremise (system : ImplicationalSystem, minLength : Integer, maxLength : Integer) : ComparableSet** | |
| Parameters | |  |  | | --- | --- | | **system** | | | Description | Implicational system. | | Multiplicity | Unspecified | | Type | Image2.png [ImplicationalSystem](#855Oq_KGAqACIUZW) | | Direction | inout | | Java Detail | N/A |  |  |  | | --- | --- | | **minLength** | | | Description | Min nodes number. | | Multiplicity | Unspecified | | Type | Integer | | Direction | inout | | Java Detail | N/A |  |  |  | | --- | --- | | **maxLength** | | | Description | Max nodes number. | | Multiplicity | Unspecified | | Type | Integer | | Direction | inout | | Java Detail | N/A | |
| Description | Returns a premise with a max nodes number.  If {@code maxLength} is null or less than 0, the max nodes number is the system nodes number. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | Premisas. |
| Query | false |

|  |  |
| --- | --- |
| **protected getRandomInt (maxValue : int) : int** | |
| Parameters | |  |  | | --- | --- | | **maxValue** | | | Description | Max value. | | Multiplicity | Unspecified | | Type | Image3.png int | | Direction | inout | | Java Detail | N/A | |
| Description | Returns a random integer, between 0 and {@code maxValue}. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | Valor entero. |
| Query | false |

|  |  |
| --- | --- |
| **protected getRandomInt (minValue : int, maxValue : int) : int** | |
| Parameters | |  |  | | --- | --- | | **minValue** | | | Description | Min value. | | Multiplicity | Unspecified | | Type | Image3.png int | | Direction | inout | | Java Detail | N/A |  |  |  | | --- | --- | | **maxValue** | | | Description | Max value. | | Multiplicity | Unspecified | | Type | Image3.png int | | Direction | inout | | Java Detail | N/A | |
| Description | Returns a random integer, between a min and max value passed as parameters. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | Valor entero. |
| Query | false |

### Image2.png GeneratorImplicationalSystemIO

|  |  |
| --- | --- |
| **Name** | **Value** |
| Description | Implements the methods to save implicational systems in files. |
| Active | false |
| Business Key Mutable | true |
| Java Detail | N/A |
| Business Model | false |
| Visibility | public |
| Leaf | false |
| Root | false |

#### Operations

|  |  |
| --- | --- |
| **public save (systems : java.util.List, fileName : String) : void** | |
| Parameters | |  |  | | --- | --- | | **systems** | | | Description | Implicational systems. | | Multiplicity | Unspecified | | Template Type Bind Info | N/A | | Type | java.util.List | | Direction | inout | | Java Detail | N/A |  |  |  | | --- | --- | | **fileName** | | | Description | File names prefix. | | Multiplicity | Unspecified | | Type | Image3.png String | | Direction | inout | | Java Detail | N/A | |
| Description | Saves n systems in n files with the names filename\_1, filename\_2, ..., filename\_n.  If the list only contains one element, this is saved in the file with the name fileName. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | @throws IOException Error en la lectura / escritura de los ficheros. |
| Query | false |

|  |  |
| --- | --- |
| **protected checkFile (fileName : String) : void** | |
| Parameters | |  |  | | --- | --- | | **fileName** | | | Description | File name. | | Multiplicity | Unspecified | | Type | Image3.png String | | Direction | inout | | Java Detail | N/A | |
| Description | Checks if the file with name fileName exists.  If no exists, this is created. |
| Leaf | false |
| Upper | 1 |
| Ordered | false |
| Unique | true |
| Return Type Description | @throws IOException Error en la lectura / escritura del fichero. |
| Query | false |