



# **ANALYSE D'AVL ET ARTEFACT**

## **RÉVÉLER LES PERSPECTIVES DE L'UTILISATEUR ET DE L'IMPLÉMENTEUR**

Groupe T1

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M1 MIAGE - C3P

# PLAN

**I. ANALYSE DE LA STRUCTURE DE DONNÉES DES PROJETS**

**II. LE PROJET AVL**

**III. LE PROJET ARTEFACT**

**IV. REMARQUES & PRESPECTIVES**





# **ANALYSE DE LA STRUCTURE DE DONNÉES DES PROJETS**



# EXPLORATION

AVLAbstractNode

AVL-Tree

- AVL-Tree-Inspector
- AVL-Tree-Tests
- BaselineOfAVLTree

AVLAbstractNode

- AVLNilNode
- AVLNode
- AVLTree

instance side

- accessing
- adding
- enumerating
- private
- removing
- testing
- abstract
- overridden

addChild:

- checkRemovingPath:
- children
- do:
- height
- isBalanced
- isNilNode
- isTotalBalanced
- remove:path:
- withAllChildren:

avl

Filter...

All Packages | Scoped View | Flat | Hier. | Inst. side | Class side | Methods | Vars | Class refs.

PDFAlignment

Artefact-Core

- Artefact-Core-Tests
- Artefact-Examples
- Artefact-Tutorial
- BaselineOfArtefact

ArtefactException

- ArtefactOverSizedContent
- ArtefactUndefinedAttribute
- ManifestArtefactCore
- PDFAlignment
- PDFAngleDirected
- PDFByteCode
- PDFCodeSegment
- PDFCompositeCodeSegment
- PDFElementCodeSegment
- PDFUnsecureElementCode
- PDFColor
- PDFDataType
- PDFDataArray

instance side

- accessing
- initialization
- position
- testing
- overrides

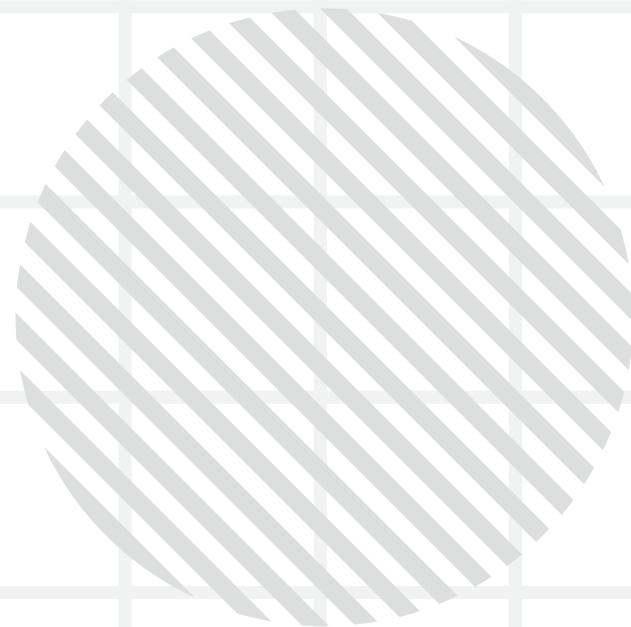
bottom

- center
- horizontal
- horizontal:
- initialize
- isBottom
- isCenter
- isLeft
- isMiddle
- isRight
- isTop
- left
- middle
- right
- top
- vertical

artefact

Filter...

All Packages | Scoped View | Flat | Hier. | Inst. side | Class side | Methods | Vars | Class refs.

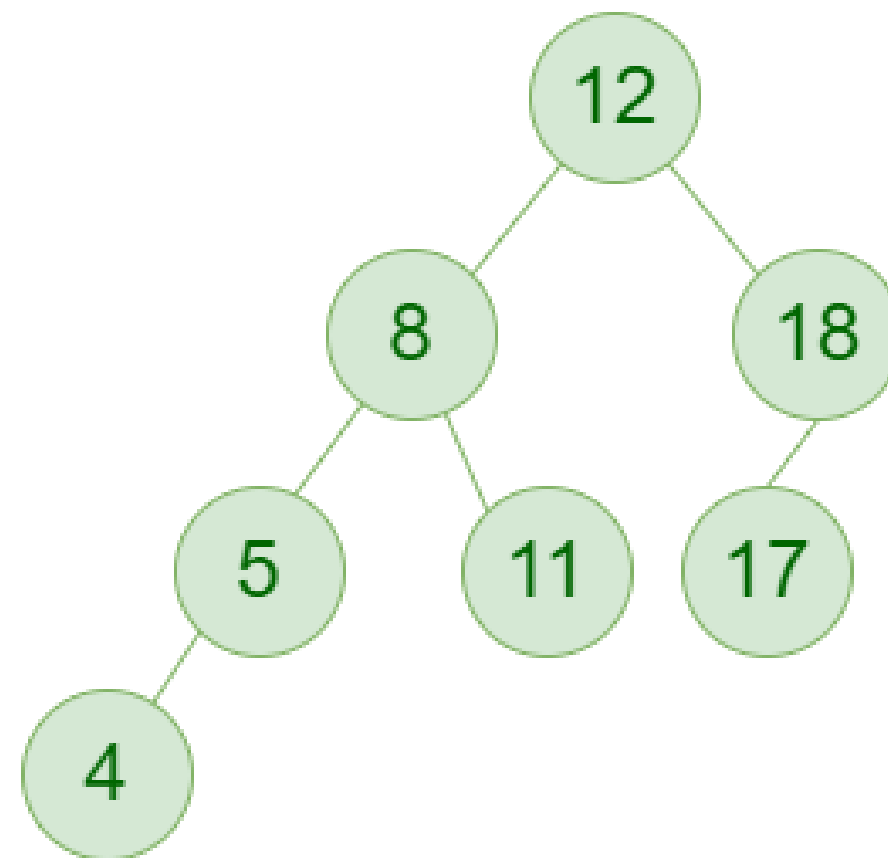


# PROJET AVL



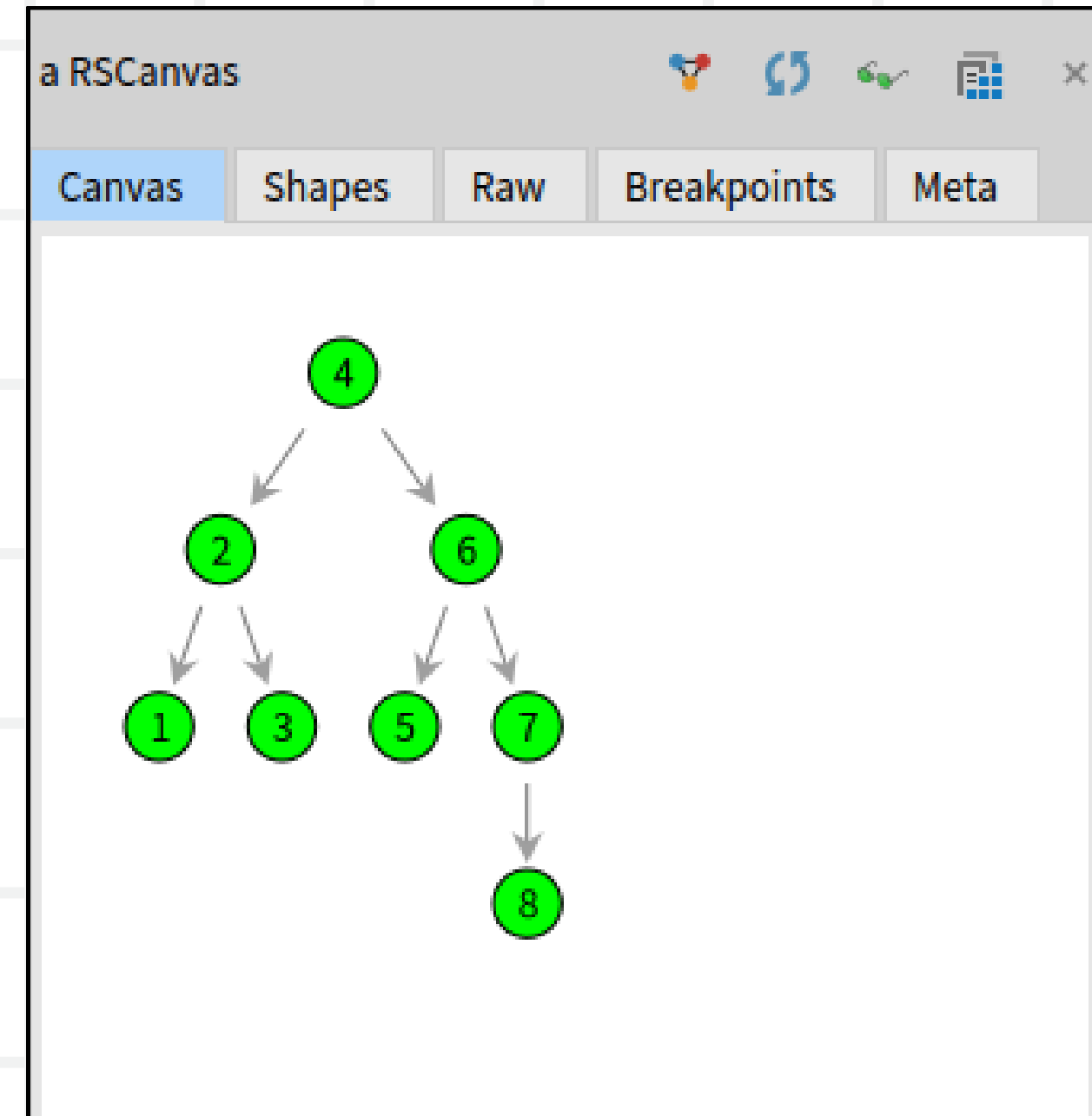
# OBJECTIF

## AVL Tree



# AVL TREE

```
1 | t1 i |  
2 t1 := AVLTree new.  
3 t1 addAll: {1. 2. 3. 4. 5. 6. 7. 8}.  
4 i := t1 inspectorCanvas.  
5  
6  
7
```



Package : AVLTree

**{ } AVLTree**

▲ add:  
● allChildren  
▲ do:  
● height  
▲ includes:  
▲ initialize  
  inspectorCanvas  
● isBalanced  
  isTotalBalanced  
▲ remove;ifAbsent:  
  root  
● search:

**AVLAbstractNode**

**AVLNode**

add:path:  
▲ addChild:  
  balance:path:  
  balanceZ:y:x:  
  checkPath:  
▲ checkRemovingPath:  
▲ children  
  childrenDo:  
  contents  
  contents:  
▲ do:  
▲ height  
▲ isBalanced

**AVLNilNode**

▲ addChild:  
▲ checkRemovingPath:  
▲ isNilNode



# TEST COVERAGE

Dr Tests - Tests Runner

Test Coverage

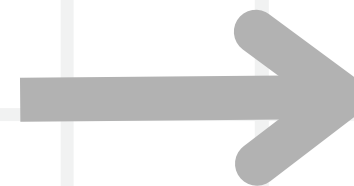
Test Packages (1 selected):  
AVL-Tree-Inspector  
AVL-Tree-Tests

Package under coverage (1 selected):  
AVL-Tree  
AVL-Tree-Inspector  
BaselineOfAVLTree

List of uncovered methods  
Results:  
90.57 % Code Coverage (0)  
Uncovered methods (5)  
AVLNode>>#balance:path:  
AVLNode>>#children  
AVLNode>>#printOn:  
AVLAbstractNode>>#isNilNode  
AVLAbstractNode>>#children

# MUTATION TEST

```
1 testCases := { AVLTreeTest }.
2 classesToMutate := {
3   AVLTree.AVLNode.AVLNilNode }.
4 analysis := MutationTestingAnalysis
5   testCasesFrom: testCases
6   mutating: classesToMutate
7   using: MutantOperator contents
8   with:
9     AllTestsMethodsRunningMutantEvaluation
10    Strategy new.
11 analysis run.
```



a SmallInteger (65)

Integer	
key	value
self	65
decimal	65

Items	Raw	Breakpoints	Meta
:l : Value			
1	Remove ^ in AVLTree>>#inspectorCanvas		
2	Remove ^ in AVLTree>>#remove:ifAbsent:		
3	Remove ^ in AVLTree>>#add:		
4	Remove ^ in AVLTree>>#includes:		
5	Remove ^ in AVLNode>>#balanceZ:y:x:		
6	Replace #and: argument with [true] in AVLNode>>#balanceZ:y:x:		
7	Replace #and: receiver with true in AVLNode>>#balanceZ:y:x:		
8	Replace #and: with #bEqv: in AVLNode>>#balanceZ:y:x:		
9	Replace #and: with #or: in AVLNode>>#balanceZ:y:x:		
10	Replace #and: argument with [true] in AVLNode>>#isTotalBalanced		
11	Replace #and: argument with [true] in AVLNode>>#isTotalBalanced		
12	Replace #and: receiver with true in AVLNode>>#isTotalBalanced		
1	self		



# PROJET ARTEFACT



# ARTEFACT ?

The screenshot shows the IntelliJ IDEA IDE interface. The top toolbar includes icons for File, Edit, Run, and other standard IDE functions. The main workspace is divided into several panes:

- Left Pane (Project Structure):** Displays a tree view of the project structure. The 'Artefact-Core' package is selected.
- Middle Pane (Class Hierarchy):** Shows the class hierarchy for 'PDFColor'. The 'PDFColor' class is selected, and its 'instance side' is expanded, showing methods like 'accessing', 'action', 'comparing', 'evaluating', 'printing', 'testing', and 'overrides'.
- Right Pane (Method List):** Displays a list of methods for the selected class. The 'green:' method is highlighted.
- Bottom Pane (Code Editor):** Shows the source code for the 'green:' method. The code is as follows:

```
green: anObject  
  
green := anObject
```

The bottom status bar indicates the current file is 'green:' and the editor is in 'Inst. side methc' mode.

# TEST COVERAGE

Test Coverage

Test Packages (1 selected):

Artefact-Core-Tests

Package under coverage (1 selected):

Colors

Morphic-Widgets-ColorPicker

Roassal3-Colors

List of uncovered methods

Results:

18.67 % Code Coverage (0)

Uncovered methods (183)

ColorMap class>>#mappingFromARGB:

ColorMap class>>#mappingFrom:to:

ColorMap class>>#mappingToARGB:

ColorMap class>>#masks:shifts:

ColorMap class>>#colors:

ColorMap class>>#mapBitsFrom:to:

ManifestColors class>>#manuallyResolvedDependencies

ManifestColors class>>#ruleClassNameInSelectorRuleV1FalsePositive

Color class>>#defaultColors3

Color class>>#cyan

Color class>>#paleBlue

Color class>>#registeredColorNames

Color class>>#defaultColors4

Color class>>#initializeColorRegistry

Color class>>#lightRed

Color class>>#indexedColors

Color class>>#veryPaleRed

Color class>>#white

Color class>>#defaultColors

Color class>>#paleBuff

Color class>>#h:s:v:

Color class>>#brown

Color class>>#fromArray:

Color class>>#green

Color class>>#lightBrown

arte

Color

Run Coverage

# MUTATION TEST

Playground

an OrderedCollection [17 it...]

Do it Publish Bindings Versions Pages

```
1 testCases := {PDFColorTest }.
2 classesToMutate := {PDFColor}.
3
4 analysis := MutationTestingAnalysis
5   testCasesFrom: testCases
6   mutating: classesToMutate
7   using: MutantOperator contents
8   with: AllTestsMethodsRunningMutantEvaluationStrategy
9   new.
10 analysis run.
11 analysis generalResult mutationScore.
12 alive := analysis generalResult aliveMutants.
13
```

a SmallInteger (29)

Integer	Raw	Breakpoints	Meta
key			value
self			29
decimal			29

Items Raw Breakpoints Meta

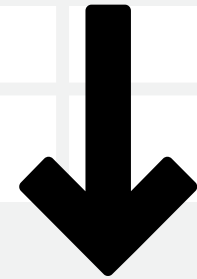
Value

- 1 Remove ^ in PDFColor>>#value
- 2 Remove ^ in PDFColor>>#value
- 3 Remove ^ in PDFColor>>#value
- 4 Replace #ifTrue:ifFalse: receiver with false in PDFColor>>#value
- 5 Replace #ifTrue:ifFalse: receiver with true in PDFColor>>#value
- 6 Replace #isEmpty with #notEmpty in PDFColor>>#value
- 7 Remove ^ in PDFColor>>#isEmpty
- 8 Replace #and: argument with [true] in PDFColor>>#isEmpty
- 9 Replace #and: receiver with true in PDFColor>>#isEmpty
- 10 Replace #and: with #bEqv: in PDFColor>>#isEmpty
- 11 Replace #and: with #nand: in PDFColor>>#isEmpty
- 12 Replace #and: with #or: in PDFColor>>#isEmpty
- 13 Replace #and: with false in PDFColor>>#isEmpty
- 14 Remove ^ in PDFColor class>>#round:
- 15 Replace #/ with #\* in PDFColor class>>#round:
- 16 Remove ^ in PDFColor class>>#greyLevel:
- 17 Remove ^ in PDFColor class>>#formatRGB:

# OUTILS ET TECHNIQUES UTILISÉS

- . System Browser
- . PlayGround/Transcript
  - . Débugueur
- . Visualisations interactives
  - . Tests Runner
- . Documentation (github)
- . Ressources sur internet
  - . Aides des collègues

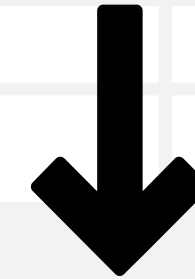
# REMARQUES & PRESPECTIVES



## UTILISATEUR

Facile à installer les deux projets

+ ou - difficile à utiliser artefact



## IMPLEMENTEUR

Pas assez de tests

Code modulaire