

PlantUML syntax examples

These are examples taken from the official documentation: <https://plantuml.com/> Generated by Plantuml syntax Test.

uml/actor
uml/Arrows_both
uml/Arrows_LR
uml/Arrows_RL
uml/class
uml/mindmap-multilines
uml/object
uml/reference_01-01-1_Basic-examples
uml/reference_01-02-1_Declaring-participant
uml/reference_01-02-2_Declaring-participant
uml/reference_01-02-3_Declaring-participant
uml/reference_01-03-1_Use-non-letters-in-participants
uml/reference_01-04-1_Message-to-Self
uml/reference_01-05-1_Text-alignment
uml/reference_01-06-1_Change-arrow-style
uml/reference_01-07-1_Change-error-color
uml/reference_01-08-1_Message-sequence-numbering
uml/reference_01-08-2_Message-sequence-numbering
uml/reference_01-08-3_Message-sequence-numbering
uml/reference_01-08-4_Message-sequence-numbering
uml/reference_01-09-1_Page-Title-Header-and-Footer
uml/reference_01-10-1_Split-diagrams
uml/reference_01-11-1_Grouping-message
uml/reference_01-12-1_Secondary-group-label
uml/reference_01-13-1_Notes-on-messages
uml/reference_01-14-1_Some-other-notes
uml/reference_01-15-1_Changing-notes-shape
uml/reference_01-16-1_Note-over-all-participants
uml/reference_01-17-1_Several-notes-aligned-at-the-same-level
uml/reference_01-17-2_Several-notes-aligned-at-the-same-level
uml/reference_01-18-1_Creole-and-HTML
uml/reference_01-19-1_Divider-or-separator
uml/reference_01-20-1_Reference
uml/reference_01-21-1_Delay
uml/reference_01-22-1_Text-wrapping
uml/reference_01-23-1_Space
uml/reference_01-24-1_lifeline
uml/reference_01-24-2_lifeline
uml/reference_01-24-3_lifeline
uml/reference_01-25-1_Return
uml/reference_01-26-1_Participant-creation
uml/reference_01-27-1_Shortcut-syntax-for-activation-deactivation-creation
uml/reference_01-28-1_Incoming-and-outgoing-messages
uml/reference_01-28-2_Incoming-and-outgoing-messages
uml/reference_01-29-1_Short-arrows-for-incoming-and-outgoing-messages
uml/reference_01-30-1_Anchors-and-Durations
uml/reference_01-31-1_Stereotypes-and-Spots
uml/reference_01-31-2_Stereotypes-and-Spots
uml/reference_01-31-3_Stereotypes-and-Spots
uml/reference_01-32-1_More-information-on-titles
uml/reference_01-32-2_More-information-on-titles
uml/reference_01-32-3_More-information-on-titles
uml/reference_01-33-1_Participants-encompass
uml/reference_01-34-1_Removing-Foot-Boxes
uml/reference_01-35-1_Skinparam
uml/reference_01-35-2_Skinparam
uml/reference_01-36-1_Changing_padding
uml/reference_02-01-1_Usecase
uml/reference_02-02-1_Actors
uml/reference_02-03-1_Stick-man
uml/reference_02-03-2_Awesome-man
uml/reference_02-03-3_Hollow-man
uml/reference_02-04-1_Usecases-description
uml/reference_02-05-1_Use-package
uml/reference_02-05-2_Use-package
uml/reference_02-06-1_Basic-example
uml/reference_02-07-1_Extension
uml/reference_02-08-1_Using-notes
uml/reference_02-09-1_Stereotypes
uml/reference_02-10-1_Changing-arrows-direction
uml/reference_02-10-2_Changing-arrows-direction
uml/reference_02-10-3_Changing-arrows-direction
uml/reference_02-10-4_Changing-arrows-direction
uml/reference_02-11-1_Splitting-diagrams
uml/reference_02-12-1_Left-to-right-direction
uml/reference_02-12-2_Left-to-right-direction
uml/reference_02-13-1_Skinparam
uml/reference_02-14-1_Complete-example
uml/reference_02-15-1_Business-Use-Case
uml/reference_02-15-2_Business-Actor

uml/reference_02-16-1_Change-arrow-color-and-style
uml/reference_02-17-1_Change-element-color-and-style
uml/reference_03-01-1_Declaring-element
uml/reference_03-02-1_Relations-between-classes
uml/reference_03-02-2_Relations-between-classes
uml/reference_03-02-3_Relations-between-classes
uml/reference_03-03-1_Label-on-relations
uml/reference_03-03-2_Label-on-relations
uml/reference_03-04-1_Adding-methods
uml/reference_03-04-2_Adding-methods
uml/reference_03-04-3_Adding-methods
uml/reference_03-05-1_Defining-visibility
uml/reference_03-05-2_Defining-visibility
uml/reference_03-06-1_Abstract-and-Static
uml/reference_03-07-1_Advanced-class-body
uml/reference_03-08-1_Notes-and-stereotypes
uml/reference_03-09-1_More-on-notes
uml/reference_03-10-1_Note-on-field-or-method
uml/reference_03-10-2_Note-on-method-with-the-same-name
uml/reference_03-11-1_Note-on-links
uml/reference_03-12-1_Abstract-class-and-interface
uml/reference_03-13-1_Using-non-letters
uml/reference_03-14-1_Hide-attributes-methods
uml/reference_03-15-1_Hide-classes
uml/reference_03-16-1_Remove-classes
uml/reference_03-17-1_Hide-or-Remove-unlinked-class
uml/reference_03-17-2_Hide-or-Remove-unlinked-class
uml/reference_03-17-3_Hide-or-Remove-unlinked-class
uml/reference_03-18-1_Use-generics
uml/reference_03-19-1_Specific-Spot
uml/reference_03-20-1_Packages
uml/reference_03-21-1_Packages-style
uml/reference_03-21-2_Packages-style
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uml/reference_03-23-1_Automatic-namespace-creation
uml/reference_03-23-2_Automatic-namespace-creation
uml/reference_03-24-1_Lollipop-interface
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uml/reference_03-25-2_Changing-arrows-direction
uml/reference_03-25-3_Changing-arrows-direction
uml/reference_03-25-4_Changing-arrows-direction
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uml/reference_03-26-2_Association-classes
uml/reference_03-27-1_Association-on-same-classe
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uml/reference_03-29-1_Skinned-Stereotypes
uml/reference_03-30-1_Color-gradient
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uml/reference_03-32-1_Splitting-large-files
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uml/reference_03-34-01-2_Bracketed-relations-style-Line-style
uml/reference_03-34-02-1_Bracketed-relations-style-Line-color
uml/reference_03-34-03-1_Bracketed-relations-style-Line-thickness
uml/reference_03-34-04-1_Bracketed-relations-style-Mix
uml/reference_03-35-1_Change-relation-color-and-style
uml/reference_03-36-1_Change-class-color-and-style
uml/reference_03-36-2_Change-class-color-and-style
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uml/reference_03-37-2_Arrows-from-to-class-members
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uml/reference_04-02-1_Relations-between-objects
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uml/reference_04-04-2_Adding-fields
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uml/reference_04-06-5_Map-table-or-associative-array
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uml/reference_05-04-2_Branches
uml/reference_05-05-1_More-on-Branches
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uml/reference_05-10-1_Skinparam
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uml/reference_06-02-2_Start-Stop-End
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uml/reference_06-03-01-2_Conditional-Several-tests-vertical-mode
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uml/reference_06-03-2_Conditional
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uml/reference_06-04-2_Conditional-with-stop-on-an-action
uml/reference_06-04-3_Conditional-with-stop-on-an-action
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uml/reference_06-07-2_While-loop
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uml/reference_06-18-2_Detach-or-kill
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uml/reference_06-21-01-2_Condition-Style
uml/reference_06-21-02-1_Condition-Style
uml/reference_06-21-03-1_Condition-Style
uml/reference_06-21-03-2_Condition-Style
uml/reference_06-22-01-1_Condition-End-Style
uml/reference_06-22-01-2_Condition-End-Style
uml/reference_06-22-02-1_Condition-End-Style
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uml/reference_07-06-4_Changing-arrows-direction
uml/reference_07-07-1_Use-UML2-notation
uml/reference_07-08-1_Use-UML1-notation
uml/reference_07-09-1_Use-rectangle-notation
uml/reference_07-10-1_Long_description
uml/reference_07-11-1_Individual-colors
uml/reference_07-12-1_Using-Sprite-in-Stereotype
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uml/reference_07-13-2_Skinparam
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uml/reference_07-14-01-2_componentStyle
uml/reference_07-15-1_Hide-or-Remove-unlinked-component
uml/reference_07-15-2_Hide-or-Remove-unlinked-component
uml/reference_07-15-3_Hide-or-Remove-unlinked-component
uml/reference_08-01-1_Declaring-element
uml/reference_08-01-2_Declaring-element
uml/reference_08-02-01-1_Declaring-element-Actor
uml/reference_08-02-02-1_Declaring-element-Component
uml/reference_08-02-03-1_Declaring-element-Interface
uml/reference_08-02-04-1_Declaring-element-Usecase
uml/reference_08-03-1_Linking-or-arrow
uml/reference_08-03-2_Linking-or-arrow
uml/reference_08-03-3_Linking-or-arrow
uml/reference_08-03-4_Linking-or-arrow
uml/reference_08-04-01-1_Bracketed-arrow-style-Line-style
uml/reference_08-04-01-2_Bracketed-arrow-style-Line-style
uml/reference_08-04-02-1_Bracketed-arrow-style-Line-color
uml/reference_08-04-03-1_Bracketed-arrow-style-Line-thickness
uml/reference_08-04-04-1_Bracketed-arrow-style-Mix
uml/reference_08-05-1_Change-arrow-color-and-style
uml/reference_08-06-1_Change-element-color-and-style
uml/reference_08-06-2_Change-element-color-and-style
uml/reference_08-07-1_Nestable-elements
uml/reference_08-08-01-1_Example-with-one-level
uml/reference_08-08-02-1_Other-example
uml/reference_08-08-02-2_Other-example
uml/reference_08-08-03-1_Full-nesting

uml/reference_08-08-03-2_Full-nesting
uml/reference_08-09-01-1_Simple-alias-with-as
uml/reference_08-09-02-1_Examples-of-long-alias
uml/reference_08-09-02-2_Examples-of-long-alias
uml/reference_08-10-1_Round-corner
uml/reference_08-11-01-1_Specific-SkinParameter-roundCorner
uml/reference_08-12-1_Appendix-All-type-of-arrow-line
uml/reference_08-13-01-1_Type-of-arrow-head
uml/reference_08-13-02-1_Type-of-0-arrow-or-circle-arrow
uml/reference_08-14-01-1_Simple-element
uml/reference_08-14-03-1_Without-sub-element
uml/reference_08-14-04-1_With-sub-element
uml/reference_08-15-02-1_Global-style-on-componentDiagram
uml/reference_08-15-03-1_Style-for-each-element
uml/reference_08-15-05-1_Global-style-on-componentDiagram
uml/reference_08-15-06-1_Style-for-each-nested-element
uml/reference_08-15-08-1_Global-style-on-componentDiagram
uml/reference_08-15-09-1_Style-for-each-nested-element
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uml/reference_09-02-1_Change_state_rendering
uml/reference_09-03-01-1_Internal-sub-state
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uml/reference_09-05-1_History
uml/reference_09-06-1_Fork
uml/reference_09-07-01-1_Horizontal-separator--
uml/reference_09-07-02-1_Vertical-separator
uml/reference_09-08-1_Conditional
uml/reference_09-09-1_Stereotypes-full-example
uml/reference_09-10-1_Point
uml/reference_09-11-1_Pin
uml/reference_09-12-1_Expansion
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uml/reference_09-14-1_Change-line-color-and-style
uml/reference_09-15-1_Note
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uml/reference_09-20-1_Changing-style
uml/reference_09-21-1_Change-state-color-and-style
uml/reference_09-21-2_Change-state-color-and-style
uml/reference_09-21-3_Change-state-color-and-style
uml/reference_10-01-1_Declaring-participant
uml/reference_10-02-1_Binary-and-Clock
uml/reference_10-03-1_Adding-message
uml/reference_10-04-1_Relative-time
uml/reference_10-05-1_Anchor-Points
uml/reference_10-06-1_Participant-oriented
uml/reference_10-07-1_Setting-scale
uml/reference_10-08-1_Initial-state
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uml/reference_10-12-1_Using-Time-and-Date
uml/reference_10-12-2_Using-Time-and-Date
uml/reference_10-13-1_Adding-constraint
uml/reference_10-14-1_Highlighted-period
uml/reference_10-15-1_Adding-texts
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uml/reference_10-17-1_Digital-Example
uml/reference_10-18-1_Adding-color
uml/reference_11-01-01-1_Complex-example
uml/reference_11-01-1_Display-JSON-Data
uml/reference_11-02-1_Highlight-parts
uml/reference_11-03-01-1_Synthesis-of-all-JSON-basic-element
uml/reference_11-04-01-1_Array-type
uml/reference_11-04-03-1_Number-array
uml/reference_11-04-04-1_String-array
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uml/reference_11-06-01-1_JSON-Unicode
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uml/reference_12-04-01-1_Without-style
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uml/reference_13-02-1_Define-multiple-addresses
uml/reference_13-03-01-1_Define-group-inside-network-definitions
uml/reference_13-03-02-1_Define-group-outside-of-network-definitions
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uml/reference_13-03-05-1_Example-with-3-group
uml/reference_13-04-01-1_Extended-Syntax-Network
uml/reference_13-04-02-1_Extended-Syntax-Group
uml/reference_13-05-1_Using-Sprites
uml/reference_13-06-1_Using-OpenIconic
uml/reference_13-07-1_Same-nodes-on-more-than-two-networks
uml/reference_13-08-1_Peer-networks
uml/reference_13-09-01-1_Without-group
uml/reference_13-09-02-1_Group-on-first
uml/reference_13-09-03-1_Group-on-second
uml/reference_13-09-04-1_Group-on-third
uml/reference_13-10-1_Add-title-caption-header-footer-or-legend-on-network-diagram
uml/reference_13-11-1_Change-width-of-the-networks
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uml/reference_14-02-2_Using-grid
uml/reference_14-03-1_Group-box
uml/reference_14-04-1_Using-separator
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uml/reference_16-02-1_One-line-declaration
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uml/reference_16-03-2_Adding-constraints
uml/reference_16-04-1_Short-names
uml/reference_16-05-1_Customize-colors
uml/reference_16-06-1_Completion-status
uml/reference_16-07-01-1_Milestone-Relative-milestone
uml/reference_16-07-02-1_Milestone-Absolute-milestone
uml/reference_16-07-03-1_Milestone-of-maximum-end-of-tasks
uml/reference_16-08-1_Hyperlinks
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uml/reference_16-10-1_Coloring-days
uml/reference_16-11-01-1_Changing-scale-Daily
uml/reference_16-11-02-1_Changing-scale-Weekly
uml/reference_16-11-02-2_Changing-scale-Weekly
uml/reference_16-11-03-1_Changing-scale-Monthly
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uml/reference_16-12-2_Close-day
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uml/reference_16-13-2_Simplified-task-succession
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uml/reference_16-15-2_Working-with-resources
uml/reference_16-15-3_Working-with-resources
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uml/reference_16-17-1_Comments

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uml/reference_16-18-02-1_With-style
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uml/reference_16-19-2_Add-notes
uml/reference_16-19-3_Add-notes
uml/reference_16-19-4_Add-notes
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uml/reference_16-21-1_Change-link-colors
uml/reference_16-21-2_Change-link-colors
uml/reference_16-22-1_Tasks-or-Milestones-on-the-same-line
uml/reference_16-23-1_Highlight-today
uml/reference_16-24-1_Task-between-two-milestones
uml/reference_16-26-1_Add-title-header-footer-caption-or-legend-on-gantt-diagram
uml/reference_16-27-1_Removing-Foot-Boxes
uml/reference_16-27-2_Removing-Foot-Boxes
uml/reference_16-27-3_Removing-Foot-Boxes
uml/reference_16-27-4_Removing-Foot-Boxes
uml/reference_17-01-1_OrgMode-syntax
uml/reference_17-02-1_Markdown-syntax
uml/reference_17-03-1_Arithmetic-notation
uml/reference_17-04-1_Multilines
uml/reference_17-05-01-1_With-inline-color
uml/reference_17-05-01-2_With-inline-color
uml/reference_17-05-01-3_With-inline-color
uml/reference_17-05-02-1_With-style-color
uml/reference_17-05-02-2_With-style-color
uml/reference_17-05-02-3_With-style-color
uml/reference_17-06-1_Removing-box
uml/reference_17-06-2_Removing-box
uml/reference_17-06-3_Removing-box
uml/reference_17-07-1_Changing-diagram-direction
uml/reference_17-08-1_Complete-example
uml/reference_17-09-01-1_Changing-style-node-depth
uml/reference_17-09-02-1_Changing-style-boxless
uml/reference_17-10-1_Word-Wrap
uml/reference_18-01-1_OrgMode-syntax
uml/reference_18-02-1_Change-direction
uml/reference_18-03-1_Arithmetic-notation
uml/reference_18-04-02-1_Several-boxless-node
uml/reference_18-04-03-1_All-boxless-node
uml/reference_18-04-05-1_Several-boxless-node
uml/reference_18-04-06-1_All-boxless-node
uml/reference_18-05-1_Colors
uml/reference_18-05-2_Colors
uml/reference_18-05-3_Colors
uml/reference_18-05-4_Colors
uml/reference_18-06-1_Using-style
uml/reference_18-07-1_Word-Wrap
uml/reference_19-01-1_Standalone-diagram
uml/reference_19-01-2_Standalone-diagram
uml/reference_19-1_Maths
uml/reference_19-2_Maths
uml/reference_20-01-1_Information-Engineering-Relations
uml/reference_20-02-1_Entities
uml/reference_20-02-2_Entities
uml/reference_20-03-1_Complete-Example
uml/reference_21-02-1_Zoom
uml/reference_21-03-1_Title
uml/reference_21-03-2_Title
uml/reference_21-04-1_Caption
uml/reference_21-05-1_Footer-and-header
uml/reference_21-06-1_Legend-the-diagram
uml/reference_21-06-2_Legend-the-diagram
uml/reference_22-01-1_Emphasized-text
uml/reference_22-02-1_Lists
uml/reference_22-03-1_Escape-character
uml/reference_22-04-1_Horizontal-lines
uml/reference_22-05-1_Headingsuml
uml/reference_22-06-1_Legacy-HTML
uml/reference_22-07-1_Code
uml/reference_22-07-2_Code
uml/reference_22-08-01-1_Create-a-table
uml/reference_22-08-02-1_Add-color-on-rows-or-cells
uml/reference_22-08-03-1_Add-color-on-border-and-text
uml/reference_22-08-04-1_No-border-or-same-color-as-the-background
uml/reference_22-08-05-1_Bold-header-or-not
uml/reference_22-09-1_Tree
uml/reference_22-09-2_Tree
uml/reference_22-09-3_Tree
uml/reference_22-10-1_Special-characters
uml/reference_22-11-1_OpenIconic
uml/reference_22-11-2_OpenIconic
uml/reference_22-12-01-1_Activity
uml/reference_22-12-02-1_Class
uml/reference_22-12-03-1_Component-Deployment-Use-Case
uml/reference_22-12-05-1_Object
uml/reference_22-12-06-1_MindMap

uml/reference_22-12-08-1_Note
 uml/reference_22-13-01-1_Activity
 uml/reference_22-13-02-1_Class
 uml/reference_22-13-03-1_Component-Deployment-Use-Case
 uml/reference_22-13-05-1_Object
 uml/reference_22-13-06-1_MindMap
 uml/reference_22-13-08-1_Note
 uml/reference_22-14-1_Style-equivalent-between-Creole-and-HTML
 uml/reference_23-01-1_Changing-colors
 uml/reference_23-04-1_Examples
 uml/reference_23-04-2_Examples
 uml/reference_23-06-1_Listing-Sprites
 uml/reference_23-1_Defining-and-using-sprites
 uml/reference_23-2_Defining-and-using-sprites
 uml/reference_24-03-1_Black-and-White
 uml/reference_24-04-1_Shadowing
 uml/reference_24-05-1_Reverse-colors
 uml/reference_24-06-1_Colors
 uml/reference_24-08-1_Text-Alignment
 uml/reference_24-08-2_Text-Alignment
 uml/reference_24-08-3_Text-Alignment
 uml/reference_24-09-1_Examples
 uml/reference_24-09-2_Examples
 uml/reference_24-09-3_Examples
 uml/reference_24-09-4_Examples
 uml/reference_24-09-5_Examples
 uml/reference_24-10-1_List-of-all-skinparam-parameters
 uml/reference_25-02-1_Variable-definition
 uml/reference_25-04-1_Conditions
 uml/reference_25-05-1_While-loop
 uml/reference_25-05-2_While-loop
 uml/reference_25-06-1_Procedure
 uml/reference_25-07-1_Return-function
 uml/reference_25-07-2_Return-function
 uml/reference_25-07-3_Return-function
 uml/reference_25-08-1_Default-argument-value
 uml/reference_25-08-2_Default-argument-value
 uml/reference_25-09-1_Unquoted-procedure-or-function
 uml/reference_25-10-1_Keywords-arguments
 uml/reference_25-11-1_Including-files-or-URL
 uml/reference_25-14-1Logging
 uml/reference_25-15-1_Memory-dump
 uml/reference_25-16-1_Assertion
 uml/reference_25-19-1_Argument-concatenation
 uml/reference_25-20-1_Dynamic-invocation
 uml/reference_25-20-2_Dynamic-invocation
 uml/reference_25-20-3_Dynamic-invocation
 uml/reference_25-21-1_Evaluation-of-addition-depending-of-data-types
 uml/reference_26-01-1_Examples
 uml/reference_26-01-2_Examples
 uml/reference_26-01-3_Examples
 uml/reference_26-01-4_Examples
 uml/reference_27-01-1_List-of-Standard-Library
 uml/reference_27-02-1_ArchiMate
 uml/reference_27-03-1_AWS-library
 uml/reference_27-03-2_AWS-library
 uml/reference_27-04-1_Amazon-Labs-AWS-Library
 uml/reference_27-05-1_Azure-library
 uml/reference_27-06-1_C4-library
 uml/reference_27-07-1_Cloud-Insight
 uml/reference_27-08-1_Cloudogu
 uml/reference_27-09-1_Elastic-library
 uml/reference_27-09-2_Elastic-library
 uml/reference_27-10-1_Google-Material-Icons
 uml/reference_27-10-2_Google-Material-Icons
 uml/reference_27-11-1_Kubernetes
 uml/reference_27-12-1_Logos
 uml/reference_27-12-2_Logos
 uml/reference_27-13-1_Office
 uml/reference_27-13-2_Office
 uml/reference_27-14-1_Open-Security-Architecture
 uml/reference_27-15-1_Tupadr3-library
 uml/reference_27-15-2_Tupadr3-library
 uml/sequence-autonumber
 uml/sequence

uml/actor

```

@startuml
actor Alice #green
` a comment this is

participant Bob
box "Sweet deal"

```

```

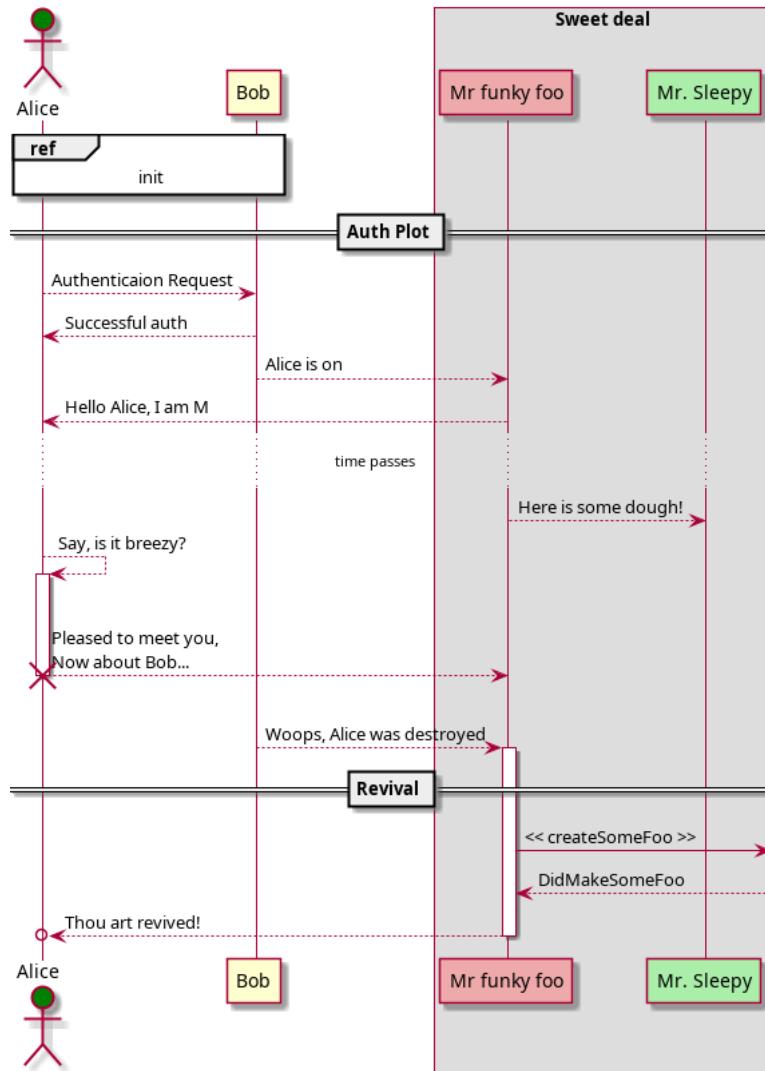
participant "Mr. funky foo" as M #EAA
participant "Mr. Sleepy" as S #AEA
end box

ref over Alice, Bob: init

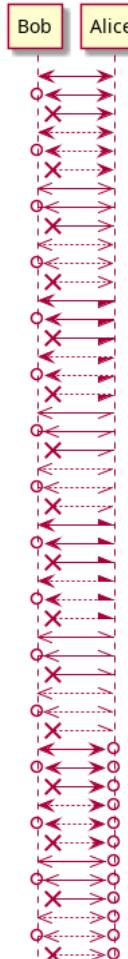
== Auth Plot ==
Alice --> Bob: Authenticaion Request
Bob --> Alice: Successful auth
Bob --> M: Alice is on
M --> Alice: Hello Alice, I am M
...time passes...
M --> S: Here is some dough!
Alice --> Alice: Say, is it breezy?
activate Alice
||22||
Alice --> M: Pleased to meet you, \nNow about Bob...
||22||
destroy Alice
Bob --> M: Woops, Alice was destroyed
deactivate Bob
== Revival ==
activate M
M ->]: << createSomeFoo >>
M <-->: DidMakeSomeFoo
M -->o Alice: Thou art revived!
deactivate M

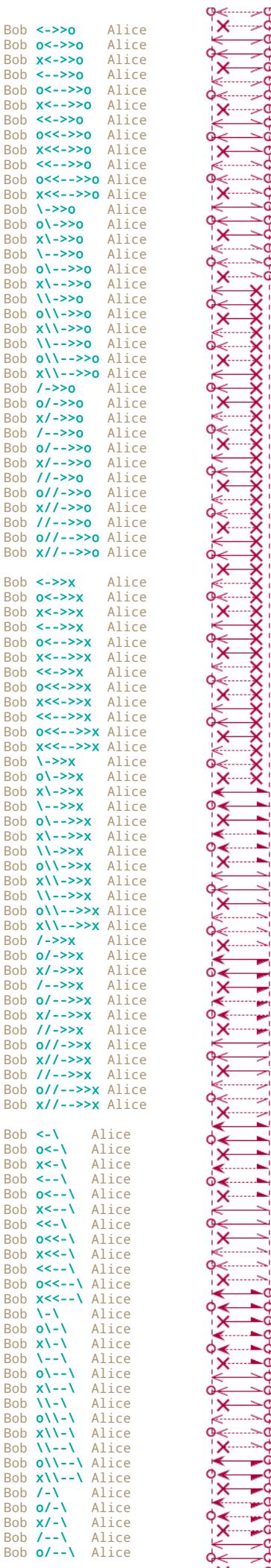
@enduml

```



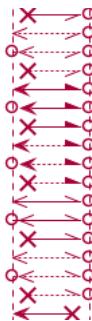
uml/Arrows_both





Bob x--\o Alice
Bob //-\o Alice
Bob o--\o Alice
Bob x--\o Alice
Bob //-\o Alice
Bob o//--\o Alice
Bob x//--\o Alice

Bob <-\o Alice
Bob o<-\o Alice
Bob x<-\o Alice
Bob <-\o\o Alice
Bob o<-\o\o Alice
Bob x<-\o\o Alice
Bob <<-\o Alice
Bob o<<-\o Alice
Bob x<<-\o Alice
Bob <<-\o\o Alice
Bob o<<-\o\o Alice
Bob x<<-\o\o Alice
Bob <<-\o\o\o Alice
Bob o<<-\o\o\o Alice
Bob x<<-\o\o\o Alice
Bob <\-o Alice
Bob o\-\o Alice
Bob x\-\o Alice
Bob \-\o\o Alice
Bob o\-\o\o Alice
Bob x\-\o\o Alice
Bob <\-o\o Alice
Bob o\-\o\o Alice
Bob x\-\o\o Alice
Bob \-\o\o\o Alice
Bob o\-\o\o\o Alice
Bob x\-\o\o\o Alice
Bob <\-o\o\o Alice
Bob o\-\o\o\o Alice
Bob x\-\o\o\o Alice
Bob \-\o\o\o\o Alice
Bob o\-\o\o\o\o Alice
Bob x\-\o\o\o\o Alice



Bob <->\x Alice
Bob o<->\x Alice
Bob x<->\x Alice
Bob <-->\x Alice
Bob o<-->\x Alice
Bob x<-->\x Alice
Bob <<->\x Alice
Bob o<<->\x Alice
Bob x<<->\x Alice
Bob <<-->\x Alice
Bob o<<-->\x Alice
Bob x<<-->\x Alice
Bob \->\x Alice
Bob o\-\>\x Alice
Bob x\-\>\x Alice
Bob \-\>\x Alice
Bob o\-\>\x Alice
Bob x\-\>\x Alice
Bob o\\-\>\x Alice
Bob x\\-\>\x Alice
Bob \\\-\>\x Alice
Bob o\\\-\>\x Alice
Bob x\\\-\>\x Alice
Bob /-\>\x Alice
Bob o/-\>\x Alice
Bob x/-\>\x Alice
Bob /-\>\x Alice
Bob o/->\x Alice
Bob x/->\x Alice
Bob //-\>\x Alice
Bob o//-\>\x Alice
Bob x//-\>\x Alice
Bob ///-\>\x Alice
Bob o///-\>\x Alice
Bob x///-\>\x Alice

Bob o\\--\\ Alice
Bob x\\--\\ Alice
Bob /--\\ Alice
Bob o/-\\ Alice
Bob x/-\\ Alice
Bob //--\\ Alice
Bob o//--\\ Alice
Bob x//--\\ Alice
Bob //--\\ Alice
Bob o//--\\ Alice
Bob x//--\\ Alice
Bob <-\\o Alice
Bob o<-\\o Alice
Bob x<-\\o Alice
Bob <--\\o Alice
Bob o<--\\o Alice
Bob x<--\\o Alice
Bob <--\\o Alice
Bob o<--\\o Alice
Bob x<--\\o Alice
Bob <--\\o Alice
Bob o<--\\o Alice
Bob x<--\\o Alice
Bob <--\\o Alice
Bob o\\--\\o Alice
Bob x\\--\\o Alice
Bob /--\\o Alice
Bob o/-\\o Alice
Bob x/-\\o Alice
Bob //--\\o Alice
Bob o//--\\o Alice
Bob x//--\\o Alice
Bob <-\\x Alice
Bob o<-\\x Alice
Bob x<-\\x Alice
Bob <--\\x Alice
Bob o<--\\x Alice
Bob x<--\\x Alice
Bob <--\\x Alice
Bob o<--\\x Alice
Bob x<--\\x Alice
Bob <--\\x Alice
Bob o<--\\x Alice
Bob x<--\\x Alice
Bob <--\\x Alice
Bob o\\--\\x Alice
Bob x\\--\\x Alice
Bob /--\\x Alice
Bob o/-\\x Alice
Bob x/-\\x Alice
Bob //--\\x Alice
Bob o//--\\x Alice
Bob x//--\\x Alice
Bob <-/- Alice
Bob o</- Alice
Bob x</- Alice
Bob <--/- Alice
Bob o<--/- Alice
Bob x<--/- Alice
Bob <--/- Alice
Bob o<--/- Alice
Bob x<--/- Alice
Bob <--/- Alice
Bob o<--/- Alice
Bob x<--/- Alice
Bob <--/- Alice
Bob o\\/- Alice
Bob x\\/- Alice
Bob /\\- Alice
Bob o\\/- Alice

```
Bob \--/ Alice
Bob o\--/ Alice
Bob x\--/ Alice
Bob \\\-/ Alice
Bob o\\-/ Alice
Bob x\\-/ Alice
Bob \\-/ Alice
Bob o\\--/ Alice
Bob x\\--/ Alice
Bob /-/ Alice
Bob o/-/ Alice
Bob x/-/ Alice
Bob /-/ Alice
Bob o/-/ Alice
Bob x/-/ Alice
Bob //-/ Alice
Bob o//-/ Alice
Bob x//-/ Alice
Bob ///-/ Alice
Bob o///-/ Alice
Bob x///-/ Alice
```

```
Bob <-/o Alice
Bob o<-/o Alice
Bob x<-/o Alice
Bob <--/o Alice
Bob o<--/o Alice
Bob x<--/o Alice
Bob <</o Alice
Bob o<</o Alice
Bob x<</o Alice
Bob <<-/o Alice
Bob o<<-/o Alice
Bob x<<-/o Alice
Bob \-/o Alice
Bob o\-/o Alice
Bob x\-/o Alice
Bob \--/o Alice
Bob o\--/o Alice
Bob x\--/o Alice
Bob \\\-/o Alice
Bob o\\-/o Alice
Bob x\\-/o Alice
Bob \\-/o Alice
Bob o\\--/o Alice
Bob x\\--/o Alice
Bob /-/o Alice
Bob o/-/o Alice
Bob x/-/o Alice
Bob /-/o Alice
Bob o/-/o Alice
Bob x/-/o Alice
Bob //-/o Alice
Bob o//-/o Alice
Bob x//-/o Alice
Bob ///-/o Alice
Bob o///-/o Alice
Bob x///-/o Alice
```

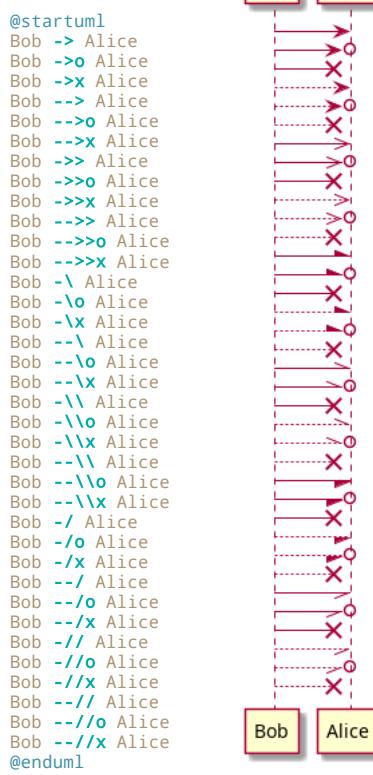
```
Bob <-/x Alice
Bob o<-/x Alice
Bob x<-/x Alice
Bob <--/x Alice
Bob o<--/x Alice
Bob x<--/x Alice
Bob <</x Alice
Bob o<</x Alice
Bob x<</x Alice
Bob <<-/x Alice
Bob o<<-/x Alice
Bob x<<-/x Alice
Bob <<-/x Alice
Bob o<<-/x Alice
Bob x<<-/x Alice
Bob \-/x Alice
Bob o\-/x Alice
Bob x\-/x Alice
Bob \--/x Alice
Bob o\--/x Alice
Bob x\--/x Alice
Bob \\\-/x Alice
Bob o\\-/x Alice
Bob x\\-/x Alice
Bob \\-/x Alice
Bob o\\--/x Alice
Bob x\\--/x Alice
Bob /-/x Alice
Bob o/-/x Alice
Bob x/-/x Alice
Bob /-/x Alice
Bob o/-/x Alice
Bob x/-/x Alice
Bob /-/x Alice
Bob o/-/x Alice
Bob x/-/x Alice
Bob /-/x Alice
Bob o/-/x Alice
Bob x/-/x Alice
Bob //-/x Alice
Bob o//-/x Alice
Bob x//-/x Alice
Bob ///-/x Alice
Bob o///-/x Alice
Bob x///-/x Alice
```

```
Bob <-// Alice
Bob o<-// Alice
Bob x<-// Alice
Bob <--// Alice
Bob o<--// Alice
Bob x<--// Alice
Bob <<-// Alice
Bob o<<-// Alice
```

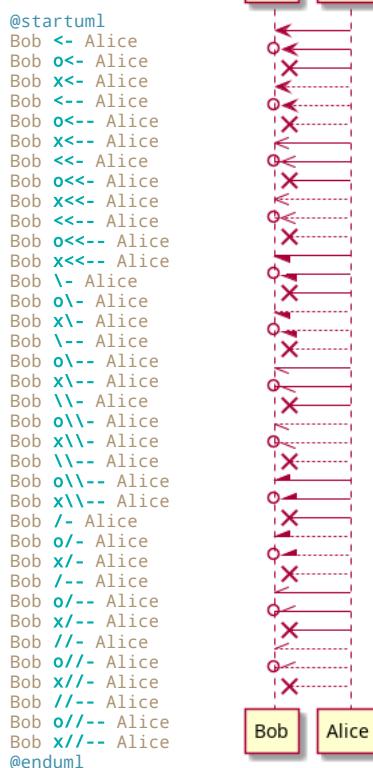
Bob <--/o Alice
Bob o<--/o Alice
Bob x<--/o Alice
Bob <--/-o Alice
Bob o<--/-o Alice
Bob x<--/-o Alice
Bob <--/-/o Alice
Bob o<--/-/o Alice
Bob x<--/-/o Alice
Bob <--/-/-o Alice
Bob o<--/-/-o Alice
Bob x<--/-/-o Alice
Bob \/-/o Alice
Bob o\/-/o Alice
Bob x\/-/o Alice
Bob \/-/-o Alice
Bob o\/-/-o Alice
Bob x\/-/-o Alice
Bob \\\/-/o Alice
Bob o\\\/-/o Alice
Bob x\\\/-/o Alice
Bob \\\/-/-o Alice
Bob o\\\/-/-o Alice
Bob x\\\/-/-o Alice
Bob /-/-o Alice
Bob o/-/-o Alice
Bob x/-/-o Alice
Bob /-/-/-o Alice
Bob o/-/-/-o Alice
Bob x/-/-/-o Alice

Appendix 1

uml/Arrows_LR



uml/Arrows_RL



uml/class

```
@startuml  
  
class Foo <>Bar>> {  
    You can use  
    several lines  
    ..  
    As you want  
    and group  
    ==  
    things together.
```

```
-- You can have as many
groups as you want.
--+
+publicMethod()
-privateMethod()
#protectedMethod()
End of class
}
```

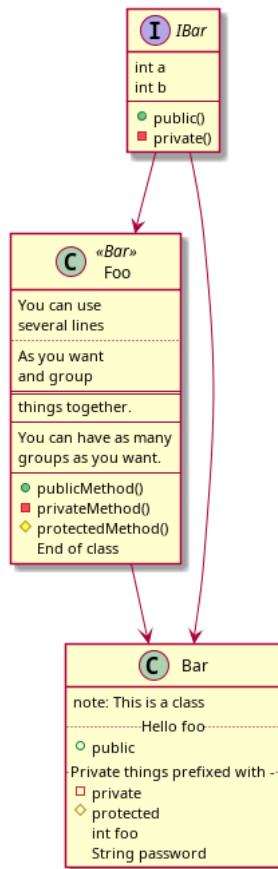
```
class Bar {
    note: This is a class
    ... Hello foo ...
    +public
    ... Private things prefixed with - ...
    -private
    #protected
    int foo
    String password
}

interface IBar {
    int a
    int b
    --
    +public()
    -private()
}

```

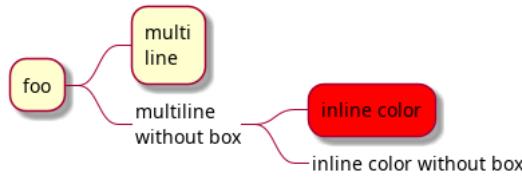
Foo --> Bar
IBar --> Foo
IBar --> Bar

@enduml



uml/mindmap-multilines

```
@startmindmap
* foo
**:multi
line;
**_:multiline
without box;
***[#red] inline color
***[#blue]_ inline color without box
@endmindmap
```



uml/object

```
@startuml
title Objects and Interfaces

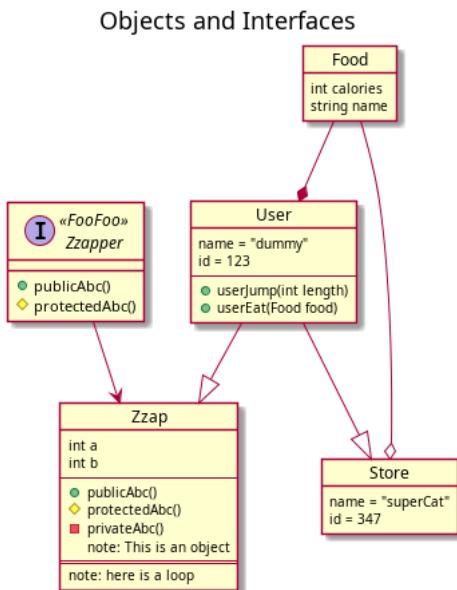
interface Zzapper <>FooFoo<> {
    +publicAbc()
    #protectedAbc()
}

object Zzap {
    int a
    int b
    --
    +publicAbc()
    #protectedAbc()
    -privateAbc()
    note: This is an object
    ==
    note: here is a loop
}

object User {
    name = "dummy"
    id = 123
    --
    +userJump(int length)
    +userEat(Food food)
}

object Food {
    int calories
    string name
}

object Store {
    name = "superCat"
    id = 347
}
```



```
Zzapper --> Zzap
```

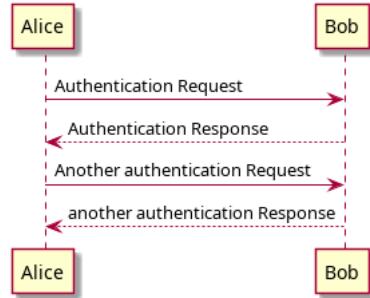
```
User --|> Store
User --|> Zzap
```

```
Food --* User
Food --o Store
```

```
@enduml
```

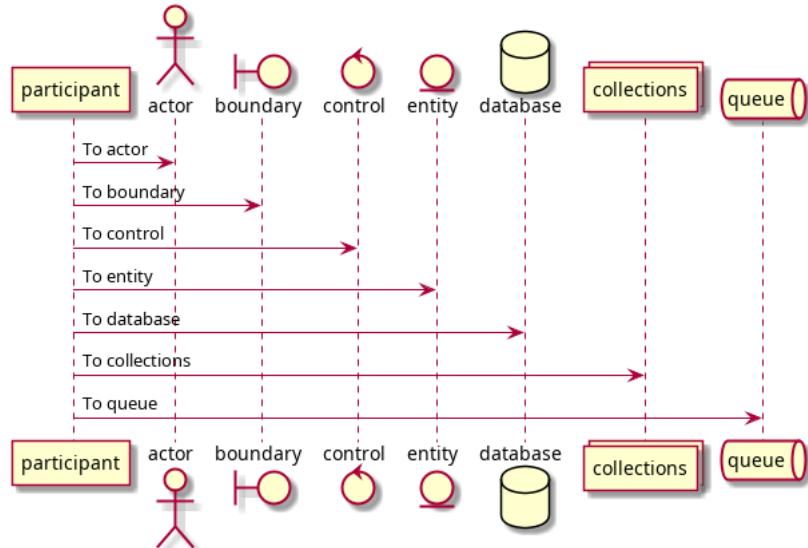
uml/reference_01-01-1_Basic-examples

```
@startuml
Alice --> Bob: Authentication Request
Bob --> Alice: Authentication Response
Alice --> Bob: Another authentication Request
Alice <-- Bob: another authentication Response
@enduml
```



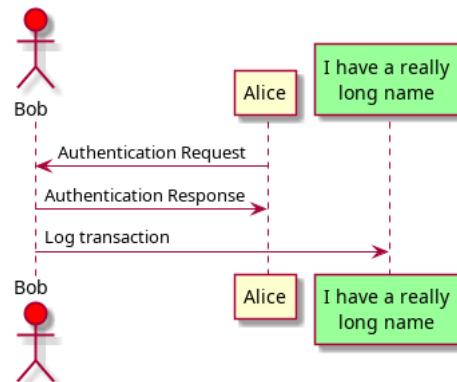
uml/reference_01-02-1_Declaring-participant

```
@startuml
participant participant as Foo
actor actor as Foo1
boundary boundary as Foo2
control control as Foo3
entity entity as Foo4
database database as Foo5
collections collections as Foo6
queue queue as Foo7
Foo -> Foo1 : To actor
Foo -> Foo2 : To boundary
Foo -> Foo3 : To control
Foo -> Foo4 : To entity
Foo -> Foo5 : To database
Foo -> Foo6 : To collections
Foo -> Foo7: To queue
@enduml
```



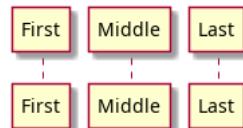
uml/reference_01-02-2_Declaring-participant

```
@startuml
actor Bob #red
' The only difference between actor
' and participant is the drawing
participant Alice
participant "I have a really\nlong name" as L #99FF99
' You can also declare:
participant L as "I have a really\nlong name" #99FF99
'
Alice->Bob: Authentication Request
Bob->Alice: Authentication Response
Bob->L: Log transaction
@enduml
```



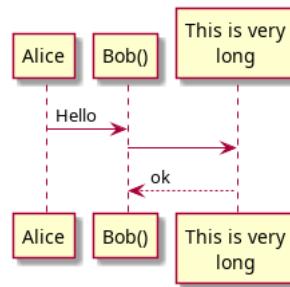
uml/reference_01-02-3_Declaring-participant

```
@startuml
participant Last order 30
participant Middle order 20
participant First order 10
@enduml
```

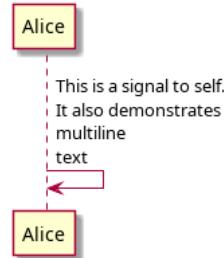


uml/reference_01-03-1_Use-non-letters-in-participants

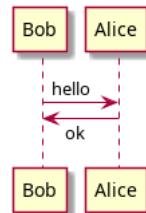
```
@startuml
Alice -> "Bob()": Hello
"Bob()" -> "This is very\nlong" as Long
' You can also declare:
' "Bob()" -> Long as "This is very\nlong"
Long --> "Bob()": ok
@enduml
```

**uml/reference_01-04-1_Message-to-Self**

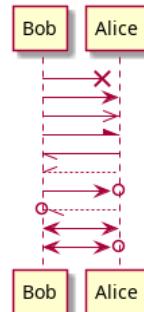
```
@startuml
Alice->Alice: This is a signal to self.\nIt also demonstrates\nmultiline \ntext
@enduml
```

**uml/reference_01-05-1_Text-alignment**

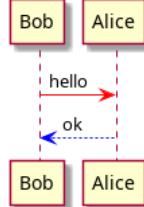
```
@startuml
skinparam responseMessageBelowArrow true
Bob -> Alice : hello
Alice -> Bob : ok
@enduml
```

**uml/reference_01-06-1_Change-arrow-style**

```
@startuml
Bob ->x Alice
Bob -> Alice
Bob ->> Alice
Bob -\> Alice
Bob \--> Alice
Bob //---> Alice
Bob ->o Alice
Bob o\--> Alice
Bob <-> Alice
Bob <->o Alice
@enduml
```

**uml/reference_01-07-1_Change-arrow-color**

```
@startuml
Bob -[#red]> Alice : hello
Alice -[#0000FF]>Bob : ok
@enduml
```

**uml/reference_01-08-1_Message-sequence-numbering**

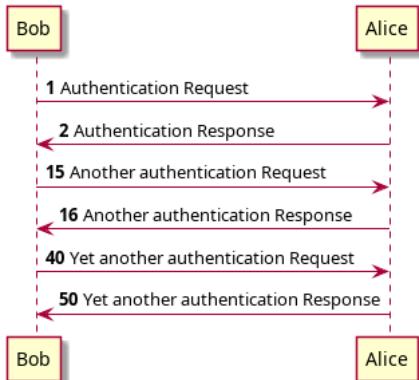
```
@startuml
autonumber
Bob -> Alice : Authentication Request
Bob <- Alice : Authentication Response
@enduml
```

**uml/reference_01-08-2_Message-sequence-numbering**

```
@startuml
autonumber
Bob -> Alice : Authentication Request
Bob <- Alice : Authentication Response
autonumber 15
Bob -> Alice : Another authentication Request
Bob <- Alice : Another authentication Response
autonumber 40 10
Bob -> Alice : Yet another authentication Request
```

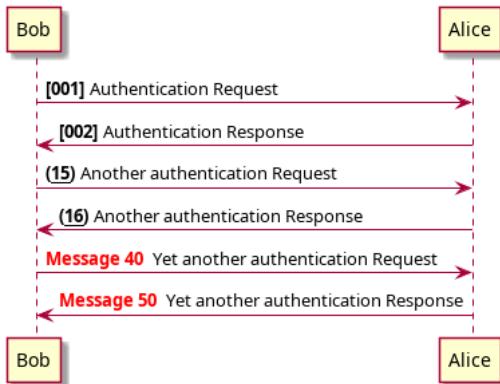
```
Bob <- Alice : Yet another authentication Response
@enduml
```

Test plantuml-syntax



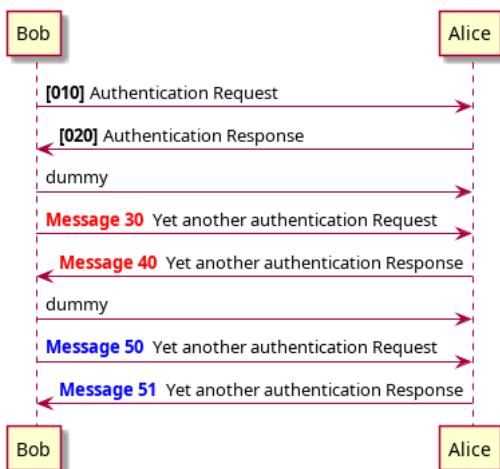
uml/reference_01-08-3_Message-sequence-numbering

```
@startuml
autonumber "<b>[000]</b>"
Bob -> Alice : Authentication Request
Bob <- Alice : Authentication Response
autonumber 15 "<b>(<u>#</u>)"</b>
Bob -> Alice : Another authentication Request
Bob <- Alice : Another authentication Response
autonumber 40 10 "<font color=red><b>Message 0 </b></font> "
Bob -> Alice : Yet another authentication Request
Bob <- Alice : Yet another authentication Response
@enduml
```



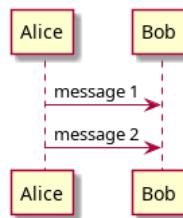
uml/reference_01-08-4_Message-sequence-numbering

```
@startuml
autonumber 10 10 "<b>[000]</b>"
Bob -> Alice : Authentication Request
Bob <- Alice : Authentication Response
autonumber stop
Bob -> Alice : dummy
autonumber resume "<font color=red><b>Message 0 </b></font> "
Bob -> Alice : Yet another authentication Request
Bob <- Alice : Yet another authentication Response
autonumber stop
Bob -> Alice : dummy
autonumber resume 1 "<font color=blue><b>Message 0 </b></font> "
Bob -> Alice : Yet another authentication Request
Bob <- Alice : Yet another authentication Response
@enduml
```



Page Header

Example Title



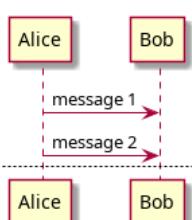
Page 1 of 1

uml/reference_01-09-1_Page-Title-Header-and-Footer

```
@startuml
header Page Header
footer Page %page% of %lastpage%
title Example Title
Alice -> Bob : message 1
Alice -> Bob : message 2
@enduml
```

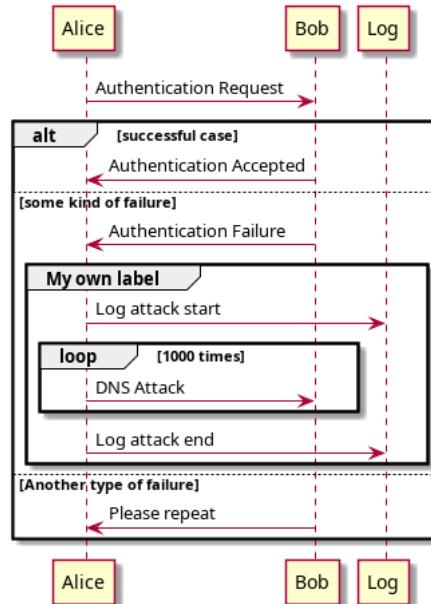
uml/reference_01-10-1_Split-diagrams

```
@startuml
Alice -> Bob : message 1
Alice -> Bob : message 2
newpage
Alice -> Bob : message 3
Alice -> Bob : message 4
newpage A title for the\last page
Alice -> Bob : message 5
Alice -> Bob : message 6
@enduml
```

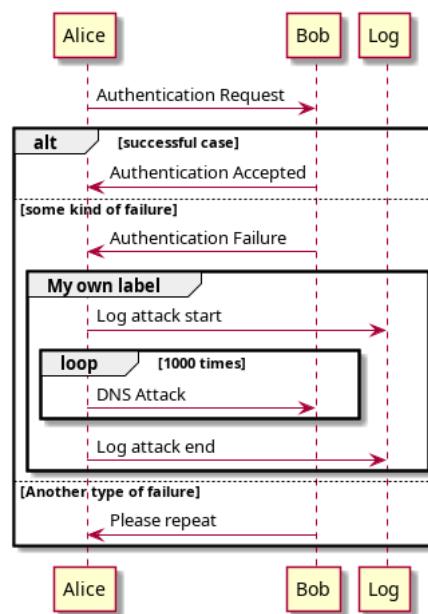


uml/reference_01-11-1_Grouping-message

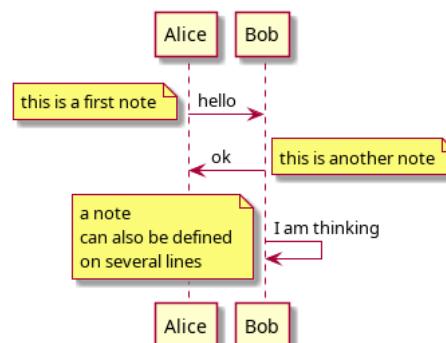
```
@startuml
Alice --> Bob: Authentication Request
alt successful case
Bob -> Alice: Authentication Accepted
else some kind of failure
Bob -> Alice: Authentication Failure
group My own label
Alice -> Log : Log attack start
loop 1000 times
Alice -> Bob: DNS Attack
end
Alice -> Log : Log attack end
end
else Another type of failure
Bob -> Alice: Please repeat
end
@enduml
```

**uml/reference_01-12-1_Secondary-group-label**

```
@startuml
Alice --> Bob: Authentication Request
alt successful case
Bob -> Alice: Authentication Accepted
else some kind of failure
Bob -> Alice: Authentication Failure
group My own label
Alice -> Log : Log attack start
loop 1000 times
Alice -> Bob: DNS Attack
end
Alice -> Log : Log attack end
end
else Another type of failure
Bob -> Alice: Please repeat
end
@enduml
```

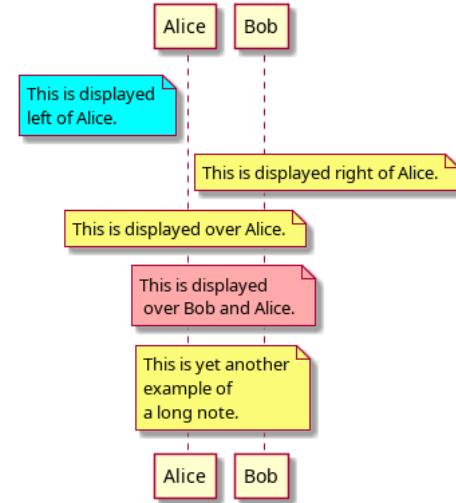
**uml/reference_01-13-1_Notes-on-messages**

```
@startuml
Alice->Bob : hello
note left: this is a first note
Bob->Alice : ok
note right: this is another note
Bob->Bob : I am thinking
note left
a note
can also be defined
on several lines
end note
@enduml
```

**uml/reference_01-14-1_Some-other-notes**

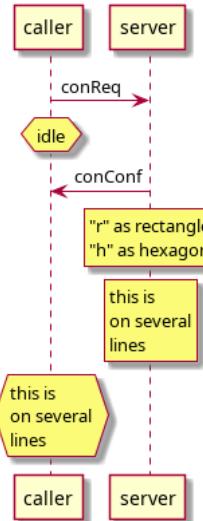
```
@startuml
participant Alice
participant Bob
note left of Alice #aqua
    This is displayed
    left of Alice.
end note
note right of Alice: This is displayed right of Alice.
note over Alice: This is displayed over Alice.
note over Alice, Bob #FFAAAA: This is displayed\n over Bob and Alice.
note over Bob, Alice
    This is yet another
    example of
    a long note.
```

```
end note
@enduml
```



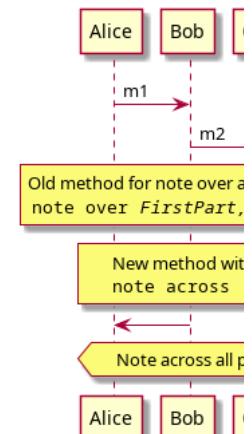
uml/reference_01-15-1_Changing-notes-shape

```
@startuml
caller -> server : conReq
hnote over caller : idle
caller <- server : conConf
rnote over server
  "r" as rectangle
  "h" as hexagon
endrnote
rnote over server
  this is
  on several
  lines
endrnote
hnote over caller
  this is
  on several
  lines
endhnote
@enduml
```



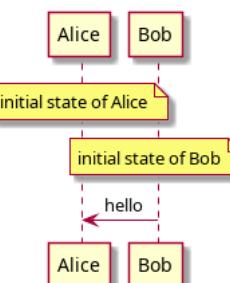
uml/reference_01-16-1_Note-over-all-participants

```
@startuml
Alice->Bob:m1
Bob->Charlie:m2
note over Alice, Charlie: Old method for note over all part. with:\n ""note over //FirstPart, LastPart//"".
note across: New method with:\n ""note across"""
Bob->Alice
hnote across:Note across all part.
@enduml
```



uml/reference_01-17-1_Several-notes-aligned-at-the-same-level

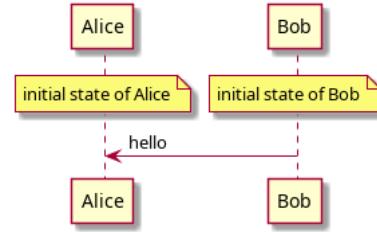
```
@startuml
note over Alice : initial state of Alice
note over Bob : initial state of Bob
Bob -> Alice : hello
@enduml
```



uml/reference_01-17-2_Several-notes-aligned-at-the-same-level

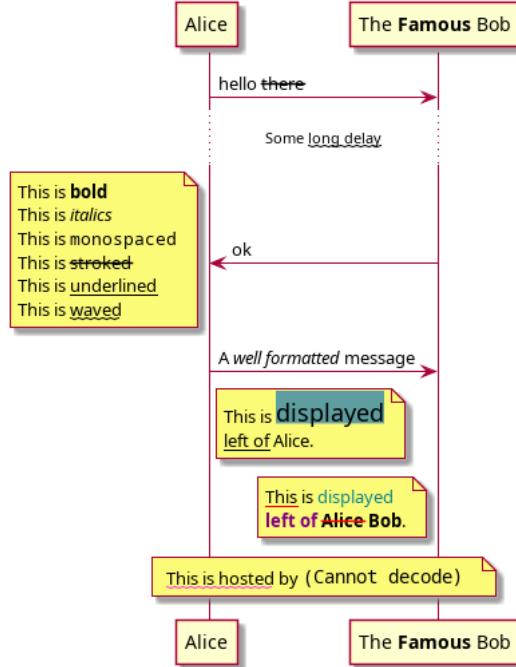
```
@startuml
note over Alice : initial state of Alice
/ note over Bob : initial state of Bob
```

```
Bob -> Alice : hello
@enduml
```



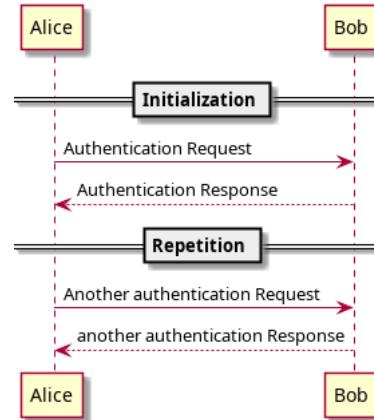
uml/reference_01-18-1_Creole-and-HTML

```
@startuml
participant Alice
participant "The **Famous** Bob" as Bob
Alice -> Bob : hello --there--
... Some ~~long delay~~ ...
Bob -> Alice : ok
note left
    This is **bold**
    This is //italics//
    This is ""monospaced"""
    This is --stroked--
    This is __underlined__
    This is ~~waved~~
end note
Alice -> Bob : A //well formatted// message
note right of Alice
    This is <back:cadetblue><size:18>displayed</size></back>
    _left of_ Alice.
end note
note left of Bob
    <u:red>This</u> is <color #118888>displayed</color>
    **<color purple>left of</color> <s:red>Alice</strike> Bob**.
end note
note over Alice, Bob
    <w:#FF33FF>This is hosted</w> by <img sourceforge.jpg>
end note
@enduml
```



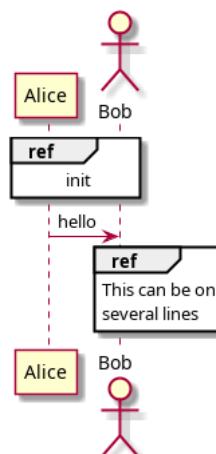
uml/reference_01-19-1_Divider-or-separator

```
@startuml
== Initialization ==
Alice -> Bob: Authentication Request
Bob --> Alice: Authentication Response
== Repetition ==
Alice -> Bob: Another authentication Request
Alice --> Bob: another authentication Response
@enduml
```



uml/reference_01-20-1_Reference

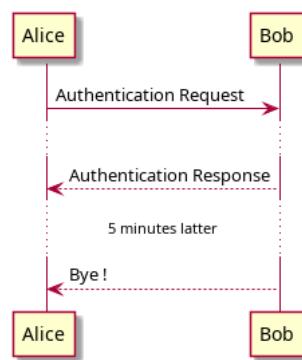
```
@startuml
participant Alice
actor Bob
ref over Alice, Bob : init
Alice -> Bob : hello
ref over Bob
    This can be on
    several lines
end ref
@enduml
```



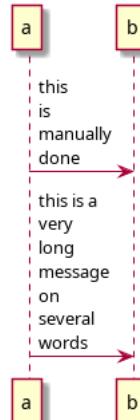
uml/reference_01-21-1_Delay

```
@startuml
Alice -> Bob: Authentication Request
```

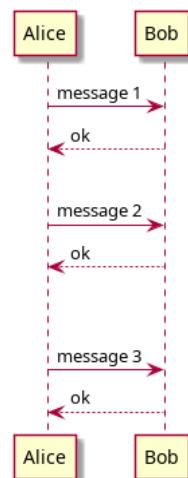
```
...
Bob --> Alice: Authentication Response
...5 minutes latter...
Bob --> Alice: Bye !
@enduml
```

**uml/reference_01-22-1_Text-wrapping**

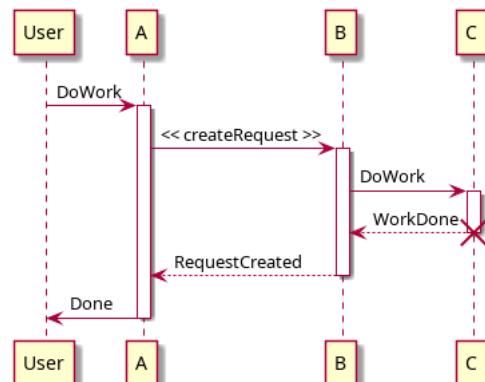
```
@startuml
skinparam maxMessageSize 50
participant a
participant b
a -> b : this\nis\nmanually\ndone
a -> b : this is a very long message on several words
@enduml
```

**uml/reference_01-23-1_Space**

```
@startuml
Alice --> Bob: message 1
Bob --> Alice: ok
|||
Alice --> Bob: message 2
Bob --> Alice: ok
||45||
Alice --> Bob: message 3
Bob --> Alice: ok
@enduml
```

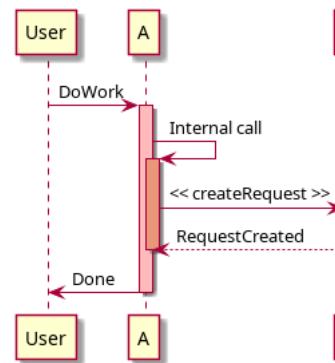
**uml/reference_01-24-1_lifeline**

```
@startuml
participant User
User -> A: DoWork
activate A
A -> B: << createRequest >>
activate B
B -> C: DoWork
activate C
C --> B: WorkDone
destroy C
B --> A: RequestCreated
deactivate B
A -> User: Done
deactivate A
@enduml
```

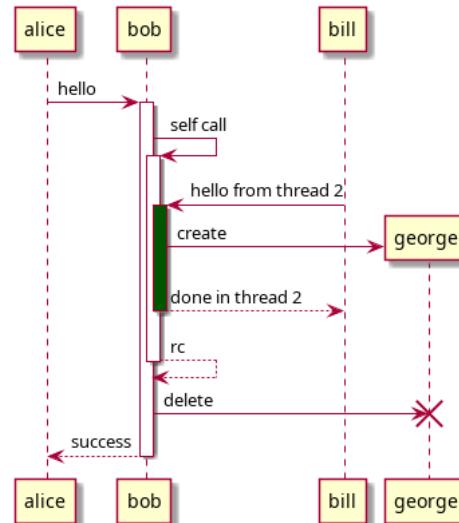
**uml/reference_01-24-2_lifeline**

```
@startuml
participant User
User -> A: DoWork
activate A #FFBBBB
A -> A: Internal call
activate A #DarkSalmon
A -> B: << createRequest >>
activate B
```

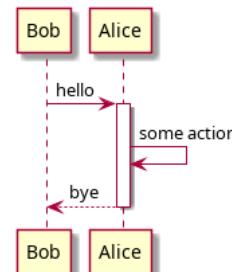
```
B --> A: RequestCreated
deactivate B
deactivate A
A -> User: Done
deactivate A
@enduml
```

**uml/reference_01-24-3_lifeline**

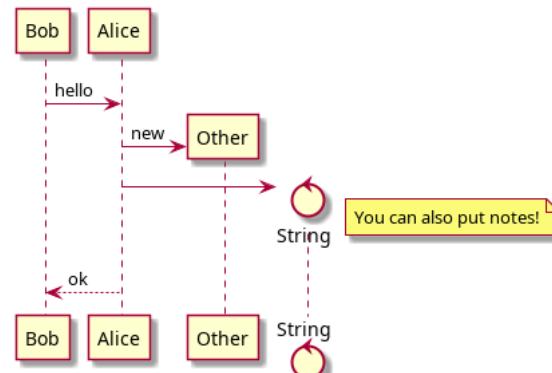
```
@startuml
autoactivate on
alice -> bob : hello
bob -> bob : self call
bill -> bob #005500 : hello from thread 2
bob -> george ** : create
return done in thread 2
return rc
bob -> george !! : delete
return success
@enduml
```

**uml/reference_01-25-1_Return**

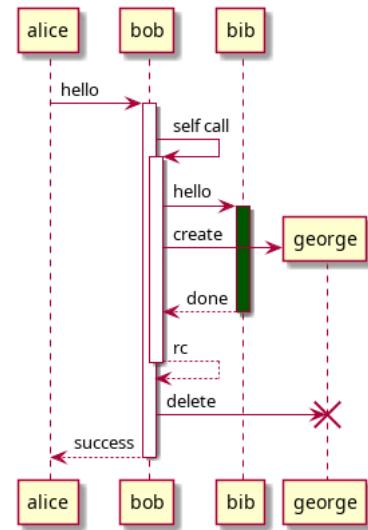
```
@startuml
Bob -> Alice : hello
activate Alice
Alice -> Alice : some action
return bye
@enduml
```

**uml/reference_01-26-1_Participant-creation**

```
@startuml
Bob -> Alice : hello
create Other
Alice -> Other : new
create control String
Alice -> String
note right : You can also put notes!
Alice --> Bob : ok
@enduml
```

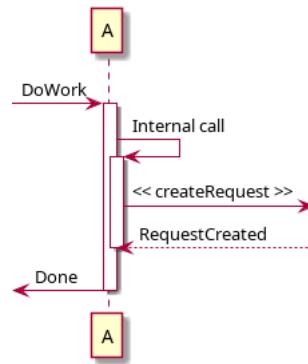
**uml/reference_01-27-1_Shortcut-syntax-for-activation-deactivation-creation**

```
@startuml
alice -> bob ++ : hello
bob -> bob ++ : self call
bob -> bib ++ #005500 : hello
bob -> george ** : create
return done
return rc
bob -> george !! : delete
return success
@enduml
```

**uml/reference_01-28-1_Incoming-and-outgoing-messages**

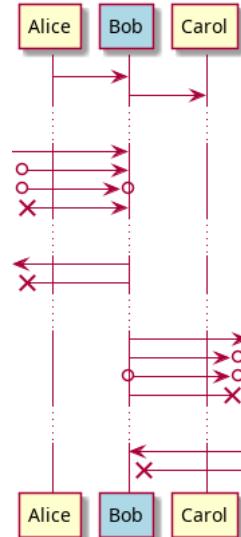
```

@startuml
[ -> A: Dowork
activate A
A --> A: Internal call
activate A
A ->] : << createRequest >>
A<- ->] : RequestCreated
deactivate A
[ <- A: Done
deactivate A
@enduml
  
```

**uml/reference_01-28-2_Incoming-and-outgoing-messages**

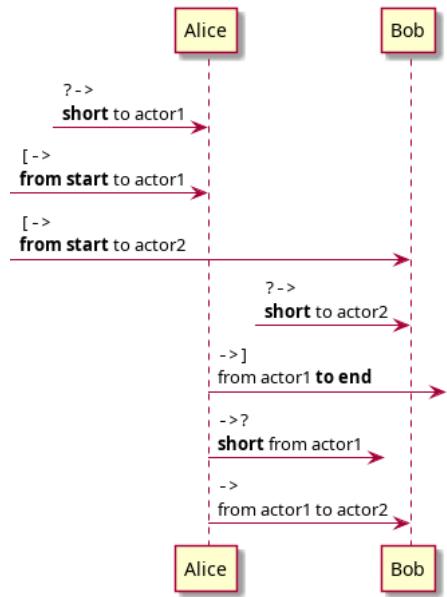
```

@startuml
participant Alice
participant Bob #lightblue
Alice -> Bob
Bob -> Carol
...
[ -> Bob
[ o-> Bob
[ o->o Bob
[ x-> Bob
...
[ <- Bob
[ x--> Bob
...
Bob ->]
Bob -> o]
Bob o -> o]
Bob -> x]
...
Bob <-]
Bob x ->]
@enduml
  
```

**uml/reference_01-29-1_Short-arrows-for-incoming-and-outgoing-messages**

```

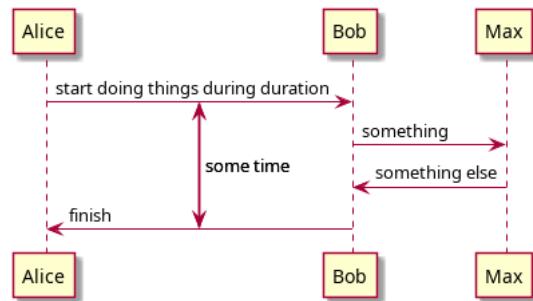
@startuml
? -> Alice : ""?->""\n**short** to actor1
[ -> Alice : ""[ ->""\n**from start** to actor1
[ -> Bob : ""[ ->""\n**from start** to actor2
? -> Bob : ""? ->""\n**short** to actor2
Alice ->] : ""->]""\nfrom actor1 **to end**
Alice ->? : ""->?""\n**short** from actor1
Alice -> Bob : ""->"" \nfrom actor1 to actor2
@enduml
  
```

**uml/reference_01-30-1_Anchors-and-Durations**

```

@startuml
!pragma teoz true
{start} Alice --> Bob : start doing things during duration
Bob --> Max : something
Max --> Bob : something else
{end} Bob --> Alice : finish
{start} <-> {end} : some time
@enduml

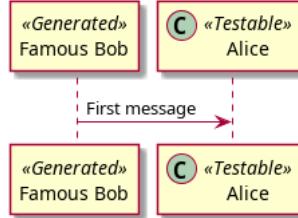
```

**uml/reference_01-31-1_Stereotypes-and-Spots**

```

@startuml
participant "Famous Bob" as Bob << Generated >>
participant Alice << (C,#ADD1B2) Testable >>
Bob->Alice: First message
@enduml

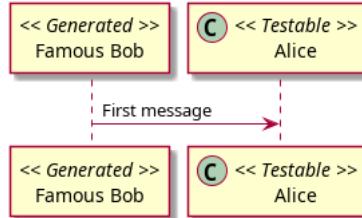
```

**uml/reference_01-31-2_Stereotypes-and-Spots**

```

@startuml
skinparam guillemet false
participant "Famous Bob" as Bob << Generated >>
participant Alice << (C,#ADD1B2) Testable >>
Bob->Alice: First message
@enduml

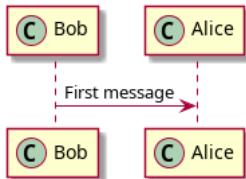
```

**uml/reference_01-31-3_Stereotypes-and-Spots**

```

@startuml
participant Bob << (C,#ADD1B2) >>
participant Alice << (C,#ADD1B2) >>
Bob->Alice: First message
@enduml

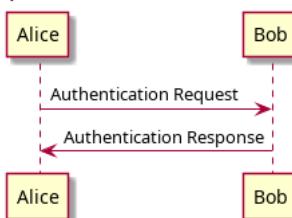
```

**Simple communication example****uml/reference_01-32-1_More-information-on-titles**

```

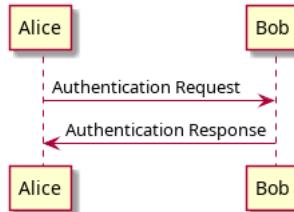
@startuml
title __Simple__ **communication** example
Alice --> Bob: Authentication Request
Bob --> Alice: Authentication Response
@enduml

```



uml/reference_01-32-2_More-information-on-titles

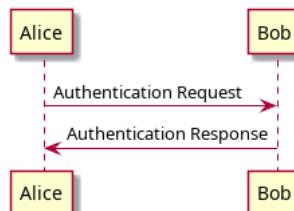
```
@startuml
title __Simple__ communication example\non several lines
Alice -> Bob: Authentication Request
Bob -> Alice: Authentication Response
@enduml
```

**Simple communication example
on several lines****uml/reference_01-32-3_More-information-on-titles**

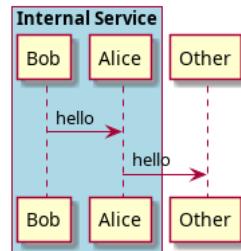
```
@startuml
title
<u>Simple</u> communication example
on <i>several</i> lines and using <font color=red>html</font>
This is hosted by <img:sourceforge.jpg>
end title
Alice -> Bob: Authentication Request
Bob -> Alice: Authentication Response
@enduml
```

**Simple communication example
on several lines and using html**

This is hosted by (Cannot decode)

**uml/reference_01-33-1_Participants-encompass**

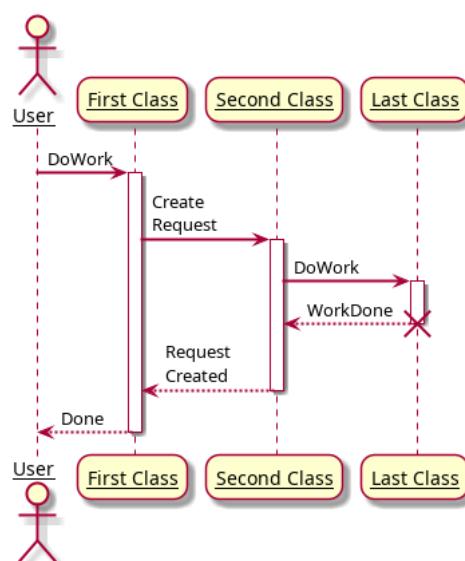
```
@startuml
box "Internal Service" #LightBlue
    participant Bob
    participant Alice
end box
participant Other
Bob -> Alice : hello
Alice -> Other : hello
@enduml
```

**uml/reference_01-34-1_Removing-Foot-Boxes**

```
@startuml
hide footbox
title Footer removed
Alice -> Bob: Authentication Request
Bob --> Alice: Authentication Response
@enduml
```

Footer removed**uml/reference_01-35-1_Skinparam**

```
@startuml
skinparam sequenceArrowThickness 2
skinparam roundcorner 20
skinparam maxmessagessize 60
skinparam sequenceParticipant underline
actor User
participant "First Class" as A
participant "Second Class" as B
participant "Last Class" as C
User -> A: DoWork
activate A
A --> B: Create Request
activate B
B -> C: DoWork
activate C
C --> B: WorkDone
destroy C
B --> A: Request Created
deactivate B
A --> User: Done
deactivate A
@enduml
```

**uml/reference_01-35-2_Skinparam**

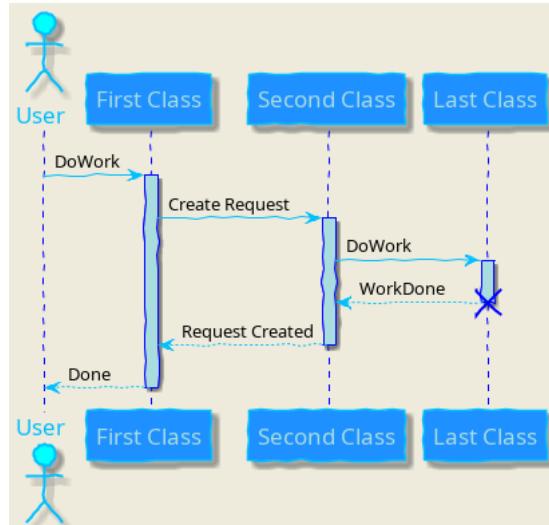
```
@startuml
skinparam backgroundColor #EEEBCD
skinparam handwritten true
skinparam sequence {
    ArrowColor DeepSkyBlue
    ActorBorderColor DeepSkyBlue
}
```

```

LifeLineBorderColor blue
LifeLineBackgroundColor #A9DCDF
ParticipantBorderColor DeepSkyBlue
ParticipantBackgroundColor DodgerBlue
ParticipantFontName Impact
ParticipantFontSize 17
ParticipantFontColor #A9DCDF
ActorBackgroundColor aqua
ActorFontColor DeepSkyBlue
ActorFontSize 17
ActorFontName Aapex
}

actor User
participant "First Class" as A
participant "Second Class" as B
participant "Last Class" as C
User -> A: DоРаМ
activate A
A -> B: Create Request
activate B
B -> C: DоРаМ
activate C
C --> B: WorkDone
destroy C
B --> A: Request Created
deactivate B
A --> User: Done
deactivate A
@enduml

```

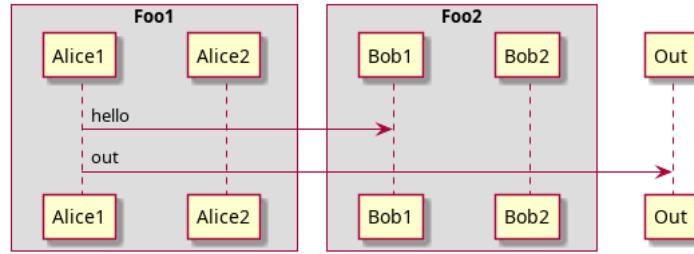


uml/reference_01-36-1_Changing_padding

```

@startuml
skinparam ParticipantPadding 20
skinparam BoxPadding 10
box "Foo1"
    participant Alice1
    participant Alice2
end box
box "Foo2"
    participant Bob1
    participant Bob2
end box
Alice1 -> Bob1 : hello
Alice1 -> Out : out
@enduml

```

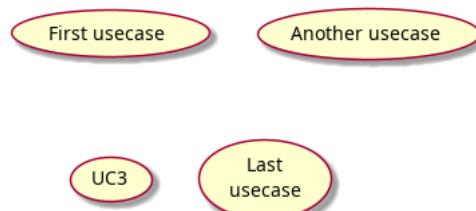


uml/reference_02-01-1_Usecase

```

@startuml
(First usecase)
(Another usecase) as (UC2)
usecase UC3
usecase (Last\nusecase) as UC4
@enduml

```

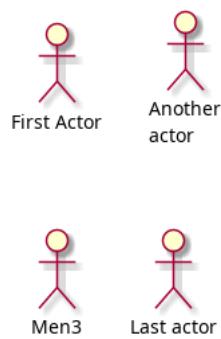


uml/reference_02-02-1_Actors

```

@startuml
:First Actor:
:Another\actor: as Men2
actor Men3
actor :Last actor: as Men4
@enduml

```



uml/reference_02-03-1_Stick-man

```

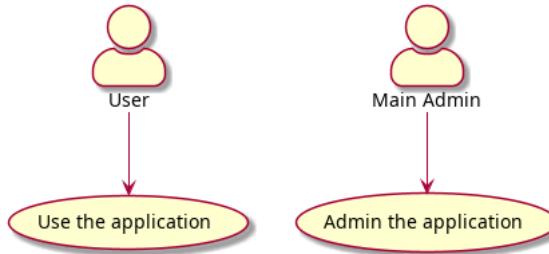
@startuml
:User: --> (Use)
"Main Admin" as Admin
"Use the application" as (Use)
Admin --> (Admin the application)
@enduml

```

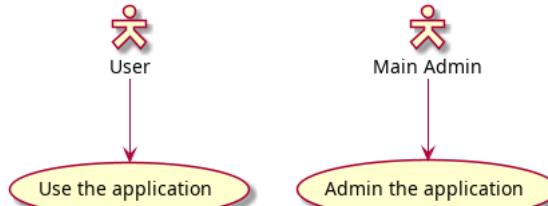


uml/reference_02-03-2_Awesome-man

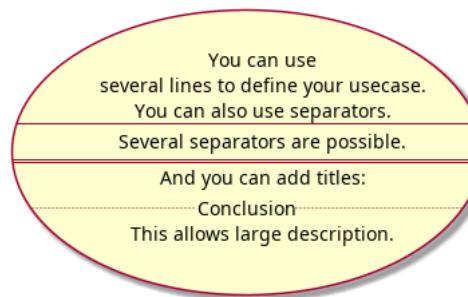
```
@startuml
skinparam actorStyle awesome
:User: --> (Use)
"Main Admin" as Admin
"Use the application" as (Use)
Admin --> (Admin the application)
@enduml
```

**uml/reference_02-03-3_Hollow-man**

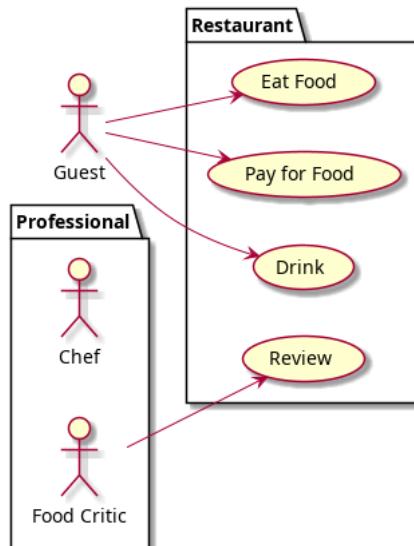
```
@startuml
skinparam actorStyle Hollow
:User: --> (Use)
"Main Admin" as Admin
"Use the application" as (Use)
Admin --> (Admin the application)
@enduml
```

**uml/reference_02-04-1_Usecases-description**

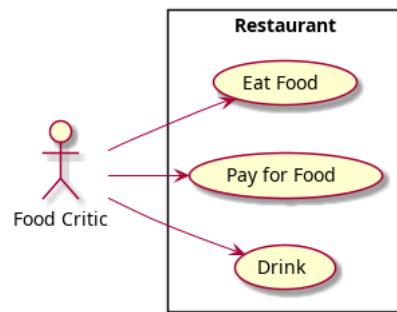
```
@startuml
usecase UC1 as "You can use
several lines to define your usecase.
You can also use separators.
-->
Several separators are possible.
==>
And you can add titles:
..Conclusion..
This allows large description."
@enduml
```

**uml/reference_02-05-1_Use-package**

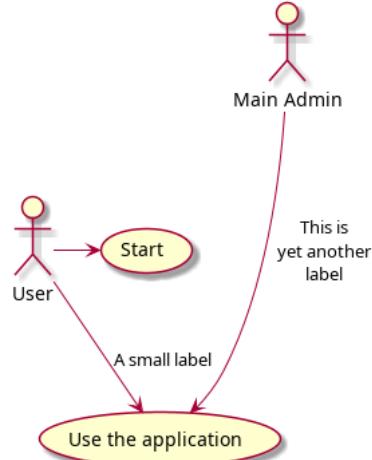
```
@startuml
left to right direction
actor Guest as g
package Professional {
    actor Chef as c
    actor "Food Critic" as fc
}
package Restaurant {
    usecase "Eat Food" as UC1
    usecase "Pay for Food" as UC2
    usecase "Drink" as UC3
    usecase "Review" as UC4
}
fc --> UC4
g --> UC1
g --> UC2
g --> UC3
@enduml
```

**uml/reference_02-05-2_Use-package**

```
@startuml
left to right direction
actor "Food Critic" as fc
rectangle Restaurant {
    usecase "Eat Food" as UC1
    usecase "Pay for Food" as UC2
    usecase "Drink" as UC3
}
fc --> UC1
fc --> UC2
fc --> UC3
@enduml
```

**uml/reference_02-06-1_Basic-example**

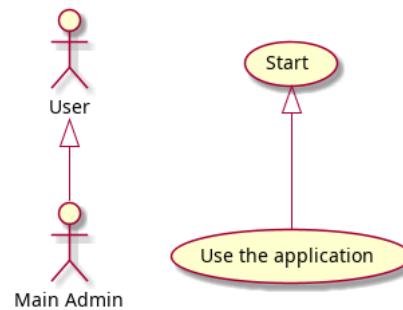
```
@startuml
User --> (Start)
User --> (Use the application) : A small label
:Main Admin: ---> (Use the application) : This is\nyet another\nlabel
@enduml
```

**uml/reference_02-07-1_Extension**

```

@startuml
:Main Admin: as Admin
(Use the application) as (Use)
User <|-- Admin
(Start) <|-- (Use)
@enduml

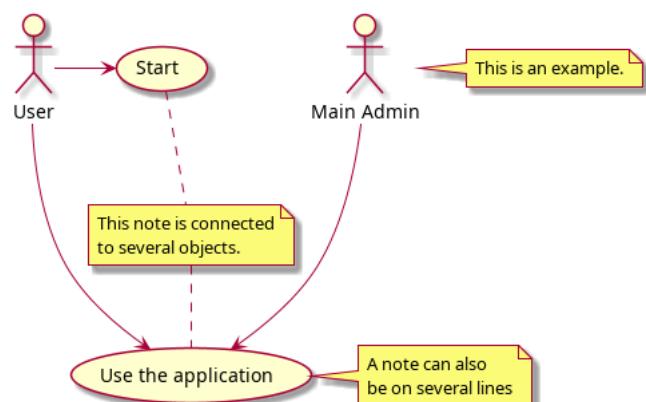
```

**uml/reference_02-08-1_Using-notes**

```

@startuml
:Main Admin: as Admin
(Use the application) as (Use)
User -> (Start)
User --> (Use)
Admin ---> (Use)
note right of Admin : This is an example.
note right of (Use)
    A note can also
    be on several lines
end note
note "This note is connected\nto several objects." as N2
(Start) .. N2
N2 .. (Use)
@enduml

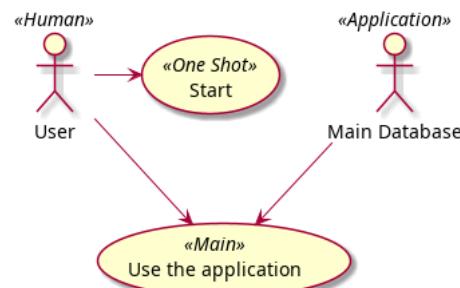
```

**uml/reference_02-09-1_Stereotypes**

```

@startuml
User << Human >>
:Main Database: as MySql << Application >>
(Start) << One Shot >>
(Use the application) as (Use) << Main >>
User -> (Start)
User --> (Use)
MySql ---> (Use)
@enduml

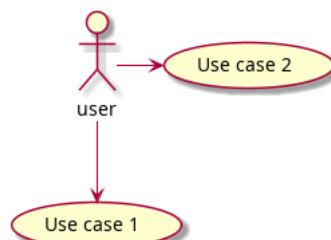
```

**uml/reference_02-10-1_Changing-arrows-direction**

```

@startuml
:user: --> (Use case 1)
:user: -> (Use case 2)
@enduml

```

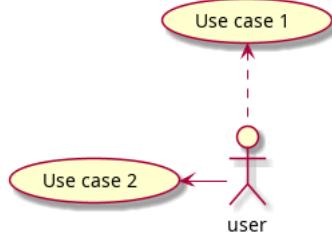
**uml/reference_02-10-2_Changing-arrows-direction**

```

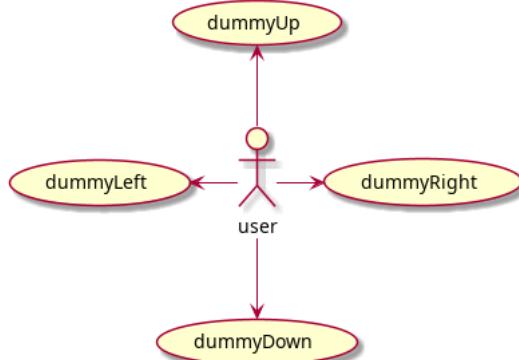
@startuml
(Use case 1) <.. :user:

```

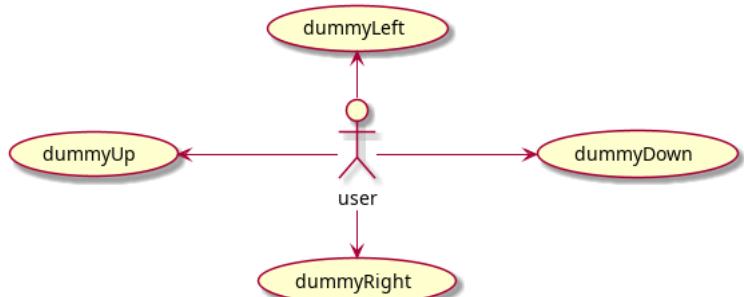
```
(Use case 2) <- :user:  
@enduml
```

**uml/reference_02-10-3_Changing-arrows-direction**

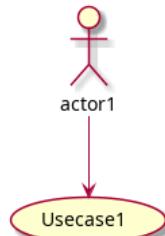
```
@startuml  
:user: -left-> (dummyLeft)  
:user: -right-> (dummyRight)  
:user: -up-> (dummyUp)  
:user: -down-> (dummyDown)  
@enduml
```

**uml/reference_02-10-4_Changing-arrows-direction**

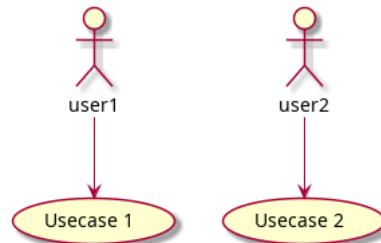
```
@startuml  
left to right direction  
:user: -left-> (dummyLeft)  
:user: -right-> (dummyRight)  
:user: -up-> (dummyUp)  
:user: -down-> (dummyDown)  
@enduml
```

**uml/reference_02-11-1_Splitting-diagrams**

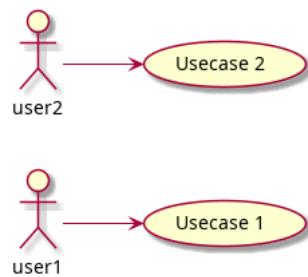
```
@startuml  
:actor1: --> (Usecase1)  
newpage  
:actor2: --> (Usecase2)  
@enduml
```

**uml/reference_02-12-1_Left-to-right-direction**

```
@startuml  
'default'  
top to bottom direction  
user1 --> (Usecase 1)  
user2 --> (Usecase 2)  
@enduml
```

**uml/reference_02-12-2_Left-to-right-direction**

```
@startuml  
left to right direction  
user1 --> (Usecase 1)  
user2 --> (Usecase 2)  
@enduml
```

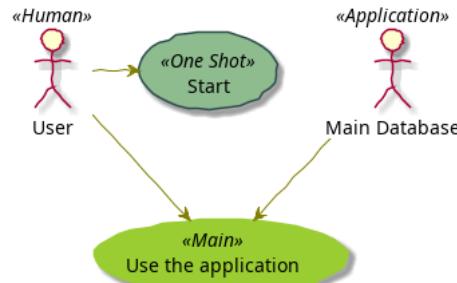
**uml/reference_02-13-1_Skinparam**

```
@startuml  
skinparam handwritten true
```

```

skinparam usecase {
    BackgroundColor DarkSeaGreen
    BorderColor DarkSlateGray
    BackgroundColor<< Main >> YellowGreen
    BorderColor<< Main >> YellowGreen
    ArrowColor Olive
    ActorBorderColor black
    ActorFontName Courier
    ActorBackgroundColor<< Human >> Gold
}
User << Human >>
:Main Database: as MySql << Application >>
(Start) << One Shot >>
(Use the application) as (Use) << Main >>
User -> (Start)
User --> (Use)
MySql --> (Use)
@enduml

```

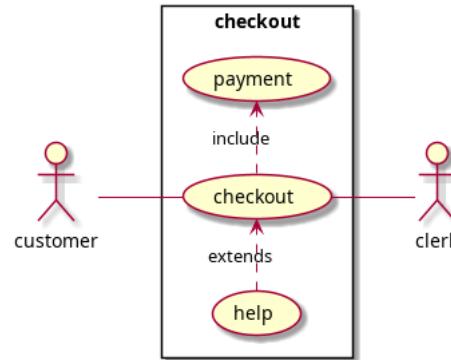


uml/reference_02-14-1_Complete-example

```

@startuml
left to right direction
skinparam packageStyle rectangle
actor customer
actor clerk
rectangle checkout {
    customer -- (checkout)
    (checkout) .> (payment) : include
    (help) .> (checkout) : extends
    (checkout) -- clerk
}
@enduml

```

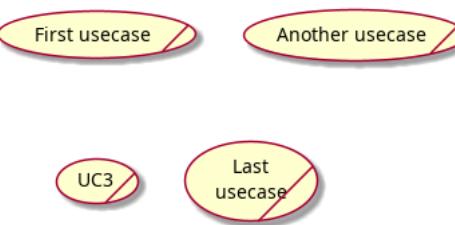


uml/reference_02-15-1_Business-Use-Case

```

@startuml
(First usecase)/
(Another usecase)/ as (UC2)
usecase/ UC3
usecase/ (Last\nusecase) as UC4
@enduml

```

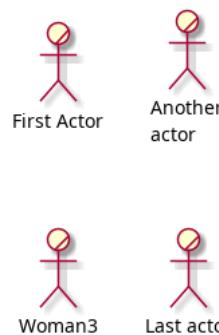


uml/reference_02-15-2_Business-Actor

```

@startuml
:First Actor:/ 
:Another\ncator:/ as Man2
actor/ Woman3
actor/ :Last actor: as Person1
@enduml

```

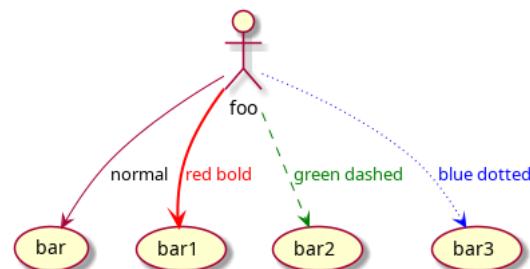


uml/reference_02-16-1_Change-arrow-color-and-style

```

@startuml
actor foo
foo --> (bar) : normal
foo --> (bar1) #line:red;line.bold;text:red : red bold
foo --> (bar2) #green;line.dashed;text:green : green dashed
foo --> (bar3) #blue;line.dotted;text:blue : blue dotted
@enduml

```

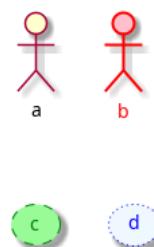


uml/reference_02-17-1_Change-element-color-and-style

```

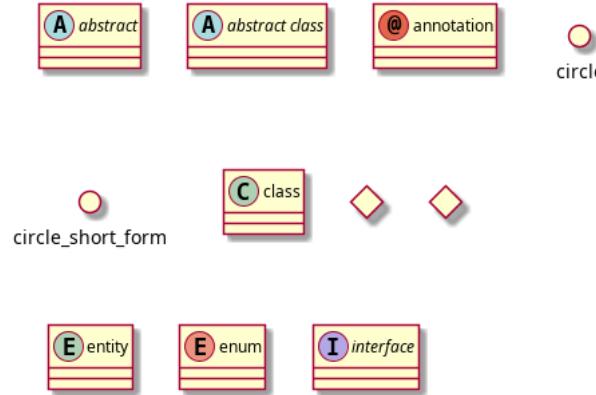
@startuml
actor a
actor b #pink;line:red;line.bold;text:red
usecase c #palegreen;line:green;line.dashed;text:green
usecase d #aliceblue;line:blue;line.dotted;text:blue
@enduml

```

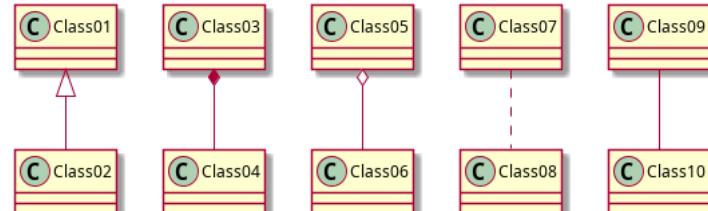


uml/reference_03-01-1_Declaring-element

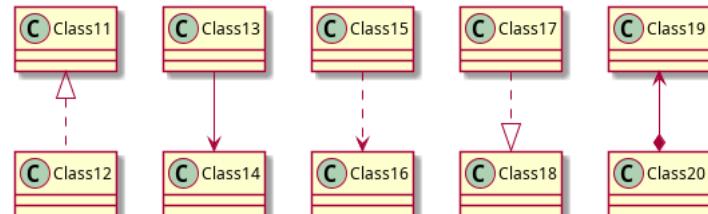
```
@startuml
abstract abstract
abstract class "abstract class"
annotation annotation
circle circle
() circle_short_form
class class
diamond diamond
<> diamond_short_form
entity entity
enum enum
interface interface
@enduml
```

**uml/reference_03-02-1_Relations-between-classes**

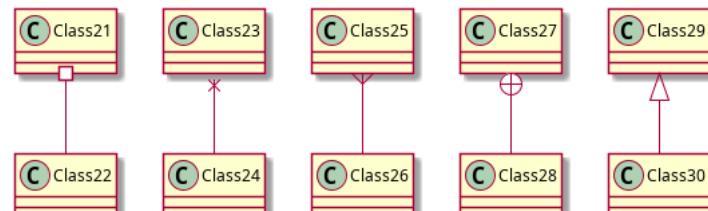
```
@startuml
Class01 <|-- Class02
Class03 *-- Class04
Class05 o-- Class06
Class07 .. Class08
Class09 -- Class10
@enduml
```

**uml/reference_03-02-2_Relations-between-classes**

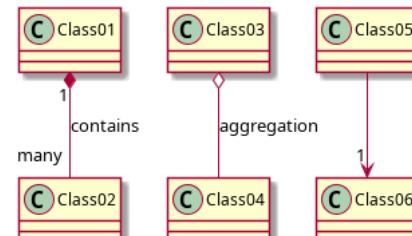
```
@startuml
Class11 <|.. Class12
Class13 --> Class14
Class15 ..> Class16
Class17 ..> Class18
Class19 <---* Class20
@enduml
```

**uml/reference_03-02-3_Relations-between-classes**

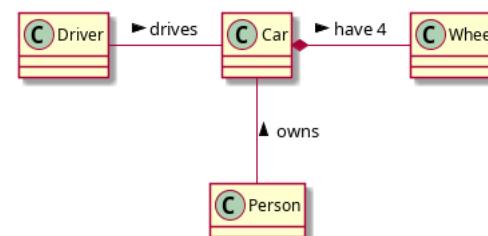
```
@startuml
Class21 #-- Class22
Class23 x-- Class24
Class25 }-- Class26
Class27 +-- Class28
Class29 ^-- Class30
@enduml
```

**uml/reference_03-03-1_Label-on-relations**

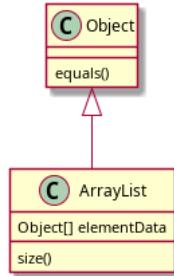
```
@startuml
Class01 "1" *-- "many" Class02 : contains
Class03 o-- Class04 : aggregation
Class05 --> "1" Class06
@enduml
```

**uml/reference_03-03-2_Label-on-relations**

```
@startuml
class Car
Driver -> Car : drives
Car *-- Wheel : have 4
Car --> Person : < owns
@enduml
```

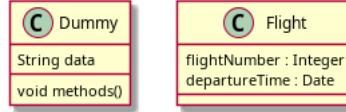
**uml/reference_03-04-1_Adding-methods**

```
@startuml
Object <|-- ArrayList
Object : equals()
ArrayList : Object[] elementData
ArrayList : size()
@enduml
```

**uml/reference_03-04-2 Adding-methods**

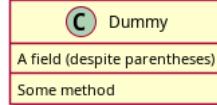
```

@startuml
class Dummy {
    String data
    void methods()
}
class Flight {
    flightNumber : Integer
    departureTime : Date
}
@enduml
  
```

**uml/reference_03-04-3 Adding-methods**

```

@startuml
class Dummy {
    {field} A field (despite parentheses)
    {method} Some method
}
@enduml
  
```

**uml/reference_03-05-1 Defining-visibility**

```

@startuml
class Dummy {
    -field1
    #field2
    ~method1()
    +method2()
}
@enduml
  
```

**uml/reference_03-05-2 Defining-visibility**

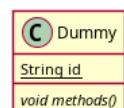
```

@startuml
skinparam classAttributeIconSize 0
class Dummy {
    -field1
    #field2
    ~method1()
    +method2()
}
@enduml
  
```

**uml/reference_03-06-1 Abstract-and-Static**

```

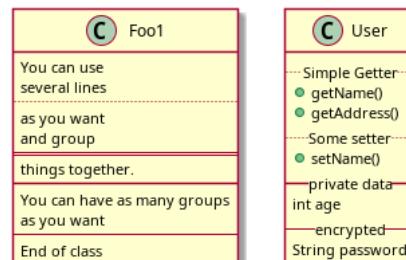
@startuml
class Dummy {
    {static} String id
    {abstract} void methods()
}
@enduml
  
```

**uml/reference_03-07-1 Advanced-class-body**

```

@startuml
class Foo1 {
    You can use
    several lines
    ..
    as you want
    and group
    ==
    things together.

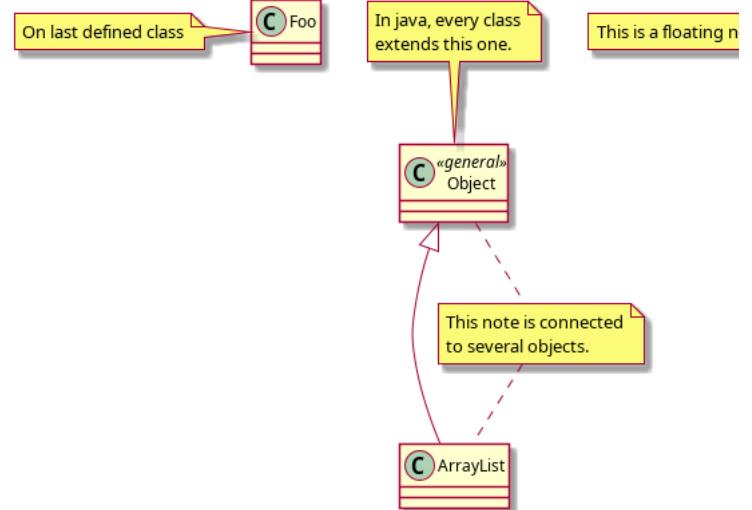
    You can have as many groups
    as you want
    --
    End of class
  
```



```

}
class User {
    ... Simple Getter ...
    + getName()
    + getAddress()
    ... Some setter ...
    + setName()
    __ private data __
    int age
    -- encrypted --
    String password
}
@enduml

```



uml/reference_03-08-1_Notes-and-stereotypes

```

@startuml
class Object << general >>
Object <|-- ArrayList
note top of Object : In java, every class\extends this one.
note "This is a floating note" as N1
note "This note is connected\nto several objects." as N2
Object .. N2
N2 .. ArrayList
class Foo
note left: On last defined class
@enduml

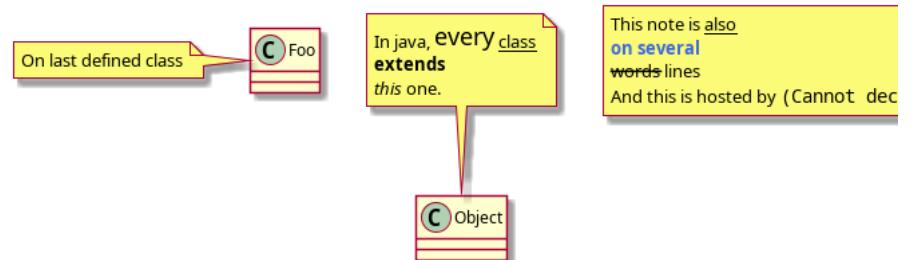
```

uml/reference_03-09-1_More-on-notes

```

@startuml
class Foo
note left: On last defined class
note top of Object
    In java, <size:18>every</size> <u>class</u>
    <b>extends</b>
    <i>this</i> one.
end note
note as N1
    This note is <u>also</u>
    <b><color:royalBlue>on several</color>
    <s>words</s> lines
    And this is hosted by <img:sourceforge.jpg>
end note
@enduml

```

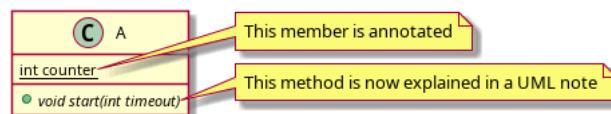


uml/reference_03-10-1_Note-on-field-or-method

```

@startuml
class A {
    {static} int counter
    +void {abstract} start(int timeout)
}
note right of A::counter
This member is annotated
end note
note right of A::start
This method is now explained in a UML note
end note
@enduml

```

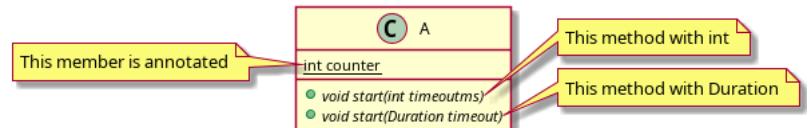


uml/reference_03-10-2_Note-on-method-with-the-same-name

```

@startuml
class A {
    {static} int counter
    +void {abstract} start(int timeouts)
    +void {abstract} start(Duration timeout)
}
note left of A::counter
This member is annotated
end note
note right of A::"start(int timeouts)"
This method with int
end note
note right of A::"start(Duration timeout)"
This method with Duration

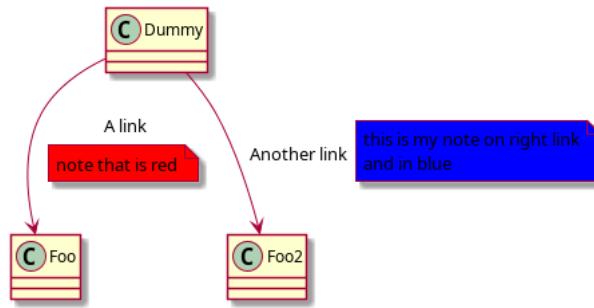
```



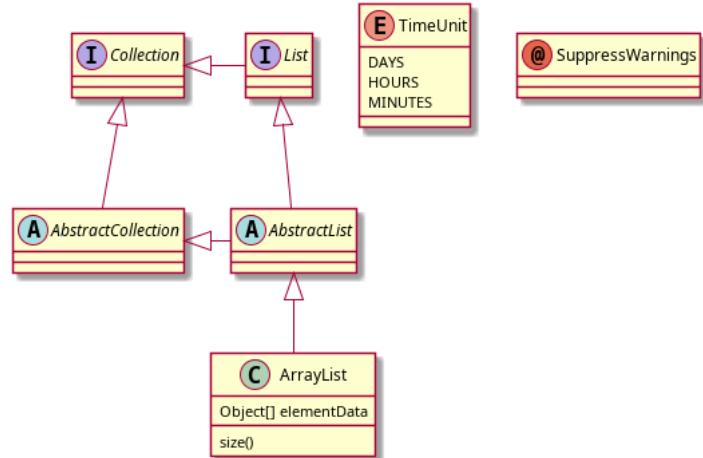
```
end note
@enduml
```

uml/reference_03-11-1_Note-on-links

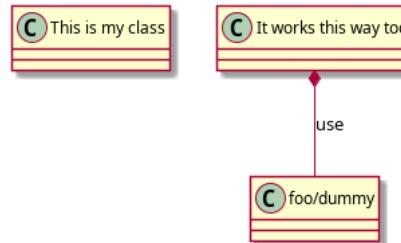
```
@startuml
class Dummy
Dummy --> Foo : A link
note on link #red: note that is red
Dummy --> Foo2 : Another link
note right on link #blue
this is my note on right link
and in blue
end note
@enduml
```

**uml/reference_03-12-1_Abstract-class-and-interface**

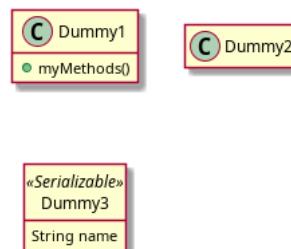
```
@startuml
abstract class AbstractList
abstract class AbstractCollection
interface List
interface Collection
List <|-- AbstractList
Collection <|-- AbstractCollection
Collection <|-- List
AbstractCollection <|-- AbstractList
AbstractList <|-- ArrayList
class ArrayList {
    Object[] elementData
    size()
}
enum TimeUnit {
    DAYS
    HOURS
    MINUTES
}
annotation SuppressWarnings
@enduml
```

**uml/reference_03-13-1_Using-non-letters**

```
@startuml
class "This is my class" as class1
class class2 as "It works this way too"
class2 *-- "foo/dummy" : use
@enduml
```

**uml/reference_03-14-1_Hide-attributes-methods**

```
@startuml
class Dummy1 {
    +myMethods()
}
class Dummy2 {
    +hiddenMethod()
}
class Dummy3 <<Serializable>> {
    String name
}
hide members
hide <<Serializable>> circle
show Dummy1 methods
show <<Serializable>> fields
@enduml
```

**uml/reference_03-15-1_Hide-classes**

```
@startuml
class Foo1
class Foo2
Foo2 *-- Foo1
hide Foo2
@enduml
```

**uml/reference_03-16-1_Remove-classes**

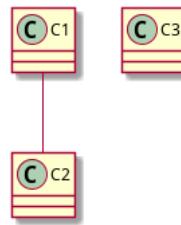
```
@startuml
class Foo1
```



```
class Foo2
Foo2 *--> Foo1
remove Foo2
@enduml
```

uml/reference_03-17-1_Hide-or-Remove-unlinked-class

```
@startuml
class C1
class C2
class C3
C1 --> C2
@enduml
```

**uml/reference_03-17-2_Hide-or-Remove-unlinked-class**

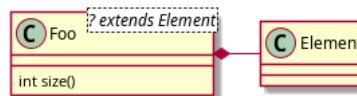
```
@startuml
class C1
class C2
class C3
C1 --> C2
hide @unlinked
@enduml
```

**uml/reference_03-17-3_Hide-or-Remove-unlinked-class**

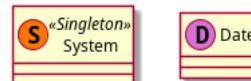
```
@startuml
class C1
class C2
class C3
C1 --> C2
remove @unlinked
@enduml
```

**uml/reference_03-18-1_Use-generics**

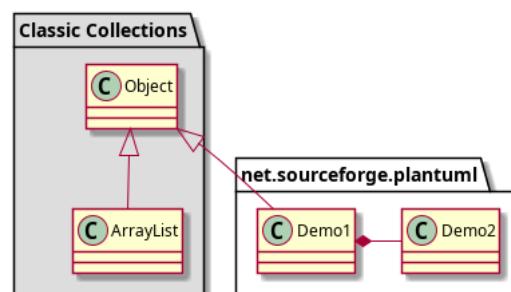
```
@startuml
class Foo<? extends Element> {
    int size()
}
Foo *--> Element
@enduml
```

**uml/reference_03-19-1_Specific-Spot**

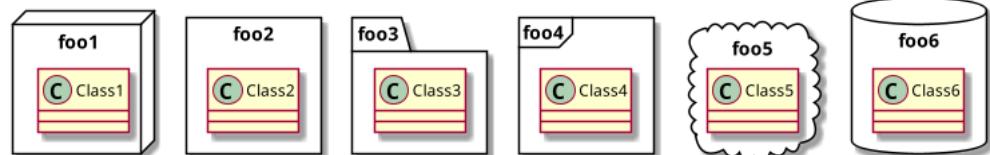
```
@startuml
class System << (S,#FF7700) Singleton >>
class Date << (D,orchid) >>
@enduml
```

**uml/reference_03-20-1_Packages**

```
@startuml
package "Classic Collections" #DDDDDD {
    Object <|-- ArrayList
}
package net.sourceforge.plantuml {
    Object <|-- Demo1
    Demo1 *--> Demo2
}
@enduml
```

**uml/reference_03-21-1_Packages-style**

```
@startuml
scale 750 width
package foo1 <<Node>> {
    class Class1
}
package foo2 <<Rectangle>> {
    class Class2
}
package foo3 <<Folder>> {
    class Class3
}
package foo4 <<Frame>> {
    class Class4
}
```



```

}
package foo5 <<Cloud>> {
    class Class5
}
package foo6 <<Database>> {
    class Class6
}
@enduml

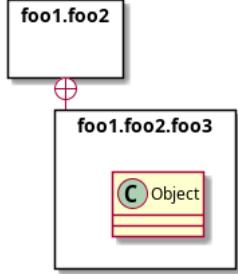
```

uml/reference_03-21-2_Packages-style

```

@startuml
skinparam packageStyle rectangle
package foo1.foo2 {
}
package foo1.foo2.foo3 {
    class Object
}
foo1.foo2 +-- foo1.foo2.foo3
@enduml

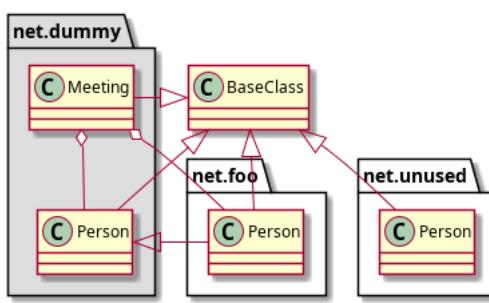
```

**uml/reference_03-22-1_Namespaces**

```

@startuml
class BaseClass
namespace net.dummy #DDDDDD {
    .BaseClass <|-- Person
    Meeting o-- Person
    .BaseClass <|- Meeting
}
namespace net.foo {
    net.dummy.Person <|- Person
    .BaseClass <|-- Person
    net.dummy.Meeting o-- Person
}
BaseClass <|-- net.unused.Person
@enduml

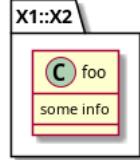
```

**uml/reference_03-23-1_Automatic-namespace-creation**

```

@startuml
set namespaceSeparator :::
class X1::X2::foo {
    some info
}
@enduml

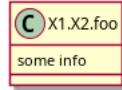
```

**uml/reference_03-23-2_Automatic-namespace-creation**

```

@startuml
set namespaceSeparator none
class X1.X2.foo {
    some info
}
@enduml

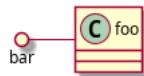
```

**uml/reference_03-24-1_Lollipop-interface**

```

@startuml
class foo
bar ()- foo
@enduml

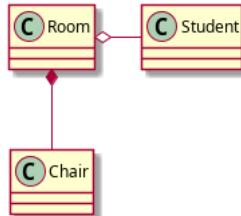
```

**uml/reference_03-25-1_Changing-arrows-direction**

```

@startuml
Room o- Student
Room *-- Chair
@enduml

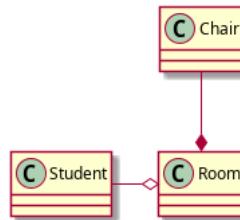
```

**uml/reference_03-25-2_Changing-arrows-direction**

```

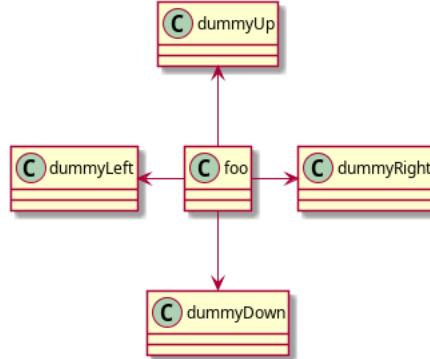
@startuml
Student -o Room
Chair --* Room
@enduml

```

**uml/reference_03-25-3_Changing-arrows-direction**

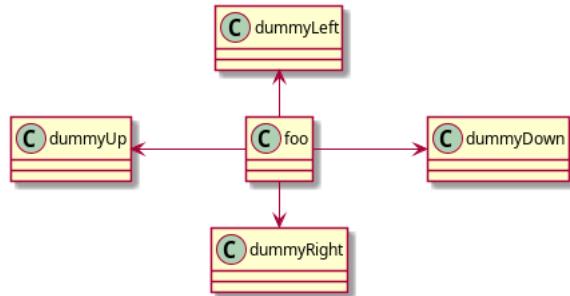
```

@startuml
foo -left-> dummyLeft
foo -right-> dummyRight
foo -up-> dummyUp
foo -down-> dummyDown
@enduml
  
```

**uml/reference_03-25-4_Changing-arrows-direction**

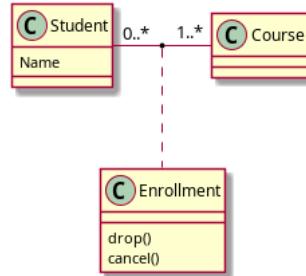
```

@startuml
left to right direction
foo -left-> dummyLeft
foo -right-> dummyRight
foo -up-> dummyUp
foo -down-> dummyDown
@enduml
  
```

**uml/reference_03-26-1_Association-classes**

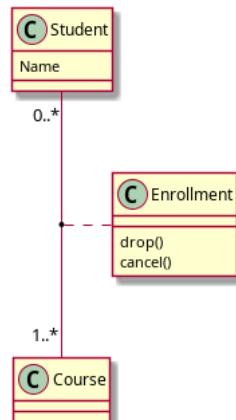
```

@startuml
class Student {
    Name
}
Student "0..*" - "1..*" Course
(Student, Course) .. Enrollment
class Enrollment {
    drop()
    cancel()
}
@enduml
  
```

**uml/reference_03-26-2_Association-classes**

```

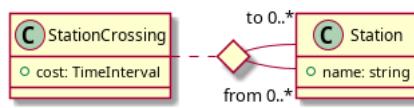
@startuml
class Student {
    Name
}
Student "0..*" -- "1..*" Course
(Student, Course) . Enrollment
class Enrollment {
    drop()
    cancel()
}
@enduml
  
```

**uml/reference_03-27-1_Association-on-same-classe**

```

@startuml
class Station {
    +name: string
}

class StationCrossing {
    +cost: TimeInterval
}
  
```

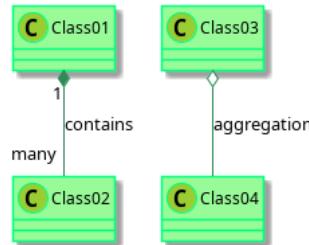


<> diamond

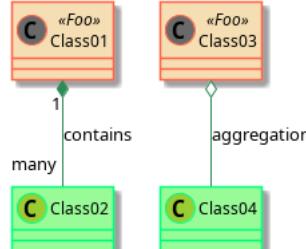
```
StationCrossing . diamond
diamond - "from 0..*" Station
diamond - "to 0..*" Station
@enduml
```

uml/reference_03-28-1_Skinparam

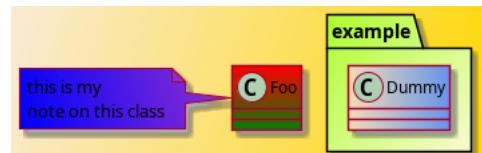
```
@startuml
skinparam class {
    BackgroundColor PaleGreen
    ArrowColor SeaGreen
    BorderColor SpringGreen
}
skinparam stereotypeBackgroundColor YellowGreen
Class01 "1" *-- "many" Class02 : contains
Class03 o-- Class04 : aggregation
@enduml
```

**uml/reference_03-29-1_Skinned-Stereotypes**

```
@startuml
skinparam class {
    BackgroundColor PaleGreen
    ArrowColor SeaGreen
    BorderColor SpringGreen
    backgroundColor <<Foo>> Wheat
    borderColor <<Foo>> Tomato
}
skinparam stereotypeBackgroundColor YellowGreen
skinparam stereotypeCBackgroundColor << Foo >> DimGray
Class01 <<Foo>>
Class03 <<Foo>>
Class01 "1" *-- "many" Class02 : contains
Class03 o-- Class04 : aggregation
@enduml
```

**uml/reference_03-30-1_Color-gradient**

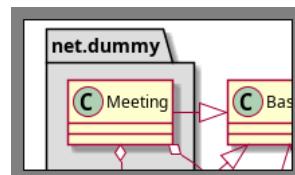
```
@startuml
skinparam backgroundcolor AntiqueWhite/Gold
skinparam classBackgroundColor Wheat|CornflowerBlue
class Foo #red-green
note left of Foo #blue\9932CC
    this is my
    note on this class
end note
package example #GreenYellow/LightGoldenRodYellow {
    class Dummy
}
@enduml
```

**uml/reference_03-31-1_Help-on-layout**

```
@startuml
class Bar1
class Bar2
together {
    class Together1
    class Together2
    class Together3
}
Together1 - Together2
Together2 - Together3
Together2 -> Bar1
Bar1 -> Bar2
@enduml
```

**uml/reference_03-32-1_Splitting-large-files**

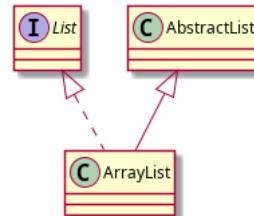
```
@startuml
' Split into 4 pages
page 2x2
skinparam pageMargin 10
skinparam pageExternalColor gray
skinparam pageBorderColor black
class BaseClass
namespace net.dummy #DDDDDD {
    .BaseClass <|-- Person
    Meeting o-- Person
    .BaseClass <|- Meeting
}
namespace net.foo {
    net.dummy.Person <|- Person
    .BaseClass <|-- Person
    net.dummy.Meeting o-- Person
}
```



```
}
BaseClass <|-- net.unused.Person
@enduml
```

uml/reference_03-33-1_Extends-and-implements

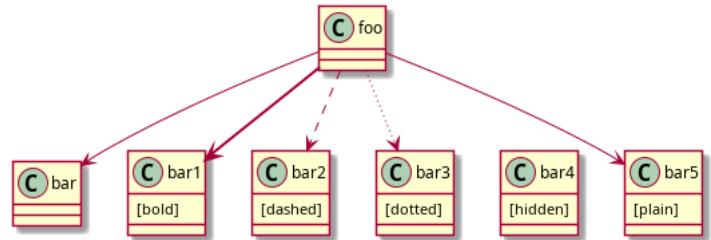
```
@startuml
class ArrayList implements List
class ArrayList extends AbstractList
@enduml
```



uml/reference_03-34-01-1_Bracketed-relations-style-Line-style

```
@startuml
title Bracketed line style without label
class foo
class bar
bar1 : [bold]
bar2 : [dashed]
bar3 : [dotted]
bar4 : [hidden]
bar5 : [plain]
foo --> bar
foo -[bold]-> bar1
foo -[dashed]-> bar2
foo -[dotted]-> bar3
foo -[hidden]-> bar4
foo -[plain]-> bar5
@enduml
```

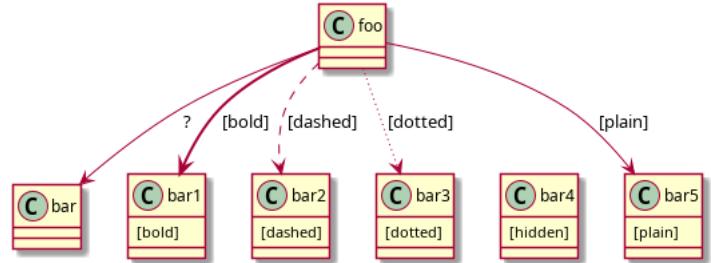
Bracketed line style without label



uml/reference_03-34-01-2_Bracketed-relations-style-Line-style

```
@startuml
title Bracketed line style with label
class foo
class bar
bar1 : [bold]
bar2 : [dashed]
bar3 : [dotted]
bar4 : [hidden]
bar5 : [plain]
foo --> bar      : ?
foo -[bold]-> bar1 : [bold]
foo -[dashed]-> bar2 : [dashed]
foo -[dotted]-> bar3 : [dotted]
foo -[hidden]-> bar4 : [hidden]
foo -[plain]-> bar5 : [plain]
@enduml
```

Bracketed line style with label

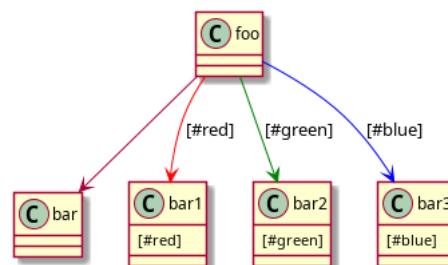


uml/reference_03-34-02-1_Bracketed-relations-style-Line-color

```
@startuml
title Bracketed line color
class foo
class bar
bar1 : [#red]
bar2 : [#green]
bar3 : [#blue]

foo --> bar
foo -[#red]-> bar1 : [#red]
foo -[#green]-> bar2 : [#green]
foo -[#blue]-> bar3 : [#blue]
'foo -[#blue;#yellow;#green]-> bar4
@enduml
```

Bracketed line color

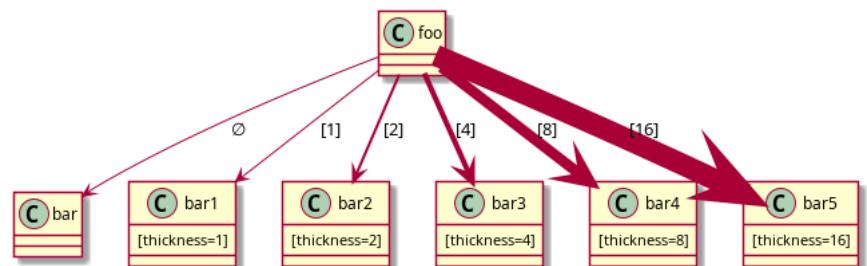


uml/reference_03-34-03-1_Bracketed-relations-style-Line-thickness

```
@startuml
title Bracketed line thickness
class foo
class bar
bar1 : [thickness=1]
bar2 : [thickness=2]
bar3 : [thickness=4]
bar4 : [thickness=8]
bar5 : [thickness=16]

foo --> bar      : Ø
foo -[thickness=1]-> bar1 : [1]
foo -[thickness=2]-> bar2 : [2]
  
```

Bracketed line thickness

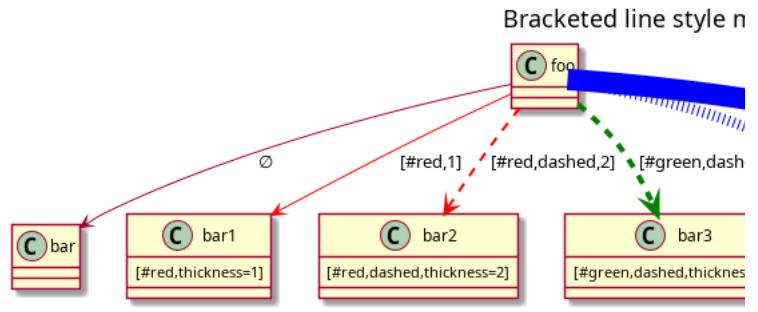


```
foo -[thickness=4]-> bar3 : [4]
foo -[thickness=8]-> bar4 : [8]
foo -[thickness=16]-> bar5 : [16]
@enduml
```

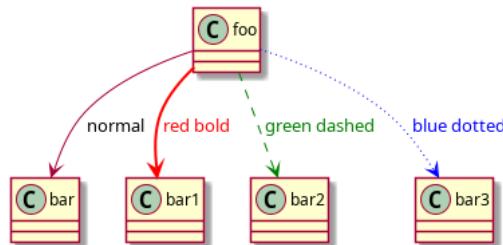
uml/reference_03-34-04-1_Bracketed-relations-style-Mix

```
@startuml
title Bracketed line style mix
class foo
class bar
bar1 : [#red,thickness=1]
bar2 : [#red,dashed,thickness=2]
bar3 : [#green,dashed,thickness=4]
bar4 : [#blue,dotted,thickness=8]
bar5 : [#blue,plain,thickness=16]

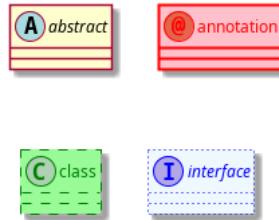
foo --> bar      : Ø
foo -[#red,thickness=1]-> bar1 : [#red,1]
foo -[#red,dashed,thickness=2]-> bar2 : [#red,dashed,2]
foo -[#green,dashed,thickness=4]-> bar3 : [#green,dashed,4]
foo -[#blue,dotted,thickness=8]-> bar4 : [blue,dotted,8]
foo -[#blue,plain,thickness=16]-> bar5 : [blue,plain,16]
@enduml
```

**uml/reference_03-35-1_Change-relation-color-and-style**

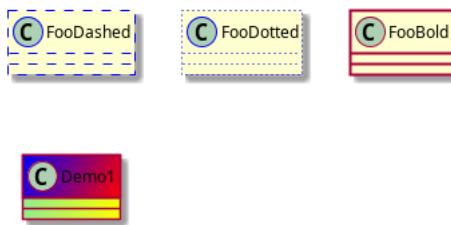
```
@startuml
class foo
foo --> bar : normal
foo --> bar1 #line:red;line.bold;text:red : red bold
foo --> bar2 #green;line.dashed;text:green : green dashed
foo --> bar3 #blue;line.dotted;text:blue : blue dotted
@enduml
```

**uml/reference_03-36-1_Change-class-color-and-style**

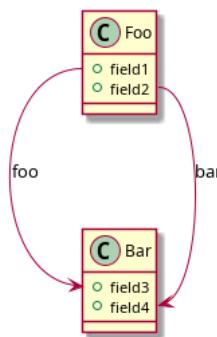
```
@startuml
abstract abstract
annotation annotation #pink;line:red;line.bold;text:red
class class #palegreen;line:green;line.dashed;text:green
interface interface #aliceblue;line:blue;line.dotted;text:blue
@enduml
```

**uml/reference_03-36-2_Change-class-color-and-style**

```
@startuml
class bar #line:green;back:lightblue
class bar2 #lightblue;line:green
class Foo1 #back:red;line:00FFFF
class FooDashed #line.dashed:blue
class FooDotted #line.dotted:blue
class FooBold #line.bold
class Demo1 #back:lightgreen|yellow;header:blue/red
@enduml
```

**uml/reference_03-37-1_Arrows-fromto-class-members**

```
@startuml
class Foo {
    + field1
    + field2
}
class Bar {
    + field3
    + field4
}
Foo::field1 --> Bar::field3 : foo
Foo::field2 --> Bar::field4 : bar
@enduml
```

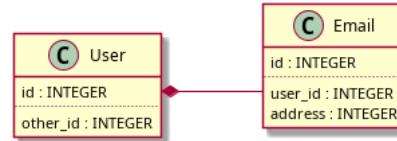
**uml/reference_03-37-2_Arrows-fromto-class-members**

```
@startuml
left to right direction
```

```

class User {
    id : INTEGER
    ...
    other_id : INTEGER
}
class Email {
    id : INTEGER
    ...
    user_id : INTEGER
    address : INTEGER
}
User::id *-- Email::user_id
@enduml

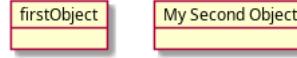
```

**uml/reference_04-01-1_Definition-of-objects**

```

@startuml
object firstObject
object "My Second Object" as o2
@enduml

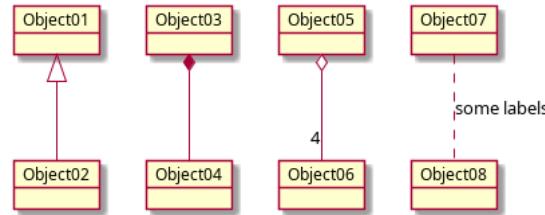
```

**uml/reference_04-02-1_Relations-between-objects**

```

@startuml
object Object01
object Object02
object Object03
object Object04
object Object05
object Object06
object Object07
object Object08
Object01 <|-- Object02
Object03 *-- Object04
Object05 o--- "4" Object06
Object07 .. Object08 : some labels
@enduml

```

**uml/reference_04-03-1_Associations-objects**

```

@startuml
object o1
object o2
diamond dia
object o3

o1 -->> dia
o2 -->> dia
dia -->> o3
@enduml

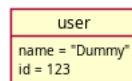
```

**uml/reference_04-04-1_Adding-fields**

```

@startuml
object user
user : name = "Dummy"
user : id = 123
@enduml

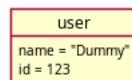
```

**uml/reference_04-04-2_Adding-fields**

```

@startuml
object user {
    name = "Dummy"
    id = 123
}
@enduml

```

**uml/reference_04-06-1_Map-table-or-associative-array**

```

@startuml
map CapitalCity {
    UK => London
    USA => Washington
    Germany => Berlin
}
@enduml

```

CapitalCity	
UK	London
USA	Washington
Germany	Berlin

uml/reference_04-06-2_Map-table-or-associative-array

```
@startuml
map "Map **Contry => CapitalCity**" as CC {
    UK => London
    USA => Washington
    Germany => Berlin
}
@enduml
```

Map Contry => CapitalCity	
UK	London
USA	Washington
Germany	Berlin

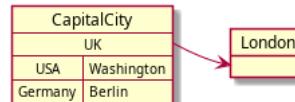
uml/reference_04-06-3_Map-table-or-associative-array

```
@startuml
map "map: Map<Integer, String>" as users {
    1 => Alice
    2 => Bob
    3 => Charlie
}
@enduml
```

map: Map<Integer, String>	
1	Alice
2	Bob
3	Charlie

uml/reference_04-06-4_Map-table-or-associative-array

```
@startuml
object London
map CapitalCity {
    UK *-> London
    USA => Washington
    Germany => Berlin
}
@enduml
```

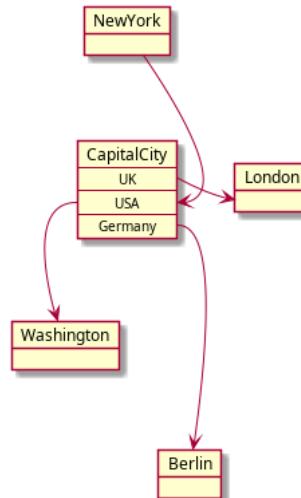


uml/reference_04-06-5_Map-table-or-associative-array

```
@startuml
object London
object Washington
object Berlin
object NewYork

map CapitalCity {
    UK *-> London
    USA *--> Washington
    Germany *----> Berlin
}

NewYork --> CapitalCity::USA
@enduml
```



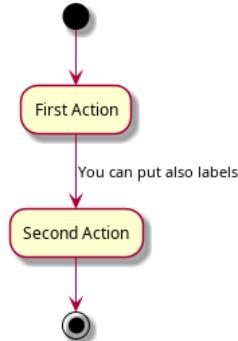
uml/reference_05-01-1_Simple-Action

```
@startuml
(*) --> "First Action"
"First Action" --> (*)
@enduml
```



uml/reference_05-02-1_Label-on-arrows

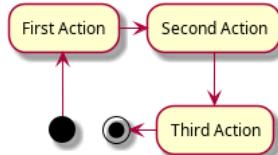
```
@startuml
(*) --> "First Action"
-->[You can put also labels] "Second Action"
--> (*)
@enduml
```



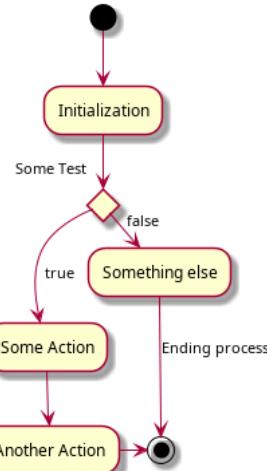
uml/reference_05-03-1_Changing-arrow-direction

```
@startuml
(*) -up-> "First Action"
-right-> "Second Action"
```

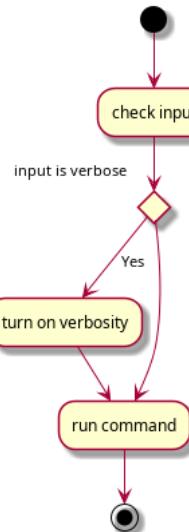
```
--> "Third Action"
-left-> (*)
@enduml
```

**uml/reference_05-04-1_Branches**

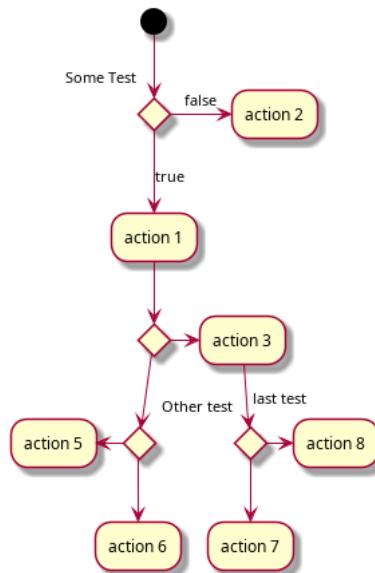
```
@startuml
(*) --> "Initialization"
if "Some Test" then
-->[true] "Some Action"
--> "Another Action"
--right-> (*)
else
-->[false] "Something else"
-->[Ending process] (*)
endif
@enduml
```

**uml/reference_05-04-2_Branches**

```
@startuml
(*) --> "check input"
If "input is verbose" then
--> [Yes] "turn on verbosity"
--> "run command"
else
--> "run command"
Endif
-->(*)
@enduml
```

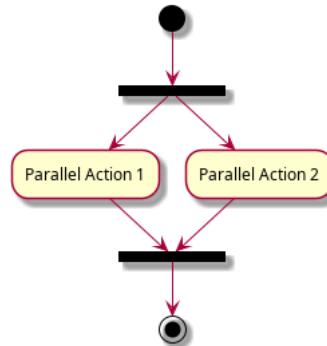
**uml/reference_05-05-1_More-on-Branches**

```
@startuml
(*) --> if "Some Test" then
-->[true] "action 1"
if "" then
--> "action 3" as a3
else
if "Other test" then
--left-> "action 5"
else
--> "action 6"
endif
endif
else
-->[false] "action 2"
endif
a3 --> if "last test" then
--> "action 7"
else
--> "action 8"
endif
@enduml
```

**uml/reference_05-06-1_Synchronization**

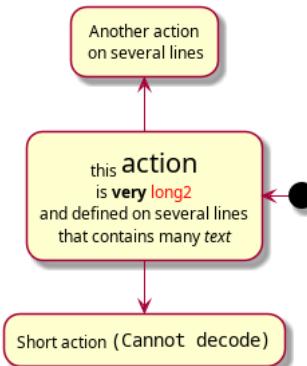
```
@startuml
(*) --> ===B1===
--> "Parallel Action 1"
```

```
--> ===B2===
==B1==> --> "Parallel Action 2"
--> ===B2===
--> (*)
@enduml
```



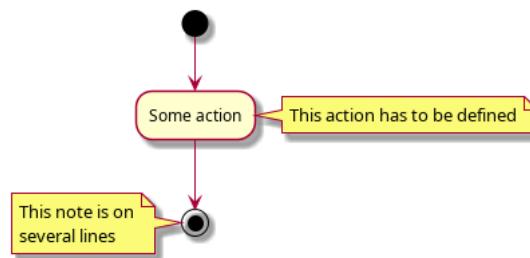
uml/reference_05-07-1_Long-action-description

```
@startuml
(*) -left-> "this <size:20>action</size>
is <b>very</b> <color:red>long2</color>
and defined on several lines
that contains many <i>text</i>" as A1
-up-> "Another action\n on several lines"
A1 --> "Short action <img:sourceforge.jpg>"
@enduml
```



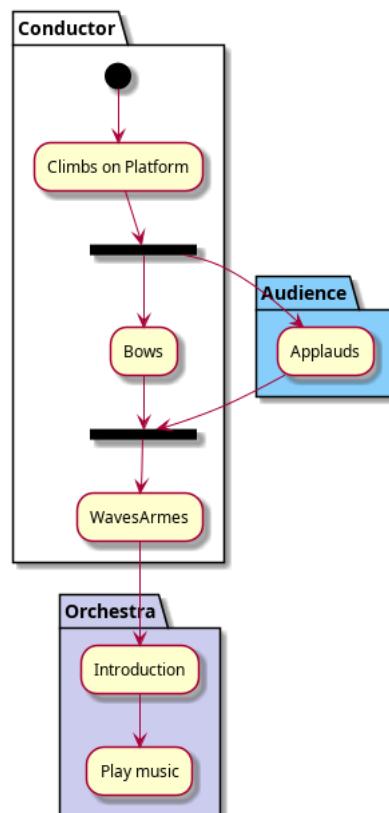
uml/reference_05-08-1_Notes

```
@startuml
(*) --> "Some action"
note right: This action has to be defined
"Some action" --> (*)
note left
    This note is on
    several lines
end note
@enduml
```



uml/reference_05-09-1_Partition

```
@startuml
partition Conductor {
    (*) --> "Climbs on Platform"
    --> === S1 ===
    --> Bows
}
partition Audience #LightSkyBlue {
    === S1 === --> Applauds
}
partition Conductor {
    Bows --> === S2 ===
    --> WavesArmes
    Applauds --> === S2 ===
}
partition Orchestra #CCCCEE {
    WavesArmes --> Introduction
    --> "Play music"
}
@enduml
```



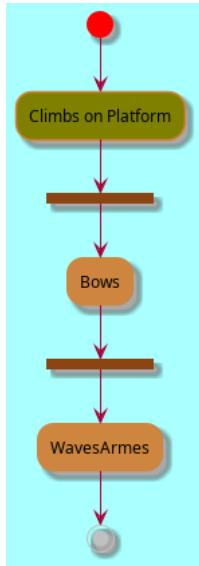
uml/reference_05-10-1_Skinparam

```
@startuml
skinparam backgroundColor #AFFFFF
```

```

skinparam activity {
  StartColor red
  BarColor SaddleBrown
  EndColor Silver
  BackgroundColor Peru
  BackgroundColor<< Begin >> Olive
  BorderColor Peru
  FontName Impact
}
(*) --> "Climbs on Platform" << Begin >>
--> === S1 ===
--> Bows
--> === S2 ===
--> WavesArmes
--> (*)
@enduml

```



uml/reference_05-11-1_Octagon

```

@startuml
'Default is skinparam activityShape roundBox
skinparam activityShape octagon
(*) --> "First Action"
"First Action" --> (*)
@enduml

```



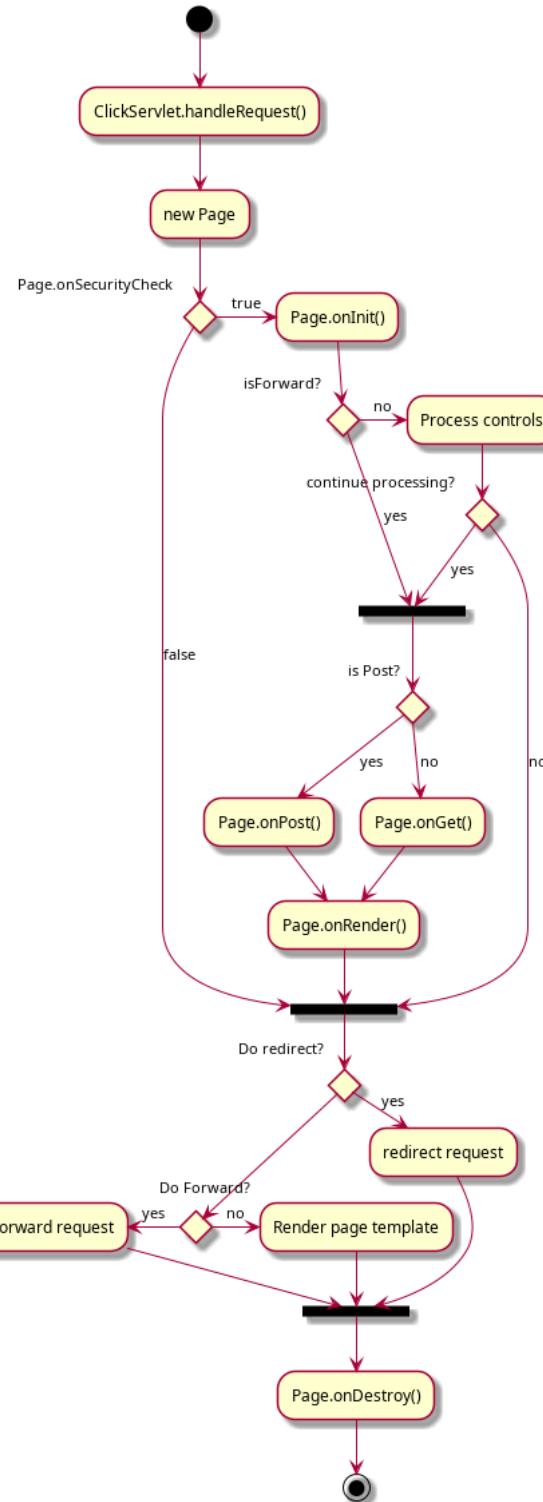
uml/reference_05-12-1_Complete-example

```

@startuml
title Servlet Container
(*) --> "ClickServlet.handleRequest()"
--> "new Page"
if "Page.onSecurityCheck" then
  ->[true] "Page.onInit()"
  if "isForward?" then
    ->[no] "Process controls"
    if "continue processing?" then
      -->[yes] ==RENDERING==
    else
      -->[no] ==REDIRECT_CHECK==
    endif
  else
    -->[yes] ==RENDERING==
  endif
  if "is Post?" then
    -->[yes] "Page.onPost()"
    --> "Page.onRender()" as render
    --> ==REDIRECT_CHECK==
  else
    -->[no] "Page.onGet()"
    --> render
  endif
else
  -->[false] ==REDIRECT_CHECK==
endif
if "Do redirect?" then
  ->[yes] "redirect request"
  --> ==BEFORE_DESTROY==
else
  if "Do Forward?" then
    -left->[yes] "Forward request"
    --> ==BEFORE_DESTROY==
  else
    -right->[no] "Render page template"
    --> ==BEFORE_DESTROY==
  endif
endif
--> "Page.onDestroy()"
-->(*)
@enduml

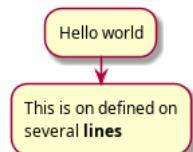
```

Servlet Container



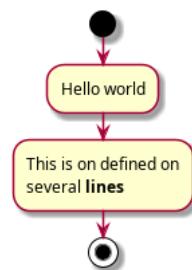
uml/reference_06-01-1_Simple-action

```
@startuml
:Hello world;
:This is on defined on
several **lines**;
@enduml
```



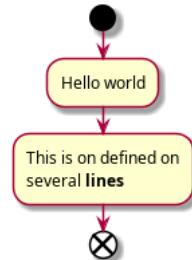
uml/reference_06-02-1_Start-Stop-End

```
@startuml
start
:Hello world;
:This is on defined on
several **lines**;
stop
@enduml
```

**uml/reference_06-02-2_Start-Stop-End**

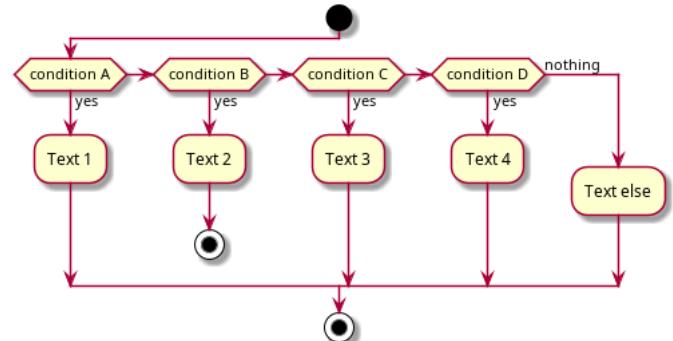
```

@startuml
start
:Hello world;
:This is on defined on
several **lines**;
end
@enduml
  
```

**uml/reference_06-03-01-1_Conditional-Several-tests-horizontal-mode**

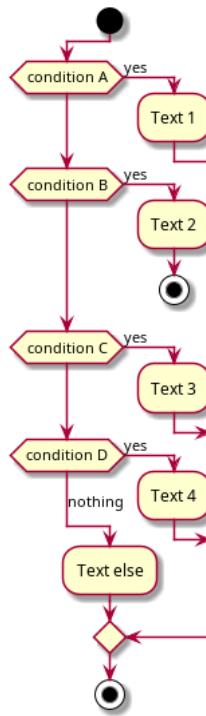
```

@startuml
start
if (condition A) then (yes)
:Text 1;
elseif (condition B) then (yes)
:Text 2;
stop
elseif (condition C) then (yes)
:Text 3;
elseif (condition D) then (yes)
:Text 4;
else (nothing)
:Text else;
endif
stop
@enduml
  
```

**uml/reference_06-03-01-2_Conditional-Several-tests-vertical-mode**

```

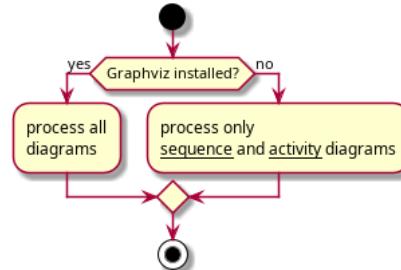
@startuml
!pragma useVerticalIf on
start
if (condition A) then (yes)
:Text 1;
elseif (condition B) then (yes)
:Text 2;
stop
elseif (condition C) then (yes)
:Text 3;
elseif (condition D) then (yes)
:Text 4;
else (nothing)
:Text else;
endif
stop
@enduml
  
```

**uml/reference_06-03-1_Conditional**

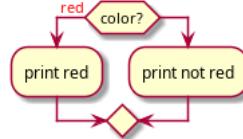
```

@startuml
start
if (Graphviz installed?) then (yes)
:process all\ndiagrams;
else (no)
:process only
  
```

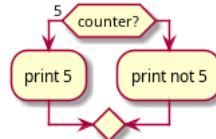
```
__sequence__ and __activity__ diagrams;
endif
stop
@enduml
```

**uml/reference_06-03-2_Conditional**

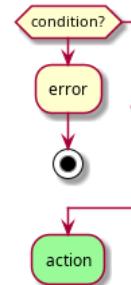
```
@startuml
if (color?) is (<color:red>red) then
:print red;
else
:print not red;
@enduml
```

**uml/reference_06-03-3_Conditional**

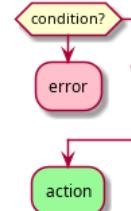
```
@startuml
if (counter?) equals (5) then
:print 5;
else
:print not 5;
@enduml
```

**uml/reference_06-04-1_Conditional-with-stop-on-an-action**

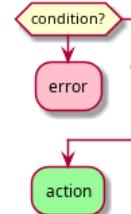
```
@startuml
if (condition?) then
:error;
stop
endif
#palegreen:action;
@enduml
```

**uml/reference_06-04-2_Conditional-with-stop-on-an-action**

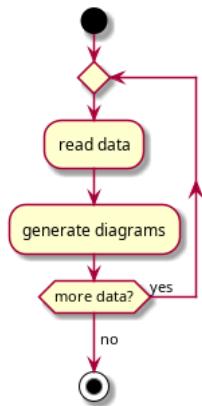
```
@startuml
if (condition?) then
:#pink:error;
kill
endif
#palegreen:action;
@enduml
```

**uml/reference_06-04-3_Conditional-with-stop-on-an-action**

```
@startuml
if (condition?) then
:#pink:error;
detach
endif
#palegreen:action;
@enduml
```

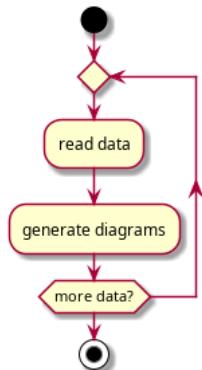
**uml/reference_06-05-1_Repeat-loop**

```
@startuml
start
repeat
:read data;
:generate diagrams;
repeat while (more data?) is (yes)
->no;
stop
@enduml
```

**uml/reference_06-05-2_Repeat-loop**

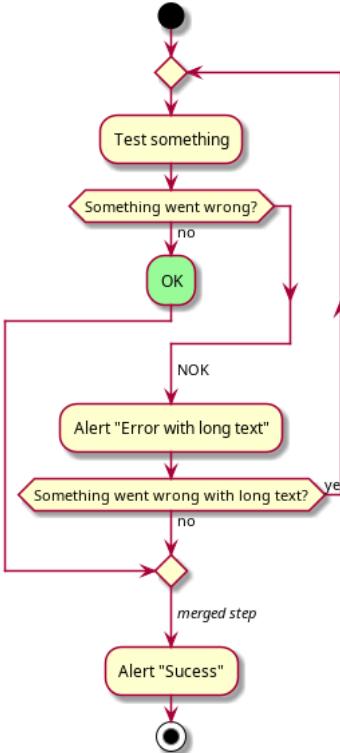
```

@startuml
start
repeat
:read data;
:generate diagrams;
repeat while (more data?)
stop
@enduml
  
```

**uml/reference_06-06-1_Break-on-a-repeat-loop**

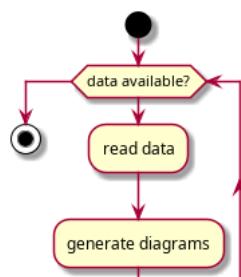
```

@startuml
start
repeat
:Test something;
  if (Something went wrong?) then (no)
    #palegreen:OK;
    break
  endif
  ->NOK;
  :Alert "Error with long text";
repeat while (Something went wrong with long text?) is (yes) not (no)
->//merged step//;
:Alert "Sucess";
stop
@enduml
  
```

**uml/reference_06-07-1_While-loop**

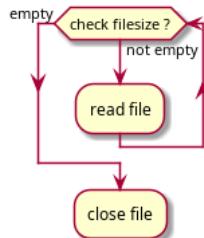
```

@startuml
start
while (data available?)
  :read data;
  :generate diagrams;
endwhile
stop
@enduml
  
```

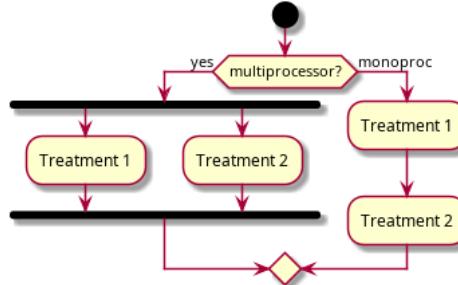


uml/reference_06-07-2_While-loop

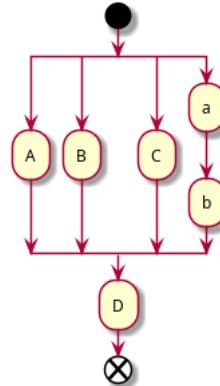
```
@startuml
while (check filesize ?) is (not empty)
  :read file;
endwhile (empty)
:close file;
@enduml
```

**uml/reference_06-08-1_Parallel-processing**

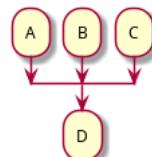
```
@startuml
start
if (multiprocessor?) then (yes)
  fork
    :Treatment 1;
    fork again
      :Treatment 2;
    end fork
else (monoproc)
  :Treatment 1;
  :Treatment 2;
endif
@enduml
```

**uml/reference_06-09-01-1_Split-processing**

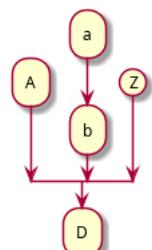
```
@startuml
start
split
  :A;
  split again
    :B;
    split again
      :C;
    split again
      :a;
      :b;
  end split
  :D;
end
@enduml
```

**uml/reference_06-09-02-1_Split-processing**

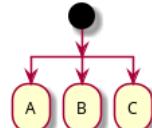
```
@startuml
split
  -[hidden]-
  :A;
  split again
  -[hidden]-
  :B;
  split again
  -[hidden]-
  :C;
  end split
  :D;
@enduml
```

**uml/reference_06-09-02-2_Split-processing**

```
@startuml
split
  -[hidden]-
  :A;
  split again
  -[hidden]-
  :a;
  :b;
  split again
  -[hidden]-
  (Z)
  end split
  :D;
@enduml
```

**uml/reference_06-09-03-1_Split-processing**

```
@startuml
start
split
  :A;
```



```

kill
split again
:;
detach
split again
:C;
kill
end split
@enduml

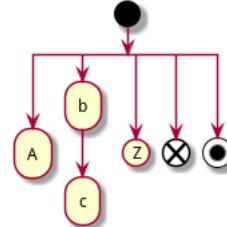
```

uml/reference_06-09-03-2_Split-processing

```

@startuml
start
split
:A;
kill
split again
:b;
:c;
detach
split again
(Z)
detach
split again
end
split again
stop
end split
@enduml

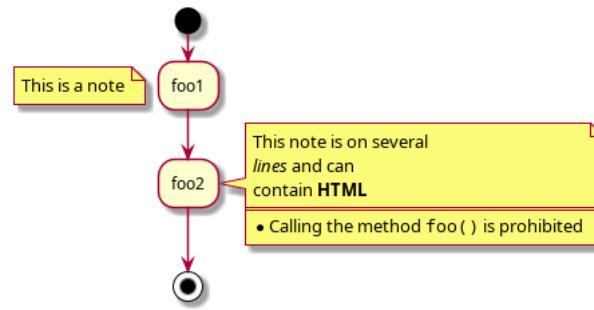
```

**uml/reference_06-10-1_Notes**

```

@startuml
start
:foo1;
floating note left: This is a note
:foo2;
note right
This note is on several
//lines// and can
contain <b>HTML</b>
=====
* Calling the method ""foo()"" is prohibited
end note
stop
@enduml

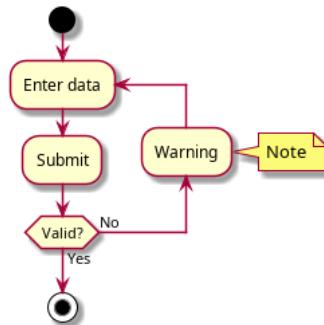
```

**uml/reference_06-10-2_Notes**

```

@startuml
start
repeat :Enter data;
:Submit;
backward :Warning;
note right: Note
repeat while (Valid?) is (No) not (Yes)
stop
@enduml

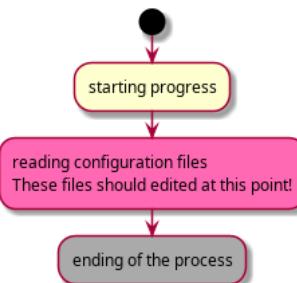
```

**uml/reference_06-11-1_Colors**

```

@startuml
start
:starting progress;
#HotPink:reading configuration files
These files should edited at this point!;
#AAAAAA:ending of the process;
@enduml

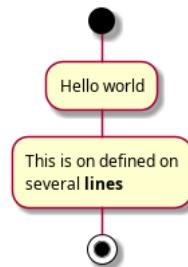
```

**uml/reference_06-12-1_Lines-without-arrows**

```

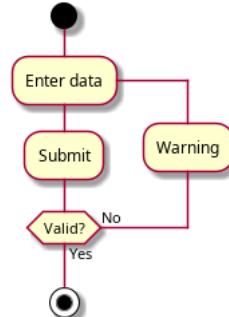
@startuml
skinparam ArrowHeadColor none
start
:Hello world;
:This is on defined on
several **lines**;
stop
@enduml

```

**uml/reference_06-12-2_Lines-without-arrows**

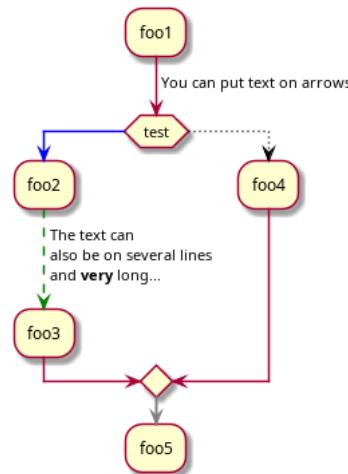
```

@startuml
skinparam ArrowHeadColor none
start
repeat :Enter data;
:Submit;
backward :Warning;
repeat while (Valid?) is (No) not (Yes)
stop
@enduml
  
```

**uml/reference_06-13-1_Arrows**

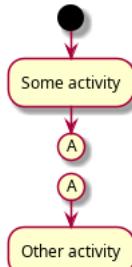
```

@startuml
:foo1;
-> You can put text on arrows;
if (test) then
  -[#blue]->
  :foo2;
  -[#green,dashed]-> The text can
  also be on several lines
  and **very** long...
  :foo3;
else
  -[#black,dotted]->
  :foo4;
endif
-[#gray,bold]->
:foo5;
@enduml
  
```

**uml/reference_06-14-1_Connector**

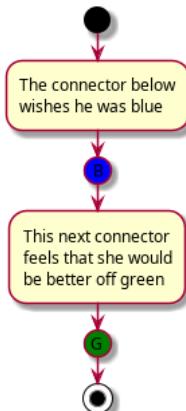
```

@startuml
start
:Some activity;
(A)
detach
(A)
:Other activity;
@enduml
  
```

**uml/reference_06-15-1_Color-on-connector**

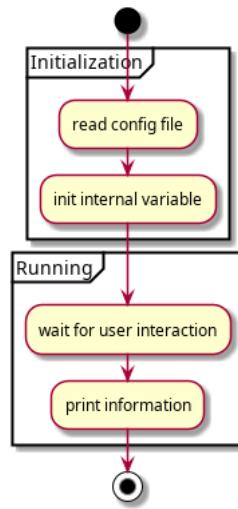
```

@startuml
start
:The connector below
wishes he was blue;
#blue:(B)
:This next connector
feels that she would
be better off green;
#gren:(G)
stop
@enduml
  
```

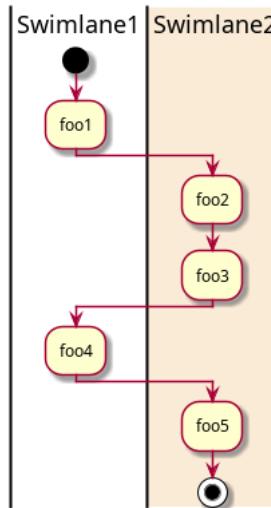


uml/reference_06-16-1_Grouping-or-partition

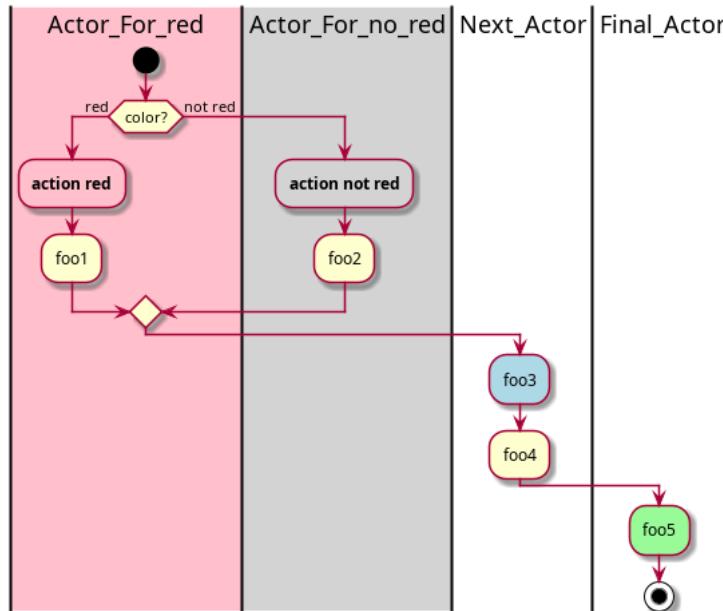
```
@startuml
start
partition Initialization {
    :read config file;
    :init internal variable;
}
partition Running {
    :wait for user interaction;
    :print information;
}
stop
@enduml
```

**uml/reference_06-17-1_Swimlanes**

```
@startuml
|Swimlane1|
start
:foo1;
|#AntiqueWhite|Swimlane2|
:foo2;
:foo3;
|Swimlane1|
:foo4;
|Swimlane2|
:foo5;
stop
@enduml
```

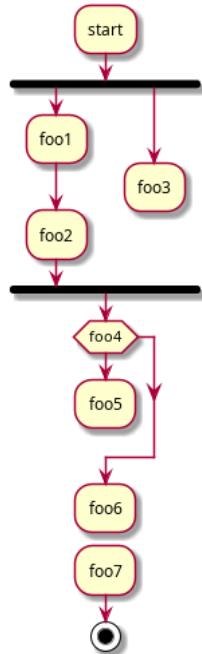
**uml/reference_06-17-2_Swimlanes**

```
@startuml
|#pink|Actor_For_red|
start
if (color?) is (red) then
    #pink:**action red**;
    :foo1;
else (not red)
    #lightgray|Actor_For_no_red|
    #lightgray:**action not red**;
    :foo2;
endif
|Next_Actor|
#lightblue:foo3;
:foo4;
|Final_Actor|
#palegreen:foo5;
stop
@enduml
```

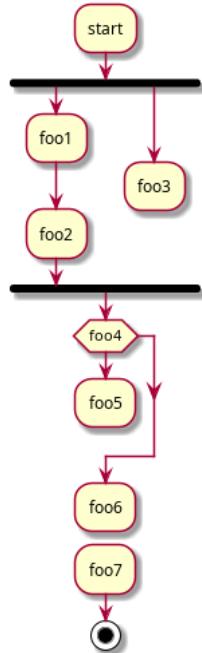
**uml/reference_06-18-1_Detach-or-kill**

```
@startuml
:start;
fork
:foo1;
:foo2;
fork again
:foo3;
detach
endfork
if (foo4) then
```

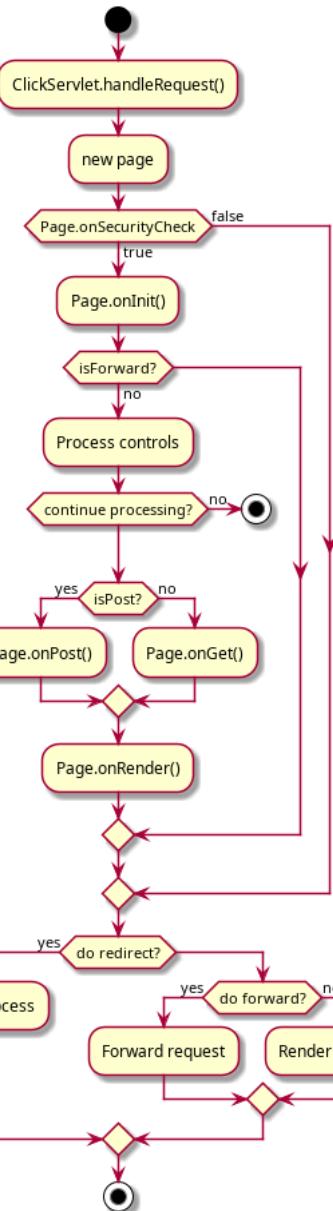
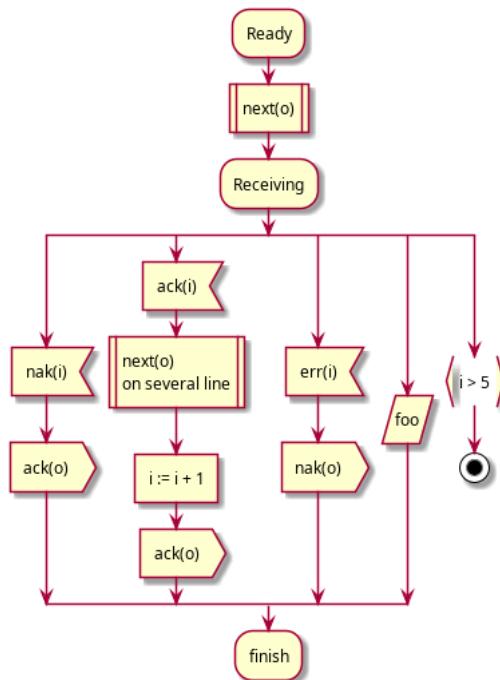
```
:foo5;
detach
endif
:foo6;
detach
:foo7;
stop
@enduml
```

**uml/reference_06-18-2_Detach-or-kill**

```
@startuml
:start;
fork
:foo1;
:foo2;
fork again
:foo3;
kill
endfork
if (foo4) then
:foo5;
kill
endif
:foo6;
kill
:foo7;
stop
@enduml
```

**uml/reference_06-19-1 SDL**

```
@startuml
:Ready;
:next(o)|;
:Receiving;
split
:nak(i)<
:ack(o)>
split again
:ack(i)<
:next(o)
on several line|
:i := i + 1]
:ack(o)>
split again
:err(i)<
:nak(o)>
split again
:foo/
split again
:i > 5}
stop
end split
:finish;
@enduml
```

**uml/reference_06-20-1_Complete-example**

```

@startuml
start
:ClickServlet.handleRequest();
:new page;
if (Page.onSecurityCheck) then (true)
:Page.onInit();
if (isForward?) then (no)
:Process controls;
if (continue processing?) then (no)
stop
endif

if (isPost?) then (yes)
:Page.onPost();
else (no)
:Page.onGet();
endif
:Page.onRender();
endif
else (false)
endif

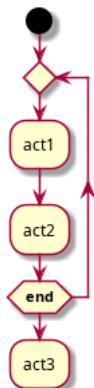
if (do redirect?) then (yes)
:redirect process;
else
if (do forward?) then (yes)
:Forward request;
else (no)
:Render page template;
endif
endif

stop
@enduml

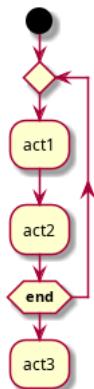
```

uml/reference_06-21-01-1_Condition-Style

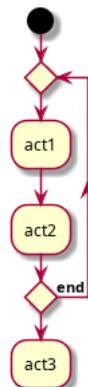
```
@startuml
skinparam conditionStyle inside
start
repeat
:act1;
:act2;
repeatwhile (<b>end</b>)
:act3;
@enduml
```

**uml/reference_06-21-01-2_Condition-Style**

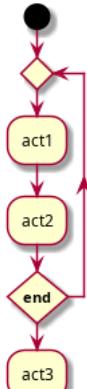
```
@startuml
start
repeat
:act1;
:act2;
repeatwhile (<b>end</b>)
:act3;
@enduml
```

**uml/reference_06-21-02-1_Condition-Style**

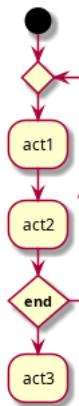
```
@startuml
skinparam conditionStyle diamond
start
repeat
:act1;
:act2;
repeatwhile (<b>end</b>)
:act3;
@enduml
```

**uml/reference_06-21-03-1_Condition-Style**

```
@startuml
skinparam conditionStyle InsideDiamond
start
repeat
:act1;
:act2;
repeatwhile (<b>end</b>)
:act3;
@enduml
```

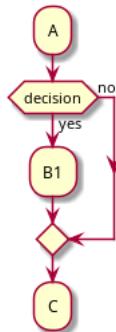
**uml/reference_06-21-03-2_Condition-Style**

```
@startuml
skinparam conditionStyle foo1
start
repeat
:act1;
:act2;
repeatwhile (<b>end</b>)
:act3;
@enduml
```

**uml/reference_06-22-01-1_Condition-End-Style**

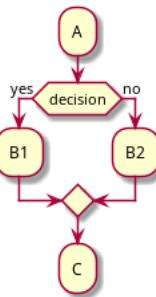
```

@startuml
skinparam ConditionEndStyle diamond
:A;
if (decision) then (yes)
: B1;
else (no)
endif
:C;
@enduml
  
```

**uml/reference_06-22-01-2_Condition-End-Style**

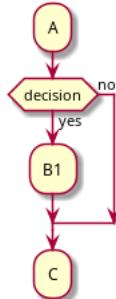
```

@startuml
skinparam ConditionEndStyle diamond
:A;
if (decision) then (yes)
: B1;
else (no)
: B2;
endif
:C;
@enduml
  
```

**uml/reference_06-22-02-1_Condition-End-Style**

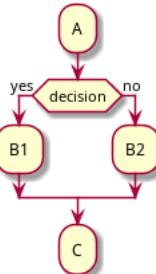
```

@startuml
skinparam ConditionEndStyle hline
:A;
if (decision) then (yes)
: B1;
else (no)
endif
:C;
@enduml
  
```

**uml/reference_06-22-02-2_Condition-End-Style**

```

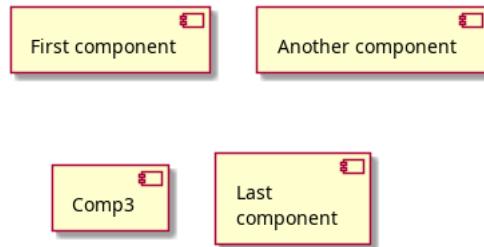
@startuml
skinparam ConditionEndStyle hline
:A;
if (decision) then (yes)
: B1;
else (no)
: B2;
endif
:C;
@enduml
  
```

**uml/reference_07-01-1_Components**

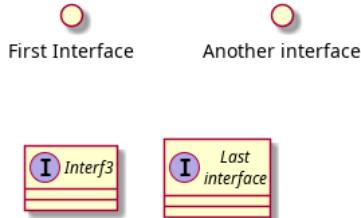
```

@startuml
[First component]
[Another component] as Comp2
component Comp3
  
```

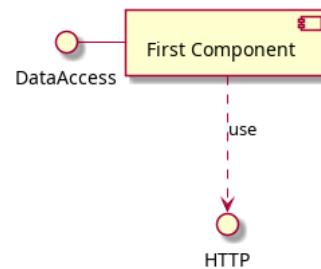
```
@startuml
component [Last\ncomponent] as Comp4
@enduml
```

**uml/reference_07-02-1_Interfaces**

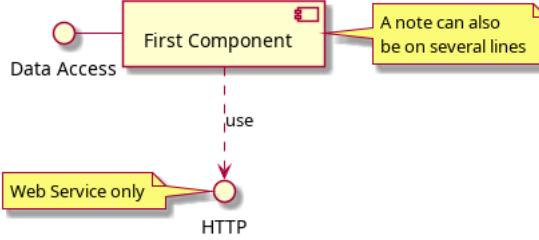
```
@startuml
() "First Interface"
() "Another interface" as Interf2
interface Interf3
interface "Last\nterface" as Interf4
@enduml
```

**uml/reference_07-03-1_Basic-example**

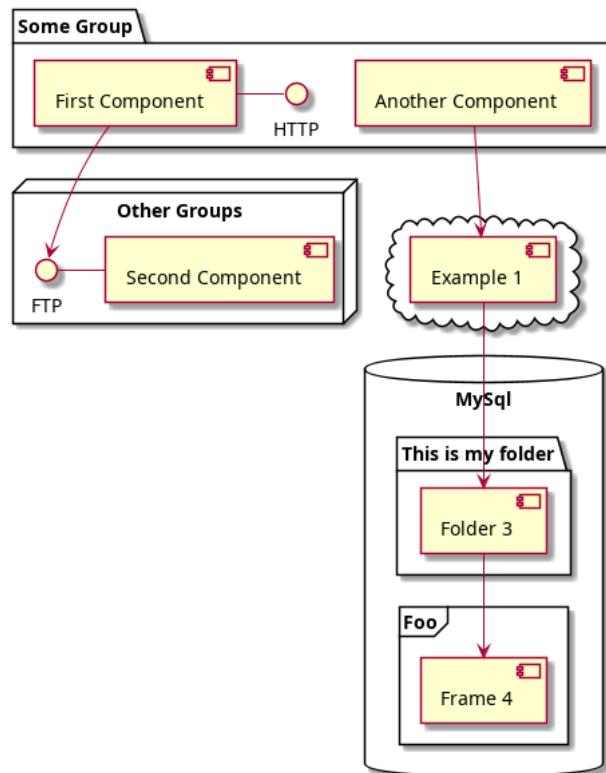
```
@startuml
DataAccess - [First Component]
[First Component] ..> HTTP : use
@enduml
```

**uml/reference_07-04-1_Using-notes**

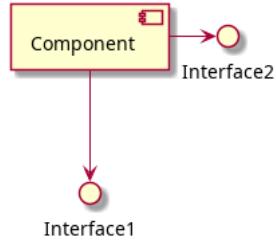
```
@startuml
interface "Data Access" as DA
DA - [First Component]
[First Component] ..> HTTP : use
note left of HTTP : Web Service only
note right of [First Component]
A note can also
be on several lines
end note
@enduml
```

**uml/reference_07-05-1_Grouping-Components**

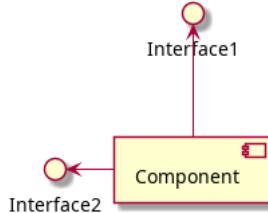
```
@startuml
package "Some Group" {
    HTTP - [First Component]
    [Another Component]
}
node "Other Groups" {
    FTP - [Second Component]
    [First Component] --> FTP
}
cloud {
    [Example 1]
}
database "MySQL" {
    folder "This is my folder" {
        [Folder 3]
    }
    frame "Foo" {
        [Frame 4]
    }
}
[Another Component] --> [Example 1]
[Example 1] --> [Folder 3]
[Folder 3] --> [Frame 4]
@enduml
```

**uml/reference_07-06-1_Changing-arrows-direction**

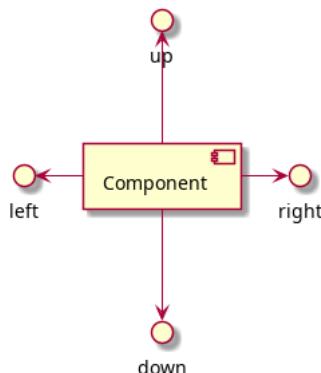
```
@startuml
[Component] --> Interface1
[Component] -> Interface2
@enduml
```

**uml/reference_07-06-2_Changing-arrows-direction**

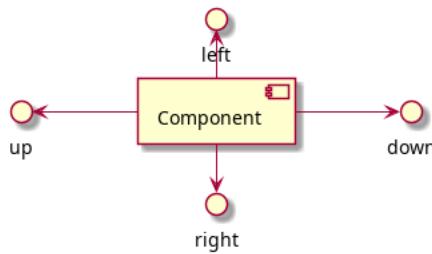
```
@startuml
Interface1 <-- [Component]
Interface2 <- [Component]
@enduml
```

**uml/reference_07-06-3_Changing-arrows-direction**

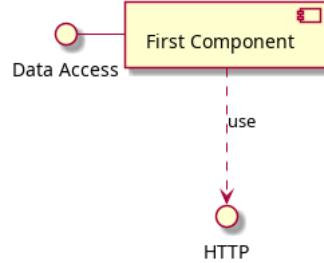
```
@startuml
[Component] -left-> left
[Component] -right-> right
[Component] -up-> up
[Component] -down-> down
@enduml
```

**uml/reference_07-06-4_Changing-arrows-direction**

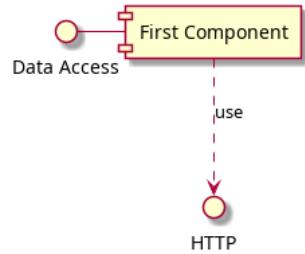
```
@startuml
left to right direction
[Component] -left-> left
[Component] -right-> right
[Component] -up-> up
[Component] -down-> down
@enduml
```

**uml/reference_07-07-1_Use-UML2-notation**

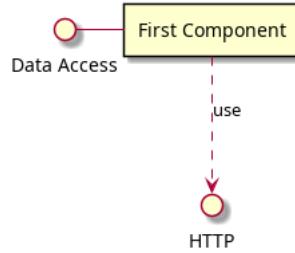
```
@startuml
interface "Data Access" as DA
DA - [First Component]
[First Component] ..> HTTP : use
@enduml
```

**uml/reference_07-08-1_Use-UML1-notation**

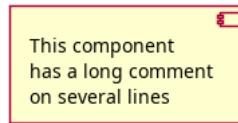
```
@startuml
skinparam componentStyle rectangle
interface "Data Access" as DA
DA - [First Component]
[First Component] ..> HTTP : use
@enduml
```

**uml/reference_07-09-1_Use-rectangle-notatio**

```
@startuml
skinparam componentStyle rectangle
interface "Data Access" as DA
DA - [First Component]
[First Component] ..> HTTP : use
@enduml
```

**uml/reference_07-10-1_Long_description**

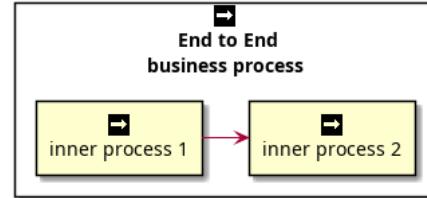
```
@startuml
component comp1 [
This component
has a long comment
on several lines
]
@enduml
```

**uml/reference_07-11-1_Individual-colors**

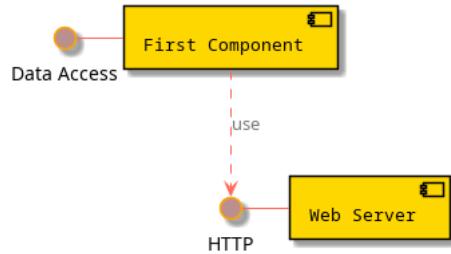
```
@startuml
component [Web Server] #Yellow
@enduml
```

**uml/reference_07-12-1_Using-Sprite-in-Stereotype**

```
@startuml
sprite $businessProcess [16x16/16] {
FFFFFFFFFFFFFFFFFF
FFFFFFFFFFFFFFFFFF
FFFFFFFFFFFFFFFFFF
FFFFFFFFFFFFFFFFFF
FFFFFFFFFFFF0FFFFF
FFFFFFFFFFFF00FFFF
FF000000000000FF
FF0000000000000FF
FF0000000000000FFF
FF000000000000FFF
}
rectangle " End to End\nbusiness process" <<$businessProcess>> {
    rectangle "inner process 1" <<$businessProcess>> as src
    rectangle "inner process 2" <<$businessProcess>> as tgt
    src -> tgt
}
@enduml
```

**uml/reference_07-13-1_Skinparam**

```
@startuml
skinparam interface {
    backgroundColor RosyBrown
    borderColor orange
}
skinparam component {
    FontSize 13
    BackgroundColor<<Apache>> Red
    BorderColor<<Apache>> #FF6655
    FontName Courier
    BorderColor black
    BackgroundColor gold
    ArrowFontName Impact
    ArrowColor #FF6655
    ArrowTextColor #777777
}
() "Data Access" as DA
DA - [First Component]
[First Component] ..> () HTTP : use
HTTP - [Web Server] << Apache >>
@enduml
```

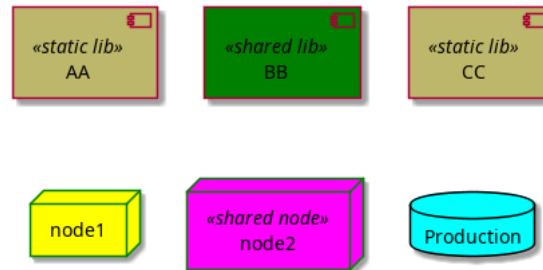
**uml/reference_07-13-2_Skinparam**

```
@startuml
[AA] <<static lib>>
[BB] <<shared lib>>
[CC] <<static lib>>
node node1
```

```

node node2 <<shared node>>
database Production
skinparam component {
    backgroundColor<<static lib>> DarkKhaki
    backgroundColor<<shared lib>> Green
}
skinparam node {
    borderColor Green
    backgroundColor Color Yellow
    backgroundColor<<shared node>> Magenta
}
skinparam databaseBackgroundColor Aqua
@enduml

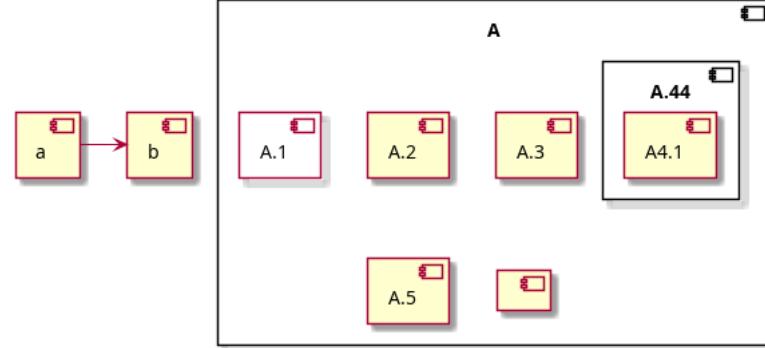
```

**uml/reference_07-14-01-1_componentStyle**

```

@startuml
skinparam BackgroundColor transparent
skinparam componentStyle uml2
component A {
    component "A.1" {
    }
    component A.44 {
        [A4.1]
        component "A.2"
        [A.3]
        component A.5 [
            A.5]
        component A.6 [
        ]
    }
    [a]->[b]
}

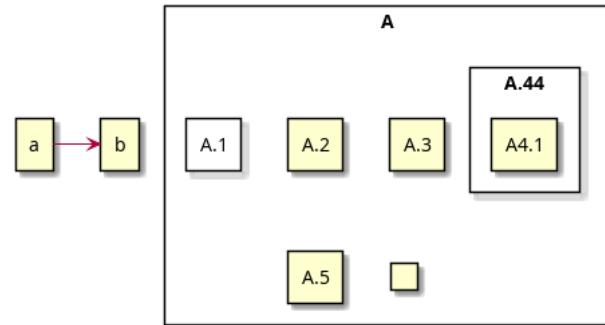
```

**uml/reference_07-14-01-2_componentStyle**

```

@startuml
skinparam BackgroundColor transparent
skinparam componentStyle rectangle
component A {
    component "A.1" {
    }
    component A.44 {
        [A4.1]
    }
    component "A.2"
    [A.3]
    component A.5 [
        A.5]
    component A.6 [
    ]
}
[a]->[b]

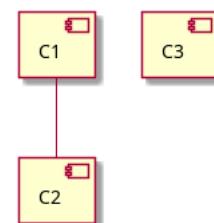
```

**uml/reference_07-15-1_Hide-or-Remove-unlinked-component**

```

@startuml
component C1
component C2
component C3
C1 -- C2
@enduml

```

**uml/reference_07-15-2_Hide-or-Remove-unlinked-component**

```

@startuml
component C1
component C2
component C3
C1 -- C2
hide @unlinked
@enduml

```

**uml/reference_07-15-3_Hide-or-Remove-unlinked-component**

```

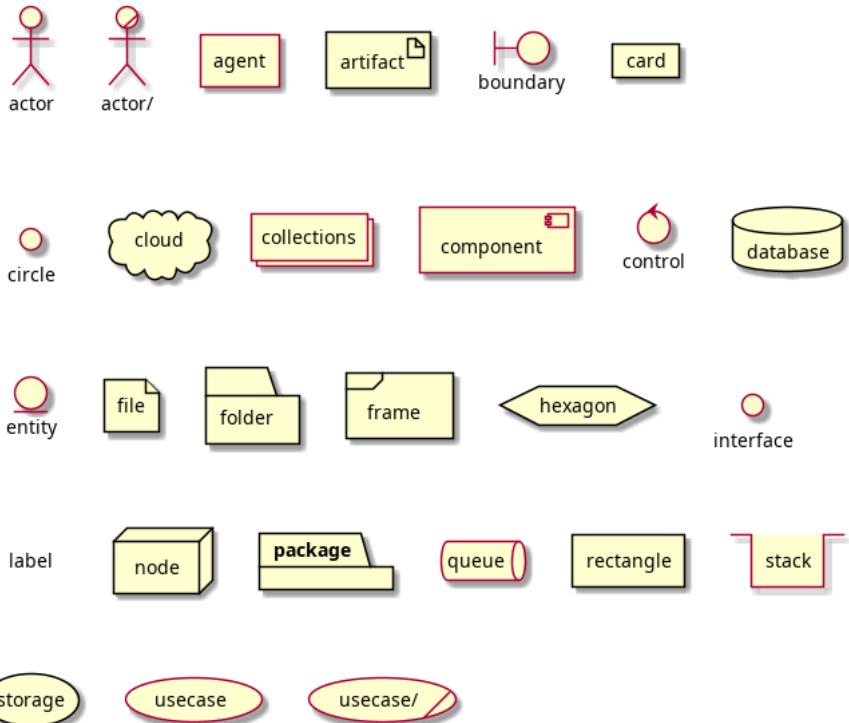
@startuml
component C1
component C2
component C3
C1 -- C2
remove @unlinked
@enduml

```

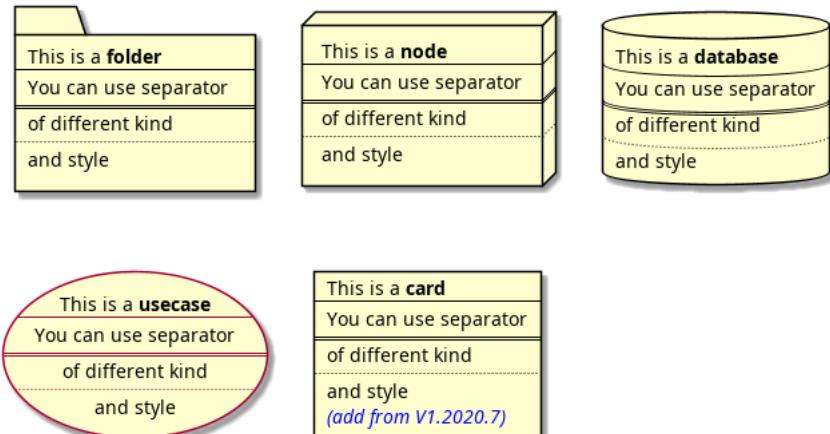


uml/reference_08-01-1_Declaring-element

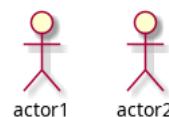
```
@startuml
actor actor
actor / "actor/"
agent agent
artifact artifact
boundary boundary
card card
circle circle
cloud cloud
collections collections
component component
control control
database database
entity entity
file file
folder folder
frame frame
hexagon hexagon
interface interface
label label
node node
package package
queue queue
rectangle rectangle
stack stack
storage storage
usecase usecase
usecase/ "usecase/"
@enduml
```

**uml/reference_08-01-2_Declaring-element**

```
@startuml
folder folder [
This is a <b>folder</b>
-----
You can use separator
=====
of different kind
....
and style
]
node node [
This is a <b>node</b>
-----
You can use separator
=====
of different kind
....
and style
]
database database [
This is a <b>database</b>
-----
You can use separator
=====
of different kind
....
and style
]
usecase usecase [
This is a <b>usecase</b>
-----
You can use separator
=====
of different kind
....
and style
]
card card [
This is a <b>card</b>
-----
You can use separator
=====
of different kind
....
and style
<i><color:blue>(add from V1.2020.7)</color></i>
]
@enduml
```

**uml/reference_08-02-01-1_Declaring-element-Actor**

```
@startuml
actor actor1
:actor2:
@enduml
```

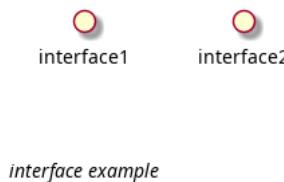


uml/reference_08-02-02-1_Declaring-element-Component

```
@startuml
component component1
[component2]
@enduml
```

**uml/reference_08-02-03-1_Declaring-element-Interface**

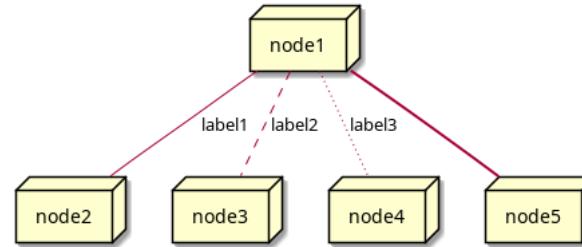
```
@startuml
interface interface1
() "interface2"
label "//interface example//"
@enduml
```

**uml/reference_08-02-04-1_Declaring-element-Usecase**

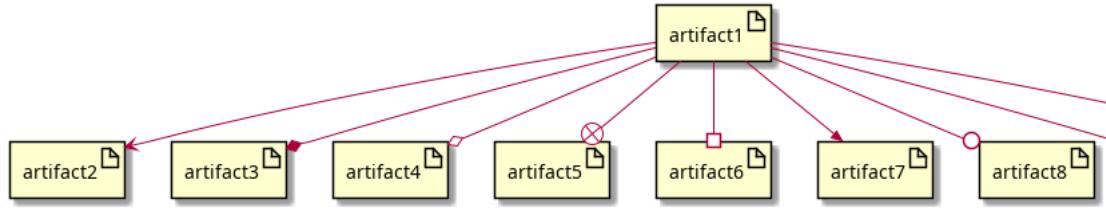
```
@startuml
usecase usecase1
(usecase2)
@enduml
```

**uml/reference_08-03-1_Linking-or-arrow**

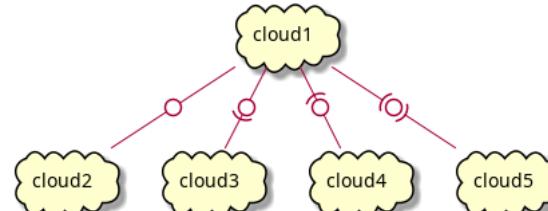
```
@startuml
node node1
node node2
node node3
node node4
node node5
node1 --> node2 : label1
node1 .. node3 : label2
node1 ~~ node4 : label3
node1 == node5
@enduml
```

**uml/reference_08-03-2_Linking-or-arrow**

```
@startuml
artifact artifact1
artifact artifact2
artifact artifact3
artifact artifact4
artifact artifact5
artifact artifact6
artifact artifact7
artifact artifact8
artifact artifact9
artifact artifact10
artifact1 --> artifact2
artifact1 -* artifact3
artifact1 --o artifact4
artifact1 --- artifact5
artifact1 --# artifact6
artifact1 -->> artifact7
artifact1 --o artifact8
artifact1 --^ artifact9
artifact1 --(0 artifact10
@enduml
```

**uml/reference_08-03-3_Linking-or-arrow**

```
@startuml
cloud cloud1
cloud cloud2
cloud cloud3
cloud cloud4
cloud cloud5
cloud1 -0- cloud2
cloud1 -0)- cloud3
cloud1 -(0- cloud4
cloud1 -(0)- cloud5
@enduml
```

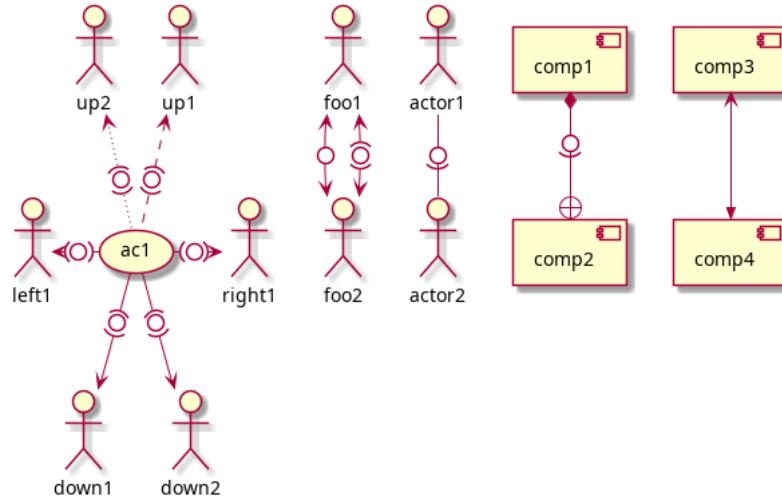
**uml/reference_08-03-4_Linking-or-arrow**

```
@startuml
actor foo1
actor foo2
foo1 <-0-> foo2
foo1 <-(0)-> foo2
(ac1) -le(0)-> left1
ac1 -ri(0)-> right1
ac1 .up(0).> up1
```

```

ac1 -> up(0)~> up2
ac1 -> do(0)~> down1
ac1 -> do(0)~> down2
actor1 -> actor2
component comp1
component comp2
comp1 *->+ comp2
[comp3] <--> [comp4]
@enduml

```



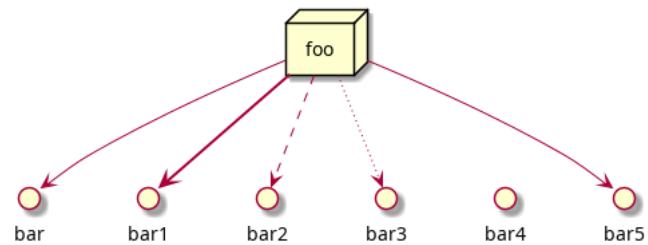
uml/reference_08-04-01-1_Bracketed-arrow-style-Line-style

```

@startuml
node foo
title Bracketed line style without label
foo --> bar
foo -[bold]-> bar1
foo -[dashed]-> bar2
foo -[dotted]-> bar3
foo -[hidden]-> bar4
foo -[plain]-> bar5
@enduml

```

Bracketed line style without label



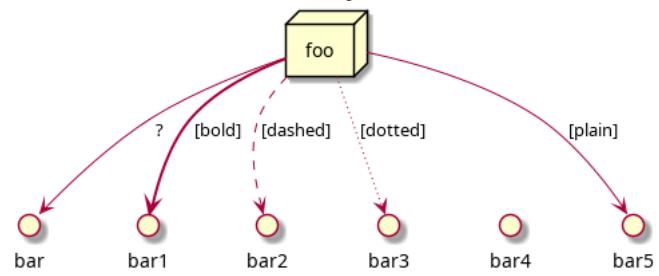
uml/reference_08-04-01-2_Bracketed-arrow-style-Line-style

```

@startuml
title Bracketed line style with label
node foo
foo --> bar      : ?
foo -[bold]-> bar1 : [bold]
foo -[dashed]-> bar2 : [dashed]
foo -[dotted]-> bar3 : [dotted]
foo -[hidden]-> bar4 : [hidden]
foo -[plain]-> bar5 : [plain]
@enduml

```

Bracketed line style with label



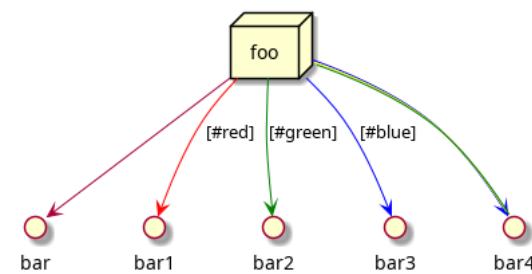
uml/reference_08-04-02-1_Bracketed-arrow-style-Line-color

```

@startuml
title Bracketed line color
node foo
foo --> bar
foo -[#red]-> bar1 : [#red]
foo -[#green]-> bar2 : [#green]
foo -[#blue]-> bar3 : [#blue]
foo -[#blue;#yellow;#green]-> bar4
@enduml

```

Bracketed line color



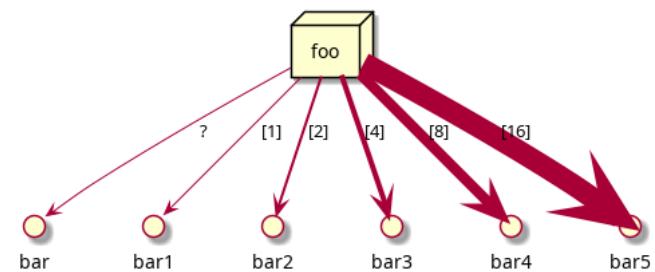
uml/reference_08-04-03-1_Bracketed-arrow-style-Line-thickness

```

@startuml
title Bracketed line thickness
node foo
foo --> bar      : ?
foo -[thickness=1]-> bar1 : [1]
foo -[thickness=2]-> bar2 : [2]
foo -[thickness=4]-> bar3 : [4]
foo -[thickness=8]-> bar4 : [8]
foo -[thickness=16]-> bar5 : [16]
@enduml

```

Bracketed line thickness



uml/reference_08-04-04-1_Bracketed-arrow-style-Mix

```

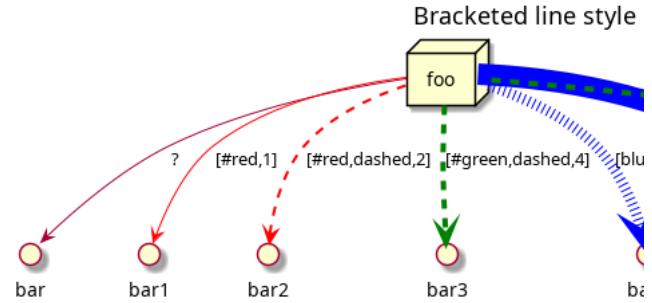
@startuml
title Bracketed line style mix
node foo
foo --> bar      : ?
foo -[#red,thickness=1]-> bar1 : [#red,1]
foo -[#red,dashed,thickness=2]-> bar2

```

```

foo -[#green,dashed,thickness=4]--> bar3      : [#green,dashed,4]
foo -[#blue,dotted,thickness=8]--> bar4      : [blue,dotted,8]
foo -[#blue,plain,thickness=16]--> bar5      : [blue,plain,16]
foo -[#blue:#green,dashed,thickness=4]--> bar6 : [blue;green,dashed,4]
@enduml

```

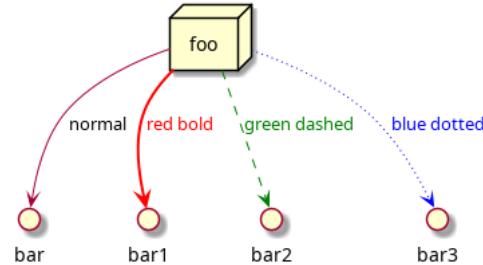


uml/reference_08-05-1_Change-arrow-color-and-style

```

@startuml
node foo
foo --> bar : normal
foo --> bar1 #line:red;line.bold;text:red : red bold
foo --> bar2 #green;line.dashed;text:green : green dashed
foo --> bar3 #blue;line.dotted;text:blue : blue dotted
@enduml

```

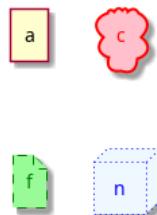


uml/reference_08-06-1_Change-element-color-and-style

```

@startuml
agent a
cloud c #pink;line:red;line.bold;text:red
file f #palegreen;line:green;line.dashed;text:green
node n #aliceblue;line:blue;line.dotted;text:blue
@enduml

```

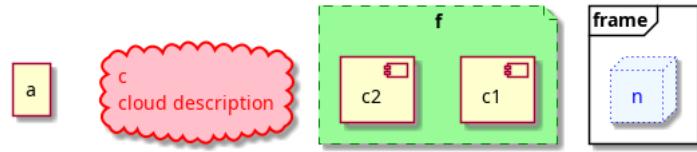


uml/reference_08-06-2_Change-element-color-and-style

```

@startuml
agent a
cloud c #pink;line:red;line.bold;text:red [
c
cloud description
]
file f #palegreen;line:green;line.dashed;text:green {
[c1]
[c2]
}
frame frame {
node n #aliceblue;line:blue;line.dotted;text:blue
}
@enduml

```



uml/reference_08-07-1_Nestable-elements

```

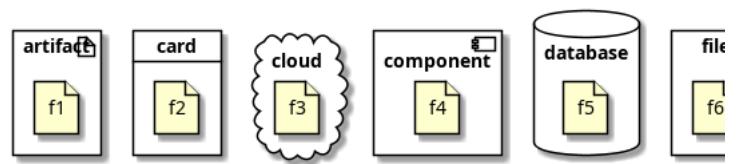
@startuml
artifact artifact {
}
card card {
}
cloud cloud {
}
component component {
}
database database {
}
file file {
}
folder folder {
}
frame frame {
}
hexagon hexagon {
}
node node {
}
package package {
}
queue queue {
}
rectangle rectangle {
}
stack stack {
}
storage storage {
}
@enduml

```

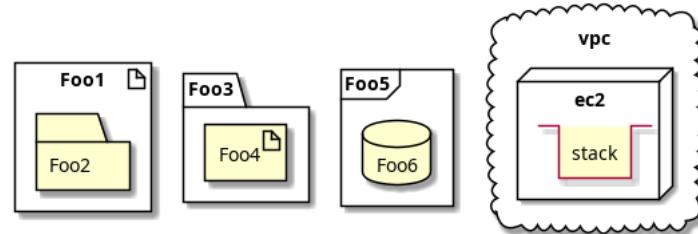


uml/reference_08-08-01-1_Example-with-one-level

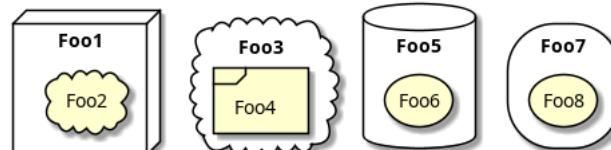
```
@startuml
artifact artifactVeryL0000000000000000000g as "artifact" {
    file f1
}
card cardVeryL0000000000000000000g as "card" {
    file f2
}
cloud cloudVeryL0000000000000000000g as "cloud" {
    file f3
}
component componentVeryL0000000000000000000g as "component" {
    file f4
}
database databaseVeryL0000000000000000000g as "database" {
    file f5
}
file fileVeryL0000000000000000000g as "file" {
    file f6
}
folder folderVeryL0000000000000000000g as "folder" {
    file f7
}
frame frameVeryL0000000000000000000g as "frame" {
    file f8
}
hexagon hexagonVeryL0000000000000000000g as "hexagon" {
    file f9
}
node nodeVeryL0000000000000000000g as "node" {
    file f10
}
package packageVeryL0000000000000000000g as "package" {
    file f11
}
queue queueVeryL0000000000000000000g as "queue" {
    file f12
}
rectangle rectangleVeryL0000000000000000000g as "rectangle" {
    file f13
}
stack stackVeryL0000000000000000000g as "stack" {
    file f14
}
storage storageVeryL0000000000000000000g as "storage" {
    file f15
}
@enduml
```

**uml/reference_08-08-02-1_Other-example**

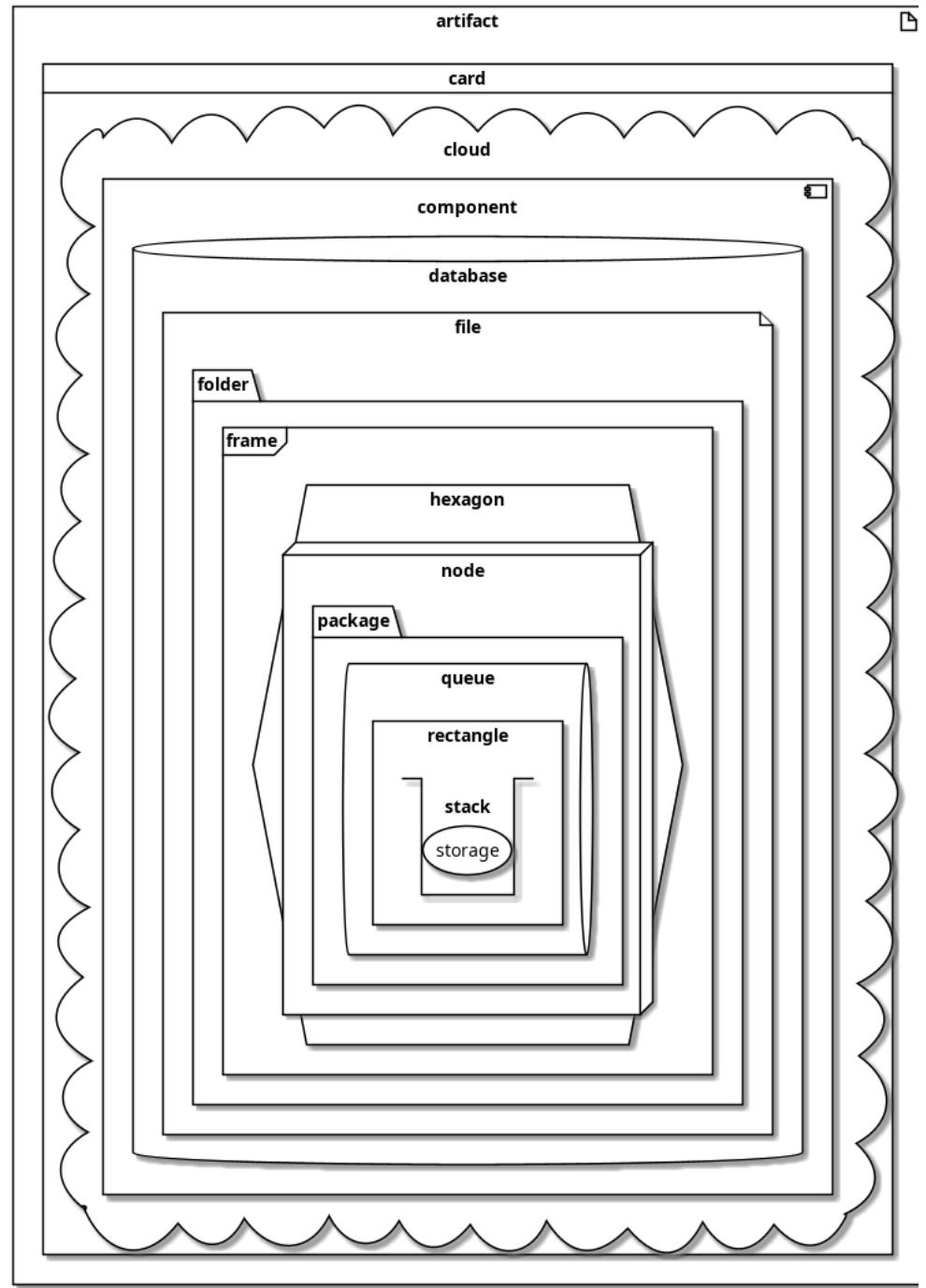
```
@startuml
artifact Foo1 {
    folder Foo2
}
folder Foo3 {
    artifact Foo4
}
frame Foo5 {
    database Foo6
}
cloud vpc {
    node ec2 {
        stack stack
    }
}
@enduml
```

**uml/reference_08-08-02-2_Other-example**

```
@startuml
node Foo1 {
    cloud Foo2
}
cloud Foo3 {
    frame Foo4
}
database Foo5 {
    storage Foo6
}
storage Foo7 {
    storage Foo8
}
@enduml
```

**uml/reference_08-08-03-1_Full-nesting**

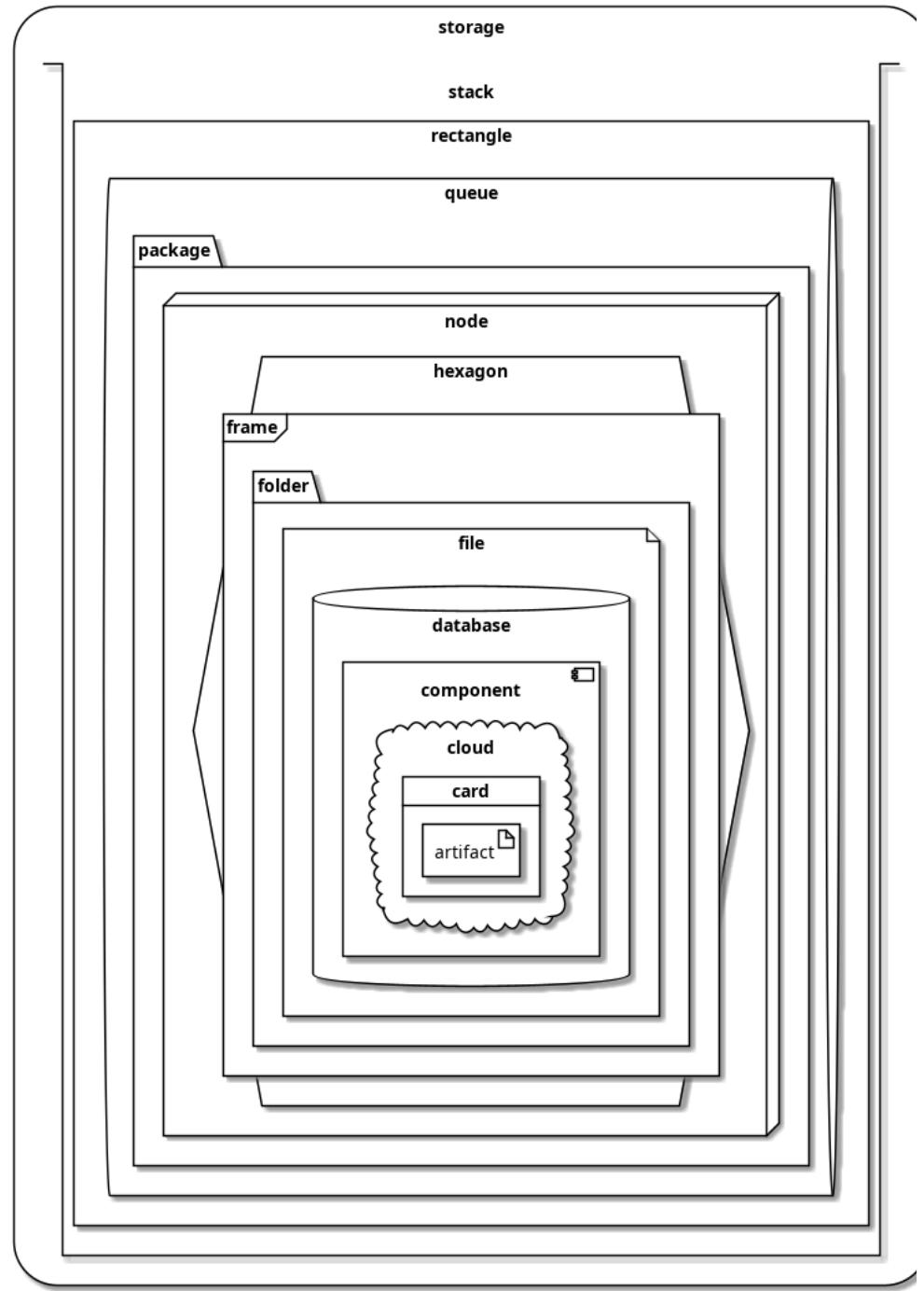
```
@startuml
artifact artifact {
```



uml/reference_08-08-03-2_Full-nesting

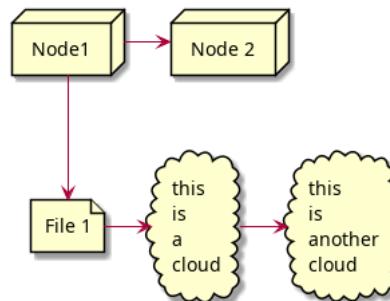
```
@startuml
storage storage {
    stack stack {
        rectangle rectangle {
            queue queue {
                package package {
                    node node {
                        hexagon hexagon {
                            frame frame {
                                folder folder {
                                    file file {
                                        database database {
                                            component component {
                                                cloud cloud {
                                                    card card {
                                                        artifact artifact {
                                                            }
                                                        }
                                                    }
                                                }
                                            }
                                        }
                                    }
                                }
                            }
                        }
                    }
                }
            }
        }
    }
}
}
```

```
}
}
}
@enduml
```



uml/reference_08-09-01-1_Simple-alias-with-as

```
@startuml
node Node1 as n1
node "Node 2" as n2
file f1 as "File 1"
cloud c1 as "this
is
a
cloud"
cloud c2 [this
is
another
cloud]
n1 -> n2
n1 --> f1
f1 -> c1
c1 -> c2
@enduml
```



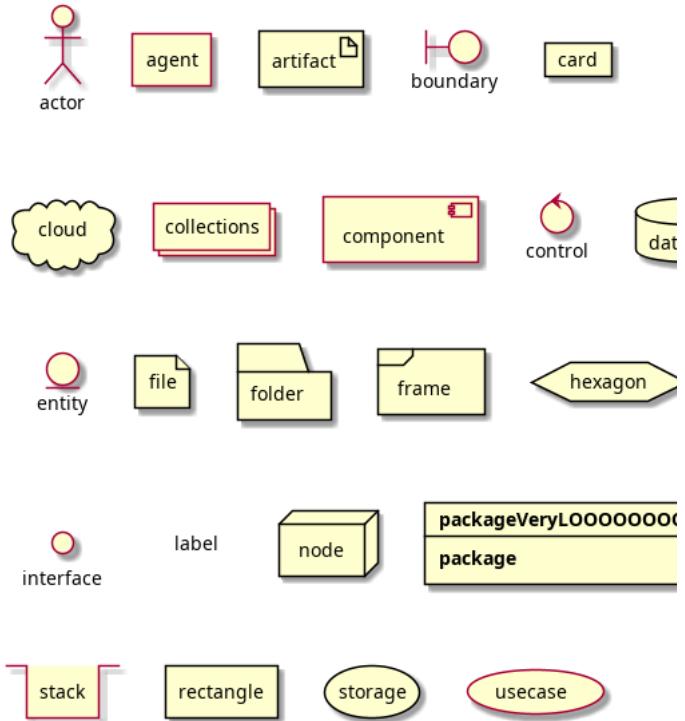
uml/reference_08-09-02-1_Examples-of-long-alias

```
@startuml
actor      "actor"      as actorVeryLooooooooooooo00000000000000000000000000000000g
agent      "agent"       as agentVeryLooooooooooooo00000000000000000000000000000000g
artifact   "artifact"    as artifactVeryLooooooooooooo00000000000000000000000000000000g
boundary   "boundary"   as boundaryVeryLooooooooooooo00000000000000000000000000000000g
card       "card"        as cardVeryLooooooooooooo00000000000000000000000000000000g
```

```

cloud      "cloud"      as cloudVeryL000000000000000000000000g
collections "collections" as collectionsVeryL000000000000000000000000g
component   "component"  as componentVeryL000000000000000000000000g
control     "control"    as controlVeryL000000000000000000000000g
database    "database"   as databaseVeryL000000000000000000000000g
entity      "entity"     as entityVeryL000000000000000000000000g
file        "file"       as fileVeryL000000000000000000000000g
folder      "folder"     as folderVeryL000000000000000000000000g
frame       "frame"      as frameVeryL000000000000000000000000g
hexagon     "hexagon"    as hexagonVeryL000000000000000000000000g
interface   "interface" as interfaceVeryL000000000000000000000000g
label       "label"      as labelVeryL000000000000000000000000g
node        "node"       as nodeVeryL000000000000000000000000g
package     "package"   as packageVeryL000000000000000000000000g
queue       "queue"     as queueVeryL000000000000000000000000g
stack       "stack"      as stackVeryL000000000000000000000000g
rectangle   "rectangle" as rectangleVeryL000000000000000000000000g
storage     "storage"   as storageVeryL000000000000000000000000g
usecase     "usecase"   as usecaseVeryL000000000000000000000000g
@enduml

```

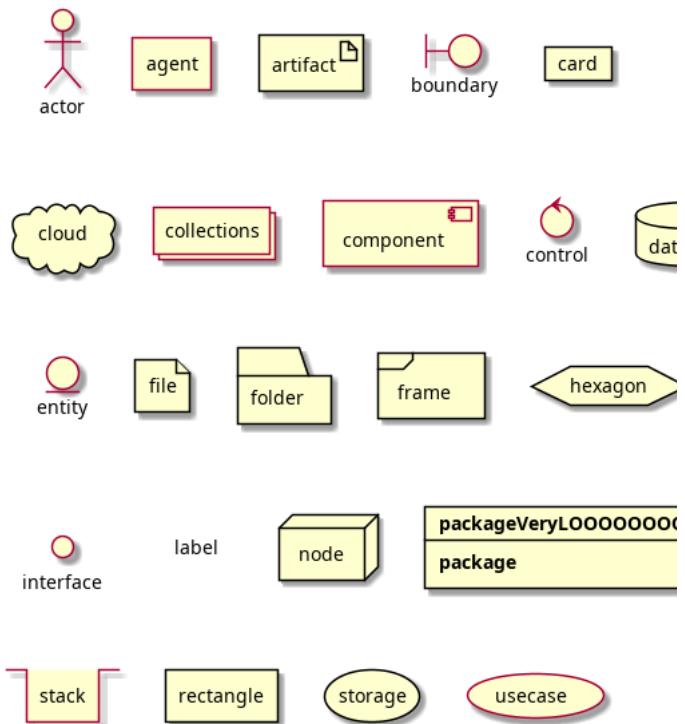


uml/reference_08-09-02-2_Examples-of-long-alias

```

@startuml
actor      actorVeryL000000000000000000000000g      as "actor"
agent      agentVeryL000000000000000000000000g      as "agent"
artifact   artifactVeryL000000000000000000000000g    as "artifact"
boundary   boundaryVeryL000000000000000000000000g   as "boundary"
card       cardVeryL000000000000000000000000g      as "card"
cloud      cloudVeryL000000000000000000000000g     as "cloud"
collections collectionsVeryL000000000000000000000000g as "collections"
component   componentVeryL000000000000000000000000g  as "component"
control     controlVeryL000000000000000000000000g   as "control"
database    databaseVeryL000000000000000000000000g   as "database"
entity      entityVeryL000000000000000000000000g    as "entity"
file        fileVeryL000000000000000000000000g     as "file"
folder      folderVeryL000000000000000000000000g   as "folder"
frame       frameVeryL000000000000000000000000g   as "frame"
hexagon     hexagonVeryL000000000000000000000000g  as "hexagon"
interface   interfaceVeryL000000000000000000000000g as "interface"
label       labelVeryL000000000000000000000000g    as "label"
node        nodeVeryL000000000000000000000000g     as "node"
package     packageVeryL000000000000000000000000g  as "package"
queue       queueVeryL000000000000000000000000g   as "queue"
stack       stackVeryL000000000000000000000000g   as "stack"
rectangle   rectangleVeryL000000000000000000000000g as "rectangle"
storage     storageVeryL000000000000000000000000g  as "storage"
usecase     usecaseVeryL000000000000000000000000g  as "usecase"
@enduml

```

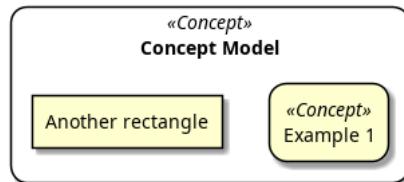


uml/reference_08-10-1_Round-corner

```

@startuml
skinparam rectangle {
  roundCorner <>Concept>> 25
}
rectangle "Concept Model" <>Concept>> {
  rectangle "Example 1" <>Concept>> as ex1
  rectangle "Another rectangle"
}
@enduml

```



uml/reference_08-11-01-1_Specific-SkinParameter-roundCorner

```

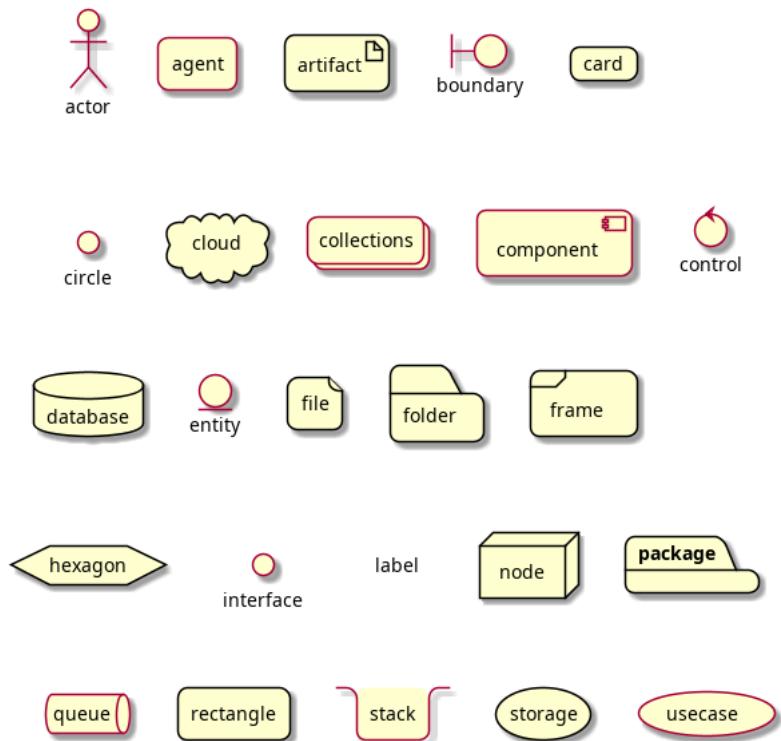
@startuml
skinparam roundCorner 15
actor actor
agent agent
artifact artifact
boundary boundary
card card

```

```

circle circle
cloud cloud
collections collections
component component
control control
database database
entity entity
file file
folder folder
frame frame
hexagon hexagon
interface interface
label label
node node
package package
queue queue
rectangle rectangle
stack stack
storage storage
usecase usecase
@enduml

```

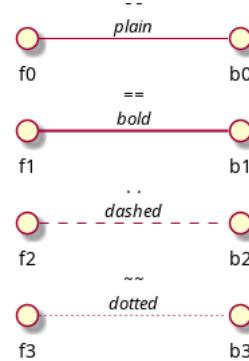


uml/reference_08-12-1_Appendix-All-type-of-arrow-line

```

@startuml
left to right direction
skinparam nodesep 5
f3 ~~ b3 : """~~"\n//dotted//
f2 .. b2 : """..\n//dashed//
f1 == b1 : """=="\n//bold//
f0 -- b0 : """--"\n//plain//
@enduml

```

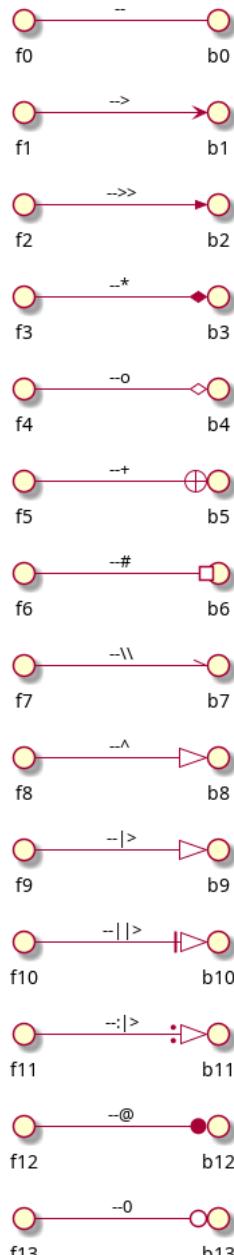


uml/reference_08-13-01-1_Type-of-arrow-head

```

@startuml
left to right direction
skinparam nodesep 5
f13 --o b13 : """--0"""
f12 --@ b12 : """-_@"""
f11 --|> b11 : """--|>"""
f10 --| |> b10 : """--| |>"""
f9 --|> b9 : """--|>"""
f8 --^ b8 : """--^ """
f7 --\ b7 : """--\ """
f6 --# b6 : """--# """
f5 --+ b5 : """--+ """
f4 --o b4 : """--o """
f3 --* b3 : """--* """
f2 -->> b2 : """-->>"""
f1 --> b1 : """--> """
f0 -- b0 : """-- """
@enduml

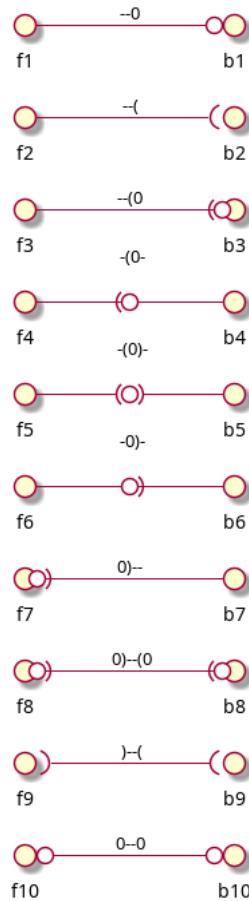
```



uml/reference_08-13-02-1_Type-of-0-arrow-or-circle-arrow

```
@startuml
left to right direction
skinparam nodesep 5
f10 0--0 b10 : "" 0--0 """
f9 )--( b9 : "" )--(""
f8 0)--(0 b8 : "" 0)--(0"""
f7 0)-- b7 : "" 0)-- ""
f6 -0)- b6 : "" -(0)-\n """
f5 -(0)- b5 : "" -(0)-\n"""
f4 -(0- b4 : "" -(0-\n """
f3 --(0 b3 : "" --(0 """
f2 --( b2 : "" --( """
f1 --0 b1 : "" --0 """
@enduml
```

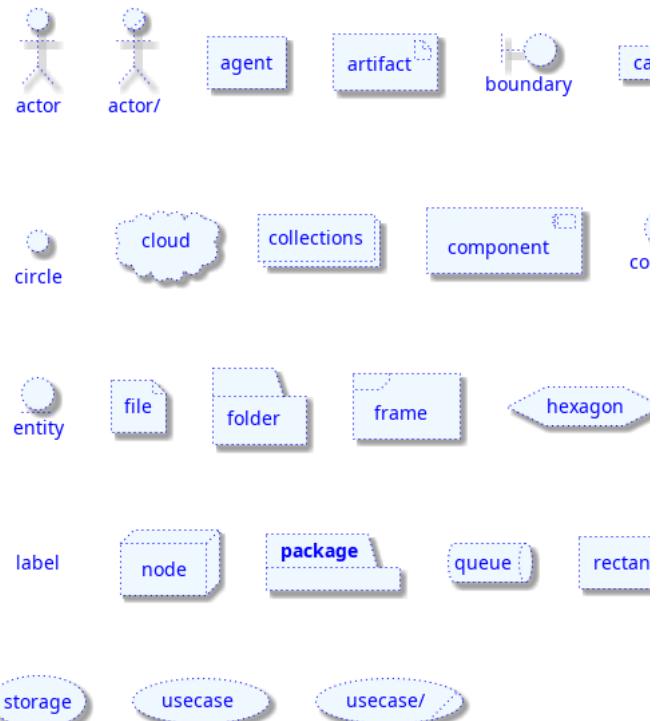
Test plantuml-syntax



uml/reference_08-14-01-1_Simple-element

```

@startuml
actor actor #aliceblue;line:blue;line.dotted;text:blue
actor/ "actor/" #aliceblue;line:blue;line.dotted;text:blue
agent agent #aliceblue;line:blue;line.dotted;text:blue
artifact artifact #aliceblue;line:blue;line.dotted;text:blue
boundary boundary #aliceblue;line:blue;line.dotted;text:blue
card card #aliceblue;line:blue;line.dotted;text:blue
circle circle #aliceblue;line:blue;line.dotted;text:blue
cloud cloud #aliceblue;line:blue;line.dotted;text:blue
collections collections #aliceblue;line:blue;line.dotted;text:blue
component component #aliceblue;line:blue;line.dotted;text:blue
control control #aliceblue;line:blue;line.dotted;text:blue
database database #aliceblue;line:blue;line.dotted;text:blue
entity entity #aliceblue;line:blue;line.dotted;text:blue
file file #aliceblue;line:blue;line.dotted;text:blue
folder folder #aliceblue;line:blue;line.dotted;text:blue
frame frame #aliceblue;line:blue;line.dotted;text:blue
hexagon hexagon #aliceblue;line:blue;line.dotted;text:blue
interface interface #aliceblue;line:blue;line.dotted;text:blue
label label #aliceblue;line:blue;line.dotted;text:blue
node node #aliceblue;line:blue;line.dotted;text:blue
package package #aliceblue;line:blue;line.dotted;text:blue
queue queue #aliceblue;line:blue;line.dotted;text:blue
rectangle rectangle #aliceblue;line:blue;line.dotted;text:blue
stack stack #aliceblue;line:blue;line.dotted;text:blue
storage storage #aliceblue;line:blue;line.dotted;text:blue
usecase usecase #aliceblue;line:blue;line.dotted;text:blue
usecase/ "usecase/" #aliceblue;line:blue;line.dotted;text:blue
@enduml
  
```



uml/reference_08-14-03-1_Without-sub-element

```

@startuml
artifact artifact #aliceblue;line:blue;line.dotted;text:blue {
}
card card #aliceblue;line:blue;line.dotted;text:blue {
}
cloud cloud #aliceblue;line:blue;line.dotted;text:blue {
}
component component #aliceblue;line:blue;line.dotted;text:blue {
}
database database #aliceblue;line:blue;line.dotted;text:blue {
}
file file #aliceblue;line:blue;line.dotted;text:blue {
}
folder folder #aliceblue;line:blue;line.dotted;text:blue {
}
  
```



```

}
frame frame #aliceblue;line:blue;line.dotted;text:blue {
}
hexagon hexagon #aliceblue;line:blue;line.dotted;text:blue {
}
node node #aliceblue;line:blue;line.dotted;text:blue {
}
package package #aliceblue;line:blue;line.dotted;text:blue {
}
queue queue #aliceblue;line:blue;line.dotted;text:blue {
}
rectangle rectangle #aliceblue;line:blue;line.dotted;text:blue {
}
stack stack #aliceblue;line:blue;line.dotted;text:blue {
}
storage storage #aliceblue;line:blue;line.dotted;text:blue {
}
@enduml

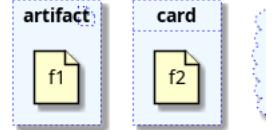
```

uml/reference_08-14-04-1_With-sub-element

```

@startuml
artifact artifactVeryL000000000000000000g as "artifact" #aliceblue;line:blue;line.dotted;text:blue {
    file f1
}
card cardVeryL000000000000000000g as "card" #aliceblue;line:blue;line.dotted;text:blue {
    file f2
}
cloud cloudVeryL000000000000000000g as "cloud" #aliceblue;line:blue;line.dotted;text:blue {
    file f3
}
component componentVeryL000000000000000000g as "component" #aliceblue;line:blue;line.dotted;text:blue {
    file f4
}
database databaseVeryL000000000000000000g as "database" #aliceblue;line:blue;line.dotted;text:blue {
    file f5
}
file fileVeryL000000000000000000g as "file" #aliceblue;line:blue;line.dotted;text:blue {
    file f6
}
folder folderVeryL000000000000000000g as "folder" #aliceblue;line:blue;line.dotted;text:blue {
    file f7
}
frame frameVeryL000000000000000000g as "frame" #aliceblue;line:blue;line.dotted;text:blue {
    file f8
}
hexagon hexagonVeryL000000000000000000g as "hexagon" #aliceblue;line:blue;line.dotted;text:blue {
    file f9
}
node nodeVeryL000000000000000000g as "node" #aliceblue;line:blue;line.dotted;text:blue {
    file f10
}
package packageVeryL000000000000000000g as "package" #aliceblue;line:blue;line.dotted;text:blue {
    file f11
}
queue queueVeryL000000000000000000g as "queue" #aliceblue;line:blue;line.dotted;text:blue {
    file f12
}
rectangle rectangleVeryL000000000000000000g as "rectangle" #aliceblue;line:blue;line.dotted;text:blue {
    file f13
}
stack stackVeryL000000000000000000g as "stack" #aliceblue;line:blue;line.dotted;text:blue {
    file f14
}
storage storageVeryL000000000000000000g as "storage" #aliceblue;line:blue;line.dotted;text:blue {
    file f15
}
@enduml

```



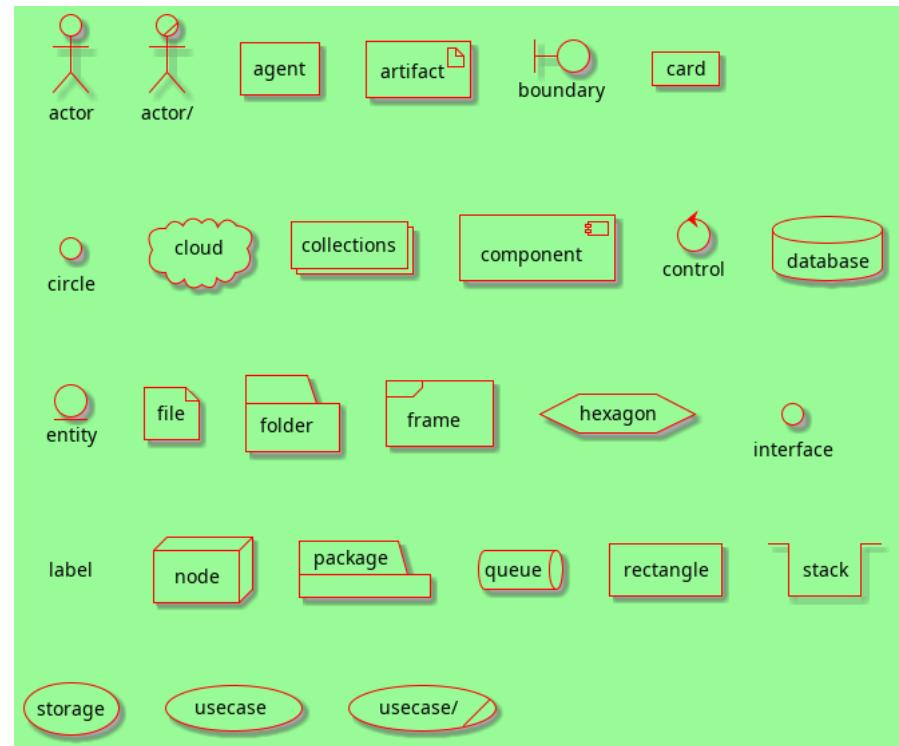
uml/reference_08-15-02-1_Global-style-on-componentDiagram

```

@startuml
<style>
ComponentDiagram {
    BackGroundColor palegreen
    LineThickness 1
    LineColor red
}
</style>
actor actor
actor/ "actor/"
agent agent
artifact artifact
boundary boundary
card card
circle circle
cloud cloud
collections collections
component component
control control
database database
entity entity
file file
folder folder
frame frame
hexagon hexagon

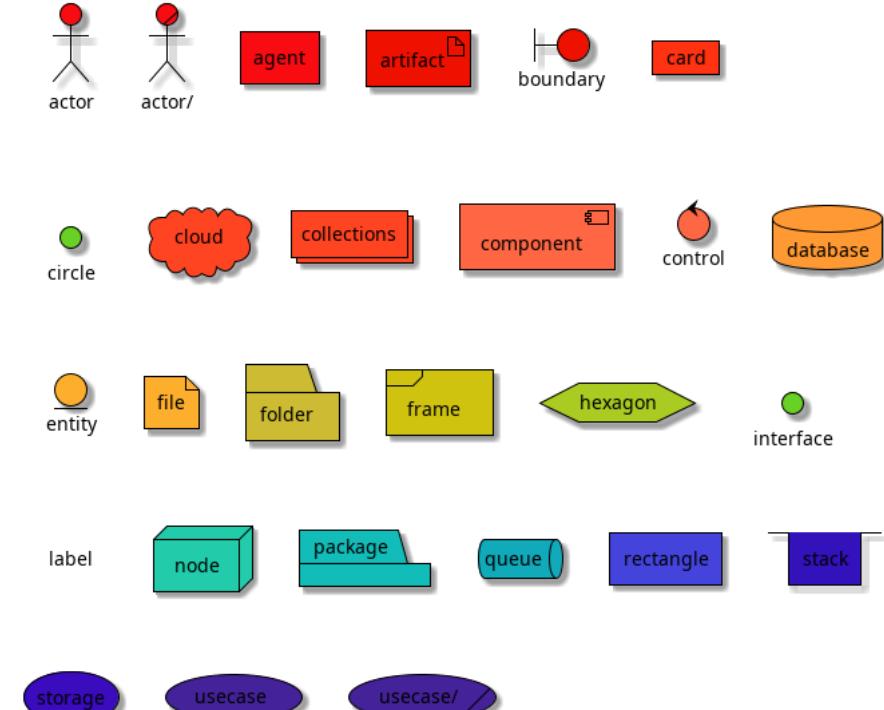
```

```
interface interface
label label
node node
package package
queue queue
rectangle rectangle
stack stack
storage storage
usecase usecase
usecase/ "usecase/"
@enduml
```



uml/reference_08-15-03-1_Style-for-each-element

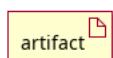
```
@startuml
<style>
actor {
    BackGroundColor #f80c12
    LineThickness 1
    LineColor black
}
agent {
    BackGroundColor #f80c12
    LineThickness 1
    LineColor black
}
artifact {
    BackGroundColor #ee1100
    LineThickness 1
    LineColor black
}
boundary {
    BackGroundColor #ee1100
    LineThickness 1
    LineColor black
}
card {
    BackGroundColor #ff3311
    LineThickness 1
    LineColor black
}
circle {
    BackGroundColor #ff3311
    LineThickness 1
    LineColor black
}
cloud {
    BackGroundColor #ff4422
    LineThickness 1
    LineColor black
}
collections {
    BackGroundColor #ff4422
    LineThickness 1
    LineColor black
}
component {
    BackGroundColor #ff6644
    LineThickness 1
    LineColor black
}
control {
    BackGroundColor #ff6644
    LineThickness 1
    LineColor black
}
database {
    BackGroundColor #ff9933
    LineThickness 1
    LineColor black
}
entity {
    BackGroundColor #feae2d
    LineThickness 1
}
```



```

LineColor black
}
file {
    BackGroundColor #feae2d
    LineThickness 1
    LineColor black
}
folder {
    BackGroundColor #ccbb33
    LineThickness 1
    LineColor black
}
frame {
    BackGroundColor #d0c310
    LineThickness 1
    LineColor black
}
hexagon {
    BackGroundColor #aacc22
    LineThickness 1
    LineColor black
}
interface {
    BackGroundColor #69d025
    LineThickness 1
    LineColor black
}
label {
    BackGroundColor black
    LineThickness 1
    LineColor black
}
node {
    BackGroundColor #22ccaa
    LineThickness 1
    LineColor black
}
package {
    BackGroundColor #12bdb9
    LineThickness 1
    LineColor black
}
queue {
    BackGroundColor #11aabb
    LineThickness 1
    LineColor black
}
rectangle {
    BackGroundColor #4444dd
    LineThickness 1
    LineColor black
}
stack {
    BackGroundColor #3311bb
    LineThickness 1
    LineColor black
}
storage {
    BackGroundColor #3b0cbd
    LineThickness 1
    LineColor black
}
usecase {
    BackGroundColor #442299
    LineThickness 1
    LineColor black
}
</style>
actor actor
actor/ "actor/"
agent agent
artifact artifact
boundary boundary
card card
circle circle
cloud cloud
collections collections
component component
control control
database database
entity entity
file file
folder folder
frame frame
hexagon hexagon
interface interface
label label
node node
package package
queue queue
rectangle rectangle
stack stack
storage storage
usecase usecase
usecase/ "usecase/"
@enduml

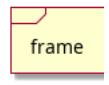
```



card



file



```
@startuml
<style>
componentDiagram {
BackGroundColor palegreen
LineThickness 2
LineColor red
}
</style>
artifact artifact {
}
card card {
}
cloud cloud {
}
component component {
}
database database {
}
file file {
}
folder folder {
}
frame frame {
}
hexagon hexagon {
}
node node {
}
package package {
}
queue queue {
}
rectangle rectangle {
}
stack stack {
}
storage storage {
}
@enduml
```

uml/reference_08-15-06-1_Style-for-each-nested-element



```
@startuml
<style>
artifact {
    BackGroundColor #ee1100
    LineThickness 1
    LineColor black
}
card {
    BackGroundColor #ff3311
    LineThickness 1
    LineColor black
}
cloud {
    BackGroundColor #ff4422
    LineThickness 1
    LineColor black
}
component {
    BackGroundColor #ff6644
    LineThickness 1
    LineColor black
}
database {
    BackGroundColor #ff9933
    LineThickness 1
    LineColor black
}
file {
    BackGroundColor #feae2d
    LineThickness 1
    LineColor black
}
folder {
    BackGroundColor #ccbb33
    LineThickness 1
    LineColor black
}
frame {
    BackGroundColor #d0c310
    LineThickness 1
    LineColor black
}
hexagon {
    BackGroundColor #aacc22
    LineThickness 1
    LineColor black
}
node {
    BackGroundColor #22ccaa
    LineThickness 1
    LineColor black
}
package {
    BackGroundColor #12bdb9
    LineThickness 1
    LineColor black
}
```

```

}
queue {
BackGroundColor #11aabb
LineThickness 1
LineColor black
}
rectangle {
BackGroundColor #4444dd
LineThickness 1
LineColor black
}
stack {
BackGroundColor #3311bb
LineThickness 1
LineColor black
}
storage {
BackGroundColor #3b0cbd
LineThickness 1
LineColor black
}
</style>
artifact artifact {
}
card card {
}
cloud cloud {
}
component component {
}
database database {
}
file file {
}
folder folder {
}
frame frame {
}
hexagon hexagon {
}
node node {
}
package package {
}
queue queue {
}
rectangle rectangle {
}
stack stack {
}
storage storage {
}
@enduml

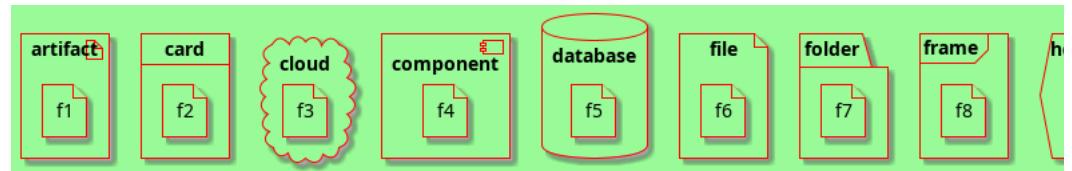
```

uml/reference_08-15-08-1_Global-style-on-componentDiagram

```

@startuml
<style>
componentDiagram {
BackGroundColor palegreen
LineThickness 1
LineColor red
}
</style>
artifact e1 as "artifact" {
    file f1
}
card e2 as "card" {
    file f2
}
cloud e3 as "cloud" {
    file f3
}
component e4 as "component" {
    file f4
}
database e5 as "database" {
    file f5
}
file e6 as "file" {
    file f6
}
folder e7 as "folder" {
    file f7
}
frame e8 as "frame" {
    file f8
}
hexagon e9 as "hexagon" {
    file f9
}
node e10 as "node" {
    file f10
}
package e11 as "package" {
    file f11
}
queue e12 as "queue" {

```



```

file f12
}
rectangle e13 as "rectangle" {
    file f13
}
stack e14 as "stack" {
    file f14
}
storage e15 as "storage" {
    file f15
}
@enduml

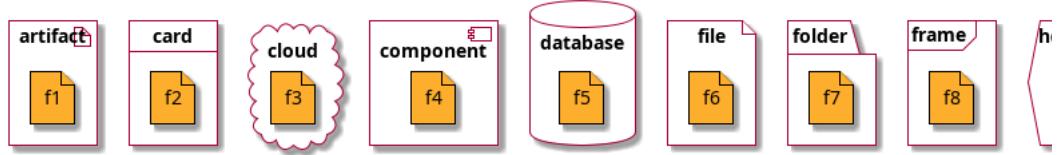
```

uml/reference_08-15-09- 1_Style-for-each-nested- element

```

@startuml
<style>
artifact {
    BackGroundColor #ee1100
    LineThickness 1
    LineColor black
}
card {
    BackGroundColor #ff3311
    LineThickness 1
    LineColor black
}
cloud {
    BackGroundColor #ff4422
    LineThickness 1
    LineColor black
}
component {
    BackGroundColor #ff6644
    LineThickness 1
    LineColor black
}
database {
    BackGroundColor #ff9933
    LineThickness 1
    LineColor black
}
file {
    BackGroundColor #feae2d
    LineThickness 1
    LineColor black
}
folder {
    BackGroundColor #ccbb33
    LineThickness 1
    LineColor black
}
frame {
    BackGroundColor #d0c310
    LineThickness 1
    LineColor black
}
hexagon {
    BackGroundColor #aacc22
    LineThickness 1
    LineColor black
}
node {
    BackGroundColor #22ccaa
    LineThickness 1
    LineColor black
}
package {
    BackGroundColor #12bdb9
    LineThickness 1
    LineColor black
}
queue {
    BackGroundColor #11aabb
    LineThickness 1
    LineColor black
}
rectangle {
    BackGroundColor #4444dd
    LineThickness 1
    LineColor black
}
stack {
    BackGroundColor #3311bb
    LineThickness 1
    LineColor black
}
storage {
    BackGroundColor #3b0cbd
    LineThickness 1
    LineColor black
}
</style>
artifact e1 as "artifact" {
    file f1
}
card e2 as "card" {
    file f2
}

```



```

}
cloud e3 as "cloud" {
    file f3
}
component e4 as "component" {
file f4
}
database e5 as "database" {
    file f5
}
file e6 as "file" {
    file f6
}
}
folder e7 as "folder" {
    file f7
}
}
frame e8 as "frame" {
    file f8
}
}
hexagon e9 as "hexagon" {
file f9
}
}
node e10 as "node" {
    file f10
}
}
package e11 as "package" {
    file f11
}
}
queue e12 as "queue" {
file f12
}
}
rectangle e13 as "rectangle" {
    file f13
}
}
stack e14 as "stack" {
file f14
}
}
storage e15 as "storage" {
    file f15
}
}
@enduml

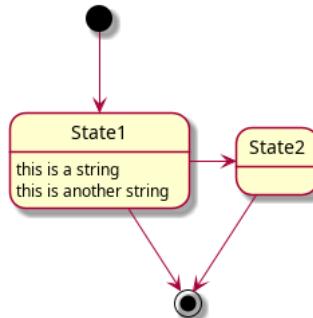
```

uml/reference_09-01-1_Simple_State

```

@startuml
[*] --> State1
State1 --> [*]
State1 : this is a string
State1 : this is another string
State1 -> State2
State2 --> [*]
@enduml

```

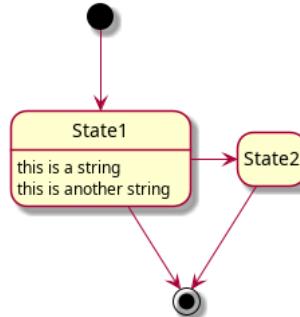


uml/reference_09-02-1_Change_state_rendering

```

@startuml
hide empty description
[*] --> State1
State1 --> [*]
State1 : this is a string
State1 : this is another string
State1 -> State2
State2 --> [*]
@enduml

```

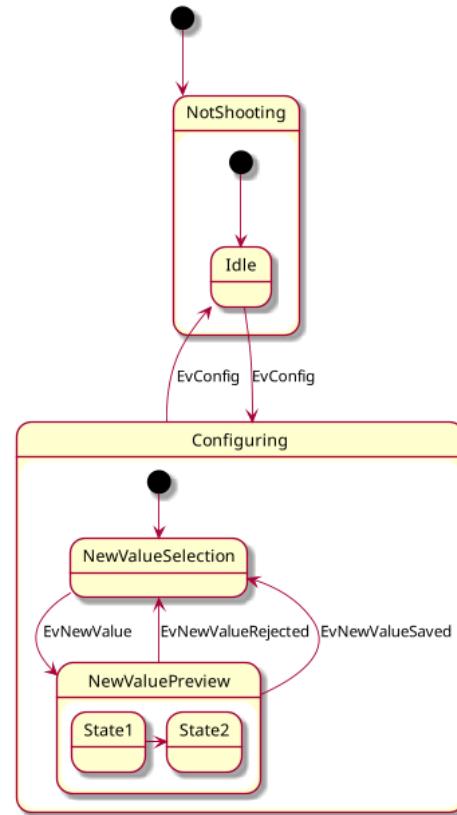


uml/reference_09-03-01-1_Internal-sub-state

```

@startuml
scale 350 width
[*] --> NotShooting
state NotShooting {
    [*] --> Idle
    Idle --> Configuring : EvConfig
    Configuring --> Idle : EvConfig
}
state Configuring {
    [*] --> NewValueSelection
    NewValueSelection --> NewValuePreview : EvnewValue
    NewValuePreview --> NewValueSelection : EvnewValueRejected
    NewValuePreview --> NewValueSelection : EvnewValueSaved
    state NewValuePreview {
        State1 -> State2
    }
}
@enduml

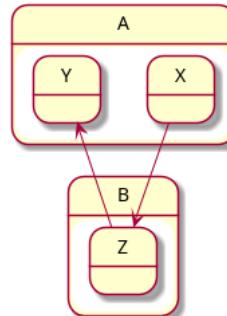
```

**uml/reference_09-03-02-1_Sub-state-to-sub-state**

```

@startuml
state A {
    state X {
    }
    state Y {
    }
}
state B {
    state Z {
    }
}
X --> Z
Z --> Y
@enduml

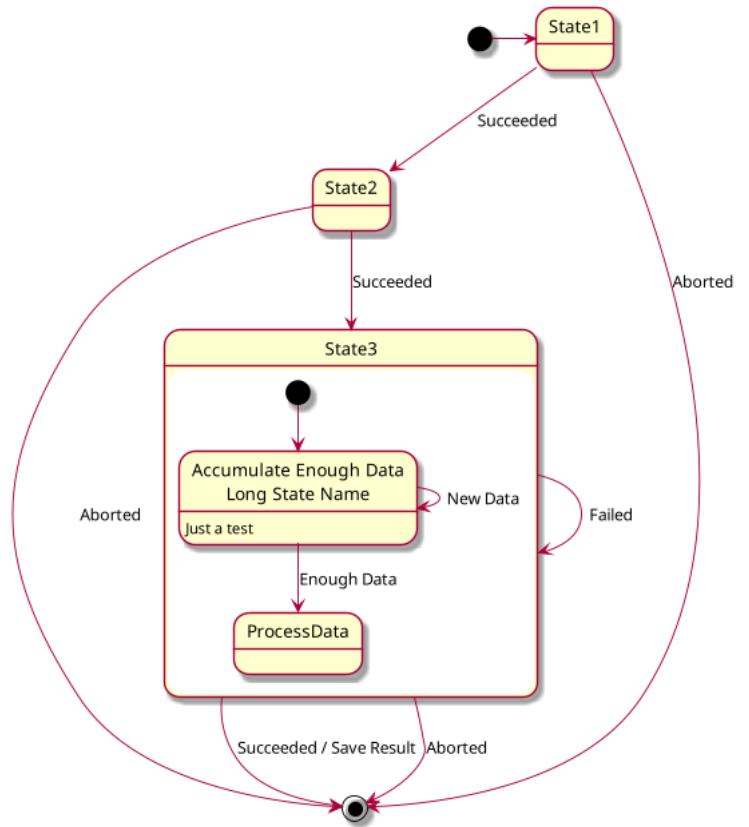
```

**uml/reference_09-04-1_Long_name**

```

@startuml
scale 600 width
[*] --> State1
State1 --> State2 : Succeeded
State1 --> [*] : Aborted
State2 --> State3 : Succeeded
State2 --> [*] : Aborted
state State3 {
    state "Accumulate Enough Data\nLong State Name" as long1
    long1 : Just a test
    [*] --> long1
    long1 --> long1 : New Data
    long1 --> ProcessData : Enough Data
}
State3 --> State3 : Failed
State3 --> [*] : Succeeded / Save Result
State3 --> [*] : Aborted
@enduml

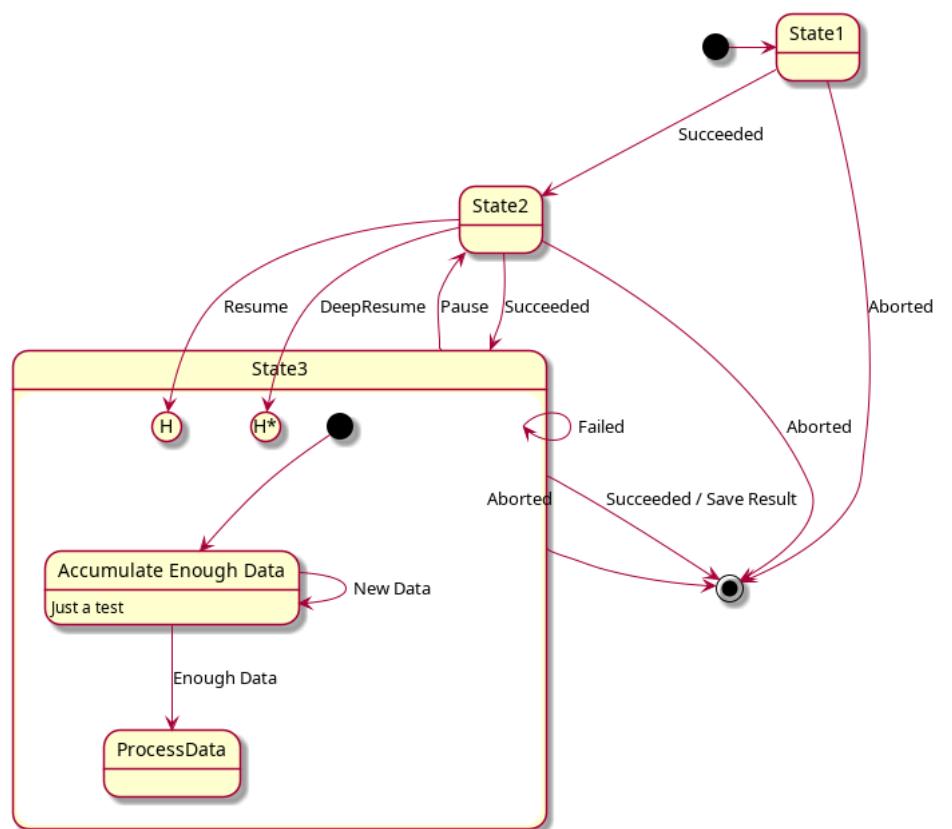
```



uml/reference_09-05-1_History

```

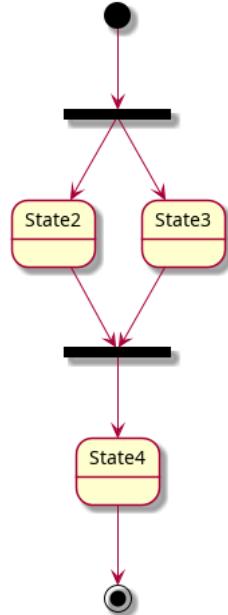
@startuml
[*] --> State1
State1 --> State2 : Succeeded
State1 --> [*] : Aborted
State2 --> State3 : Succeeded
State2 --> [*] : Aborted
state State3 {
    state "Accumulate Enough Data" as long1
    long1 : Just a test
    [*] --> long1
    long1 --> long1 : New Data
    long1 --> ProcessData : Enough Data
    State2 --> [H]: Resume
}
State3 --> State2 : Pause
State2 --> State3[H*]: DeepResume
State3 --> State3 : Failed
State3 --> [*] : Succeeded / Save Result
State3 --> [*] : Aborted
@enduml
  
```



uml/reference_09-06-1_Fork

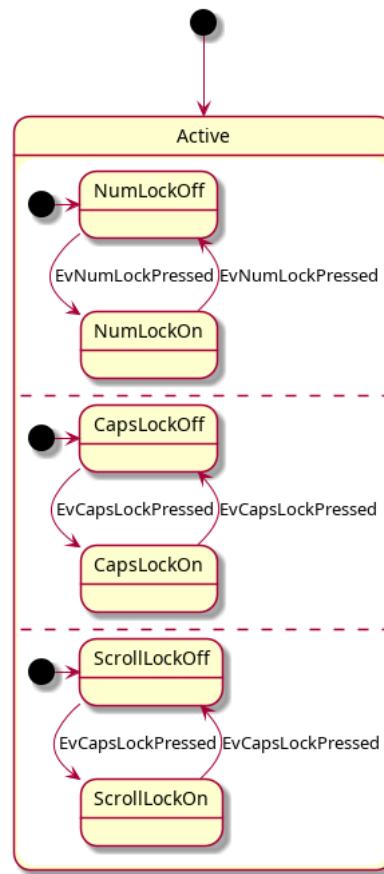
```

@startuml
state fork_state <<fork>>
[*] --> fork_state
fork_state --> State2
fork_state --> State3
state join_state <<join>>
State2 --> join_state
State3 --> join_state
join_state --> State4
State4 --> [*]
@enduml
  
```

**uml/reference_09-07-01-1_Horizontal-separator--**

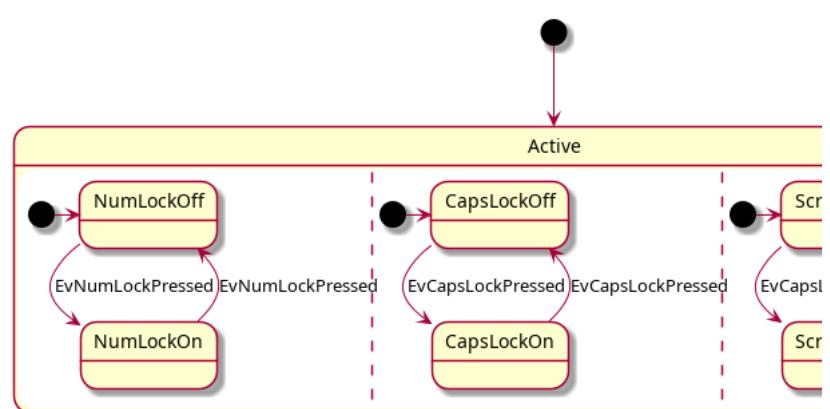
```

@startuml
[*] --> Active
state Active {
[*] -> NumLockOff
NumLockOff --> NumLockOn : EvNumLockPressed
NumLockOn --> NumLockOff : EvNumLockPressed
-- 
[*] -> CapsLockOff
CapsLockOff --> CapsLockOn : EvCapsLockPressed
CapsLockOn --> CapsLockOff : EvCapsLockPressed
-- 
[*] -> ScrollLockOff
ScrollLockOff --> ScrollLockOn : EvCapsLockPressed
ScrollLockOn --> ScrollLockOff : EvCapsLockPressed
}
@enduml
  
```

**uml/reference_09-07-02-1_Vertical-separator**

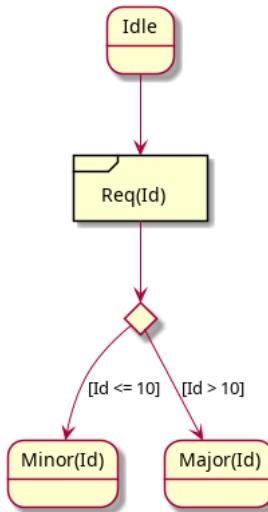
```

@startuml
[*] --> Active
state Active {
[*] -> NumLockOff
NumLockOff --> NumLockOn : EvNumLockPressed
NumLockOn --> NumLockOff : EvNumLockPressed
|| 
[*] -> CapsLockOff
CapsLockOff --> CapsLockOn : EvCapsLockPressed
CapsLockOn --> CapsLockOff : EvCapsLockPressed
|| 
[*] -> ScrollLockOff
ScrollLockOff --> ScrollLockOn : EvCapsLockPressed
ScrollLockOn --> ScrollLockOff : EvCapsLockPressed
}
@enduml
  
```

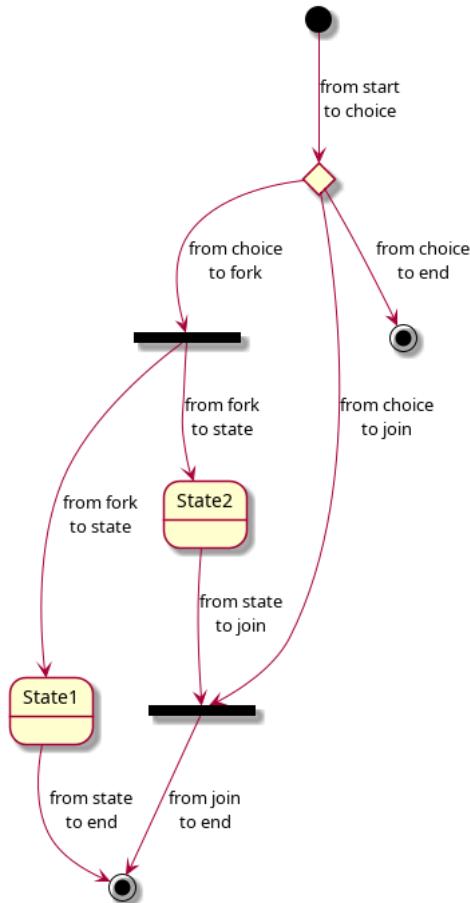


uml/reference_09-08-1_Conditional

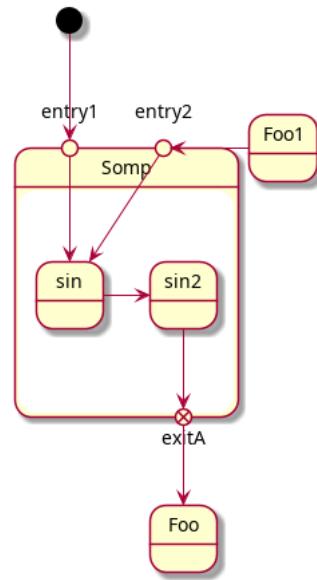
```
@startuml
state "Req(Id)" as ReqId <<sdlreceive>>
state "Minor(Id)" as MinorId
state "Major(Id)" as MajorId
state c <<choice>>
Idle --> ReqId
ReqId --> c
c --> MinorId : [Id <= 10]
c --> MajorId : [Id > 10]
@enduml
```

**uml/reference_09-09-1_Stereotypes-full-example**

```
@startuml
state choice1 <<choice>>
state fork1 <<fork>>
state join2 <<join>>
state end3 <<end>>
[*] --> choice1 : from start\nto choice
choice1 --> fork1 : from choice\nto fork
choice1 --> join2 : from choice\nto join
choice1 --> end3 : from choice\nto end
fork1 --> State1 : from fork\nto state
fork1 --> State2 : from fork\nto state
State2 --> join2 : from state\nto join
State1 --> [*] : from state\nto end
join2 --> [*] : from join\nto end
@enduml
```

**uml/reference_09-10-1_Point**

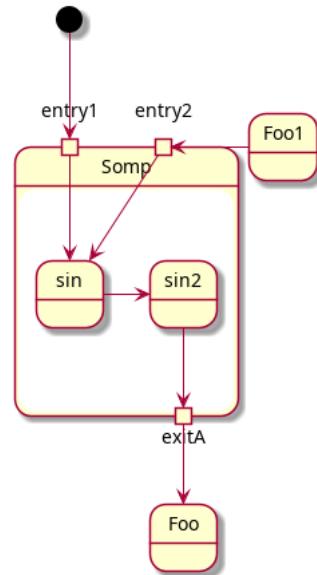
```
@startuml
state Somp {
    state entry1 <<entryPoint>>
    state entry2 <<entryPoint>>
    state sin
    entry1 --> sin
    entry2 -> sin
    sin -> sin2
    sin2 --> exitA <<exitPoint>>
}
[*] --> entry1
exitA --> Foo
Foo1 -> entry2
@enduml
```

**uml/reference_09-11-1_Pin**

```

@startuml
state Somp {
    state entry1 <<inputPin>>
    state entry2 <<inputPin>>
    state sin
    entry1 --> sin
    entry2 --> sin
    sin --> sin2
    sin2 --> exitA <<outputPin>>
}
[*] --> entry1
exitA --> Foo
Foo1 --> entry2
@enduml

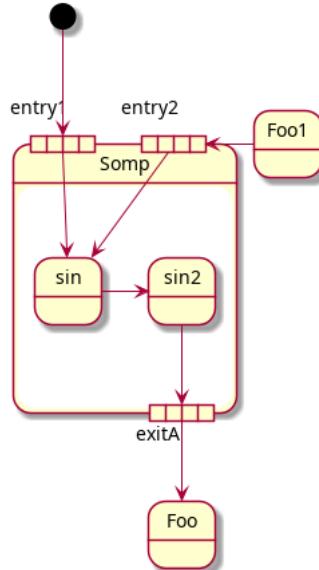
```

**uml/reference_09-12-1_Expansion**

```

@startuml
state Somp {
    state entry1 <<expansionInput>>
    state entry2 <<expansionInput>>
    state sin
    entry1 --> sin
    entry2 -> sin
    sin -> sin2
    sin2 --> exitA <<expansionOutput>>
}
[*] --> entry1
exitA --> Foo
Foo1 --> entry2
@enduml

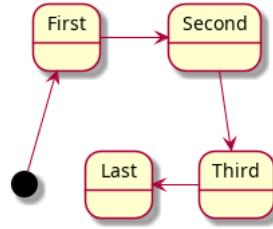
```

**uml/reference_09-13-1_Arrow_direction**

```

@startuml
[*] -up-> First
First -right-> Second
Second --> Third
Third -left-> Last
@enduml

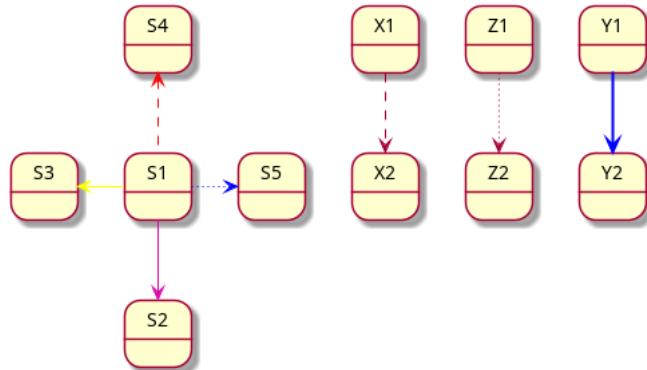
```

**uml/reference_09-14-1_Change-line-color-and-style**

```

@startuml
State S1
State S2
S1 -[#DD00AA]-> S2
S1 -left[#yellow]-> S3
S1 -up[#red,dashed]-> S4
S1 -right[dotted,#blue]-> S5
X1 -[dashed]-> X2
Z1 -[dotted]-> Z2
Y1 -[#blue,bold]-> Y2
@enduml

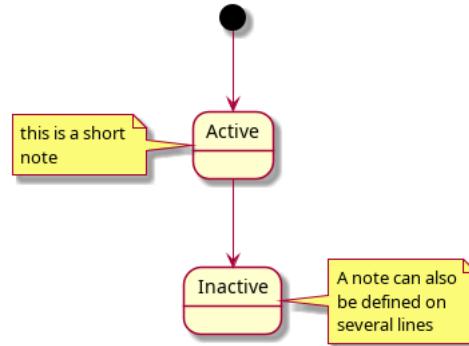
```

**uml/reference_09-15-1_Note**

```

@startuml
[*] --> Active
Active --> Inactive
note left of Active : this is a short\nnote
note right of Inactive
    A note can also
    be defined on
    several lines
end note
@enduml

```

**uml/reference_09-15-2_Note**

```

@startuml
state foo
note "This is a floating note" as N1
@enduml

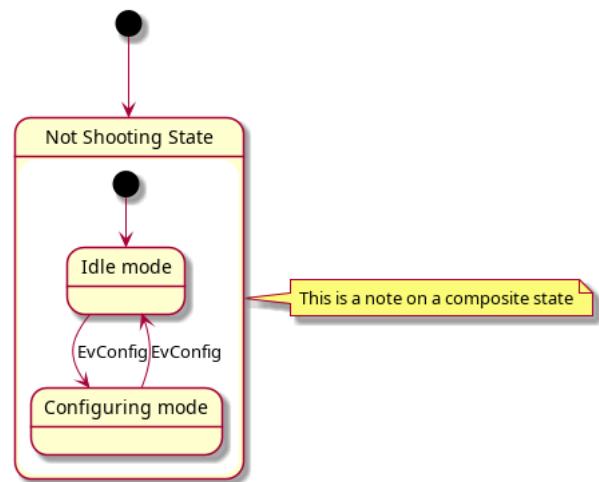
```

**uml/reference_09-16-1_More_in_notes**

```

@startuml
[*] --> NotShooting
state "Not Shooting State" as NotShooting {
    state "Idle mode" as Idle
    state "Configuring mode" as Configuring
    [*] --> Idle
    Idle --> Configuring : EvConfig
    Configuring --> Idle : EvConfig
}
note right of NotShooting : This is a note on a composite state
@enduml

```

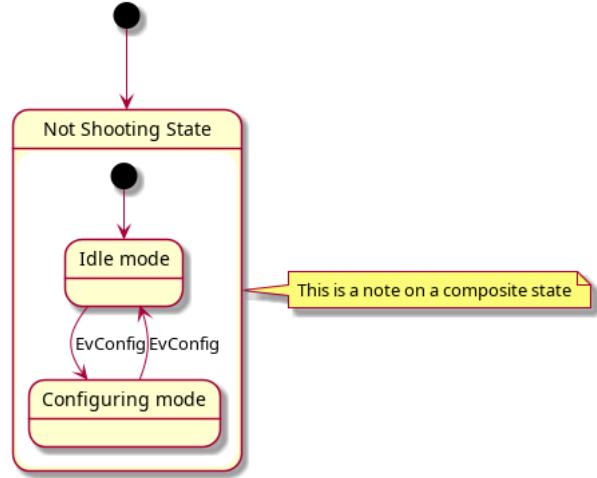
**uml/reference_09-17-1_More-in-notes**

```

@startuml
[*] --> NotShooting
state "Not Shooting State" as NotShooting {
    state "Idle mode" as Idle
    state "Configuring mode" as Configuring
    [*] --> Idle
    Idle --> Configuring : EvConfig
    Configuring --> Idle : EvConfig
}

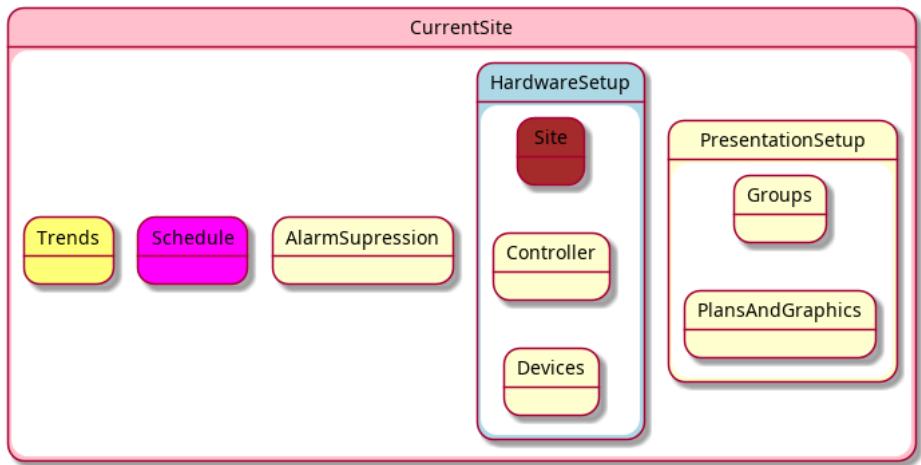
```

```
note right of NotShooting : This is a note on a composite state
@enduml
```



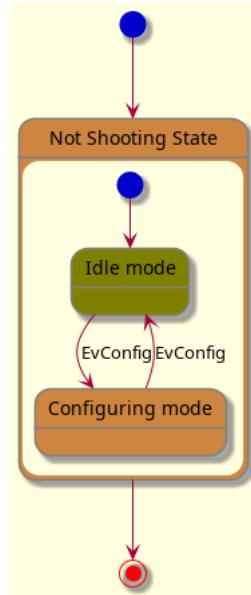
uml/reference_09-18-1_Inline-color

```
@startuml
state CurrentSite #pink {
    state HardwareSetup #lightblue {
        state Site #brown
        Site -> Controller
        Controller -> Devices
    }
    state PresentationSetup{
        Groups -> PlansAndGraphics
    }
    state Trends #FFFF77
    state Schedule #magenta
    state AlarmSuppression
}
@enduml
```



uml/reference_09-19-1_Skinparam

```
@startuml
skinparam backgroundColor LightYellow
skinparam state {
    StartColor MediumBlue
    EndColor Red
    BackgroundColor Peru
    BackgroundColor<<Warning>> Olive
    BorderColor Gray
    FontName Impact
}
[*] --> NotShooting
state "Not Shooting State" as NotShooting {
    state "Idle mode" as Idle <<Warning>>
    state "Configuring mode" as Configuring
    [*] --> Idle
    Idle --> Configuring : EvConfig
    Configuring --> Idle : EvConfig
}
NotShooting --> [*]
@enduml
```



uml/reference_09-20-1_Changing-style

```
@startuml
<style>
stateDiagram {
    BackgroundColor Peru
    'LineColor' Gray
    'FontName' Impact
    'FontColor' Red
    arrow {
        'FontSize' 13
        'LineColor' Blue
    }
}
</style>

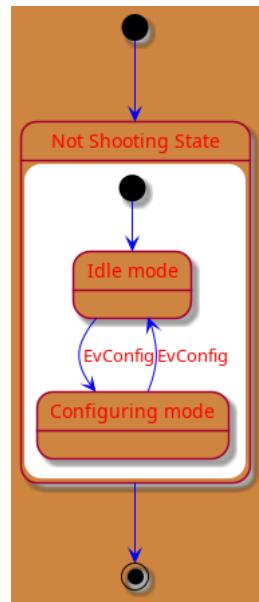
[*] --> NotShooting
state "Not Shooting State" as NotShooting {
    state "Idle mode" as Idle <<Warning>>
```

```

state "Configuring mode" as Configuring
[*] --> Idle
Idle --> Configuring : EvConfig
Configuring --> Idle : EvConfig
}

NotShooting --> [*]
@enduml

```

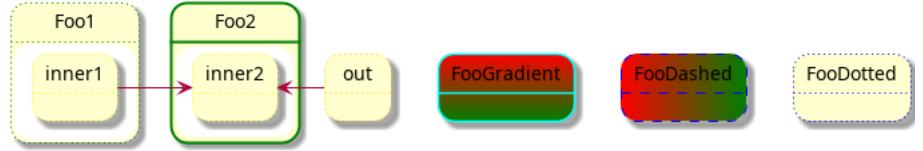


uml/reference_09-21-1_Change-state-color-and-style

```

@startuml
state FooGradient #red-green ##00FFFF
state FooDashed #red|green ##[dashed]blue {
}
state FooDotted ##[dotted]blue {
}
state FooBold ##[bold] {
}
state Foo1 ##[dotted]green {
    state inner1 ##[dotted]yellow
}
state out ##[dotted]gold
state Foo2 ##[bold]green {
    state inner2 ##[dotted]yellow
}
inner1 -> inner2
out -> inner2
@enduml

```

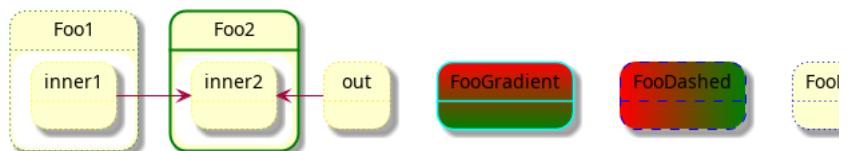


uml/reference_09-21-2_Change-state-color-and-style

```

@startuml
state FooGradient #red-green;line:00FFFF
state FooDashed #red|green;line.dashed;line:blue {
}
state FooDotted #line.dotted;line:blue {
}
state FooBold #line.bold {
}
state Foo1 #line.dotted;line:green {
    state inner1 #line.dotted;line:yellow
}
state out #line.dotted;line:gold
state Foo2 #line.bold;line:green {
    state inner2 #line.dotted;line:yellow
}
inner1 -> inner2
out -> inner2
@enduml

```



uml/reference_09-21-3_Change-state-color-and-style

```

@startuml
state s1 : s1 description
state s2 #pink;line:red;line.bold;text:red : s2 description
state s3 #palegreen;line:green;line.dashed;text:green : s3 description
state s4 #aliceblue;line:blue;line.dotted;text:blue : s4 description
@enduml

```



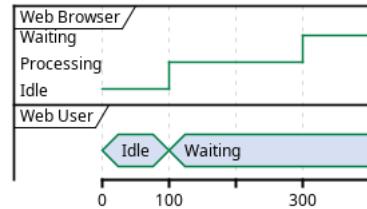
uml/reference_10-01-1_Declaring-participant

```

@startuml
robust "Web Browser" as WB
concise "Web User" as WU
@0
WU is Idle
WB is Idle

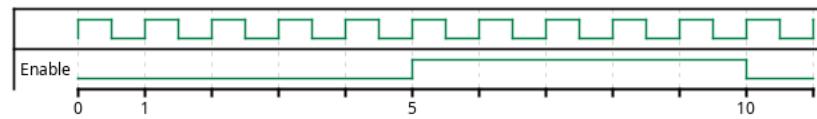
```

```
@100
WU is Waiting
WB is Processing
@300
WB is Waiting
@enduml
```



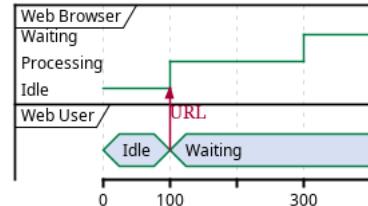
uml/reference_10-02-1_Binary-and-Clock

```
@startuml
clock clk with period 1
binary "Enable" as EN
@0
EN is low
@5
EN is high
@10
EN is low
@enduml
```



uml/reference_10-03-1_Adding-message

```
@startuml
robust "Web Browser" as WB
concise "Web User" as WU
@0
WU is Idle
WB is Idle
@100
WU -> WB : URL
WU is Waiting
WB is Processing
@300
WB is Waiting
@enduml
```



uml/reference_10-04-1_Relative-time

```
@startuml
robust "DNS Resolver" as DNS
robust "Web Browser" as WB
concise "Web User" as WU

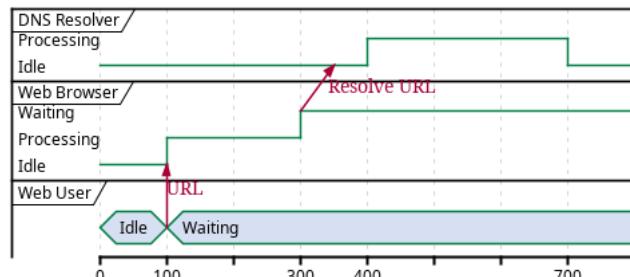
@0
WU is Idle
WB is Idle
DNS is Idle

@+100
WU -> WB : URL
WU is Waiting
WB is Processing

@+200
WB is Waiting
WB -> DNS@+50 : Resolve URL

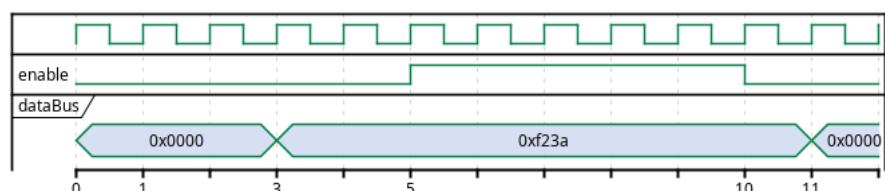
@+100
DNS is Processing

@+300
DNS is Idle
@enduml
```



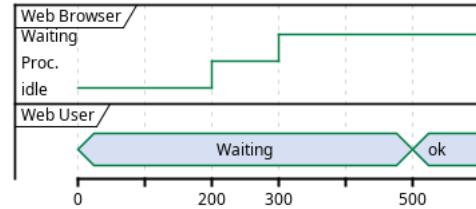
uml/reference_10-05-1_Anchor-Points

```
@startuml
clock clk with period 1
binary "enable" as EN
concise "dataBus" as db
@0 as :start
@5 as :en_high
@10 as :en_low
@:start
EN is low
db is "0x0000"
@:en_high
EN is high
@:en_low
EN is low
@:en_high-2
db is "0xf23a"
@:en_high+6
db is "0x0000"
@enduml
```

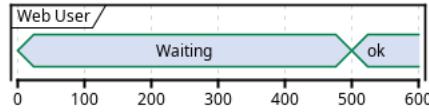


uml/reference_10-06-1_Participant-oriented

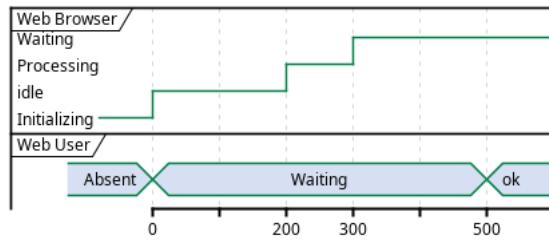
```
@startuml
robust "Web Browser" as WB
concise "Web User" as WU
@Web
0 is idle
+200 is Proc.
+100 is Waiting
@WU
0 is Waiting
+500 is ok
@enduml
```

**uml/reference_10-07-1_Setting-scale**

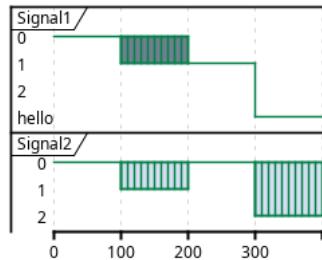
```
@startuml
concise "Web User" as WU
scale 100 as 50 pixels
@WU
0 is Waiting
+500 is ok
@enduml
```

**uml/reference_10-08-1_Initial-state**

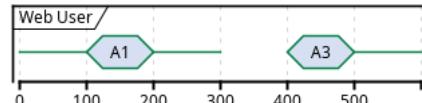
```
@startuml
robust "Web Browser" as WB
concise "Web User" as WU
WB is Initializing
WU is Absent
@Web
0 is idle
+200 is Processing
+100 is Waiting
@WU
0 is Waiting
+500 is ok
@enduml
```

**uml/reference_10-09-1_Intricated-state**

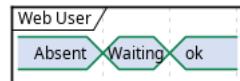
```
@startuml
robust "Signal1" as S1
robust "Signal2" as S2
S1 has 0,1,2,hello
S2 has 0,1,2
@0
S1 is 0
S2 is 0
@100
S1 is {0,1} #SlateGrey
S2 is {0,1}
@200
S1 is 1
S2 is 0
@300
S1 is hello
S2 is {0,2}
@enduml
```

**uml/reference_10-10-1_Hidden-state**

```
@startuml
concise "Web User" as WU
@0
WU is {-}
@100
WU is A1
@200
WU is {-}
@300
WU is {hidden}
@400
WU is A3
@500
WU is {-}
@enduml
```

**uml/reference_10-11-1_Hide-time-axis**

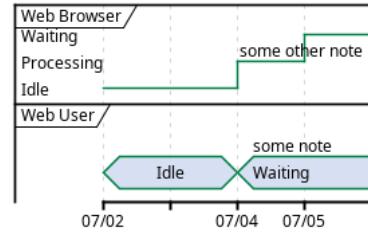
```
@startuml
hide time-axis
concise "Web User" as WU
WU is Absent
@WU
0 is Waiting
```



```
+500 is ok
@enduml
```

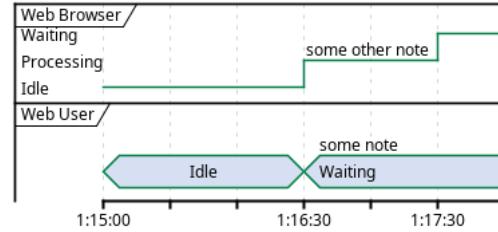
uml/reference_10-12-1_Using-Time-and-Date

```
@startuml
robust "Web Browser" as WB
concise "Web User" as WU
@2019/07/02
WU is Idle
WB is Idle
@2019/07/04
WU is Waiting : some note
WB is Processing : some other note
@2019/07/05
WB is Waiting
@enduml
```



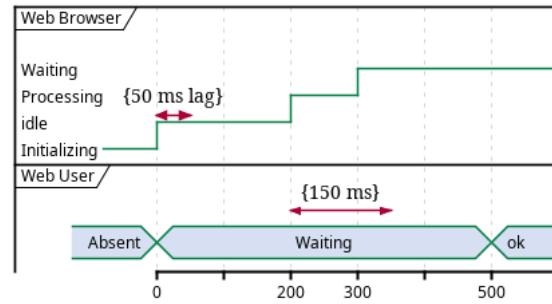
uml/reference_10-12-2_Using-Time-and-Date

```
@startuml
robust "Web Browser" as WB
concise "Web User" as WU
@1:15:00
WU is Idle
WB is Idle
@1:16:30
WU is Waiting : some note
WB is Processing : some other note
@1:17:30
WB is Waiting
@enduml
```



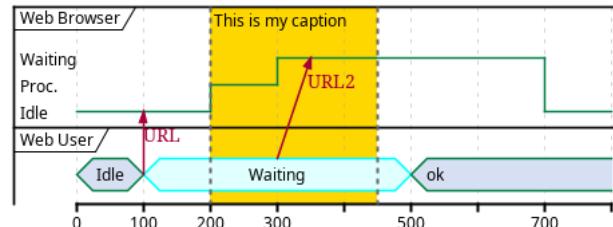
uml/reference_10-13-1_Adding-constraint

```
@startuml
robust "Web Browser" as WB
concise "Web User" as WU
WB is Initializing
WU is Absent
@WB
0 is idle
+200 is Processing
+100 is Waiting
WB@0 <-> @50 : {50 ms lag}
@WU
0 is Waiting
+500 is ok
@200 <-> @+150 : {150 ms}
@enduml
```



uml/reference_10-14-1_Highlighted-period

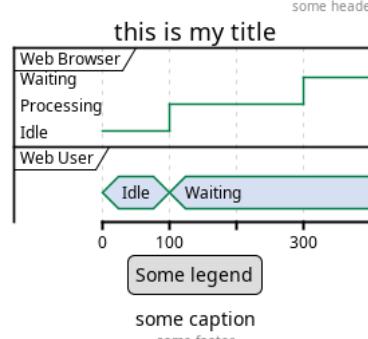
```
@startuml
robust "Web Browser" as WB
concise "Web User" as WU
@0
WU is Idle
WB is Idle
@100
WU -> WB : URL
WU is Waiting #LightCyan;line:Aqua
@200
WB is Proc.
@300
WU -> WB@350 : URL2
WB is Waiting
@+200
WU is ok
@+200
WB is Idle
highlight 200 to 450 #Gold;line:DimGrey : This is my caption
@enduml
```



uml/reference_10-15-1_Adding-texts

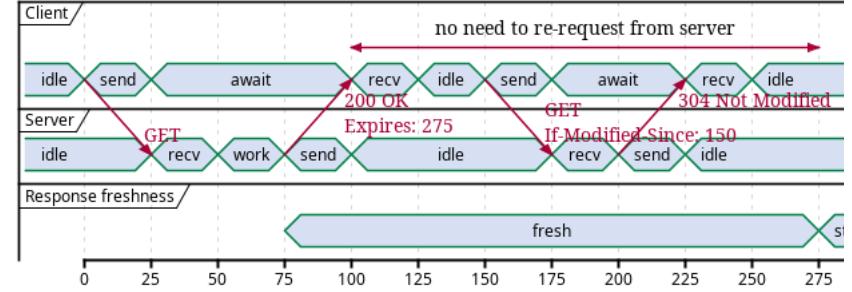
```
@startuml
Title this is my title
header: some header
footer: some footer
legend
  Some legend
end legend
caption some caption
robust "Web Browser" as WB
concise "Web User" as WU
@0
WU is Idle
WB is Idle
```

```
@100
WU is Waiting
WB is Processing
@300
WB is Waiting
@enduml
```



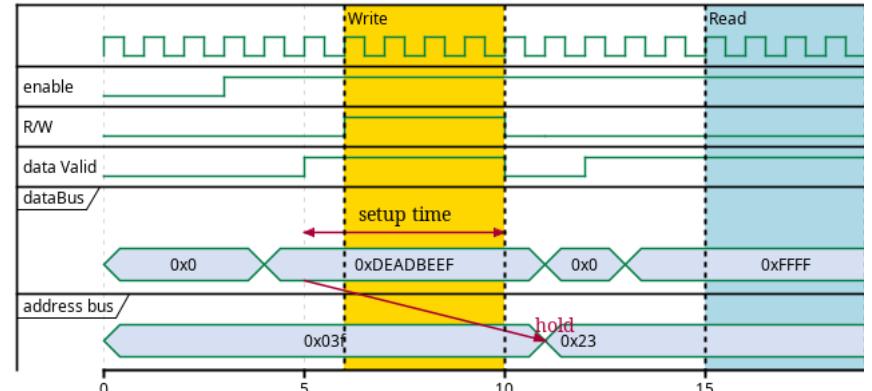
uml/reference_10-16-1_Complete-example

```
@startuml
concise "Client" as Client
concise "Server" as Server
concise "Response freshness" as Cache
Server is idle
Client is idle
@Client
0 is send
Client -> Server@+25 : GET
+25 is await
+75 is recv
+25 is idle
+25 is send
Client -> Server@+25 : GET\nIf-Modified-Since: 150
+25 is await
+50 is recv
+25 is idle
@100 <-> @275 : no need to re-request from server
@Server
25 is recv
+25 is work
+25 is send
Server -> Client@+25 : 200 OK\nExpires: 275
+25 is idle
+75 is recv
+25 is send
Server -> Client@+25 : 304 Not Modified
+25 is idle
@Cache
75 is fresh
+200 is stale
@enduml
```



uml/reference_10-17-1_Digital-Example

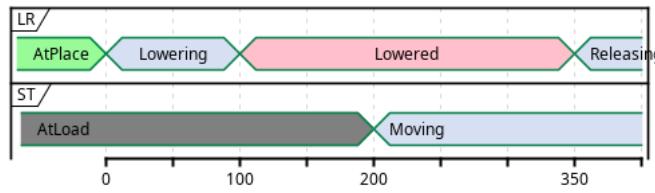
```
@startuml
scale 5 as 150 pixels
clock clk with period 1
binary "enable" as en
binary "R/W" as rw
binary "data Valid" as dv
concise "dataBus" as db
concise "address bus" as addr
@6 as :write_beg
@10 as :write_end
@15 as :read_beg
@19 as :read_end
@0
en is low
db is "0x0"
addr is "0x03f"
rw is low
dv is 0
@:write_beg-3
en is high
@:write_beg-2
db is "0xDEADBEEF"
@:write_beg-1
dv is 1
@:write_beg
rw is high
@:write_end
rw is low
dv is low
@:write_end+1
rw is low
db is "0x0"
addr is "0x23"
@12
dv is high
@13
db is "0xFFFF"
@20
en is low
dv is low
@21
db is "0x0"
highlight :write_beg to :write_end #Gold:Write
highlight :read_beg to :read_end #lightBlue:Read
```



```
db@:write_beg-1 <-> @:write_end : setup time
db@:write_beg-1 -> addr@:write_end+1 : hold
@enduml
```

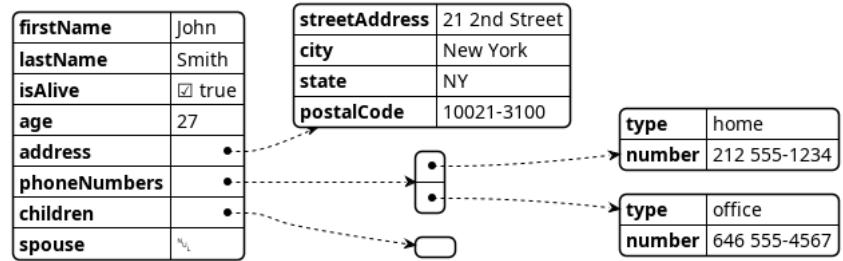
uml/reference_10-18-1 Adding-color

```
@startuml
concise "LR" as LR
concise "ST" as ST
LR is AtPlace #palegreen
ST is AtLoad #gray
@LR
0 is Lowering
100 is Lowered #pink
350 is Releasing
@ST
200 is Moving
@enduml
```



uml/reference_11-01-01-1 Complex-example

```
@startjson
{
  "firstName": "John",
  "lastName": "Smith",
  "isAlive": true,
  "age": 27,
  "address": {
    "streetAddress": "21 2nd Street",
    "city": "New York",
    "state": "NY",
    "postalCode": "10021-3100"
  },
  "phoneNumbers": [
    {
      "type": "home",
      "number": "212 555-1234"
    },
    {
      "type": "office",
      "number": "646 555-4567"
    }
  ],
  "children": [],
  "spouse": null
}
@endjson
```



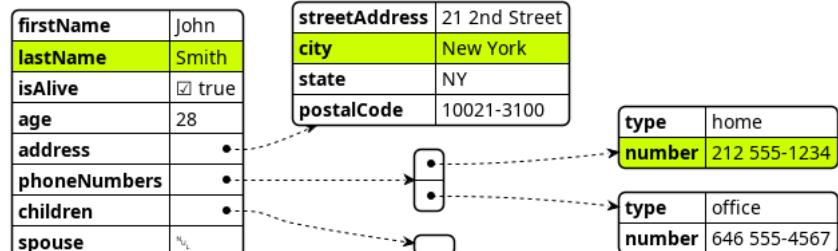
uml/reference_11-01-1 Display-JSON-Data

```
@startjson
{
  "fruit": "Apple",
  "size": "Large",
  "color": "Red"
}
@endjson
```

fruit	Apple
size	Large
color	Red

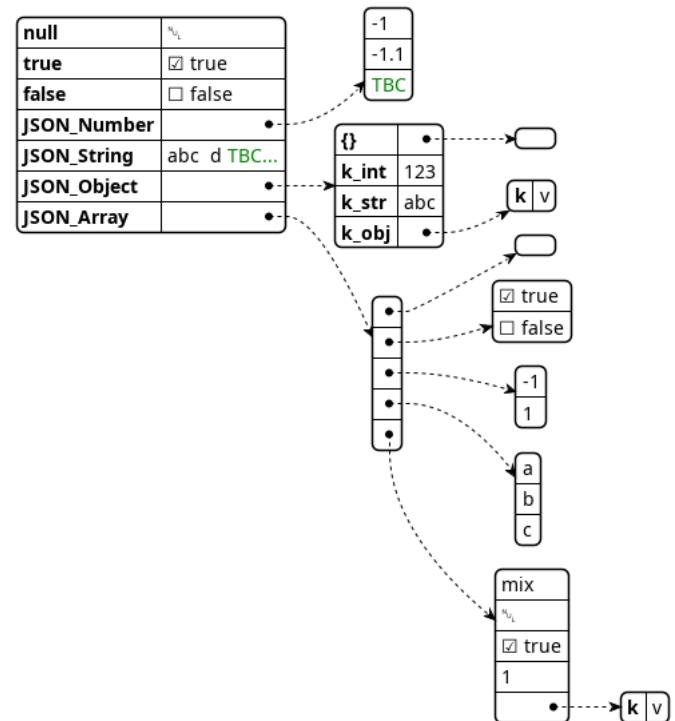
uml/reference_11-02-1 Highlight-parts

```
@startjson
#highlight "lastName"
#highlight "address" / "city"
#highlight "phoneNumbers" / "0" / "number"
{
  "firstName": "John",
  "lastName": "Smith",
  "isAlive": true,
  "age": 28,
  "address": {
    "streetAddress": "21 2nd Street",
    "city": "New York",
    "state": "NY",
    "postalCode": "10021-3100"
  },
  "phoneNumbers": [
    {
      "type": "home",
      "number": "212 555-1234"
    },
    {
      "type": "office",
      "number": "646 555-4567"
    }
  ],
  "children": [],
  "spouse": null
}
@endjson
```



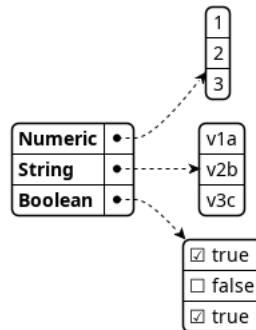
uml/reference_11-03-01-1_Synthesis-of-all-JSON-basic-element

```
@startjson
{
  "null": null,
  "true": true,
  "false": false,
  "JSON_Number": [-1, -1.1, "<color:green>TBC"],
  "JSON_String": "a\nb\rc\td <color:green>TBC...",
  "JSON_Object": {
    "{}": {},
    "k_int": 123,
    "k_str": "abc",
    "k_obj": {"k": "v"}
  },
  "JSON_Array": [
    [],
    [true, false],
    [-1, 1],
    ["a", "b", "c"],
    ["mix", null, true, 1, {"k": "v"}]
]
}
@endjson
```



uml/reference_11-04-01-1_Array-type

```
@startjson
{
  "Numeric": [1, 2, 3],
  "String": ["v1a", "v2b", "v3c"],
  "Boolean": [true, false, true]
}
@endjson
```



uml/reference_11-04-03-1_Number-array

```
@startjson
[1, 2, 3]
@endjson
```



uml/reference_11-04-04-1_String-array

```
@startjson
["1a", "2b", "3c"]
@endjson
```



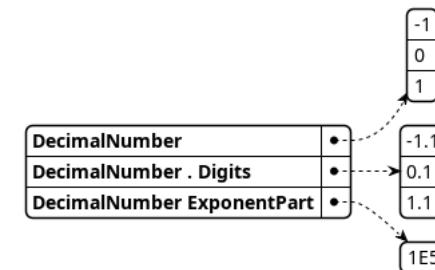
uml/reference_11-04-05-1_Boolean-array

```
@startjson
[true, false, true]
@endjson
```



uml/reference_11-05-1_JSON-numbers

```
@startjson
{
  "DecimalNumber": [-1, 0, 1],
  "DecimalNumber . Digits": [-1.1, 0.1, 1.1],
  "DecimalNumber ExponentPart": [1E5]
}
@endjson
```



uml/reference_11-06-01-1_JSON-Unicode

```
@startjson
{
  "<color:blue><b>code": "<color:blue><b>value",
  "a\u005Cb": "a\u005Cb",
  "\uD83D\uDE10": "\uD83D\uDE10",
  "\ud83d\ude10": "\ud83d\ude10"
}
@endjson
```

code	value
a\u005Cb	a\b
\uD83D\uDE10	(?)
\ud83d\ude10	(?)

uml/reference_11-06-02-1_JSON-two-character-escape-sequence

```
@startjson
{
  "***legend***: character name":
  "quotation mark character (U+0022)": ["**two-character escape sequence**", "example (between 'a' and 'b')"], 
  "reverse solidus character (U+005C)": ["\\\"", "a\"b"],
  "solidus character (U+002F)": ["\\\/", "a/b"],
  "backspace character (U+0008)": ["\\b", "a\bb"],
  "form feed character (U+000C)": ["\\f", "a\fb"],
  "line feed character (U+000A)": ["\\n", "a\nb"],
  "carriage return character (U+000D)": ["\\r", "a\rb"],
  "character tabulation character (U+0009)": ["\\t", "a\tb"]
}
@endjson
```

legend: charac
quotation mar
reverse solidus
solidus charact
backspace char
form feed char
line feed chara
carriage return
character tabu

uml/reference_11-06-02-2_JSON-two-character-escape-sequence

```
@startjson
[
  "\\\\", 
  "\\n",
  "\\r",
  "\\t"
]
@endjson
```

**uml/reference_11-07-1_Minimal-JSON-examples**

```
@startjson
"Hello world!"
@endjson
```

Hello world!

uml/reference_11-07-2_Minimal-JSON-examples

```
@startjson
42
@endjson
```

42

uml/reference_11-07-3_Minimal-JSON-examples

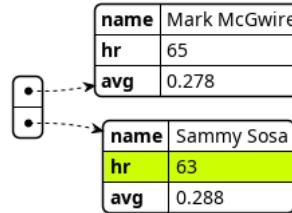
```
@startjson
true
@endjson
```

true

uml/reference_11-08-01-1_Without-style

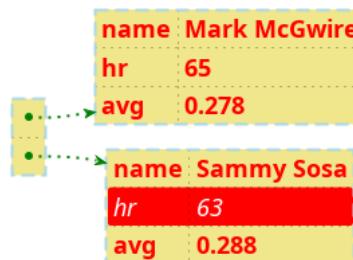
```
@startjson
#highlight "1" / "hr"
[
```

```
{
  "name": "Mark McGwire",
  "hr": 65,
  "avg": 0.278
},
{
  "name": "Sammy Sosa",
  "hr": 63,
  "avg": 0.288
}
]
@endjson
```



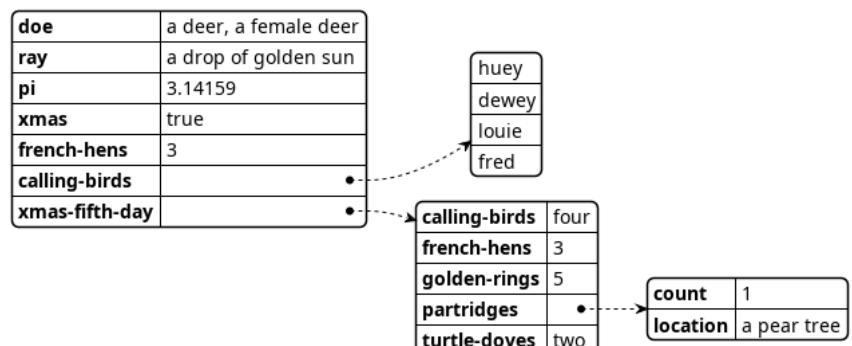
uml/reference_11-08-02-1_With-style

```
@startjson
<style>
jsonDiagram {
  node {
    BackGroundColor Khaki
    LineColor lightblue
    FontName Helvetica
    FontColor red
    FontSize 18
    FontStyle bold
    RoundCorner 0
    LineThickness 2
    LineStyle 10;5
    separator {
      LineThickness 0.5
      LineColor black
      LineStyle 1;5
    }
  }
  arrow {
    BackGroundColor lightblue
    LineColor green
    LineThickness 2
    LineStyle 2;5
  }
  highlight {
    BackGroundColor red
    FontColor white
    FontStyle italic
  }
}
</style>
#highlight "1" / "hr"
[
  {
    "name": "Mark McGwire",
    "hr": 65,
    "avg": 0.278
  },
  {
    "name": "Sammy Sosa",
    "hr": 63,
    "avg": 0.288
  }
]
@endjson
```



uml/reference_12-01-1_Complex-example

```
@startyaml
doe: "a deer, a female deer"
ray: "a drop of golden sun"
pi: 3.14159
xmas: true
french-hens: 3
calling-birds:
  - huey
  - dewey
  - louie
  - fred
xmas-fifth-day:
  calling-birds: four
  french-hens: 3
  golden-rings: 5
  partridges:
    count: 1
    location: "a pear tree"
  turtle-doves: two
@endyaml
```



uml/reference_12-02-1_Specific-key-with-symbols-or-unicode

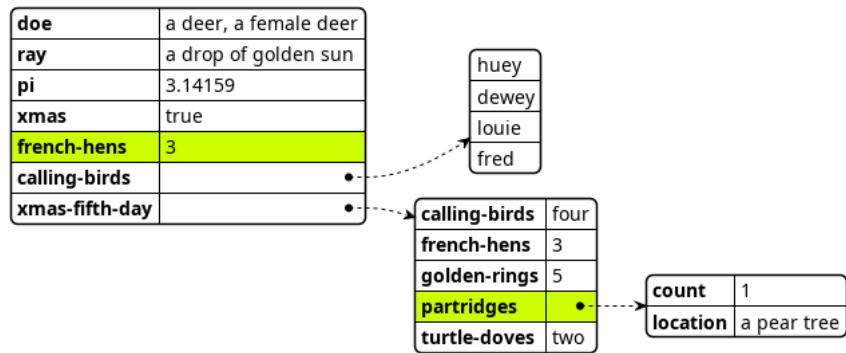
```
@startyaml
@fruit: Apple
$size: Large
&color: Red
♥: Heart
%: Per mille
@endyaml
```

@fruit	Apple
\$size	Large
&color	Red
♥	Heart
%	Per mille

uml/reference_12-03-01-1_Normal-style

```
@startyaml
#highlight "french-hens"
#highlight "xmas-fifth-day" / "partridges"

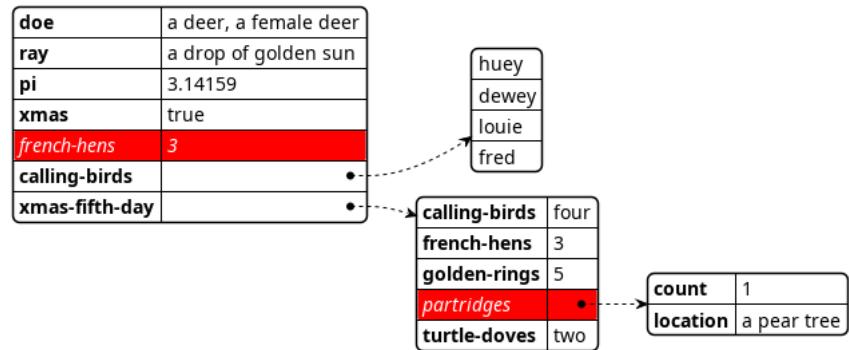
doe: "a deer, a female deer"
ray: "a drop of golden sun"
pi: 3.14159
xmas: true
french-hens: 3
calling-birds:
- huey
- dewey
- louie
- fred
xmas-fifth-day:
calling-birds: four
french-hens: 3
golden-rings: 5
partridges:
count: 1
location: "a pear tree"
turtle-doves: two
@endyaml
```



uml/reference_12-03-02-1_Customised-style

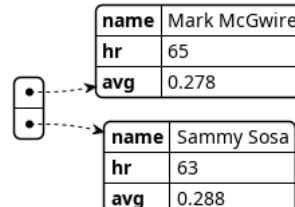
```
@startyaml
<style>
yamlDiagram {
    highlight {
        BackGroundColor red
        FontColor white
        FontStyle italic
    }
}
</style>
#highlight "french-hens"
#highlight "xmas-fifth-day" / "partridges"

doe: "a deer, a female deer"
ray: "a drop of golden sun"
pi: 3.14159
xmas: true
french-hens: 3
calling-birds:
- huey
- dewey
- louie
- fred
xmas-fifth-day:
calling-birds: four
french-hens: 3
golden-rings: 5
partridges:
count: 1
location: "a pear tree"
turtle-doves: two
@endyaml
```



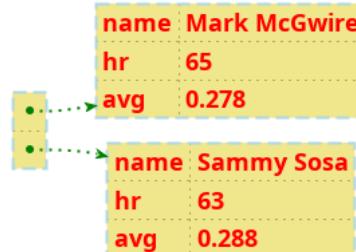
uml/reference_12-04-01-1_Without-style

```
@startyaml
-
  name: Mark McGwire
  hr: 65
  avg: 0.278
-
  name: Sammy Sosa
  hr: 63
  avg: 0.288
@endyaml
```



uml/reference_12-04-02-1_With-style

```
@startyaml
<style>
yamlDiagram {
    node {
        BackGroundColor lightblue
        LineColor lightblue
        FontName Helvetica
        FontColor red
        FontSize 18
        FontStyle bold
        BackGroundColor Khaki
        RoundCorner 0
    }
}
```



```

LineThickness 2
LineStyle 10;5
separator {
    LineThickness 0.5
    LineColor black
    LineStyle 1;5
}
}
arrow {
    BackGroundColor lightblue
    LineColor green
    LineThickness 2
    LineStyle 2;5
}
}
</style>
-
name: Mark McGwire
hr: 65
avg: 0.278
-
name: Sammy Sosa
hr: 63
avg: 0.288
@endyaml

```

uml/reference_12-1_Display-YAML-Data

```

@startyaml
fruit: Apple
size: Large
color: Red
@endyaml

```

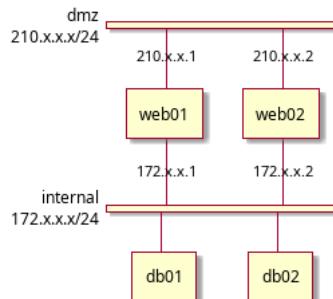
fruit	Apple
size	Large
color	Red

uml/reference_13-01-1_Simple-diagram

```

@startuml
nwdiag {
network dmz {
address = "210.x.x.x/24"
web01 [address = "210.x.x.1"];
web02 [address = "210.x.x.2"];
}
network internal {
address = "172.x.x.x/24";
db01;
db02;
}
}
@enduml

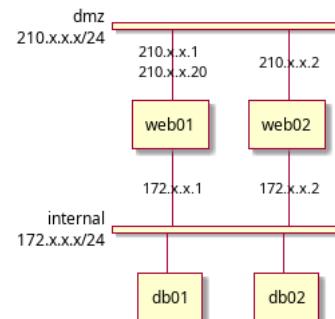
```

**uml/reference_13-02-1_Define-multiple-addresses**

```

@startuml
nwdiag {
network dmz {
address = "210.x.x.x/24"
// set multiple addresses (using comma)
web01 [address = "210.x.x.1, 210.x.x.20"];
web02 [address = "210.x.x.2"];
}
network internal {
address = "172.x.x.x/24";
web01 [address = "172.x.x.1"];
web02 [address = "172.x.x.2"];
db01;
db02;
}
}
@enduml

```

**uml/reference_13-03-01-1_Define-group-inside-network-definitions**

```

@startuml
nwdiag {
network Sample_front {
address = "192.168.10.0/24";
// define group
group web {
    web01 [address = ".1"];
    web02 [address = ".2"];
}
}

```

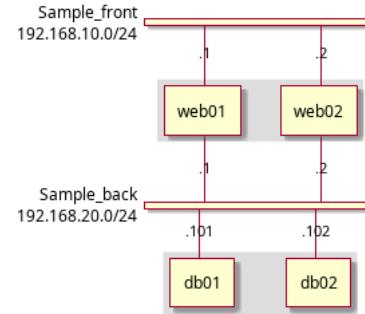
```

}
network Sample_back {
address = "192.168.20.0/24";
web01 [address = ".1"];
web02 [address = ".2"];
db01 [address = ".101"];
db02 [address = ".102"];

// define network using defined nodes
group db {
  db01;
  db02;
}
}

@enduml

```



uml/reference_13-03-02-1_Define-group-outside-of-network-definitions

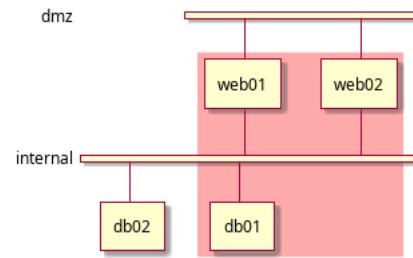
```

@startuml
nwdiag {
// define group outside of network definitions
group {
  color = "#FFAAAA";
  web01;
  web02;
  db01;
}

network dmz {
  web01;
  web02;
}
network internal {
  web01;
  web02;
  db01;
  db02;
}
}

@enduml

```



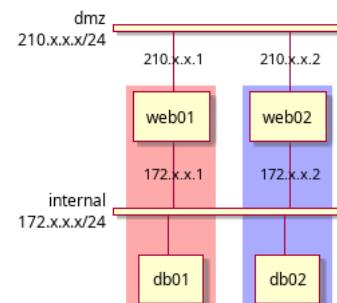
uml/reference_13-03-04-1_Example-with-2-group

```

@startuml
nwdiag {
group {
  color = "#FFaaaa";
  web01;
  db01;
}
group {
  color = "#aaaaFF";
  web02;
  db02;
}
network dmz {
address = "210.x.x.x/24"
  web01 [address = "210.x.x.x.1"];
  web02 [address = "210.x.x.x.2"];
}
network internal {
address = "172.x.x.x/24";
  web01 [address = "172.x.x.x.1"];
  web02 [address = "172.x.x.x.2"];
  db01 ;
  db02 ;
}

@enduml

```



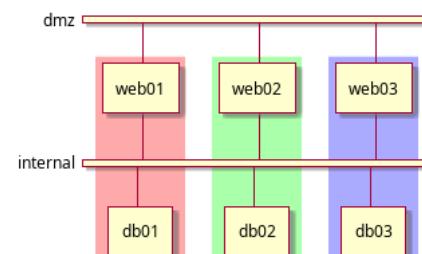
uml/reference_13-03-05-1_Example-with-3-group

```

@startuml
nwdiag {
group {
  color = "#FFaaaa";
  web01;
  db01;
}
group {
  color = "#aaFFaa";
  web02;
  db02;
}
group {
  color = "#aaaaFF";
  web03;
}

@enduml

```



```

db03;
}

network dmz {
web01;
web02;
web03;
}
network internal {
web01;
db01 ;
web02;
db02 ;
web03;
db03;
}
}
@enduml

```

uml/reference_13-04-01-1_Extended-Syntax-Network

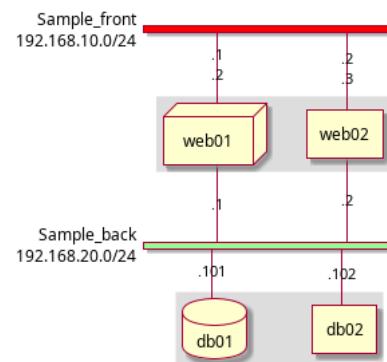
```

@startuml
nwdiag {
network Sample_front {
address = "192.168.10.0/24"
color = "red"

// define group
group web {
web01 [address = ".1, .2", shape = "node"]
web02 [address = ".2, .3"]
}
network Sample_back {
address = "192.168.20.0/24"
color = "palegreen"
web01 [address = ".1"]
web02 [address = ".2"]
db01 [address = ".101", shape = database]
db02 [address = ".102"]

// define network using defined nodes
group db {
db01;
db02;
}
}
}
@enduml

```



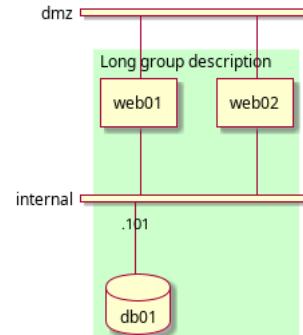
uml/reference_13-04-02-1_Extended-Syntax-Group

```

@startuml
nwdiag {
group {
color = "#CCFFCC";
description = "Long group description";
web01;
web02;
db01;
}

network dmz {
web01;
web02;
}
network internal {
web01;
web02;
db01 [address = ".101", shape = database];
}
}
@enduml

```



uml/reference_13-05-1_Using-Sprites

```

@startuml
!include <office/Servers/application_server>
!include <office/Servers/database_server>

nwdiag {
network dmz {
address = "210.x.x.x/24"

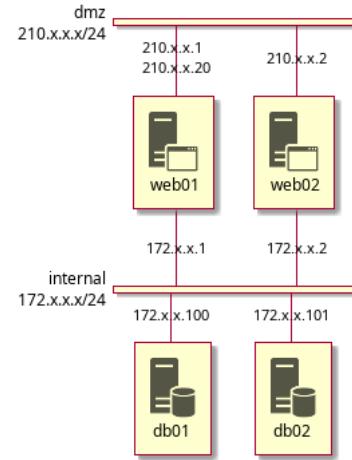
// set multiple addresses (using comma)
web01 [address = "210.x.x.1, 210.x.x.20", description = "<$application_server>\n web01"]
web02 [address = "210.x.x.2", description = "<$application_server>\n web02"];
}
network internal {
address = "172.x.x.x/24";
}

```

```

web01 [address = "172.x.x.1"];
web02 [address = "172.x.x.2"];
db01 [address = "172.x.x.100", description = "<$database_server>\n db01"];
db02 [address = "172.x.x.101", description = "<$database_server>\n db02"];
}
}
@enduml

```



uml/reference_13-06-1_Using-OpenIconic

```

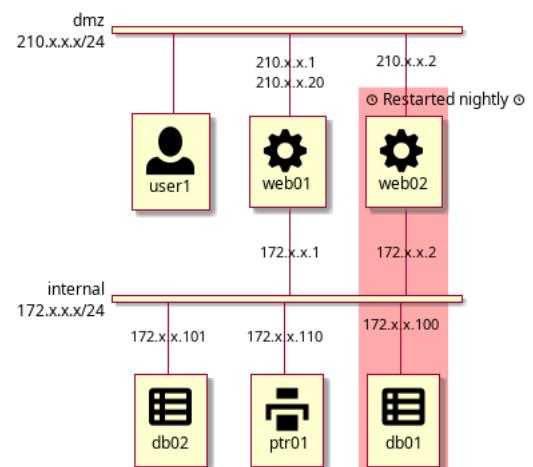
@startuml
nwdiag {
group nightly {
color = "#FFAAAA";
description = "<&clock> Restarted nightly <&clock>";
web02;
db01;
}
network dmz {
address = "210.x.x.x/24"

user [description = "<&person*4.5>\n user1"];
// set multiple addresses (using comma)
web01 [address = "210.x.x.1, 210.x.x.20", description = "<&cog*4>\nweb01"]
web02 [address = "210.x.x.2", description = "<&cog*4>\nweb02"];

}
network internal {
address = "172.x.x.x/24";

web01 [address = "172.x.x.1"];
web02 [address = "172.x.x.2"];
db01 [address = "172.x.x.100", description = "<&spreadsheet*4>\n db01"];
db02 [address = "172.x.x.101", description = "<&spreadsheet*4>\n db02"];
ptr [address = "172.x.x.110", description = "<&print*4>\n ptr01"];
}
}
@enduml

```



uml/reference_13-07-1_Same-nodes-on-more-than-two-networks

```

@startuml
nwdiag {
// define group at outside network definitions
group {
color = "#7777FF";

web01;
web02;
db01;
}

network dmz {
color = "pink"

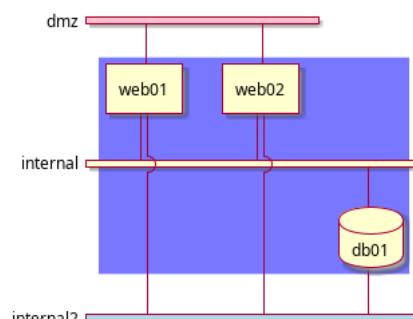
web01;
web02;
}

network internal {
web01;
web02;
db01 [shape = database ];
}

network internal2 {
color = "LightBlue";

web01;
web02;
db01;
}
}
@enduml

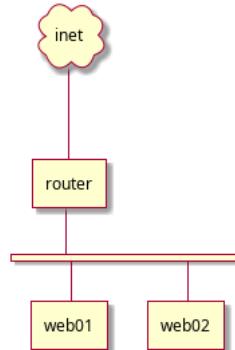
```



uml/reference_13-08-1_Peer-networks

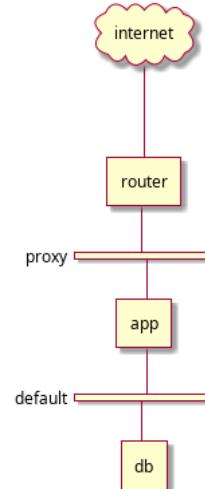
```
@startuml
nwdiag {
inet [shape = cloud];
inet -- router;

network {
router;
web01;
web02;
}
@enduml
```

**uml/reference_13-09-01-1_Without-group**

```
@startuml
nwdiag {
internet [ shape = cloud];
internet -- router;

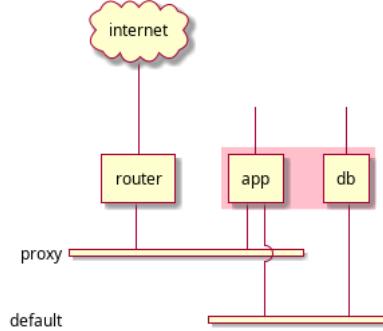
network proxy {
router;
app;
}
network default {
app;
db;
}
}
@enduml
```

**uml/reference_13-09-02-1_Group-on-first**

```
@startuml
nwdiag {
internet [ shape = cloud];
internet -- router;

group {
color = "pink";
app;
db;
}

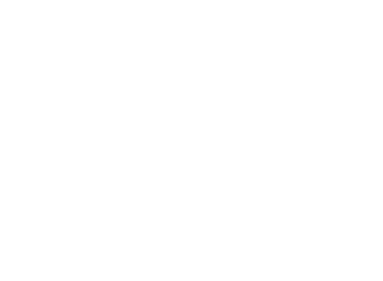
network proxy {
router;
app;
}
network default {
app;
db;
}
}
@enduml
```

**uml/reference_13-09-03-1_Group-on-second**

```
@startuml
nwdiag {
internet [ shape = cloud];
internet -- router;

network proxy {
router;
app;
}

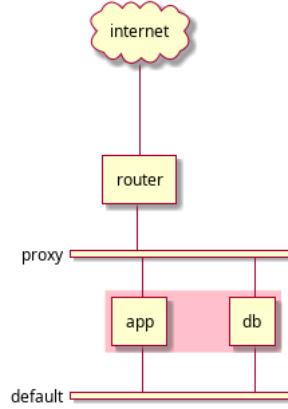
group {
color = "pink";
app;
db;
}
```



```

}
network default {
app;
db;
}
@enduml

```

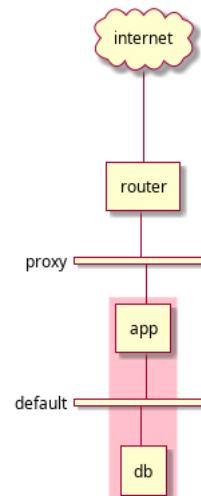
**uml/reference_13-09-04-1_Group-on-third**

```

@startuml
nwdiag {
internet [ shape = cloud];
internet --> router;

network proxy {
router;
app;
}
network default {
app;
db;
}
group {
color = "pink";
app;
db;
}
}
@enduml

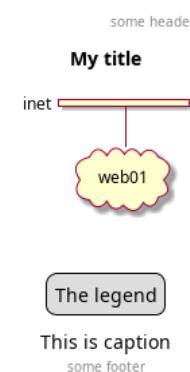
```

**uml/reference_13-10-1_Add-title-caption-header-footer-or-legend-on-network-diagram**

```

@startuml
header some header
footer some footer
title My title
nwdiag {
network inet {
web01 [shape = cloud]
}
}
legend
The legend
end legend
caption This is caption
@enduml

```

**uml/reference_13-11-1_Change-width-of-the-networks**

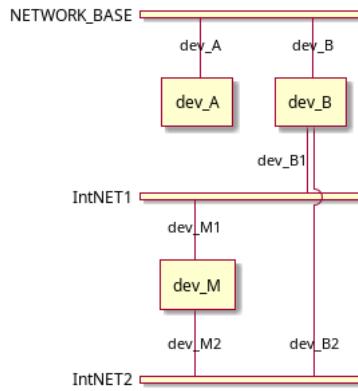
```

@startuml
nwdiag {
network NETWORK_BASE {
dev_A [address = "dev_A" ]
dev_B [address = "dev_B" ]
}
network IntNET1 {
dev_B [address = "dev_B1" ]
dev_M [address = "dev_M1" ]
}
network IntNET2 {
dev_B [address = "dev_B2" ]
dev_M [address = "dev_M2" ]
}

```

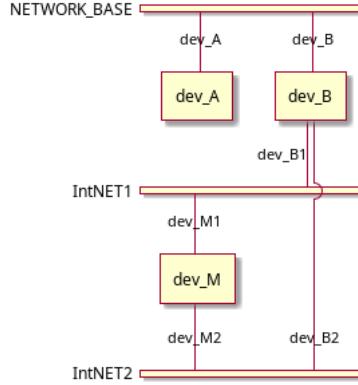
Test plantuml-syntax

```
}
}
@enduml
```



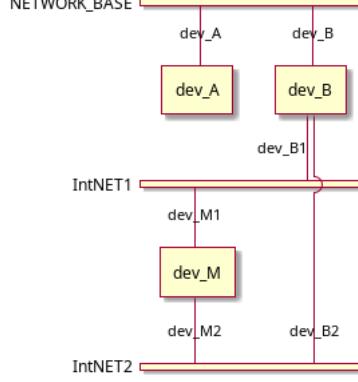
uml/reference_13-11-2_Change-width-of-the-networks

```
@startuml
nwdiag {
network NETWORK_BASE {
width = full
dev_A [address = "dev_A" ]
dev_B [address = "dev_B" ]
}
network IntNET1 {
width = full
dev_B [address = "dev_B1" ]
dev_M [address = "dev_M1" ]
}
network IntNET2 {
width = full
dev_B [address = "dev_B2" ]
dev_M [address = "dev_M2" ]
}
}
@enduml
```



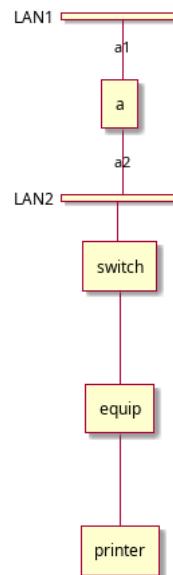
uml/reference_13-11-3_Change-width-of-the-networks

```
@startuml
nwdiag {
network NETWORK_BASE {
width = full
dev_A [address = "dev_A" ]
dev_B [address = "dev_B" ]
}
network IntNET1 {
width = full
dev_B [address = "dev_B1" ]
dev_M [address = "dev_M1" ]
}
network IntNET2 {
dev_B [address = "dev_B2" ]
dev_M [address = "dev_M2" ]
}
}
@enduml
```



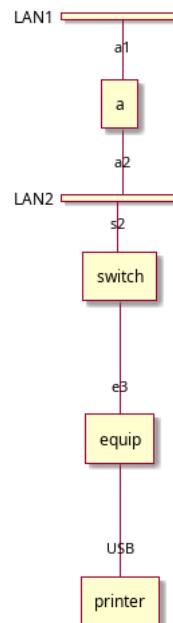
uml/reference_13-12-1_Other-internal-networks

```
@startuml
nwdiag {
network LAN1 {
a [address = "a1"];
}
network LAN2 {
a [address = "a2"];
switch;
}
switch -- equip;
equip --> printer;
}
@enduml
```

**uml/reference_13-12-2_Other-internal-networks**

```

@startuml
nwdiag {
network LAN1 {
a [address = "a1"];
}
network LAN2 {
a [address = "a2"];
switch [address = "s2"];
}
switch --> equip;
equip [address = "e3"];
equip --> printer;
printer [address = "USB"];
}
@enduml
  
```

**uml/reference_14-01-1_Basic-widgets**

```

@startsalt
{
  Just plain text
  [This is my button]
  () Unchecked radio
  (X) Checked radio
  [] Unchecked box
  [X] Checked box
  "Enter text here"
  ^This is a dropdown
}
@endsalt
  
```

Just plain text

This is my button

○ Unchecked radio

(X) Checked radio

□ Unchecked box

Checked box

Enter text here

This is a dropdown

uml/reference_14-02-1_Using-grid

```

@startsalt
{
  Login | "MyName" |
  Password | "****" |
  [Cancel] | [ OK ]
}
@endsalt
  
```

Login	<input type="text" value="MyName"/>
Password	<input type="password" value="****"/>
[Cancel]	[OK]

uml/reference_14-02-2_Using-grid

```
@startsalt
{+
  Login | "MyName"   "
  Password | "****"   "
  [Cancel] | [ OK ]"
}
@endsalt
```

**uml/reference_14-03-1_Group-box**

```
@startsalt
{^"My group box"
  Login | "MyName"   "
  Password | "****"   "
  [Cancel] | [ OK ]"
}
@endsalt
```

**uml/reference_14-04-1_Using-separator**

```
@startsalt
{
  Text1
  .
  "Some field"
  ==
  Note on usage
  ~~
  Another text
  --
  [Ok]
}
@endsalt
```

Text1

Some field

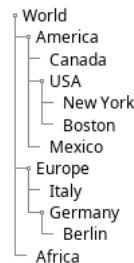
Note on usage

Another text

Ok

uml/reference_14-05-1_Tree-widget

```
@startsalt
{
{T
+ World
++ America
+++ Canada
+++ USA
++++ New York
++++ Boston
+++ Mexico
++ Europe
+++ Italy
+++ Germany
++++ Berlin
++ Africa
}
}
@endsalt
```

**uml/reference_14-06-1_Tree-table**

```
@startsalt
{
{T
+Region    | Population    | Age
+ World    | 7.13 billion | 30
++ America | 964 million  | 30
+++ Canada | 35 million   | 30
+++ USA    | 319 million  | 30
++++ NYC   | 8 million    | 30
++++ Boston | 617 thousand | 30
+++ Mexico | 117 million  | 30
++ Europe  | 601 million  | 30
+++ Italy  | 61 million   | 30
+++ Germany | 82 million  | 30
+++ Berlin | 3 million   | 30
++ Africa  | 1 billion   | 30
}
}
@endsalt
```

Region	Population	Age
World	7.13 billion	30
America	964 million	30
Canada	35 million	30
USA	319 million	30
NYC	8 million	30
Boston	617 thousand	30
Mexico	117 million	30
Europe	601 million	30
Italy	61 million	30
Germany	82 million	30
Berlin	3 million	30
Africa	1 billion	30

uml/reference_14-06-2_Tree-table

```
@startsalt
{
```

```
...
== with T!
{T!
+Region | Population | Age
+ World | 7.13 billion | 30
++ America | 964 million | 30
}
...
== with T-
{T-
+Region | Population | Age
+ World | 7.13 billion | 30
++ America | 964 million | 30
}
...
== with T+
{T+
+Region | Population | Age
+ World | 7.13 billion | 30
++ America | 964 million | 30
}
...
== with T#
{T#
+Region | Population | Age
+ World | 7.13 billion | 30
++ America | 964 million | 30
}
...
}
@endsalt
```

with T!		
Region	Population	Age
World	7.13 billion	30
America		
America	964 million	30

with T-		
Region	Population	Age
World	7.13 billion	30
America		
America	964 million	30

with T+		
Region	Population	Age
World	7.13 billion	30
America		
America	964 million	30

with T#		
Region	Population	Age
World	7.13 billion	30
America		
America	964 million	30

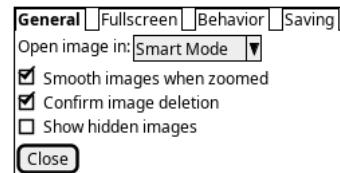
uml/reference_14-07-1_Enclosing-brackets

```
@startsalt
{
Name | " "
Modifiers: | { (X) public | () default | () private | () protected
           [] abstract | [] final | [] static }
Superclass: | { "java.lang.Object" | [Browse...] }
}
@endsalt
```

Name
 Modifiers: public default private protected
 abstract final static
 Superclass: java.lang.Object

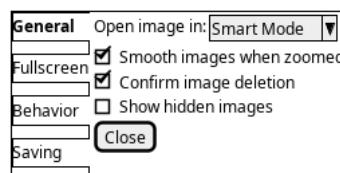
uml/reference_14-08-1_Adding-tabs

```
@startsalt
{+
{/ <b>General | Fullscreen | Behavior | Saving >
{
{ Open image in: | ^Smart Mode^ }
[X] Smooth images when zoomed
[X] Confirm image deletion
[ ] Show hidden images
}
[Close]
}
@endsalt
```



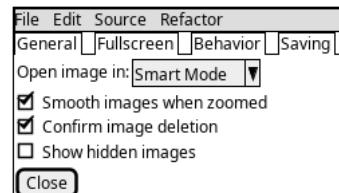
uml/reference_14-08-2_Adding-tabs

```
@startsalt
{+
{/ <b>General
Fullscreen
Behavior
Saving > |
{
{ Open image in: | ^Smart Mode^ }
[X] Smooth images when zoomed
[X] Confirm image deletion
[ ] Show hidden images
}
}
}
@endsalt
```



uml/reference_14-09-1_Using-menu

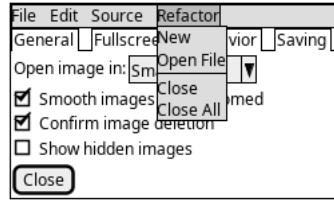
```
@startsalt
{+
{* File | Edit | Source | Refactor }
{/ General | Fullscreen | Behavior | Saving }
{
{ Open image in: | ^Smart Mode^ }
[X] Smooth images when zoomed
[X] Confirm image deletion
[ ] Show hidden images
}
```



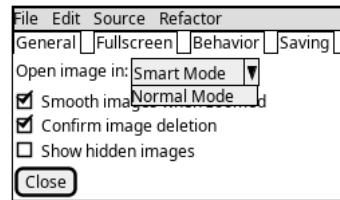
```
[Close]
}
@endsalt
```

uml/reference_14-09-2_Using-menu

```
@startsalt
{+
{* File | Edit | Source | Refactor
Refactor | New | Open File | - | Close | Close All }
{/ General | Fullscreen | Behavior | Saving }
{
{ Open image in: | ^Smart Mode^ }
[X] Smooth images when zoomed
[X] Confirm image deletion
[ ] Show hidden images
}
[Close]
}
@endsalt
```

**uml/reference_14-09-3_Using-menu**

```
@startsalt
{+
{* File | Edit | Source | Refactor }
{/ General | Fullscreen | Behavior | Saving }
{
{ Open image in: | ^Smart Mode^^Normal Mode^ }
[X] Smooth images when zoomed
[X] Confirm image deletion
[ ] Show hidden images
}
[Close]
}
@endsalt
```

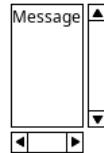
**uml/reference_14-10-1_Advanced-table**

```
@startsalt
{#
. | Column 2 | Column 3
Row header 1 | value 1 | value 2
Row header 2 | A long cell | *
}
@endsalt
```

	Column 2	Column 3
Row header 1	value 1	value 2
Row header 2	A long cell	*

uml/reference_14-11-1_Scroll-Bars

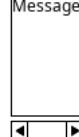
```
@startsalt
{S
Message
.
.
.
}
@endsalt
```

**uml/reference_14-11-2_Scroll-Bars**

```
@startsalt
{SI
Message
.
.
.
}
@endsalt
```

**uml/reference_14-11-3_Scroll-Bars**

```
@startsalt
{S-
Message
.
.
.
}
```



```
}
```

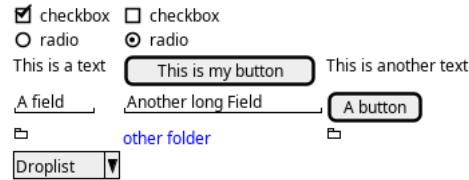
@endsalt

uml/reference_14-12-1_Coloros

```
@startsalt
{
<color:Blue>Just plain text
[This is my default button]
[<color:green>This is my green button]
[<color:#9a9a9a>This is my disabled button]
[] <color:red>Unchecked box
[X] <color:green>Checked box
"Enter text here"
^This is a dropdown^
^<color:#9a9a9a>This is a disabled dropdown^
^<color:red>This is a red dropdown^
}
@endsalt
```

**uml/reference_14-13-1_Pseudo-sprite**

```
@startsalt
{
[X] checkbox|[] checkbox
() radio | (X) radio
This is a text|[This is my button]|This is another text
"A field"|"Another long Field"|[A button]
<>folder
.....
.XXXX.....
.X...X.....
XXXXXX.....
.X.....X.
.X.....X.
.X.....X.
.X.....X.
.X.....X.
.X.....X.
.XXXXXXXX.
.....
>>|<color:blue>other folder|<>folder>>
^Dropdown^
}
@endsalt
```

**uml/reference_14-14-1_OpenIconic**

```
@startsalt
{
Login<&person> | "MyName" "
Password<&key> | "****" "
[Cancel <&circle-x>] | [OK <&account-login>]
}
@endsalt
```

**uml/reference_14-14-2_OpenIconic**

```
@startuml
listopeniconic
@enduml
```

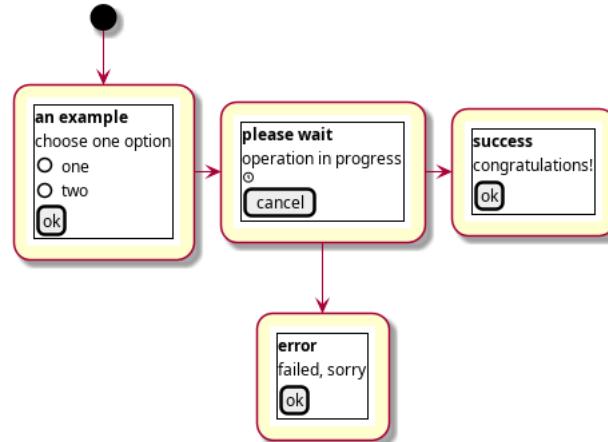
List Open Iconic	◆ bell	◆ cloud	■ excerpt	■ justify-right	♪ musical-note	★ star
Credit to	◊ bluetooth	◊ cloudy	Σ expand-down	◊ key	◊ paperclip	☀ sun
https://useiconic.com/open	■ bold	◊ code	Η expand-left	□ laptop	■ pencil	▢ tablet
	+ bolt	◊ cog	Η expand-right	■ layers	■ people	>tag
	⇒ account-login	■ book	Σ collapse-down	Σ expand-up	▲ person	tags
	⇒ account-logout	■ bookmark	Η collapse-left	Σ external-link	□ phone	◎ target
	↗ action-redo	■ box	Η collapse-right	◊ eye	♦ pie-chart	▣ task
	↶ action-undo	■ briefcase	Σ collapse-up	◊ eyedropper	† pin	terminal
	≡ align-center	£ british-pound	◊ command	■ file	● play-circle	T text
	≡ align-left	□ browser	■ comment-square	◊ fire	+ plus	▶ thumb-down
	≡ align-right	◊ camera-slr	□ crop	◊ flag	◊ power-standby	◀ thumb-up
	◊ aperture	◊ bug	◊ contrast	◊ flash	▪ print	timer
	↓ arrow-bottom	■ bullhorn	■ copywriting	■ folder	▪ pulse	underline
	● arrow-circle-bottom	■ calculator	■ credit-card	▪ fork	■ puzzle-piece	■ vertical-align
	● arrow-circle-left	■ calendar	□ dashboard	▪ fullscreen-enter	? question-mark	■ vertical-align
	● arrow-circle-right	◊ camera-slr	Σ data-transfer-download	▪ fullscreen-exit	■ rain	■ video
	● arrow-circle-top	▼ caret-bottom	Σ data-transfer-upload	◊ globe	× random	● volume-high
	← arrow-left	◀ caret-left	◊ delete	■ graph	○ reload	● volume-low
	→ arrow-right	▶ caret-right	◊ dial	■ grid-four-up	▷ media-pause	■ volume-off
	↓ arrow-thick-bottom	▲ caret-top	■ document	■ grid-three-up	▶ media-play	▲ warning
	→ arrow-thick-left	▼ cart	◊ dollar	■ grid-two-up	● media-record	wifi
	→ arrow-thick-right	◊ chat	◊ droplet	■ hard-drive	◀ media-skip-backward	🔧 wrench
	↑ arrow-thick-top	✓ check	■ double-quote-sans-left	■ header	▶ media-skip-forward	share-boxed
	↑ arrow-top	▼ chevron-bottom	■ double-quote-sans-right	◊ headphones	▷ media-step-backward	x x
	◊ audio-spectrum	◀ chevron-left	■ double-quote-serif-left	◊ heart	● media-step-forward	yen
	◊ audio	▶ chevron-right	■ double-quote-serif-right	◊ home	■ media-stop	signal
	◊ badge	▲ chevron-top	◊ droplet	■ image	● medical-cross	sort-ascending
	◊ ban	● circle-check	▲ eject	□ inbox	■ menu	sort-descending
	■ bar-chart	● circle-x	△ elevator	∞ infinity	◊ microphone	spreadsheet
	◊ basket	■ clipboard	◊ ellipses	◊ info	− minus	
	◊ battery-empty	◊ clock	■ envelope-closed	◊ italic	□ monitor	
	■ battery-full	▲ cloud-download	◊ envelope-open	■ justify-center	● moon	
	◊ beaker	◆ cloud-upload	€ euro	■ justify-left	+ move	

uml/reference_14-15-1_Include-Salt-on-activity-diagram

```
@startuml
(*) --> "
{{ salt
{+
<b>an example
choose one option
()one
()two
[ok]
}}
" as choose

choose -right->
{{ salt
{+
<b>please wait
operation in progress
<&clock>
[cancel]
}}
" as wait
wait -right->
{{ salt
{+
<b>success
congratulations!
[ok]
}}
" as success

wait -down->
{{ salt
{+
<b>error
failed, sorry
[ok]
}}
"
@enduml
```



uml/reference_14-15-2_Include-Salt-on-activity-diagram

```
@startuml
!unquoted procedure SALT($x)
"{{ salt
%invoke_procedure("_"+$x)
}}" as $x
!endprocedure
```

```

!procedure _choose()
{+
<b>an example
choose one option
()one
()two
[ok]
}
!endprocedure

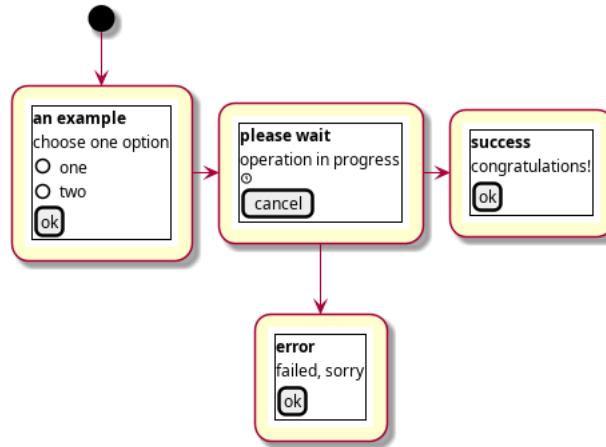
!procedure _wait()
{+
<b>please wait
operation in progress
<&clock>
[cancel]
}
!endprocedure

!procedure _success()
{+
<b>success
congratulations!
[ok]
}
!endprocedure

!procedure _error()
{+
<b>error
failed, sorry
[ok]
}
!endprocedure

(*) --> SALT(choose)
-right-> SALT(wait)
wait -right-> SALT(success)
wait -down-> SALT(error)
@enduml

```

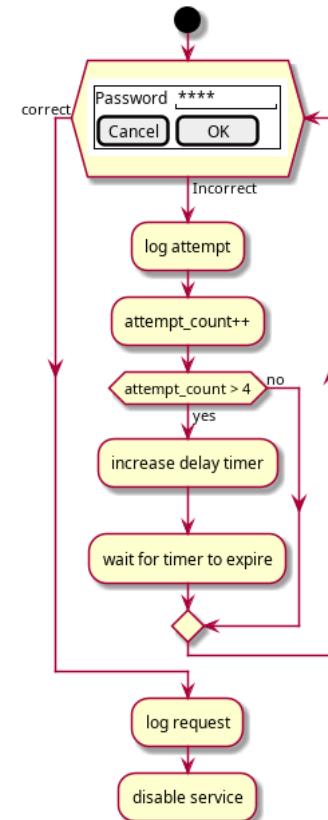


uml/reference_14-16-1_Include-salt-on-while-condition-of-activity-diagram

```

@startuml
start
while (\n{{\nsalt\n{\nPassword | "****"      "\n[Cancel] | [ OK ]}}\n) is (Incorrect)
:log attempt;
:attempt_count++;
if (attempt_count > 4) then (yes)
:increase delay timer;
:wait for timer to expire;
else (no)
endif
endwhile (correct)
:log request;
:disable service;
@enduml

```



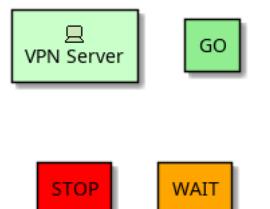
uml/reference_15-01-1_Archimate-keyword

```

@startuml
archimate #Technology "VPN Server" as vpnServerA <<technology-device>>

rectangle GO #lightgreen
rectangle STOP #red
rectangle WAIT #orange
@enduml

```



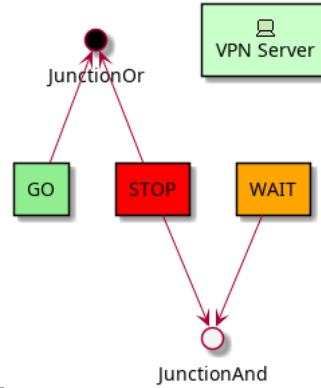
uml/reference_15-02-1_Defining-Junctions

```
@startuml
!define Junction_Or circle #black
!define Junction_And circle #whitesmoke

Junction_And JunctionAnd
Junction_Or JunctionOr

archimate #Technology "VPN Server" as vpnServerA <>technology-device>>

rectangle GO #lightgreen
rectangle STOP #red
rectangle WAIT #orange
GO -up-> JunctionOr
STOP -up-> JunctionOr
STOP -down-> JunctionAnd
WAIT -down-> JunctionAnd
@enduml
```



uml/reference_15-03-1_Example-1

```
@startuml
skinparam rectangle<<behavior>> {
    roundCorner 25
}
sprite $bProcess jar:archimate/business-process
sprite $aService jar:archimate/application-service
sprite $aComponent jar:archimate/application-component

rectangle "Handle claim" as HC <>$bProcess>><<behavior>> #Business
rectangle "Capture Information" as CI <>$bProcess>><<behavior>> #Business
rectangle "Notify\nAdditional Stakeholders" as NAS <>$bProcess>><<behavior>> #Business
rectangle "Validate" as V <>$bProcess>><<behavior>> #Business
rectangle "Investigate" as I <>$bProcess>><<behavior>> #Business
rectangle "Pay" as P <>$bProcess>><<behavior>> #Business

HC *-down- CI
HC *-down- NAS
HC *-down- V
HC *-down- I
HC *-down- P

CI -right-> NAS
NAS -right-> V
V -right-> I
I -right-> P

rectangle "Scanning" as scanning <>$aService>><<behavior>> #Application
rectangle "Customer administration" as customerAdministration <>$aService>><<behavior>> #Application
rectangle "Claims administration" as claimsAdministration <>$aService>><<behavior>> #Application
rectangle Printing <>$aService>><<behavior>> #Application
rectangle Payment <>$aService>><<behavior>> #Application

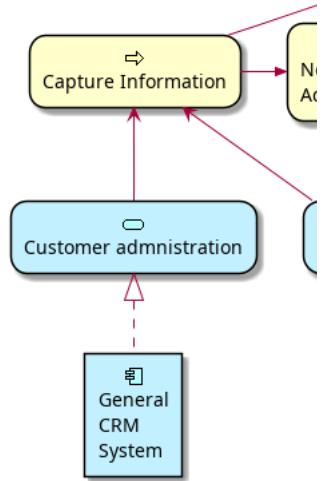
scanning -up-> CI
customerAdministration -up-> CI
claimsAdministration -up-> NAS
claimsAdministration -up-> V
claimsAdministration -up-> I
Payment -up-> P

Printing -up-> V
Printing -up-> P

rectangle "Document\nManagement\nSystem" as DMS <>$aComponent>> #Application
rectangle "General\nCRM\nSystem" as CRM <>$aComponent>> #Application
rectangle "Home & Away\nPolicy\nAdministration" as HAPA <>$aComponent>> #Application
rectangle "Home & Away\nFinancial\nAdministration" as HFPA <>$aComponent>> #Application

DMS .up.|> scanning
DMS .up.|> Printing
CRM .up.|> customerAdministration
HAPA .up.|> claimsAdministration
HFPA .up.|> Payment

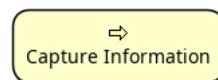
legend left
Example from the "Archisurance case study" (OpenGroup).
See
=====
<$bProcess> :business process
=====
<$aService> : application service
=====
<$aComponent> : application component
endlegend
@enduml
```



Example from the "Archisurance case study"
See
=====
<\$bProcess> :business process
=====
<\$aService> : application service
=====
<\$aComponent> : application component

uml/reference_15-04-1_Example-2

```
@startuml
skinparam roundcorner 25
rectangle "Capture Information" as CI <>archimate/business-process>> #Business
@enduml
```



uml/reference_15-05-1_List-possible-sprites

```
@startuml
listsprite
@enduml
```



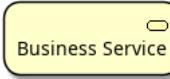
uml/reference_15-06-02-1_Archimate-elements

```
@startuml
!include <archimate/Archimate>
Motivation_Stakeholder(StakeholderElement, "Stakeholder Description")
@enduml
```



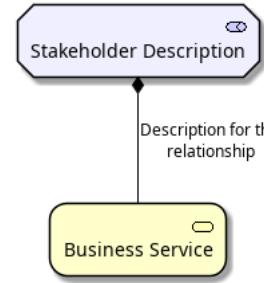
uml/reference_15-06-02-2_Archimate-elements

```
@startuml
!include <archimate/Archimate>
Business_Service(BService, "Business Service")
@enduml
```



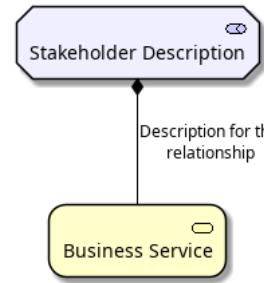
uml/reference_15-06-03-1_Archimate-relationships

```
@startuml
!include <archimate/Archimate>
Motivation_Stakeholder(StakeholderElement, "Stakeholder Description")
Business_Service(BService, "Business Service")
Rel_Composition(StakeholderElement, BService, "Description for the relationship")
@enduml
```



uml/reference_15-06-03-2_Archimate-relationships

```
@startuml
!include <archimate/Archimate>
Motivation_Stakeholder(StakeholderElement, "Stakeholder Description")
Business_Service(BService, "Business Service")
Rel_Composition_Down(StakeholderElement, BService, "Description for the relationship")
@enduml
```



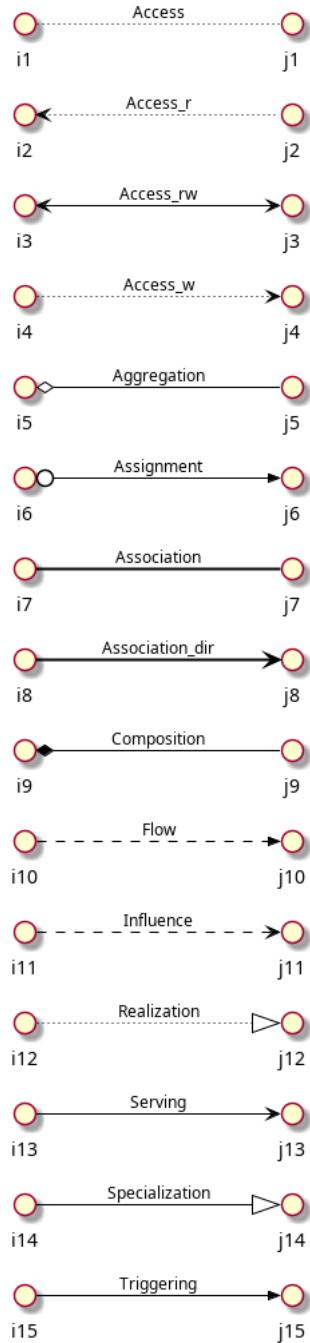
uml/reference_15-06-04-1_Appendice-Examples-of-all-Archimate-RelationTypes

```
@startuml
left to right direction
skinparam nodesep 4
!include <archimate/Archimate>
Rel_Triggering(i15, j15, Triggering)
Rel_Specialization(i14, j14, Specialization)
```

```

Rel_Serving(i13, j13, Serving)
Rel_Realization(i12, j12, Realization)
Rel_Influence(i11, j11, Influence)
Rel_Flow(i10, j10, Flow)
Rel_Composition(i9, j9, Composition)
Rel_Association_dir(i8, j8, Association_dir)
Rel_Association(i7, j7, Association)
Rel_Assignment(i6, j6, Assignment)
Rel_Aggregation(i5, j5, Aggregation)
Rel_Access_w(i4, j4, Access_w)
Rel_Access_rw(i3, j3, Access_rw)
Rel_Access_r(i2, j2, Access_r)
Rel_Access(i1, j1, Access)
@enduml

```

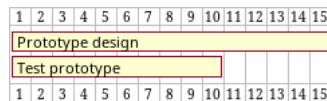


uml/reference_16-01-01-1_Declaring-tasks-Duration

```

@startgantt
[Prototype design] lasts 15 days
[Test prototype] lasts 10 days
@endgantt

```

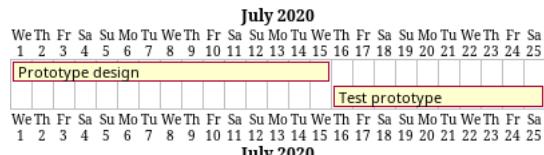


uml/reference_16-01-02-1_Declaring-tasks-Start

```

@startuml
[Prototype design] lasts 15 days
[Test prototype] lasts 10 days
Project starts 2020-07-01
[Prototype design] starts 2020-07-01
[Test prototype] starts 2020-07-16
@enduml

```

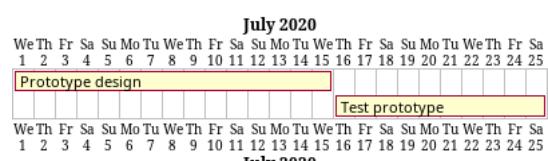


uml/reference_16-01-03-1_Declaring-tasks-End

```

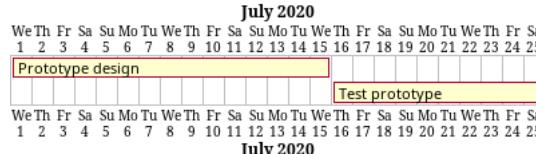
@startuml
[Prototype design] lasts 15 days
[Test prototype] lasts 10 days
Project starts 2020-07-01
[Prototype design] ends 2020-07-15
[Test prototype] ends 2020-07-25
@enduml

```

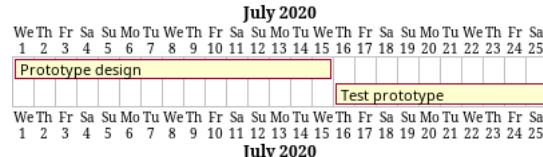


uml/reference_16-01-04-1_StartEnd

```
@startuml
Project starts 2020-07-01
[Prototype design] starts 2020-07-01
[Test prototype] starts 2020-07-16
[Prototype design] ends 2020-07-15
[Test prototype] ends 2020-07-25
@enduml
```

**uml/reference_16-02-1_One-line-declaration**

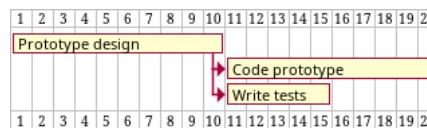
```
@startuml
Project starts 2020-07-01
[Prototype design] starts 2020-07-01 and ends 2020-07-15
[Test prototype] starts 2020-07-16 and lasts 10 days
@enduml
```

**uml/reference_16-03-1_Adding-constraints**

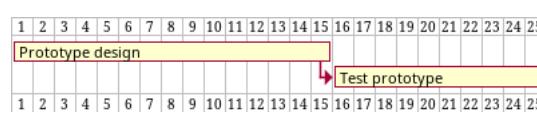
```
@startgantt
[Prototype design] lasts 15 days
[Test prototype] lasts 10 days
[Test prototype] starts at [Prototype design]'s end
@endgantt
```

**uml/reference_16-03-2_Adding-constraints**

```
@startgantt
[Prototype design] lasts 10 days
[Code prototype] lasts 10 days
[Write tests] lasts 5 days
[Code prototype] starts at [Prototype design]'s end
[Write tests] starts at [Code prototype]'s start
@endgantt
```

**uml/reference_16-04-1_Short-names**

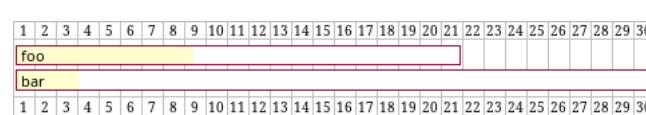
```
@startgantt
[Prototype design] as [D] lasts 15 days
[Test prototype] as [T] lasts 10 days
[T] starts at [D]'s end
@endgantt
```

**uml/reference_16-05-1_Customize-colors**

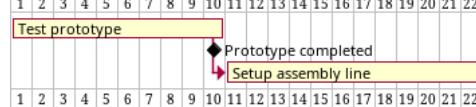
```
@startgantt
[Prototype design] lasts 13 days
[Test prototype] lasts 4 days
[Test prototype] starts at [Prototype design]'s end
[Prototype design] is colored in Fuchsia/FireBrick
[Test prototype] is colored in GreenYellow/Green
@endgantt
```

**uml/reference_16-06-1_Completion-status**

```
@startgantt
[foo] lasts 21 days
[foo] is 40% completed
[bar] lasts 30 days and is 10% complete
@endgantt
```

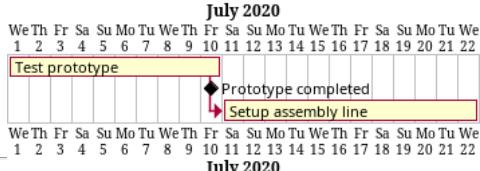
**uml/reference_16-07-01-1_Milestone-Relative-milestone**

```
@startgantt
[Test prototype] lasts 10 days
[Prototype completed] happens at [Test prototype]'s end
[Setup assembly line] lasts 12 days
[Setup assembly line] starts at [Test prototype]'s end
@endgantt
```

**uml/reference_16-07-02-1_Milestone-Absolute-milestone**

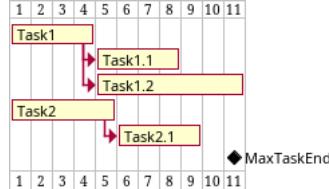
```
@startgantt
Project starts 2020-07-01
[Test prototype] lasts 10 days
[Prototype completed] happens 2020-07-10
```

```
[Setup assembly line] lasts 12 days
[Setup assembly line] starts at [Test prototype]'s end
@endgantt
```



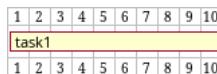
uml/reference_16-07-03-1_Milestone-of-maximum-end-of-tasks

```
@startgantt
[Task1] lasts 4 days
then [Task1.1] lasts 4 days
[Task1.2] starts at [Task1]'s end and lasts 7 days
[Task2] lasts 5 days
then [Task2.1] lasts 4 days
[MaxTaskEnd] happens at [Task1.1]'s end
[MaxTaskEnd] happens at [Task1.2]'s end
[MaxTaskEnd] happens at [Task2.1]'s end
@endgantt
```



uml/reference_16-08-1_Hyperlinks

```
@startgantt
[task1] lasts 10 days
[task1] links to [[http://plantuml.com]]
@endgantt
```



uml/reference_16-09-1_Calendar

```
@startgantt
Project starts the 20th of september 2017
[Prototype design] as [TASK1] lasts 13 days
[TASK1] is colored in Lavender/LightBlue
@endgantt
```



uml/reference_16-10-1_Coloring-days

```
@startgantt
Project starts the 2020/09/01
2020/09/07 is colored in salmon
2020/09/13 to 2020/09/16 are colored in lightblue
[Prototype design] as [TASK1] lasts 22 days
[TASK1] is colored in Lavender/LightBlue
[Prototype completed] happens at [TASK1]'s end
@endgantt
```



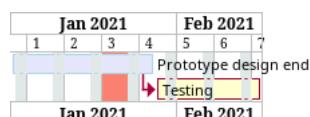
uml/reference_16-11-01-1_Changing-scale-Daily

```
@startuml
saturday are closed
sunday are closed
Project starts the 1st of january 2021
[Prototype design end] as [TASK1] lasts 19 days
[TASK1] is colored in Lavender/LightBlue
[Testing] lasts 14 days
[TASK1]->[Testing]
2021-01-18 to 2021-01-22 are named [End's committee]
2021-01-18 to 2021-01-22 are colored in salmon
@enduml
```



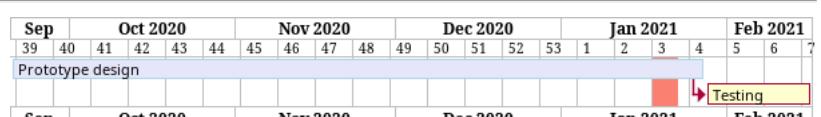
uml/reference_16-11-02-1_Changing-scale-Weekly

```
@startuml
printscale weekly
saturday are closed
sunday are closed
Project starts the 1st of january 2021
[Prototype design end] as [TASK1] lasts 19 days
[TASK1] is colored in Lavender/LightBlue
[Testing] lasts 14 days
[TASK1]->[Testing]
2021-01-18 to 2021-01-22 are named [End's committee]
2021-01-18 to 2021-01-22 are colored in salmon
@enduml
```



uml/reference_16-11-02-2_Changing-scale-Weekly

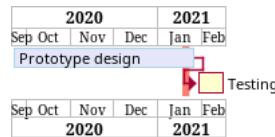
```
@startgantt
printscale weekly
Project starts the 20th of september 2020
[Prototype design] as [TASK1] lasts 130 days
[TASK1] is colored in Lavender/LightBlue
```



```
[Testing] lasts 20 days
[TASK1]->[Testing]
2021-01-18 to 2021-01-22 are named [End's committee]
2021-01-18 to 2021-01-22 are colored in salmon
@endgantt
```

uml/reference_16-11-03-1_Changing-scale-Monthly

```
@startgantt
projectscale monthly
Project starts the 20th of september 2020
[Prototype design] as [TASK1] lasts 130 days
[TASK1] is colored in Lavender/LightBlue
[Testing] lasts 20 days
[TASK1]->[Testing]
2021-01-18 to 2021-01-22 are named [End's committee]
2021-01-18 to 2021-01-22 are colored in salmon
@endgantt
```



uml/reference_16-12-1_Close-day

```
@startgantt
project starts the 2018/04/09
saturday are closed
sunday are closed
2018/05/01 is closed
2018/04/17 to 2018/04/19 is closed
[Prototype design] lasts 14 days
[Test prototype] lasts 4 days
[Test prototype] starts at [Prototype design]'s end
[Prototype design] is colored in Fuchsia/FireBrick
[Test prototype] is colored in GreenYellow/Green
@endgantt
```

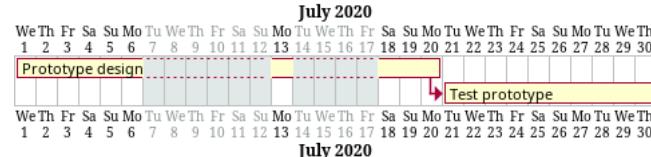


April 2018

May 2018

uml/reference_16-12-2_Close-day

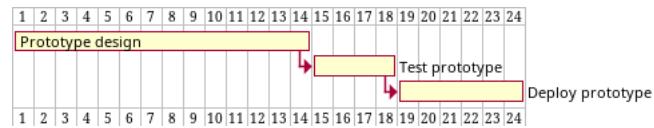
```
@startgantt
2020-07-07 to 2020-07-17 is closed
2020-07-13 is open
Project starts the 2020-07-01
[Prototype design] lasts 10 days
Then [Test prototype] lasts 10 days
@endgantt
```



July 2020

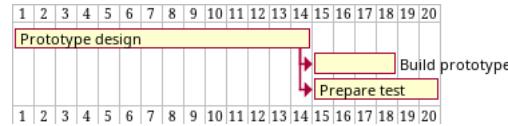
uml/reference_16-13-1_Simplified-task-succession

```
@startgantt
[Prototype design] lasts 14 days
then [Test prototype] lasts 4 days
then [Deploy prototype] lasts 6 days
@endgantt
```



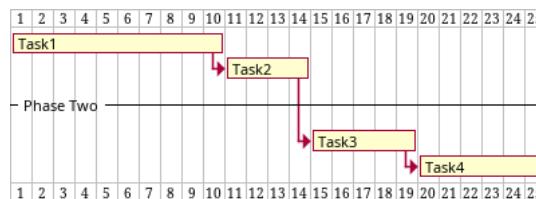
uml/reference_16-13-2_Simplified-task-succession

```
@startgantt
[Prototype design] lasts 14 days
[Build prototype] lasts 4 days
[Prepare test] lasts 6 days
[Prototype design] -> [Build prototype]
[Prototype design] -> [Prepare test]
@endgantt
```



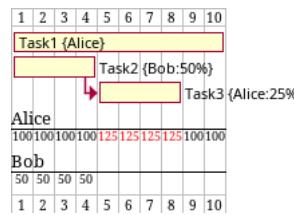
uml/reference_16-14-1_Separator

```
@startgantt
[Task1] lasts 10 days
then [Task2] lasts 4 days
-- Phase Two --
then [Task3] lasts 5 days
then [Task4] lasts 6 days
@endgantt
```



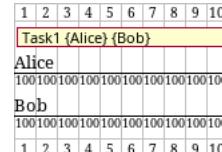
uml/reference_16-15-1_Working-with-resources

```
@startgantt
[Task1] on {Alice} lasts 10 days
[Task2] on {Bob:50%} lasts 2 days
then [Task3] on {Alice:25%} lasts 1 days
@endgantt
```



uml/reference_16-15-2_Working-with-resources

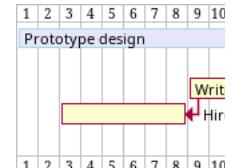
```
@startgantt
[Task1] on {Alice} {Bob} lasts 20 days
@endgantt
```

**uml/reference_16-15-3_Working-with-resources**

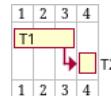
```
@startgantt
project starts on 2020-06-19
[Task1] on {Alice} lasts 10 days
{Alice} is off on 2020-06-24 to 2020-06-26
@endgantt
```

**uml/reference_16-16-1_Complex-example**

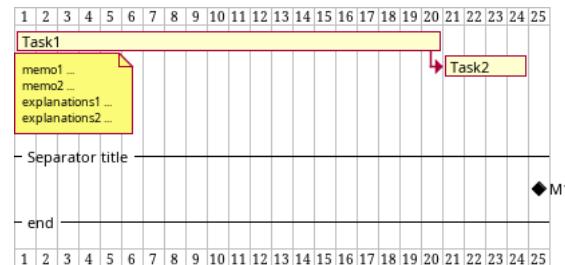
```
@startgantt
[Prototype design] lasts 13 days and is colored in Lavender/LightBlue
[Test prototype] lasts 9 days and is colored in Coral/Green and starts 3 days after [Prototype design]'s end
[Write tests] lasts 5 days and ends at [Prototype design]'s end
[Hire tests writers] lasts 6 days and ends at [Write tests]'s start
[Init and write tests report] is colored in Coral/Green
[Init and write tests report] starts 1 day before [Test prototype]'s start and ends at [Test prototype]'s end
@endgantt
```

**uml/reference_16-17-1_Comments**

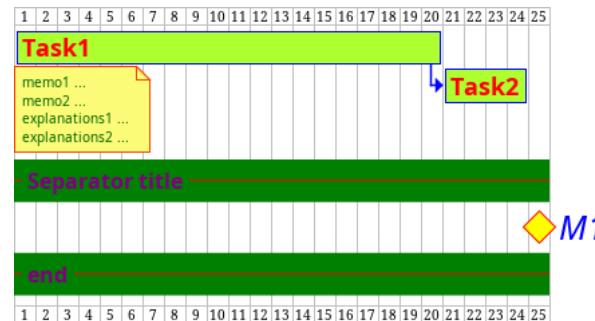
```
@startgantt
' This is a comment
[T1] lasts 3 days
' this comment
is on several lines '
[T2] starts at [T1]'s end and lasts 1 day
@endgantt
```

**uml/reference_16-18-01-1_Without-style**

```
@startuml
[Task1] lasts 20 days
note bottom
memo1 ...
memo2 ...
explanations1 ...
explanations2 ...
end note
[Task2] lasts 4 days
[Task1] -> [Task2]
-- Separator title --
[M1] happens on 5 days after [Task1]'s end
-- end --
@enduml
```

**uml/reference_16-18-02-1_With-style**

```
@startuml
<style>
ganttDiagram {
task {
FontName Helvetica
FontColor red
FontSize 18
PlantUML Language Reference Guide (1.2021.2)
268 / 415
16.18
Using style
16
GANTT DIAGRAM
FontStyle bold
BackGroundColor GreenYellow
LineColor blue
}
milestone {
FontColor blue
FontSize 25
FontStyle italic
BackGroundColor yellow
LineColor red
}
note {
FontColor DarkGreen
FontSize 10
LineColor OrangeRed
}
arrow {
FontName Helvetica
FontColor red
FontSize 18
}
```



```

FontStyle bold
BackGroundColor GreenYellow
LineColor blue
}
separator {
LineColor red
BackGroundColor green
FontSize 16
FontStyle bold
FontColor purple
}
}
</style>
[Task1] lasts 20 days
note bottom
memo1 ...
memo2 ...
explanations1 ...
explanations2 ...
end note
[Task2] lasts 4 days
[Task1] -> [Task2]
-- Separator title --
[M1] happens on 5 days after [Task1]'s end
-- end --
@enduml

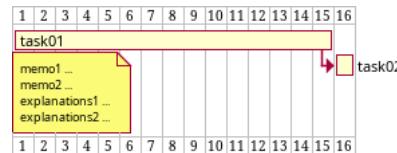
```

uml/reference_16-19-1_Add-notes

```

@startgantt
[task01] lasts 15 days
note bottom
memo1 ...
memo2 ...
explanations1 ...
explanations2 ...
end note
[task01] -> [task02]
@endgantt

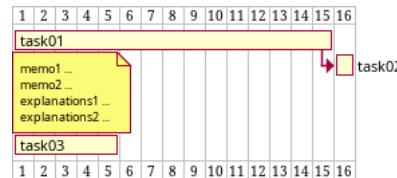
```

**uml/reference_16-19-2_Add-notes**

```

@startgantt
[task01] lasts 15 days
note bottom
memo1 ...
memo2 ...
explanations1 ...
explanations2 ...
end note
[task01] -> [task02]
[task03] lasts 5 days
@endgantt

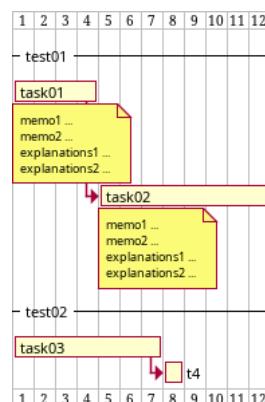
```

**uml/reference_16-19-3_Add-notes**

```

@startgantt
-- test01 --
[task01] lasts 4 days
note bottom
'note left
memo1 ...
memo2 ...
explanations1 ...
explanations2 ...
end note
[task02] lasts 8 days
[task01] -> [task02]
note bottom
'note left
memo1 ...
memo2 ...
explanations1 ...
explanations2 ...
end note
-- test02 --
[task03] as [t3] lasts 7 days
[t3] -> [t4]
@endgantt

```

**uml/reference_16-19-4_Add-notes**

```

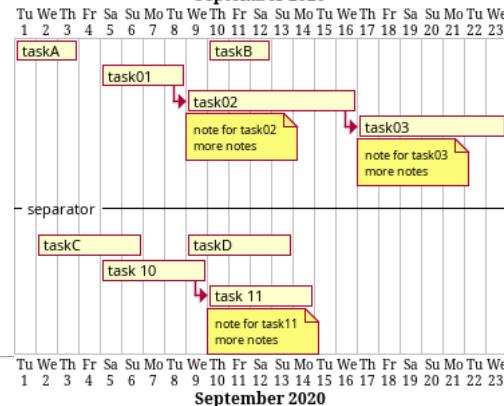
@startgantt
Project starts 2020-09-01
[taskA] starts 2020-09-01 and lasts 3 days
[taskB] starts 2020-09-10 and lasts 3 days
[taskB] displays on same row as [taskA]
[task01] starts 2020-09-05 and lasts 4 days
then [task02] lasts 8 days
note bottom
note for task02
more notes

```

```

end note
then [task03] lasts 7 days
note bottom
note for task03
more notes
end note
-- separator --
[taskC] starts 2020-09-02 and lasts 5 days
[taskD] starts 2020-09-09 and lasts 5 days
[taskD] displays on same row as [taskC]
[task 10] starts 2020-09-05 and lasts 5 days
then [task 11] lasts 5 days
note bottom
note for task11
more notes
end note
@endgantt

```

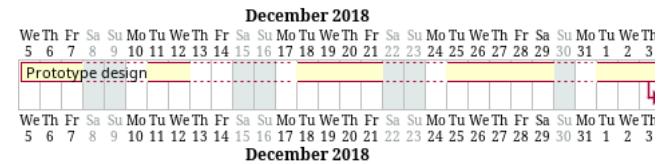


uml/reference_16-20-1_Pause-tasks

```

@startgantt
Project starts the 5th of december 2018
saturday are closed
sunday are closed
2018/12/29 is opened
[Prototype design] lasts 17 days
[Prototype design] pauses on 2018/12/13
[Prototype design] pauses on 2018/12/14
[Prototype design] pauses on monday
[Test prototype] starts at [Prototype design]'s end and lasts 2 weeks
@endgantt

```

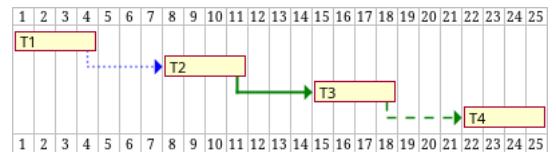


uml/reference_16-21-1_Change-link-colors

```

@startgantt
[T1] lasts 4 days
[T2] lasts 4 days and starts 3 days after [T1]'s end with blue dotted link
[T3] lasts 4 days and starts 3 days after [T2]'s end with green bold link
[T4] lasts 4 days and starts 3 days after [T3]'s end with green dashed link
@endgantt

```

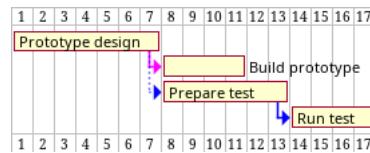


uml/reference_16-21-2_Change-link-colors

```

@startuml
<style>
ganttDiagram {
arrow {
    LineColor blue
}
}
</style>
[Prototype design] lasts 7 days
[Build prototype] lasts 4 days
[Prepare test] lasts 6 days
[Prototype design] -[#FF00FF]-> [Build prototype]
[Prototype design] -[dotted]-> [Prepare test]
Then [Run test] lasts 4 days
@enduml

```



uml/reference_16-22-1_Tasks-or-Milestones-on-the-same-line

```

@startgantt
[Prototype design] lasts 13 days
[Test prototype] lasts 4 days and 1 week
[Test prototype] starts 1 week and 2 days after [Prototype design]'s end
[Test prototype] displays on same row as [Prototype design]
[r1] happens on 5 days after [Prototype design]'s end
[r2] happens on 5 days after [r1]'s end
[r3] happens on 5 days after [r2]'s end
[r2] displays on same row as [r1]
[r3] displays on same row as [r1]
@endgantt

```



uml/reference_16-23-1_Highlight-today

```

@startgantt
Project starts the 20th of september 2018
sunday are close
2018/09/21 to 2018/09/23 are colored in salmon
2018/09/21 to 2018/09/30 are named [Vacation in the Bahamas]
today is 30 days after start and is colored in #AAF
[foo] happens 40 days after start
[Dummy] lasts 10 days and starts 10 days after start
@endgantt

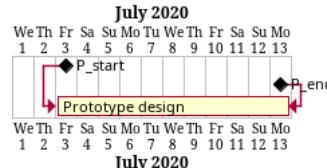
```



Test plantuml-syntax

uml/reference_16-24-1_Task-between-two-milestones

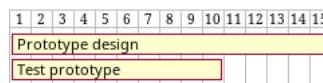
```
@startgantt
project starts on 2020-07-01
[P_start] happens 2020-07-03
[P_end] happens 2020-07-13
[Prototype design] occurs from [P_start] to [P_end]
@endgantt
```

**uml/reference_16-26-1_Add-title-header-footer-caption-or-legend-on-gantt-diagram**

```
@startuml
header some header
footer some footer
title My title
[Prototype design] lasts 13 days
legend
The legend
end legend
caption This is caption
@enduml
```

**uml/reference_16-27-1_Removing-Foot-Boxes**

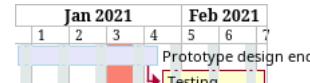
```
@startgantt
hide footbox
title Foot Box removed
[Prototype design] lasts 15 days
[Test prototype] lasts 10 days
@endgantt
```

Foot Box removed**uml/reference_16-27-2_Removing-Foot-Boxes**

```
@startgantt
Project starts the 20th of september 2017
[Prototype design] as [TASK1] lasts 13 days
[TASK1] is colored in Lavender/LightBlue
hide footbox
@endgantt
```

**uml/reference_16-27-3_Removing-Foot-Boxes**

```
@startgantt
hide footbox
printscale weekly
saturday are closed
sunday are closed
Project starts the 1st of january 2021
[Prototype design end] as [TASK1] lasts 19 days
[TASK1] is colored in Lavender/LightBlue
[Testing] lasts 14 days
[TASK1]->[Testing]
2021-01-18 to 2021-01-22 are named [End's committee]
2021-01-18 to 2021-01-22 are colored in salmon
@endgantt
```

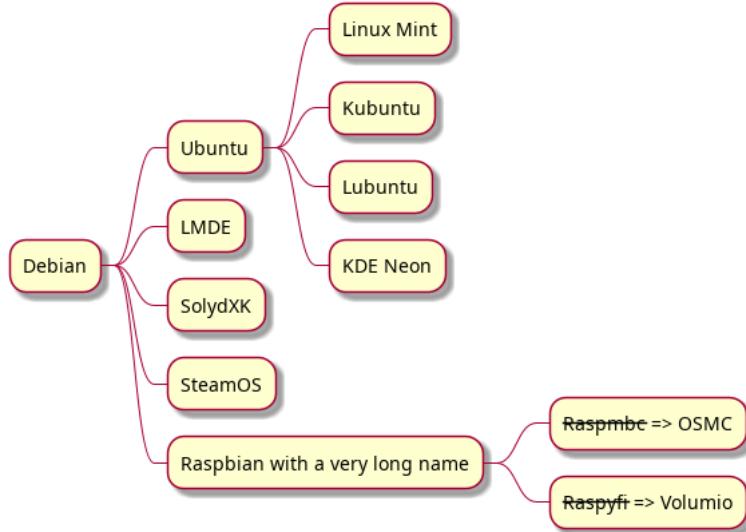
**uml/reference_16-27-4_Removing-Foot-Boxes**

```
@startgantt
hide footbox
projectscale monthly
Project starts the 20th of september 2020
[Prototype design] as [TASK1] lasts 130 days
[TASK1] is colored in Lavender/LightBlue
[Testing] lasts 20 days
[TASK1]->[Testing]
2021-01-18 to 2021-01-22 are named [End's committee]
2021-01-18 to 2021-01-22 are colored in salmon
@endgantt
```

**uml/reference_17-01-1_OrgMode-syntax**

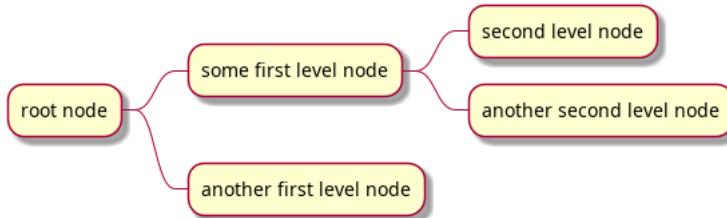
```
@startmindmap
* Debian
** Ubuntu
*** Linux Mint
*** Kubuntu
*** Lubuntu
*** KDE Neon
** LMDE
** SolydXK
** SteamOS
** Raspbian with a very long name
*** <s>Raspmbc</s> => OSMC
```

```
*** <s>Raspyfi</s> => Volumio
@endmindmap
```



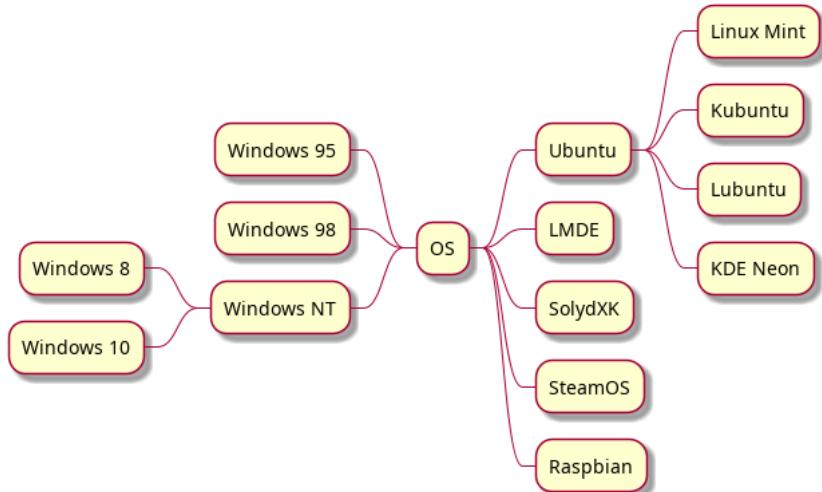
uml/reference_17-02-1_Markdown-syntax

```
@startmindmap
* root node
  * some first level node
    * second level node
      * another second level node
    * another first level node
@endmindmap
```



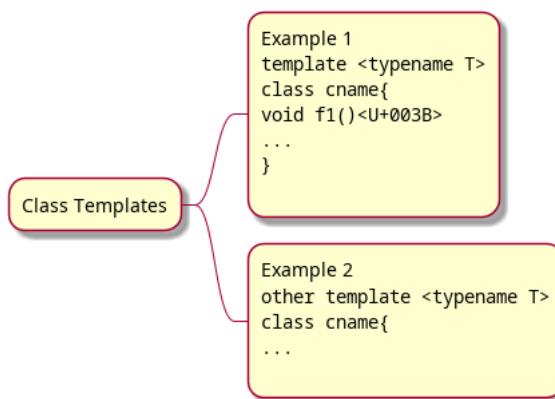
uml/reference_17-03-1_Arithmetic-notation

```
@startmindmap
+ OS
++ Ubuntu
+++ Linux Mint
+++ Kubuntu
+++ Lubuntu
+++ KDE Neon
++ LMDE
++ SolydXK
++ SteamOS
++ Raspbian
-- Windows 95
-- Windows 98
-- Windows NT
--- Windows 8
--- Windows 10
@endmindmap
```



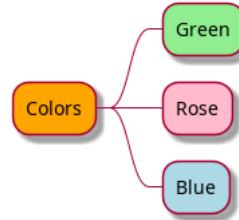
uml/reference_17-04-1_Multilines

```
@startmindmap
* Class Templates
** Example 1
<code>
template <typename T>
class cname{
void f1()<U+003B>
...
}
</code>
;
** Example 2
<code>
other template <typename T>
class cname{
...
</code>
;
@endmindmap
```

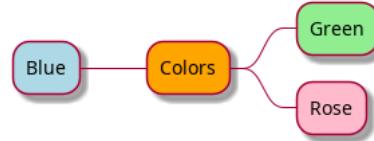


uml/reference_17-05-01-1_With-inline-color

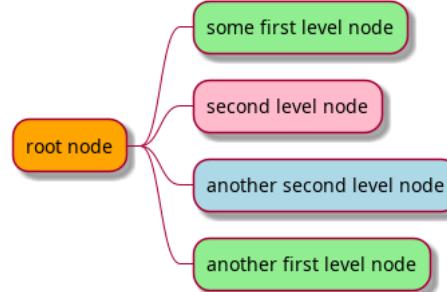
```
@startmindmap
*[#Orange] Colors
**[#lightgreen] Green
**[#FFBBCC] Rose
**[#lightblue] Blue
@endmindmap
```

**uml/reference_17-05-01-2_With-inline-color**

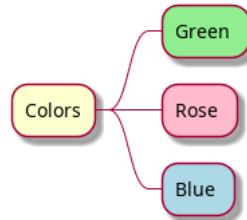
```
@startmindmap
+[#Orange] Colors
++[#lightgreen] Green
++[#FFBBCC] Rose
--[#lightblue] Blue
@endmindmap
```

**uml/reference_17-05-01-3_With-inline-color**

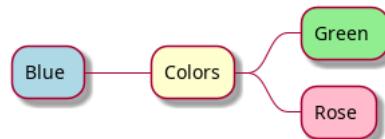
```
@startmindmap
*[#Orange] root node
*[#lightgreen] some first level node
*[#FFBBCC] second level node
*[#lightblue] another second level node
*[#lightgreen] another first level node
@endmindmap
```

**uml/reference_17-05-02-1_With-style-color**

```
@startmindmap
<style>
mindmapDiagram {
    .green {
        backgroundColor lightgreen
    }
    .rose {
        backgroundColor #FFBBCC
    }
    .your_style_name {
        backgroundColor lightblue
    }
}
</style>
* Colors
** Green <>green>>
** Rose <>rose>>
** Blue <>your_style_name>>
@endmindmap
```

**uml/reference_17-05-02-2_With-style-color**

```
@startmindmap
<style>
mindmapDiagram {
    .green {
        backgroundColor lightgreen
    }
    .rose {
        backgroundColor #FFBBCC
    }
    .your_style_name {
        backgroundColor lightblue
    }
}
</style>
+ Colors
++ Green <>green>>
++ Rose <>rose>>
-- Blue <>your_style_name>>
@endmindmap
```

**uml/reference_17-05-02-3_With-style-color**

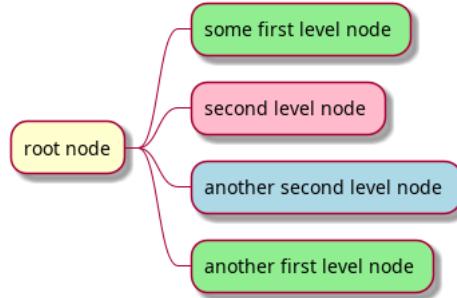
```
@startmindmap
<style>
mindmapDiagram {
    .green {

```

```

    BackgroundColor lightgreen
}
.rose {
    BackgroundColor #FFBBCC
}
.your_style_name {
    BackgroundColor lightblue
}
}
</style>
* root node
* some first level node <>green>>
* second level node <>rose>>
* another second level node <>your_style_name>>
* another first level node <>green>>
@endmindmap

```

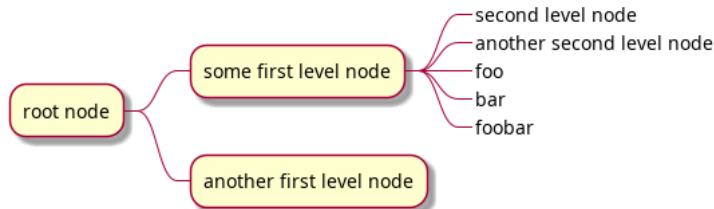


uml/reference_17-06-1_Removing-box

```

@startmindmap
* root node
** some first level node
*** _ second level node
***_ another second level node
***_ foo
***_ bar
***_ foobar
** another first level node
@endmindmap

```

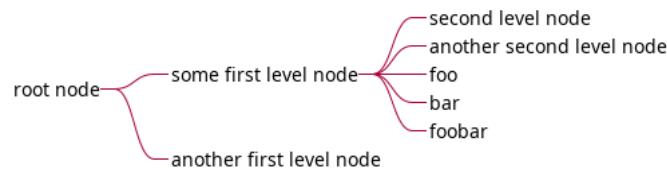


uml/reference_17-06-2_Removing-box

```

@startmindmap
* _ root node
** some first level node
*** _ second level node
***_ another second level node
***_ foo
***_ bar
***_ foobar
** _ another first level node
@endmindmap

```

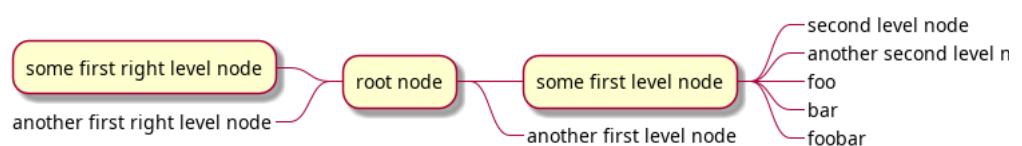


uml/reference_17-06-3_Removing-box

```

@startmindmap
+ root node
++ some first level node
+++ _ second level node
+++_ another second level node
+++_ foo
+++_ bar
+++_ foobar
++ _ another first level node
-- some first right level node
--_ another first right level node
@endmindmap

```

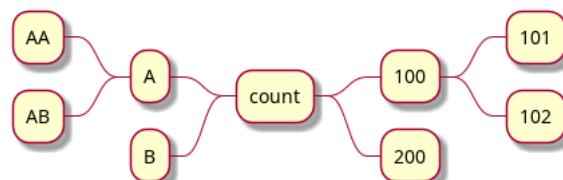


uml/reference_17-07-1_Changing-diagram-direction

```

@startmindmap
* count
** 100
*** 101
*** 102
** 200
left side
** A
*** AA
*** AB
** B
@endmindmap

```



uml/reference_17-08-1_Complete-example

```

@startmindmap
caption figure 1
title My super title

* <&flag>Debian
** <&globe>Ubuntu
*** Linux Mint
*** Kubuntu
*** Lubuntu
*** KDE Neon
** <&graph>LMDE
** <&pulse>SolydXK

```

```
** <&people>SteamOS
** <&star>Raspbian with a very long name
*** <s>Raspmbc</s> => OSMC
*** <s>Raspyfi</s> => Volumio
header
My super header
endheader
center footer My super footer
legend right
Short
legend
endlegend
@endmindmap
```

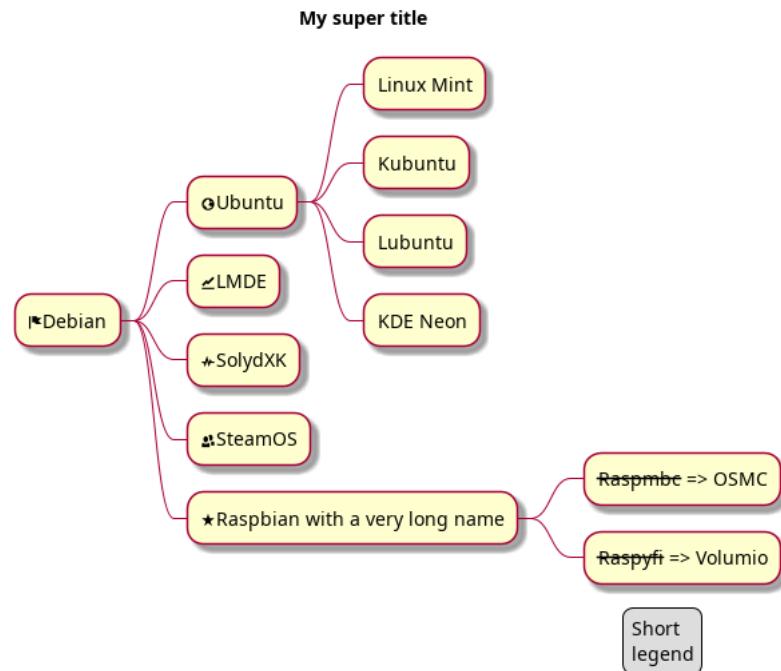
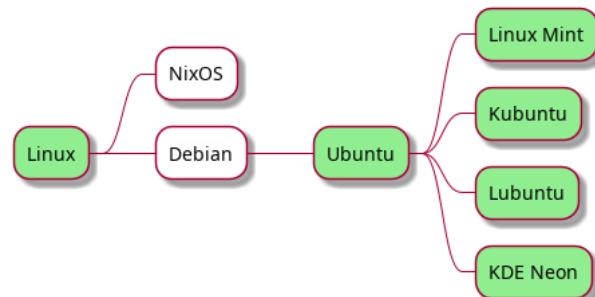


figure 1

My super footer

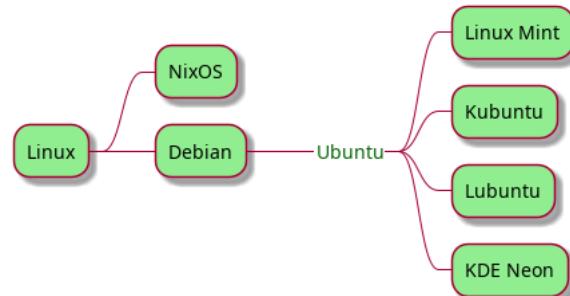
uml/reference_17-09-01-1_Changing-style-node-depth

```
@startmindmap
<style>
mindmapDiagram {
    node {
        BackgroundColor lightGreen
    }
    :depth(1) {
        BackGroundColor white
    }
}
</style>
* Linux
** NixOS
** Debian
*** Ubuntu
**** Linux Mint
**** Kubuntu
**** Lubuntu
**** KDE Neon
@endmindmap
```



uml/reference_17-09-02-1_Changing-style-boxless

```
@startmindmap
<style>
mindmapDiagram {
    node {
        BackgroundColor lightGreen
    }
    boxless {
        FontColor darkgreen
    }
}
</style>
* Linux
** NixOS
** Debian
*** Ubuntu
**** Linux Mint
**** Kubuntu
**** Lubuntu
**** KDE Neon
@endmindmap
```



uml/reference_17-10-1_Word-Wrap

```
@startmindmap
<style>
node {
    Padding 12
    Margin 3
    HorizontalAlignment center
    LineColor blue
}
```

```

LineThickness 3.0
BackgroundColor gold
RoundCorner 40
MaximumWidth 100
}
rootNode {
  LineStyle 8.0;3.0
  LineColor red
  BackgroundColor white
  LineThickness 1.0
  RoundCorner 0
  Shadowing 0.0
}
leafNode {
  LineColor gold
  RoundCorner 0
  Padding 3
}
arrow {
  LineStyle 4
  LineThickness 0.5
  LineColor green
}
</style>
* Hi =)
** sometimes i have node in which i want to write a long text
*** this results in really huge diagram
**** of course, i can explicit split with a new line
**** but it could be cool if PlantUML was able to split long lines, maybe with an option
@endmindmap

```

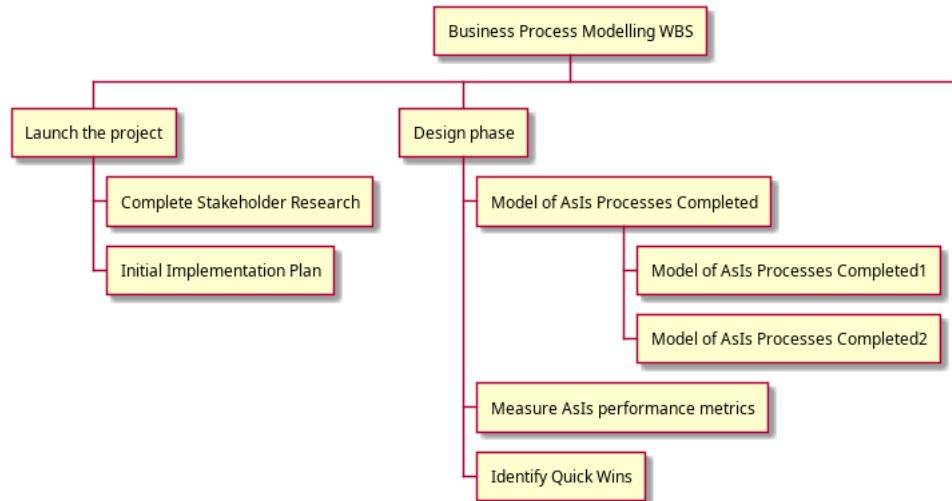


uml/reference_18-01-1_OrgMode-syntax

```

@startwbs
* Business Process Modelling WBS
** Launch the project
*** Complete Stakeholder Research
*** Initial Implementation Plan
** Design phase
*** Model of AsIs Processes Completed
**** Model of AsIs Processes Completed1
**** Model of AsIs Processes Completed2
*** Measure AsIs performance metrics
*** Identify Quick Wins
** Complete innovate phase
@endwbs

```

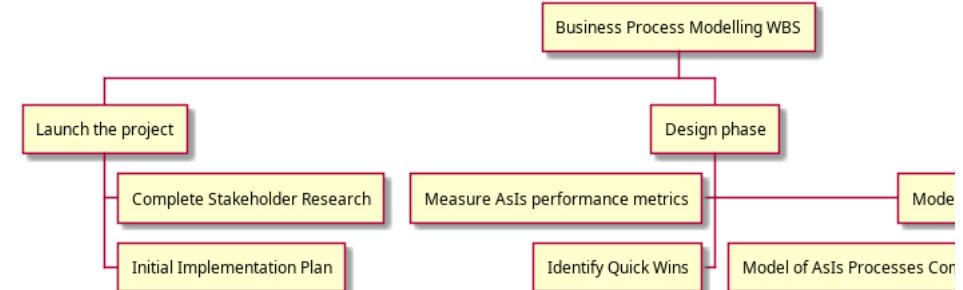


uml/reference_18-02-1_Change-direction

```

@startwbs
* Business Process Modelling WBS
** Launch the project
*** Complete Stakeholder Research
*** Initial Implementation Plan
** Design phase
*** Model of AsIs Processes Completed
****< Model of AsIs Processes Completed1
****> Model of AsIs Processes Completed2
***< Measure AsIs performance metrics
***< Identify Quick Wins
@endwbs

```

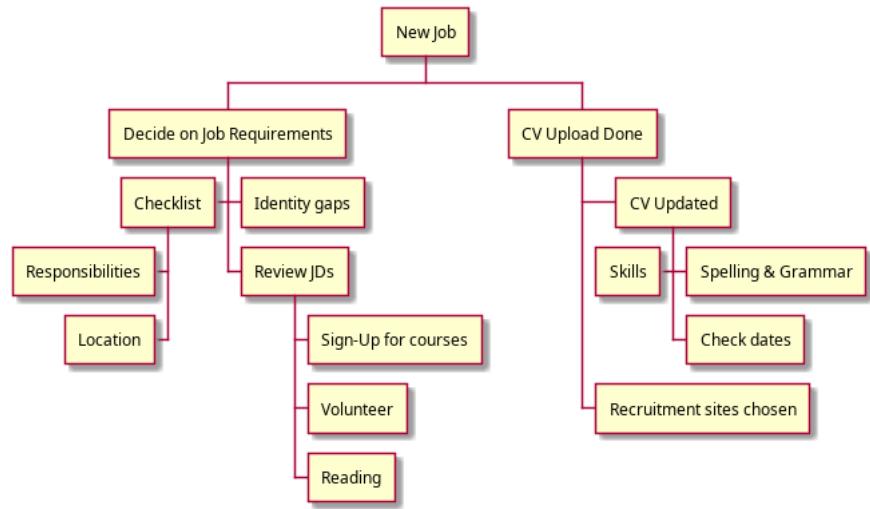


uml/reference_18-03-1_Arithmetic-notation

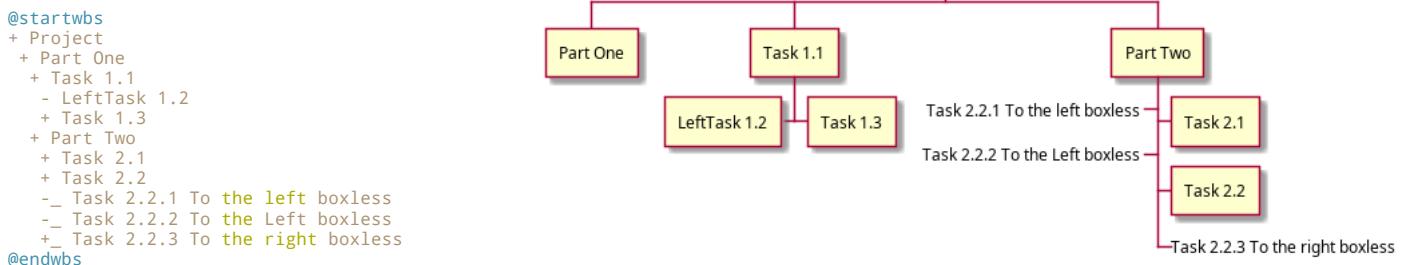
```

@startwbs
+ New Job
++ Decide on Job Requirements
+++ Identity gaps
+++ Review JDs
++++ Sign-Up for courses
++++ Volunteer
++++ Reading
++ Checklist
+++ Responsibilities
+++ Location
++ CV Upload Done
+++ CV Updated
++++ Spelling & Grammar
++++ Check dates
---- Skills
+++ Recruitment sites chosen
@endwbs

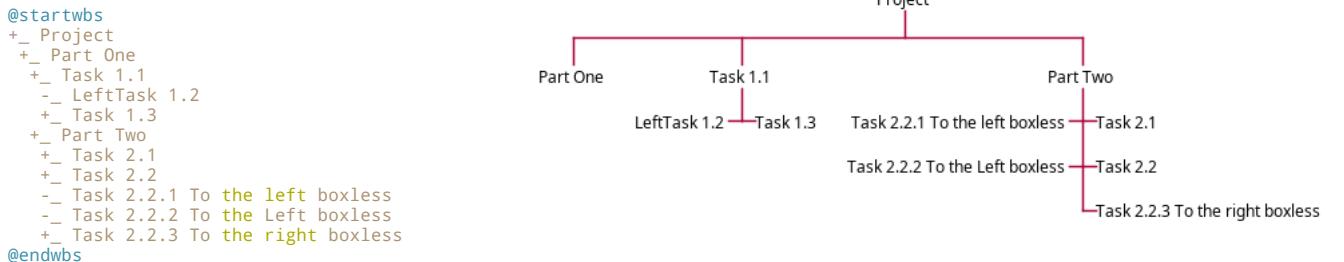
```



uml/reference_18-04-02-1_Several-boxless-node



uml/reference_18-04-03-1_All-boxless-node



uml/reference_18-04-05-1_Several-boxless-node

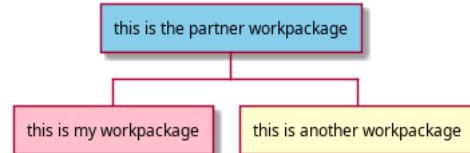


uml/reference_18-04-06-1_All-boxless-node

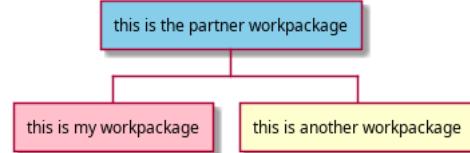


uml/reference_18-05-1_Colors

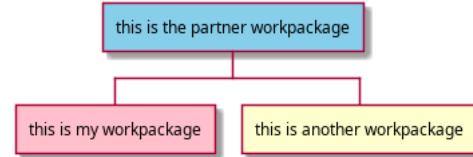
```
@startwbs
*[#SkyBlue] this is the partner workpackage
**[#pink] this is my workpackage
** this is another workpackage
@endwbs
```

**uml/reference_18-05-2_Colors**

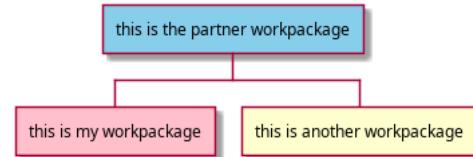
```
@startwbs
+[#SkyBlue] this is the partner workpackage
++[#pink] this is my workpackage
++ this is another workpackage
@endwbs
```

**uml/reference_18-05-3_Colors**

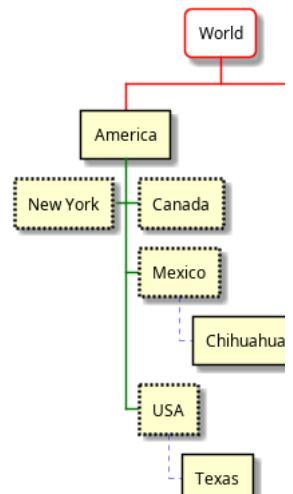
```
@startwbs
<style>
wbsDiagram {
    .pink {
        BackgroundColor pink
    }
    .your_style_name {
        BackgroundColor SkyBlue
    }
}
</style>
* this is the partner workpackage <>your_style_name>>
** this is my workpackage <>pink>>
** this is another workpackage
@endwbs
```

**uml/reference_18-05-4_Colors**

```
@startwbs
<style>
wbsDiagram {
    .pink {
        BackgroundColor pink
    }
    .your_style_name {
        BackgroundColor SkyBlue
    }
}
</style>
+ this is the partner workpackage <>your_style_name>>
++ this is my workpackage <>pink>>
++ this is another workpackage
@endwbs
```

**uml/reference_18-06-1_Using-style**

```
@startwbs
<style>
wbsDiagram {
    // all lines (meaning connector and borders, there are no other lines in WBS) are black by default
    Linecolor black
    arrow {
        // note that connector are actually "arrow" even if they don't look like as arrow
        // This is to be consistent with other UML diagrams. Not 100% sure that it's a good idea
        // So now connector are green
        LineColor green
    }
    :depth(0) {
        // will target root node
        BackgroundColor White
        RoundCorner 10
        LineColor red
        // Because we are targeting depth(0) for everything, border and connector for level 0 will be red
    }
    arrow {
        :depth(2) {
            // Targetting only connector between Mexico-Chihuahua and USA-Texas
            LineColor blue
            LineStyle 4
            LineThickness .5
        }
    }
    node {
        :depth(2) {
            LineStyle 2
            LineThickness 2.5
        }
    }
    boxless {
        // will target boxless node with '_'
        FontColor darkgreen
    }
}
```



```
}
</style>
* World
** America
*** Canada
*** Mexico
**** Chihuahua
*** USA
**** Texas
** Europe
***_ England
***_ Germany
***_ Spain
@endwbs
```

uml/reference_18-07-1_Word-Wrap

```
@startwbs
<style>
node {
    Padding 12
    Margin 3
    HorizontalAlignment center
    LineColor blue
    LineThickness 3.0
    BackgroundColor gold
    RoundCorner 40
    MaximumWidth 100
}

rootNode {
    LineStyle 8.0;3.0
    LineColor red
    BackgroundColor white
    LineThickness 1.0
    RoundCorner 0
    Shadowing 0.0
}
leafNode {
    LineColor gold
    RoundCorner 0
    Padding 3
}
arrow {
    LineStyle 4
    LineThickness 0.5
    LineColor green
}
</style>
* Hi =)
** sometimes i have node in which i want to write a long text
*** this results in really huge diagram
**** of course, i can explicit split with a\nnew line
***** but it could be cool if PlantUML was able to split long lines, maybe with an option who specify the maximum width of a node
@endwbs
```

uml/reference_19-01-1_Standalone-diagram

```
@startmath
f(t)=(a_0)/2 + sum_(n=1)^oo a_n cos((n\pi t)/L) + sum_(n=1)^oo b_n \ sin((n\pi t)/L)
@endmath
```

$$f(t) = \frac{a_0}{2} + \sum_{n=1}^{\infty} a_n \cos\left(\frac{n\pi t}{L}\right) + \sum_{n=1}^{\infty} b_n \sin\left(\frac{n\pi t}{L}\right)$$

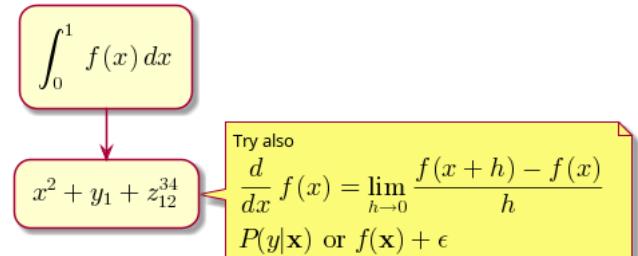
uml/reference_19-01-2_Standalone-diagram

```
@startlatex
\sum_{i=0}^{n-1} (a_i + b_i^2)
@endlatex
```

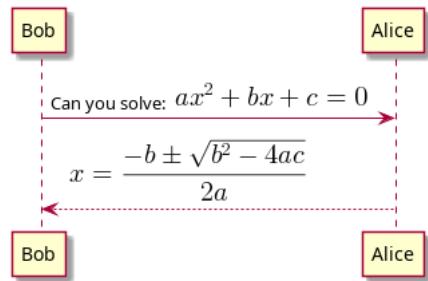
$$\sum_{i=0}^{n-1} (a_i + b_i^2)$$

uml/reference_19-1_Maths

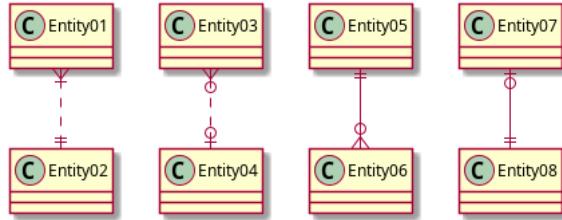
```
@startuml
:<math>\int_0^1 f(x) dx</math>;
:<math>x^2 + y_1 + z_{12}^{34}</math>;
note right
    Try also
    <math>d/dx f(x) = \lim_{h \rightarrow 0} (f(x+h) - f(x))/h</math>
    <math>P(y|\mathbf{x}) \rightarrow f(\mathbf{x}) + \epsilon</math>
end note
@enduml
```

**uml/reference_19-2_Maths**

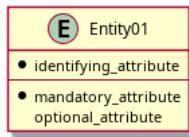
```
@startuml
Bob -> Alice : Can you solve: <math>ax^2+bx+c=0</math>
Alice --> Bob: <math>x = (-b \pm \sqrt{b^2-4ac})/(2a)</math>
@enduml
```

**uml/reference_20-01-1_Information-Engineering-Relations**

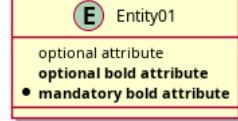
```
@startuml
Entity01 }|...|| Entity02
Entity03 }o..o| Entity04
Entity05 ||--o{ Entity06
Entity07 |o--|| Entity08
@enduml
```

**uml/reference_20-02-1_Entities**

```
@startuml
entity Entity01 {
    * identifying_attribute
    --
    * mandatory_attribute
    optional_attribute
}
@enduml
```

**uml/reference_20-02-2_Entities**

```
@startuml
entity Entity01 {
    optional_attribute
    **optional bold attribute**
    * **mandatory bold attribute**
}
@enduml
```

**uml/reference_20-03-1_Complete-Example**

```
@startuml
' hide the spot
hide circle

' avoid problems with angled crows feet
skinparam linetype ortho

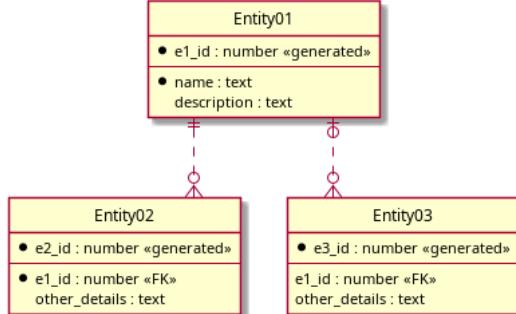
entity "Entity01" as e01 {
    *e1_id : number <<generated>>
    --
    *name : text
    description : text
}

entity "Entity02" as e02 {
    *e2_id : number <<generated>>
    --
    *e1_id : number <<FK>>
    other_details : text
}

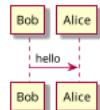
entity "Entity03" as e03 {
    *e3_id : number <<generated>>
    --
    e1_id : number <<FK>>
    other_details : text
}

e01 ||...o{ e02
e01 |o..o{ e03

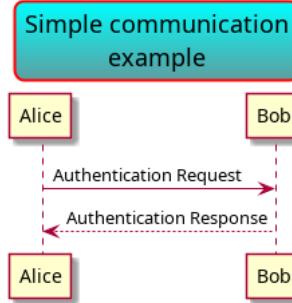
@enduml
```

**uml/reference_21-02-1_Zoom**

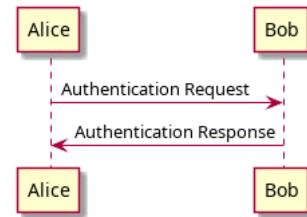
```
@startuml
scale 180*90
Bob->Alice : hello
@enduml
```

**uml/reference_21-03-1_Title**

```
@startuml
skinparam titleBorderRoundCorner 15
skinparam titleBorderThickness 2
skinparam titleBorderColor red
skinparam titleBackgroundColor Aqua-CadetBlue
title Simple communication\nexample
Alice -> Bob: Authentication Request
Bob --> Alice: Authentication Response
@enduml
```

**Simple communication example
on several lines and using creole tags****uml/reference_21-03-2_Title**

```
@startuml
title
<u>Simple</u> communication example
on <i>several</i> lines and using <back:cadetblue>creole tags</back>
end title
Alice -> Bob: Authentication Request
Bob -> Alice: Authentication Response
@enduml
```

**uml/reference_21-04-1_Caption**

```
@startuml
caption figure 1
Alice -> Bob: Hello
@enduml
```

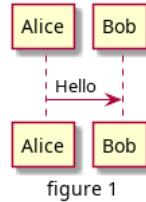
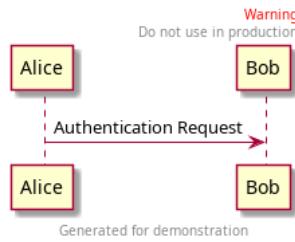


figure 1

uml/reference_21-05-1_Footer-and-header

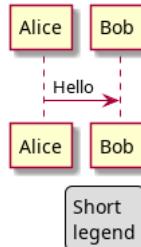
```
@startuml
Alice -> Bob: Authentication Request
header
<font color=red>Warning:</font>
Do not use in production.
endheader
center footer Generated for demonstration
@enduml
```



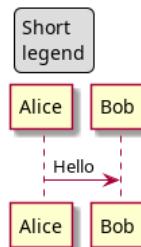
Generated for demonstration

uml/reference_21-06-1_Legend-the-diagram

```
@startuml
Alice -> Bob : Hello
legend right
Short
legend
endlegend
@enduml
```

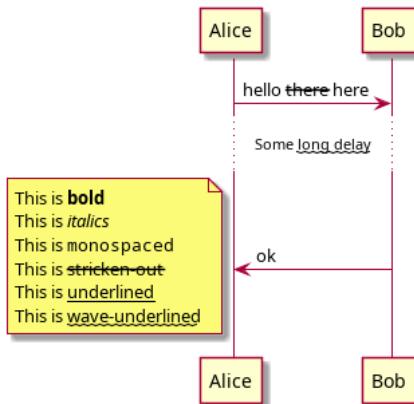
**uml/reference_21-06-2_Legend-the-diagram**

```
@startuml
Alice -> Bob : Hello
legend top left
Short
legend
endlegend
@enduml
```

**uml/reference_22-01-1_Emphasized-text**

Test plantuml-syntax

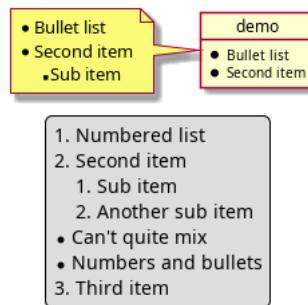
```
@startuml
Alice -> Bob : hello --there-- here
... Some ~~long delay~~ ...
Bob -> Alice : ok
note left
  This is **bold**
  This is //italics//
  This is ""monospaced"""
  This is --stricken-out--
  This is __underlined__
  This is ~~wave-underlined~~
end note
@enduml
```



uml/reference_22-02-1_Lists

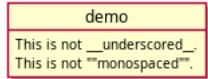
```
@startuml
object demo {
  * Bullet list
  * Second item
}
note left
  * Bullet list
  * Second item
  ** Sub item
end note

legend
  # Numbered list
  # Second item
  ## Sub item
  ## Another sub item
  * Can't quite mix
  * Numbers and bullets
  # Third item
end legend
@enduml
```



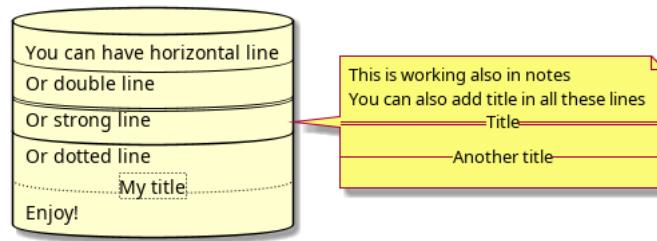
uml/reference_22-03-1_Escape-character

```
@startuml
object demo {
  This is not __underscored__.
  This is not ~"monospaced"~.
}
@enduml
```



uml/reference_22-04-1_Horizontal-lines

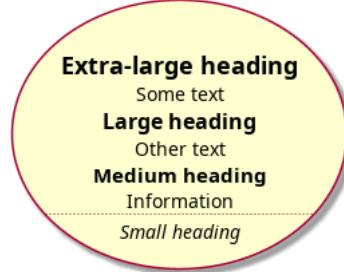
```
@startuml
database DB1 as "
You can have horizontal line
-----
Or double line
=====
Or strong line
_____
Or dotted line
..My title..
Enjoy!
"
note right
  This is working also in notes
  You can also add title in all these lines
  ==Title==
  --Another title--
end note
@enduml
```



uml/reference_22-05-1_Headingsuml

```
@startuml
usecase UC1 as "
= Extra-large heading
Some text
== Large heading
Other text
==== Medium heading
Information
....
```

```
==== Small heading"
@enduml
```

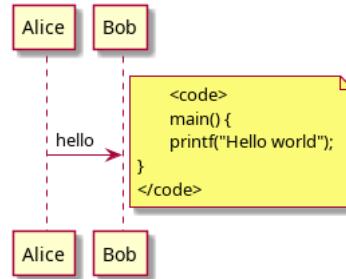
**uml/reference_22-06-1_Legacy-HTML**

```
@startuml
/* You can change <color:red>text color</color>
* You can change <back:cadetblue>background color</back>
* You can change <size:18>size</size>
* You use <u>legacy</u> <b>HTML <i>tag</i></b>
* You use <u:red>color</u> <s:green>in HTML</s> <w:#0000FF>tag</w>
----
* Use image : <img:>http://plantuml.com/logo3.png</img>
;
@enduml
```

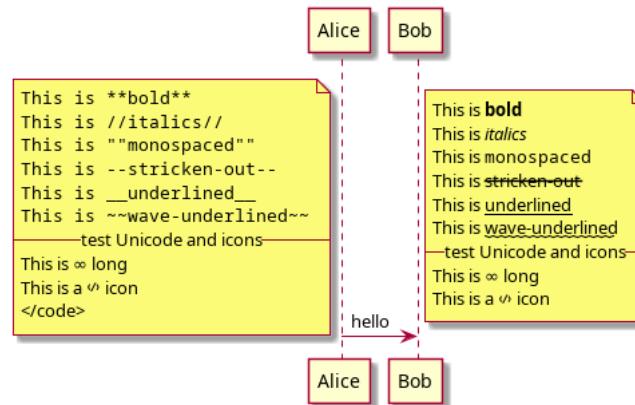
- You can change **text color**
- You can change **background color**
- You can change **size**
- You use **legacy HTML tag**
- You use **color in HTML tag**
- Use image : (Cannot decode: http://plantuml.com/logo3.png)

uml/reference_22-07-1_Code

```
@startuml
Alice -> Bob : hello
note right
<code>
main() {
printf("Hello world");
}
</code>
end note
@enduml
```

**uml/reference_22-07-2_Code**

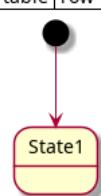
```
@startuml
Alice -> Bob : hello
note left
<code>
This is **bold**
This is //italics//
This is ""monospaced"""
This is --stricken-out--
This is __underlined__
This is ~~wave-underlined~~
--test Unicode and icons--
This is <U+221E> long
This is a <&code> icon
</code>
end note
note right
This is **bold**
This is //italics//
This is ""monospaced"""
This is --stricken-out--
This is __underlined__
This is ~~wave-underlined~~
--test Unicode and icons--
This is <U+221E> long
This is a <&code> icon
end note
@enduml
```

**uml/reference_22-08-01-1_Create-a-table**

```
@startuml
skinparam titleFontSize 14
title
Example of simple table
|= |= table |= header |
| a | table | row |
| b | table | row |
end title
[*] --> State1
@enduml
```

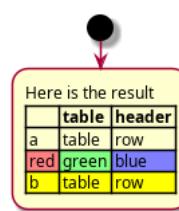
Example of simple table

	table	header
a	table	row
b	table	row



uml/reference_22-08-02-1_Add-color-on-rows-or-cells

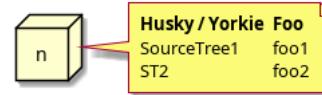
```
@startuml
start
:Here is the result
|= |= table |= header |
| a | table | row |
|<#FF8080> red |<#80FF80> green |<#8080FF> blue |
<#yellow>| b | table | row |
@enduml
```

**uml/reference_22-08-03-1_Add-color-on-border-and-text**

```
@startuml
title
<#lightblue,#red>|= Step |= Date |= Name |= Status |= Link |
<#lightgreen>| 1.1 | TBD | plantuml news |<#Navy><color:OrangeRed><b> Unknown | [[https://plantuml.com/news plantuml news]] |
end title
@enduml
```

uml/reference_22-08-04-1_No-border-or-same-color-as-the-background

```
@startuml
node n
note right of n
<#FBFB77,#FBFB77>|= Husky / Yorkie |= Foo |
| SourceTree1 | foo1 |
| ST2 | foo2 |
end note
@enduml
```

**uml/reference_22-08-05-1_Bold-header-or-not**

```
@startuml
note as deepCSS0
|<#white> Husky / Yorkie |
|=> gainsboro SourceTree0 |
endnote

note as deepCSS1
|= <#white> Husky / Yorkie |= Foo |
|<#gainsboro><r> SourceTree1 | foo1 |
endnote

note as deepCSS2
|= Husky / Yorkie |
|=> gainsboro SourceTree2 |
endnote

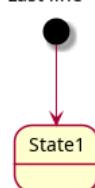
note as deepCSS3
<#white>|= Husky / Yorkie |= Foo |
|<#gainsboro> SourceTree1 | foo1 |
endnote
@enduml
```

**uml/reference_22-09-1_Tree**

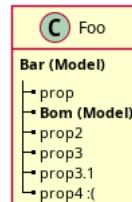
```
@startuml
skinparam titleFontSize 14
title
Example of Tree
|- First line
|- **Bom (Model)**
|- prop1
|- prop2
|- prop3
|- Last line
end title
[*] --> State1
@enduml
```

Example of Tree

- > First line
- > **Bom (Model)**
- > prop1
- > prop2
- > prop3
- > Last line

**uml/reference_22-09-2_Tree**

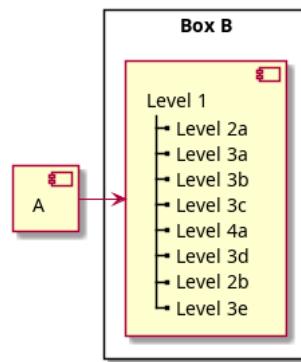
```
@startuml
class Foo {
    **Bar (Model)**
    |_ prop
    |_ **Bom (Model)**
    |_ prop2
    |_ prop3
    |_ prop3.1
    |_ prop4 :(
```



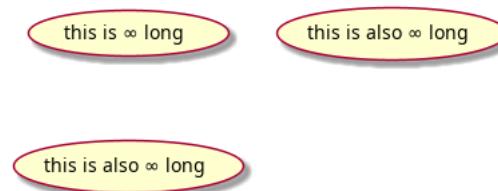
```
--  
}@enduml
```

uml/reference_22-09-3_Tree

```
@startuml  
[A] as A  
rectangle "Box B" {  
    component B [  
        Level 1  
        |__ Level 2a  
        |__ Level 3a  
        |__ Level 3b  
        |__ Level 3c  
        |__ Level 4a  
        |__ Level 3d  
        |__ Level 2b  
        |__ Level 3e  
    ]  
}  
A --> B  
@enduml
```

**uml/reference_22-10-1_Special-characters**

```
@startuml  
usecase direct as "this is ∞ long"  
usecase ampHash as "this is also &#8734; long"  
usecase angleBrackets as "this is also <U+221E> long"  
@enduml
```

**uml/reference_22-11-1_OpenIconic**

```
@startuml  
title: <size:20><heart>Use of OpenIconic</heart></size>  
class Wifi  
note left  
Click on <&wifi>  
end note  
@enduml
```

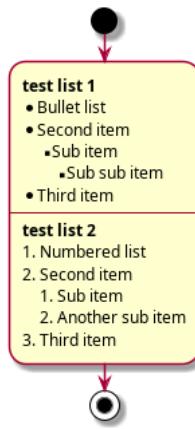
♥Use of OpenIconic♥

List Open Iconic	bell	cloud	excerpt	justify-right	musical-note	star
Credit to	✉ bell	☁️ cloudy	_excerpt	☞ key	📎 paperclip	☀ sun
https://useiconic.com/open	:bold	⚡ code	⤿ expand-down	💻 laptop	✍ pencil	tablet
	+: bolt	⚙ cog	⤿ expand-left	🖨️ layers	👤 people	>tag
	⤿ account-login	📘 book	⤿ expand-right	⤿ lightbulb	👤 person	tags
	⤿ account-logout	🔖 bookmark	⤿ collapse-down	⤿ expand-up	☎️ phone	target
	⤿ action-redo	📦 box	⤿ collapse-left	⤿ external-link	📊 pie-chart	task
	⤿ action-undo	💼 briefcase	⤿ collapse-right	⤿ eye	📌 pin	terminal
	⤿ align-center	💷 british-pound	⤿ command	⤿ eyedropper	➊ play-circle	text
	⤿ align-left	💻 browser	⤿ comment-square	📄 file	➕ plus	thumb-down
	⤿ align-right	🖌 brush	⤿ compass	🔥 fire	⌚ power-standby	thumb-up
	⤿ aperture	🐛 bug	⤿ contrast	⚡ flag	🖨️ print	timer
	⤿ arrow-bottom	🎺 bullhorn	⤿ copywriting	⚡ flash	📅 project	transfer
	⤿ arrow-circle-bottom	-Calculator	⤿ credit-card	📁 folder	▶ loop-circular	trash
	⤿ arrow-circle-left	📅 calendar	⤿ crop	🍴 fork	▶ loop-square	pulse
	⤿ arrow-circle-right	📸 camera-slr	⤿ dashboard	⤿ fullscreen-enter	▶ loop	puzzle-piece
	⤿ arrow-circle-top	⤿ caret-bottom	⤿ data-transfer-download	⤿ fullscreen-exit	?] magnifying-glass	question-mark
	⤿ arrow-left	⤿ caret-left	⤿ data-transfer-upload	⤿ globe	?] map-marker	rain
	⤿ arrow-right	⤿ caret-right	⤿ delete	⤿ graph	⤿ map	random
	⤿ arrow-thick-bottom	⤿ caret-top	⤿ dial	⤿ grid-four-up	⤿ media-pause	vertical-align
	⤿ arrow-thick-left	⤿ cart	⤿ document	⤿ grid-three-up	⤿ media-play	volume-high
	⤿ arrow-thick-right	⤿ chat	⤿ dollar	⤿ grid-two-up	⤿ media-record	volume-low
	⤿ arrow-thick-top	⤿ check	⤿ double-quote-sans-left	⤿ hard-drive	⤿ media-skip-backward	volume-off
	⤿ arrow-top	⤿ chevron-bottom	⤿ double-quote-sans-right	⤿ header	⤿ media-skip-forward	warning
	⤿ audio-spectrum	⤿ chevron-left	⤿ double-quote-serif-left	⤿ headphones	⤿ media-step-backward	wifi
	⤿ audio	⤿ chevron-right	⤿ double-quote-serif-right	之心 heart	⤿ media-step-forward	wrench
	⤿ badge	⤿ chevron-top	⤿ droplet	⤿ home	⤿ media-stop	x
	⤿ ban	⤿ checkmark	⤿ eject	⤿ image	⤿ medical-cross	yen
	⤿ bar-chart	⤿ circle-x	⤿ elevator	⤿ inbox	⤿ menu	share
	⤿ basket	⤿ clipboard	⤿ ellipses	⤿ infinity	⤿ microphone	shield
	⤿ battery-empty	⤿ clock	⤿ envelope-closed	⤿ info	⤿ minus	zoom-in
	⤿ battery-full	⤿ cloud-download	⤿ envelope-open	⤿ italic	⤿ monitor	zoom-out
	⤿ beaker	⤿ cloud-upload	⤿ euro	⤿ justify-center	⤿ moon	spreadsheet
				⤿ justify-left	⤿ move	

uml/reference_22-12-01-1_Activity

```
@startuml  
start  
:**test list 1**  
* Bullet list  
* Second item  
** Sub item
```

```
*** Sub sub item
* Third item
---
**test list 2**
# Numbered list
# Second item
## Sub item
## Another sub item
# Third item;
stop
@enduml
```



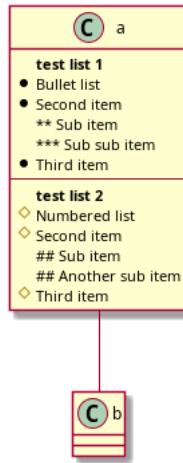
uml/reference_22-12-02-1_Class

@startuml

```
class a {
    **test list 1**
    * Bullet list
    * Second item
    ** Sub item
    *** Sub sub item
    * Third item
    ---
    **test list 2**
    # Numbered list
    # Second item
    ## Sub item
    ## Another sub item
    # Third item
}
```

a -- b

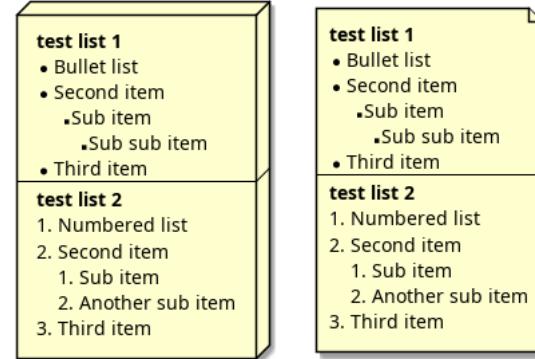
@enduml



uml/reference_22-12-03-1_Component-Deployment-Use-Case

```
@startuml
node n [
    **test list 1**
    * Bullet list
    * Second item
    ** Sub item
    *** Sub sub item
    * Third item
    ---
    **test list 2**
    # Numbered list
    # Second item
    ## Sub item
    ## Another sub item
    # Third item
]

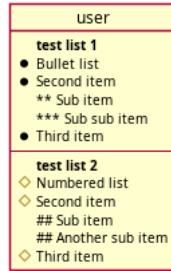
file f as "
    **test list 1**
    * Bullet list
    * Second item
    ** Sub item
    *** Sub sub item
    * Third item
    ---
    **test list 2**
    # Numbered list
    # Second item
    ## Sub item
    ## Another sub item
    # Third item
"
@enduml
```



uml/reference_22-12-05-1_Object

```
@startuml
object user {
    **test list 1**
    * Bullet list
    * Second item
    ** Sub item
    *** Sub sub item
    * Third item
}
```

```
----
**test list 2**
# Numbered list
# Second item
## Sub item
## Another sub item
# Third item
}
@enduml
```

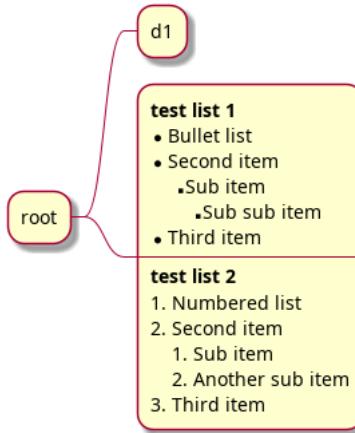


uml/reference_22-12-06-1_MindMap

@startmindmap

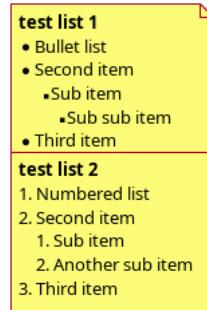
```
* root
** d1
**:**test list 1**
* Bullet list
* Second item
** Sub item
*** Sub sub item
* Third item
---
**test list 2**
# Numbered list
# Second item
## Sub item
## Another sub item
# Third item;
```

@endmindmap



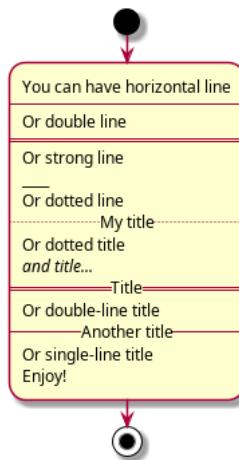
uml/reference_22-12-08-1_Note

```
@startuml
note as n
**test list 1**
* Bullet list
* Second item
** Sub item
*** Sub sub item
* Third item
---
**test list 2**
# Numbered list
# Second item
## Sub item
## Another sub item
# Third item
end note
@enduml
```



uml/reference_22-13-01-1_Activity

```
@startuml
start
:You can have horizontal line
---
Or double line
=====
Or strong line
_____
Or dotted line
...My title..
Or dotted title
//and title... //
==Title==
Or double-line title
--Another title--
Or single-line title
Enjoy!;
stop
@enduml
```



uml/reference_22-13-02-1_Class

@startuml

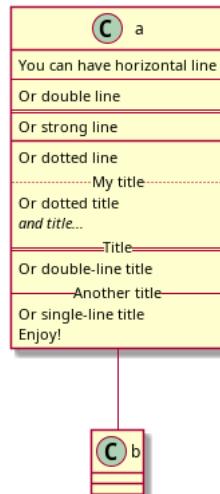
```
class a {
    You can have horizontal line
    -----
    Or double line
    =====
```

```

Or strong line
Or dotted line
..My title..
Or dotted title
//and title... //
==Title==
Or double-line title
--Another title--
Or single-line title
Enjoy!
}

a -- b
@enduml

```



uml/reference_22-13-03-1_Component-Deployment-Use-Case

```

@startuml
node n [
You can have horizontal line
---- 
Or double line
=====
Or strong line

Or dotted line
..My title..
//and title... //
==Title==
--Another title--
Enjoy!
]

file f as "
You can have horizontal line
---- 
Or double line
=====
Or strong line

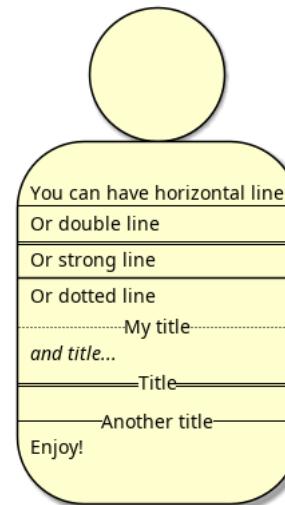
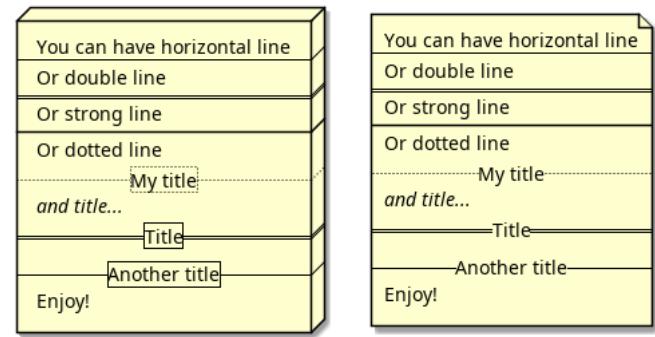
Or dotted line
..My title..
//and title... //
==Title==
--Another title--
Enjoy!
"

person p [
You can have horizontal line
---- 
Or double line
=====
Or strong line

Or dotted line
..My title..
//and title... //
==Title==
--Another title--
Enjoy!
]

]
@enduml

```



uml/reference_22-13-05-1_Object

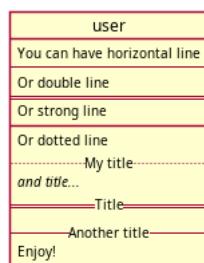
```

@startuml
object user {
You can have horizontal line
---- 
Or double line
=====
Or strong line

Or dotted line
..My title..
//and title... //
==Title==
--Another title--
Enjoy!
}

]
@enduml

```

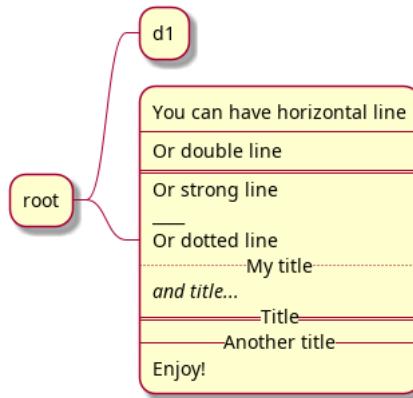


uml/reference_22-13-06-1_MindMap

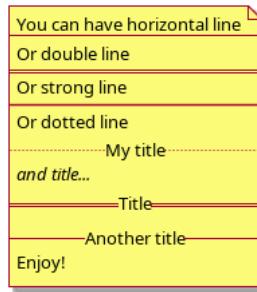
@startmindmap

```
* root
** d1
** You can have horizontal line
----
Or double line
=====
Or strong line
_____
Or dotted line
..My title..
//and title... //
==Title==
--Another title--
Enjoy!;
```

@endmindmap

**uml/reference_22-13-08-1_Note**

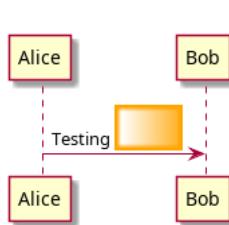
```
@startuml
note as n
You can have horizontal line
----
Or double line
=====
Or strong line
_____
Or dotted line
..My title..
//and title... //
==Title==
--Another title--
Enjoy!
end note
@enduml
```

**uml/reference_22-14-1_Style-equivalent-between-Creole-and-HTML**

```
@startmindmap
* Style equivalent\n(between Creole and HTML)
**:**Creole**
----
<#silver>|= code|= output|
| \n This is ""~**bold**""\n | \n This is **bold** |
| \n This is ""~//italics//""\n | \n This is //italics// |
| \n This is ""~"monospaced~"" "\n | \n This is "monospaced" |
| \n This is ""~~stroked~~"\n | \n This is --stroked-- |
| \n This is ""~__underlined__""\n | \n This is __underlined__ |
| \n This is "<U+007E><U+007E>waved<U+007E><U+007E>""\n | \n This is ~~waved~~ |
**:<b>Legacy HTML like
----
<#silver>|= code|= output|
| \n This is ""~<b>bold</b>""\n | \n This is <b>bold</b> |
| \n This is ""~<i>italics</i>""\n | \n This is <i>italics</i> |
| \n This is ""~<font:monospaced>monospaced</font>""\n | \n This is <font:monospaced>monospaced</font> |
| \n This is ""~<s>stroked</s>""\n | \n This is <s>stroked</s> |
| \n This is ""~<u>underlined</u>""\n | \n This is <u>underlined</u> |
| \n This is ""~<w>waved</w>""\n | \n This is <w>waved</w> |

And color as a bonus...
<#silver>|= code|= output|
| \n This is ""~<s:""<color:green>"green""</color>"">stroked</s>""\n | \n This is <s:green>stroked</s> |
| \n This is ""~<u:""<color:red>"red""</color>"">underlined</u>""\n | \n This is <u:red>underlined</u> |
| \n This is ""~<w:""<color:#0000FF>"#0000FF""</color>"">waved</w>""\n | \n This is <w:#0000FF>waved</w> |
@endmindmap
```

Style equivalent
(between Creole and PlantUML)



uml/reference_23-01-1_Changing-colors

```

@startuml
sprite $foo1 {
FFFFFFFFFFFF
F0123456789ABCF
FFFFFFFFFFFFFF
}
Alice -> Bob : Testing <$foo1,scale=3.4,color=orange>
@enduml
  
```

uml/reference_23-04-1_Examples

```

@startuml
sprite $printer [15x15/8z] N0tH3W0W208HxFz_kMAhj7lHWpa1XC716sz0Pq4MVPEWfbHIuxP3L6kbTcizR8tAhzaqFvXwvFfPEqm0
  
```

```
@startuml
start
:click on <$printer> to print the page;
@enduml
```

 click on  to print the page

uml/reference_23-04-2_Examples

```
@startuml
sprite $bug [15x15/16z] PKzR2i0m2BFMi15p__FEjEqB1z27aeqCqixa8S40T7C53cKpsHpaYPDJY_12MHM-BLRyywPhrrlw3qumqNThmXgd1T0terAZm0W8sgijafog
sprite $printer [15x15/8z] N0tH3W0W208HxFz_kMAhj71HWpa1XC716sz0Pq4MVPEWfbHIuxP3L6kbTcizR8tAhzaqFvXwvFfPEqm0
sprite $disk {
444445566677881
436000000009991
43600000000ACA1
53700000001A7A1
5370000012B8A1
5380000123B8A1
63800001233C9A1
634999AABC99B1
744566778899AB1
7456AAAAA99AAB1
8566AFC228AABB1
8567AC8118BBBBB1
867BD4433BBBBB1
39AAAAABBBBBBC1
}

title Use of sprites (<$printer>, <$bug>...)

class Example {
    Can have some bug : <$bug>
    Click on <$disk> to save
}

note left : The printer <$printer> is available

@enduml
```



uml/reference_23-06-1_Listing-Sprites

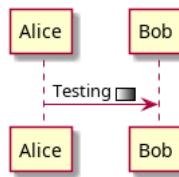
```
@startuml
#define osaPuml https://raw.githubusercontent.com/Crashedmind/PlantUML-opensecurityarchitecture2-icons/master
!include osaPuml/Common.puml
!include osaPuml/User/all.puml

listsprites
@enduml
```



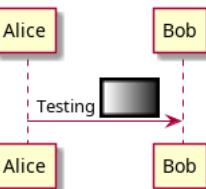
uml/reference_23-1_Defining-and-using-sprites

```
@startuml
sprite $foo1 {
FFFFFFFFFF
F0123456789ABCF
F0123456789ABCF
F0123456789ABCF
F0123456789ABCF
F0123456789ABCF
F0123456789ABCF
F0123456789ABCF
F0123456789ABCF
FFFFFFFFFF
}
Alice -> Bob : Testing <$foo1>
@enduml
```



uml/reference_23-2_Defining-and-using-sprites

```
@startuml
sprite $foo1 {
FFFFFFFFFF
F0123456789ABCF
F0123456789ABCF
F0123456789ABCF
F0123456789ABCF
F0123456789ABCF
F0123456789ABCF
F0123456789ABCF
F0123456789ABCF
}
Alice -> Bob : Testing <$foo1{scale=3}>
@enduml
```



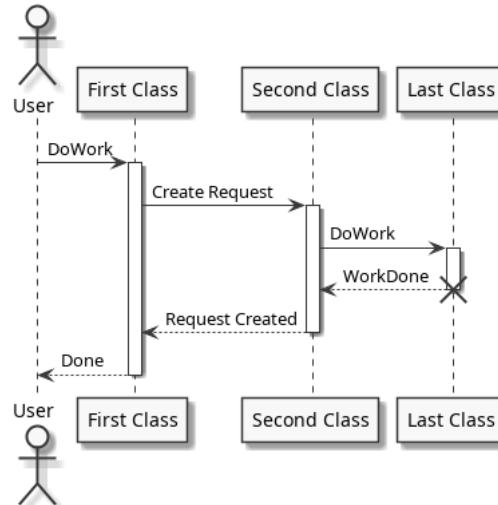
uml/reference_24-03-1_Black-and-White

```
@startuml
skinparam monochrome true

actor User
participant "First Class" as A
participant "Second Class" as B
participant "Last Class" as C

User --> A: DoWork
activate A
A --> B: Create Request
activate B
B --> C: DoWork
activate C
C --> B: WorkDone
destroy C
B --> A: Request Created
deactivate B
A --> User: Done
deactivate A

@enduml
```

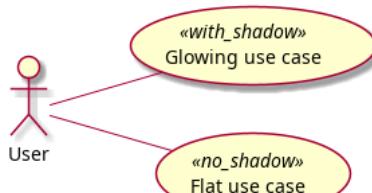


uml/reference_24-04-1_Shadowing

```
@startuml
left to right direction
skinparam shadowing<<no_shadow>> false
skinparam shadowing<<with_shadow>> true

actor User
(Glowing use case) <<with_shadow>> as guc
(Flat use case) <<no_shadow>> as fuc
User --> guc
User --> fuc

@enduml
```

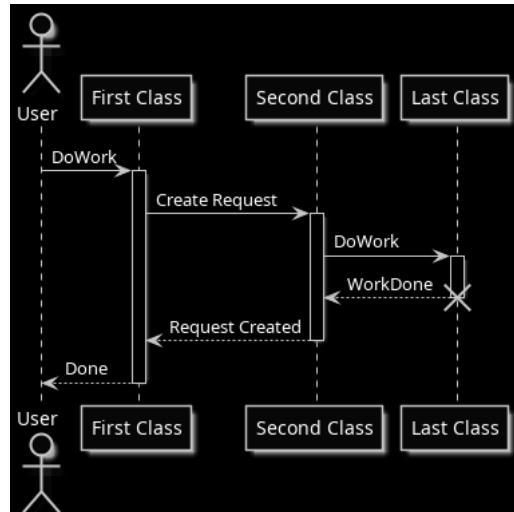


uml/reference_24-05-1_Reverse-colors

```
@startuml
skinparam monochrome reverse

actor User
participant "First Class" as A
participant "Second Class" as B
participant "Last Class" as C

User --> A: DoWork
activate A
A --> B: Create Request
activate B
B --> C: DoWork
activate C
C --> B: WorkDone
destroy C
B --> A: Request Created
deactivate B
A --> User: Done
deactivate A
```



@enduml

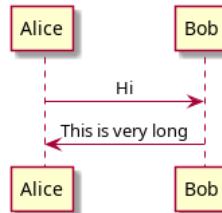
uml/reference_24-06-1_Colors

```
@startuml
colors
@enduml
```

APPLICATION	Crimson	DeepPink	Indigo	LightYellow
AliceBlue	Cyan	DeepSkyBlue	Ivory	Lime
AntiqueWhite	DarkBlue	DimGray	Khaki	LimeGreen
Aqua	DarkCyan	DimGrey	Lavender	Linen
Aquamarine	DarkGoldenRod	DodgerBlue	LavenderBlush	MOTIVATION
Azure	DarkGray	FireBrick	LawnGreen	Magenta
BUSINESS	DarkGreen	FloralWhite	LemonChiffon	Maroon
Beige	DarkGrey	ForestGreen	LightBlue	MediumAquaMarine
Bisque	DarkKhaki	Fuchsia	LightCoral	MediumBlue
Black	DarkMagenta	Gainsboro	LightCyan	MediumOrchid
BlanchedAlmond	DarkOliveGreen	GhostWhite	LightGoldenRodYellow	MediumPurple
Blue	DarkOrchid	Gold	LightGray	MediumSeaGreen
BlueViolet	DarkRed	GoldenRod	LightGreen	MediumSlateBlue
Brown	DarkSalmon	Gray	LightGrey	MediumSpringGreen
BurlyWood	DarkSeaGreen	Green	LightPink	MediumTurquoise
CadetBlue	DarkSlateBlue	GreenYellow	LightSalmon	MediumVioletRed
Chartreuse	DarkSlateGray	Grey	LightSeaGreen	MidnightBlue
Chocolate	DarkSlateGrey	HoneyDew	LightSkyBlue	MintCream
Coral	DarkTurquoise	HotPink	LightSlateGray	MistyRose
CornflowerBlue	DarkViolet	IMPLEMENTATION	LightSlateGrey	Moccasin
Cornsilk	Darkorange	IndianRed	LightSteelBlue	NavajoWhite

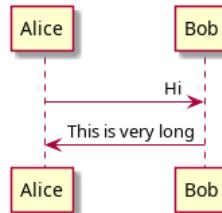
uml/reference_24-08-1_Text-Alignment

```
@startuml
skinparam sequenceMessageAlign center
Alice -> Bob : Hi
Bob -> Alice : This is very long
@enduml
```



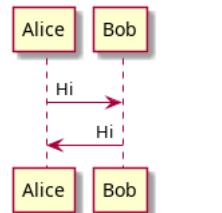
uml/reference_24-08-2_Text-Alignment

```
@startuml
skinparam sequenceMessageAlign right
Alice -> Bob : Hi
Bob -> Alice : This is very long
@enduml
```



uml/reference_24-08-3_Text-Alignment

```
@startuml
skinparam sequenceMessageAlign direction
Alice -> Bob : Hi
Bob -> Alice: Hi
@enduml
```



uml/reference_24-09-1_Examples

```
@startuml
skinparam backgroundColor #EEEBCD
skinparam handwritten true

skinparam sequence {
    ArrowColor DeepSkyBlue
    ActorBorderColor DeepSkyBlue
    LifeLineBorderColor blue
    LifeLineBackgroundColor #A9DCDF

    ParticipantBorderColor DeepSkyBlue
    ParticipantBackgroundColor DodgerBlue
    ParticipantFontName Impact
    ParticipantFontSize 17
    ParticipantFontColor #A9DCDF
```

```

ActorBackgroundColor aqua
ActorFontColor DeepSkyBlue
ActorFontSize 17
ActorFontName Aapex
}

actor User
participant "First Class" as A
participant "Second Class" as B
participant "Last Class" as C

User -> A: DoWork
activate A

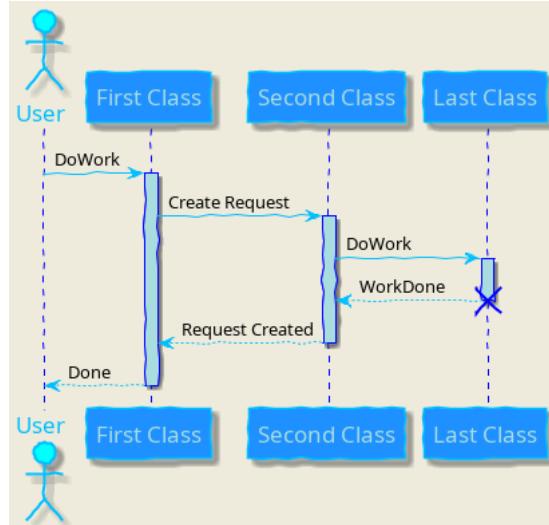
A --> B: Create Request
activate B

B --> C: DoWork
activate C
C --> B: WorkDone
destroy C

B --> A: Request Created
deactivate B

A --> User: Done
deactivate A
@enduml

```



uml/reference_24-09-2_Examples

```

@startuml
skinparam handwritten true

skinparam actor {
  BorderColor black
  FontName Courier
  BackgroundColor<< Human >> Gold
}

skinparam usecase {
  BackgroundColor DarkSeaGreen
  BorderColor DarkSlateGray

  BackgroundColor<< Main >> YellowGreen
  BorderColor<< Main >> YellowGreen

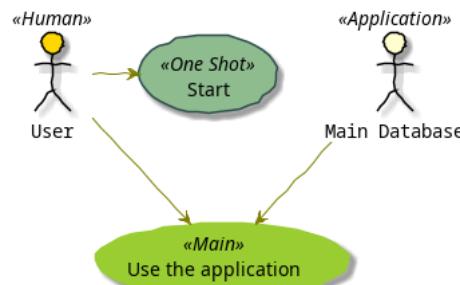
  ArrowColor Olive
}

User << Human >>
:Main Database: as MySql << Application >>
(Start) << One Shot >>
(Use the application) as (Use) << Main >>

User -> (Start)
User --> (Use)

MySql --> (Use)
@enduml

```

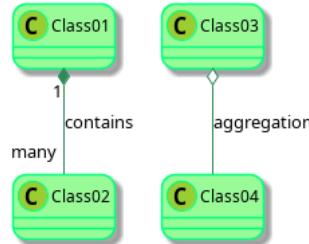


uml/reference_24-09-3_Examples

```

@startuml
skinparam roundcorner 20
skinparam class {
  BackgroundColor PaleGreen
  ArrowColor SeaGreen
  BorderColor SpringGreen
}
skinparam stereotypeCBackgroundColor YellowGreen
Class01 "1" *-- "many" Class02 : contains
Class03 o-- Class04 : aggregation
@enduml

```

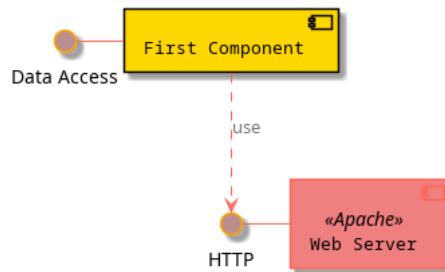


uml/reference_24-09-4_Examples

```

@startuml
skinparam interface {
  backgroundColor RosyBrown
  borderColor orange
}
skinparam component {
  FontSize 13
  BackgroundColor<<Apache>> LightCoral
  BorderColor<<Apache>> #FF6655
  FontName Courier
  BorderColor black
}

```



```

BackgroundColor gold
ArrowFontName Impact
ArrowColor #FF6655
ArrowFontColor #777777
}

() "Data Access" as DA
[Web Server] << Apache >>

DA - [First Component]
[First Component] ..> () HTTP : use
HTTP - [Web Server]
@enduml

```

uml/reference_24-09-5_Examples

```

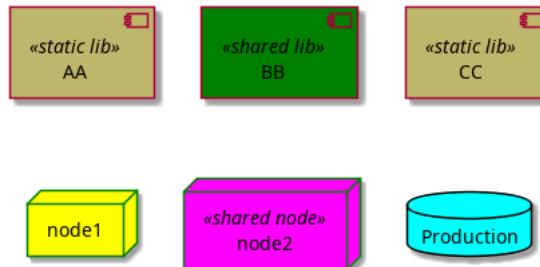
@startuml
[AA] <<static lib>>
[BB] <<shared lib>>
[CC] <<static lib>>

node node1
node node2 <<shared node>>
database Production

skinparam component {
    backgroundColor<<static lib>> DarkKhaki
    backgroundColor<<shared lib>> Green
}

skinparam node {
    borderColor Green
    backgroundColor Yellow
    backgroundColor<<shared node>> Magenta
}
skinparam databaseBackgroundColor Aqua
@enduml

```

**uml/reference_24-10-1_List-of-all-skinparam-parameters**

```

@startuml
help skinparams
@enduml

```

Help on skinparam

The code of this command is located in `net.sourceforge.plantuml.help` package.
You may improve it on <https://github.com/plantuml/plantuml/tree/master/src/net/sourceforge/plantuml/help>

The possible skinparam are :

- ActivityBackgroundColor
- ActivityBarColor
- ActivityBorderColor
- ActivityBorderThickness
- ActivityDiamondBackgroundColor
- ActivityDiamondBorderColor
- ActivityDiamondFontColor
- ActivityDiamondFontName
- ActivityDiamondFontSize
- ActivityDiamondFontStyle
- ActivityEndColor
- ActivityFontColor
- ActivityFontName
- ActivityFontSize
- ActivityFontStyle
- ActivityStartColor
- ActorBackgroundColor
- ActorBorderColor
- ActorFontColor
- ActorFontName
- ActorFontSize
- ActorFontStyle
- ActorStereotypeFontColor
- ActorStereotypeFontName
- ActorStereotypeFontSize
- ActorStereotypeFontStyle
- AgentBackgroundColor
- AgentBorderColor
- AgentBorderThickness
- AgentFontColor
- AgentFontName
- AgentFontSize
- AgentFontStyle
- AgentStereotypeFontColor
- AgentStereotypeFontName

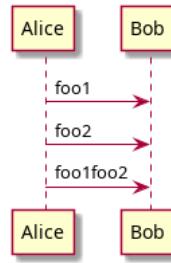
- AgentStereotypeFontSize
- AgentStereotypeFontStyle
- ArchimateBackgroundColor
- ArchimateBorderColor
- ArchimateBorderThickness
- ArchimateFontColor
- ArchimateFontName
- ArchimateFontSize
- ArchimateFontStyle
- ArchimateStereotypeFontColor
- ArchimateStereotypeFontName
- ArchimateStereotypeFontSize
- ArchimateStereotypeFontStyle
- ArrowColor
- ArrowFontColor
- ArrowFontName
- ArrowFontSize
- ArrowFontStyle
- ArrowHeadColor
- ArrowLollipopColor
- ArrowMessageAlignment
- ArrowThickness
- ArtifactBackgroundColor
- ArtifactBorderColor
- ArtifactFontColor
- ArtifactFontName
- ArtifactFontSize
- ArtifactFontStyle
- ArtifactStereotypeFontColor
- ArtifactStereotypeFontName
- ArtifactStereotypeFontSize
- ArtifactStereotypeFontStyle
- BackgroundColor
- BiddableBackgroundColor
- BiddableBorderColor
- BoundaryBackgroundColor
- BoundaryBorderColor
- BoundaryFontColor
- BoundaryFontName
- BoundaryFontSize
- BoundaryFontStyle
- BoundaryStereotypeFontColor
- BoundaryStereotypeFontName
- BoundaryStereotypeFontSize
- BoundaryStereotypeFontStyle
- BoxPadding
- CaptionFontColor
- CaptionFontName
- CaptionFontSize
- CaptionFontStyle
- CardBackgroundColor
- CardBorderColor
- CardBorderThickness
- CardFontColor
- CardFontName
- CardFontSize
- CardFontStyle
- CardStereotypeFontColor
- CardStereotypeFontName
- CardStereotypeFontSize
- CardStereotypeFontStyle
- CircledCharacterFontColor
- CircledCharacterFontName
- CircledCharacterFontSize
- CircledCharacterFontStyle
- CircledCharacterRadius
- ClassAttributeFontColor
- ClassAttributeFontName
- ClassAttributeFontSize
- ClassAttributeFontStyle
- ClassAttributeIconSize
- ClassBackgroundColor

- ClassBorderColor
- ClassBorderThickness
- ClassFontColor
- ClassFontName
- ClassFontSize
- ClassFontStyle
- ClassHeaderBackgroundColor
- ClassStereotypeFontColor
- ClassStereotypeFontName
- ClassStereotypeFontSize
- ClassStereotypeFontStyle
- CloudBackgroundColor
- CloudBorderColor
- CloudFontColor
- CloudFontName
- CloudFontSize
- CloudFontStyle
- CloudStereotypeFontColor
- CloudStereotypeFontName
- CloudStereotypeFontSize
- CloudStereotypeFontStyle
- CollectionsBackgroundColor
- CollectionsBorderColor
- ColorArrowSeparationSpace
- ComponentBackgroundColor
- ComponentBorderColor
- ComponentBorderThickness
- ComponentFontColor
- ComponentFontName
- ComponentFontSize
- ComponentFontStyle
- ComponentStereotypeFontColor
- ComponentStereotypeFontName
- ComponentStereotypeFontSize
- ComponentStereotypeFontStyle
- ComponentStyle
- ConditionEndStyle
- ConditionStyle
- ControlBackgroundColor
- ControlBorderColor
- ControlFontColor
- ControlFontName
- ControlFontSize
- ControlFontStyle
- ControlStereotypeFontColor
- ControlStereotypeFontName
- ControlStereotypeFontSize
- ControlStereotypeFontStyle
- DatabaseBackgroundColor
- DatabaseBorderColor
- DatabaseFontColor
- DatabaseFontName
- DatabaseFontSize
- DatabaseFontStyle
- DatabaseStereotypeFontColor
- DatabaseStereotypeFontName
- DatabaseStereotypeFontSize
- DatabaseStereotypeFontStyle
- DefaultFontColor
- DefaultFontName
- DefaultFontSize
- DefaultFontStyle
- DefaultMonospacedFontName
- DefaultTextAlignment
- DesignedBackgroundColor
- DesignedBorderColor
- DesignedDomainBorderThickness
- DesignedDomainFontColor
- DesignedDomainFontName
- DesignedDomainFontSize
- DesignedDomainFontStyle
- DesignedDomainStereotypeFontColor

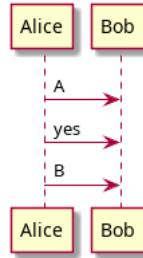
- DesignedDomainStereotypeFontName
 - DesignedDomainStereotypeFontSize
 - DesignedDomainStereotypeFontStyle
-

uml/reference_25-02-1_Variable-definition

```
@startuml
!$ab = "foo1"
!$cd = "foo2"
!$ef = $ab + $cd
Alice -> Bob : $ab
Alice -> Bob : $cd
Alice -> Bob : $ef
@enduml
```

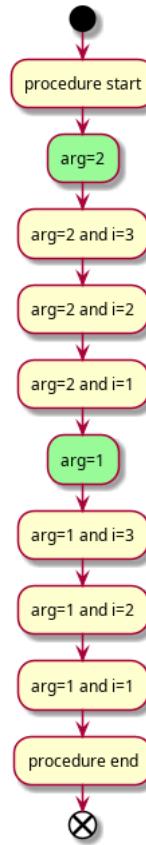
**uml/reference_25-04-1_Conditions**

```
@startuml
!$a = 10
!$ijk = "foo"
Alice -> Bob : A
if ($ijk == "foo") && ($a+10>=4)
Alice -> Bob : yes
else
Alice -> Bob : This should not appear
endif
Alice -> Bob : B
@enduml
```

**uml/reference_25-05-1_While-loop**

```
@startuml
!procedure $foo($arg)
:procedure start;
!while $arg!=0
!$i=3
#palegreen:arg=$arg;
!while $i!=0
:arg=$arg and i=$i;
!$i = $i - 1
!endwhile
!$arg = $arg - 1
!endwhile
:procedure end;
!endprocedure

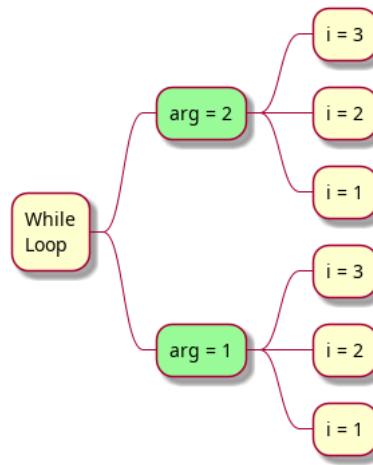
start
$foo(2)
end
@enduml
```

**uml/reference_25-05-2_While-loop**

```
@startmindmap
!procedure $foo($arg)
!while $arg!=0
!$i=3
**[#palegreen] arg = $arg
!while $i!=0
*** i = $i
!$i = $i - 1
!endwhile
!$arg = $arg - 1
!endwhile
!endprocedure

*:While
Loop;
$foo(2)
```

@endmindmap

**uml/reference_25-06-1_Procedure**

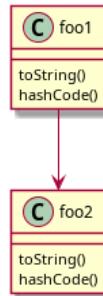
```

@startuml
!procedure $msg($source, $destination)
$source --> $destination
!endprocedure

!procedure $init_class($name)
class $name {
    $addCommonMethod()
}
!endprocedure

!procedure $addCommonMethod()
toString()
hashCode()
!endprocedure

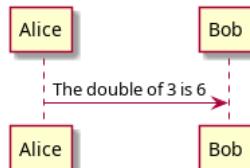
$init_class("foo1")
$init_class("foo2")
$msg("foo1", "foo2")
@enduml
  
```

**uml/reference_25-07-1_Return-function**

```

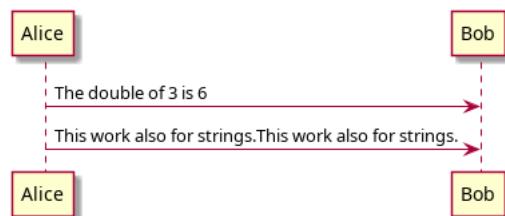
@startuml
!function $double($a)
!return $a + $a
!endfunction

Alice -> Bob : The double of 3 is $double(3)
@enduml
  
```

**uml/reference_25-07-2_Return-function**

```

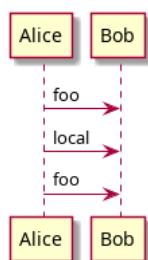
@startuml
!function $double($a) !return $a + $a
Alice -> Bob : The double of 3 is $double(3)
Alice -> Bob : $double("This work also for strings.")
@enduml
  
```

**uml/reference_25-07-3_Return-function**

```

@startuml
!function $dummy()
!local $ijk = "local"
!return "Alice -> Bob : " + $ijk
!endfunction

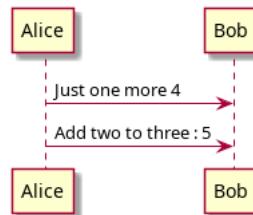
!global $ijk = "foo"
Alice -> Bob : $dummy()
Alice -> Bob : $ijk
@enduml
  
```



uml/reference_25-08-1_Default-argument-value

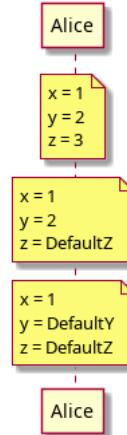
```
@startuml
!function $inc($value, $step=1)
!return $value + $step
!endfunction

Alice -> Bob : Just one more $inc(3)
Alice -> Bob : Add two to three : $inc(3, 2)
@enduml
```

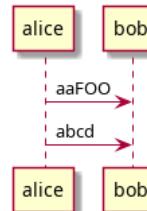
**uml/reference_25-08-2_Default-argument-value**

```
@startuml
!procedure defaulttest($x, $y="DefaultY", $z="DefaultZ")
note over Alice
  x = $x
  y = $y
  z = $z
end note
!endprocedure

defaulttest(1, 2, 3)
defaulttest(1, 2)
defaulttest(1)
@enduml
```

**uml/reference_25-09-1_Unquoted-procedure-or-function**

```
@startuml
!unquoted function id($text1, $text2="FOO") !return $text1 + $text2
alice -> bob : id(aa)
alice -> bob : id(ab,cd)
@enduml
```

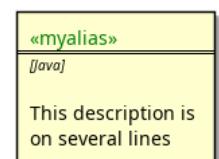
**uml/reference_25-10-1_Keywords-arguments**

```
@startuml

!unquoted procedure $element($alias, $description="", $label="", $technology="", $size=12, $colour="green")
rectangle $alias as "
<color:$colour><$alias></color>
==$label==
//<size:$size>[$technology]</size>//

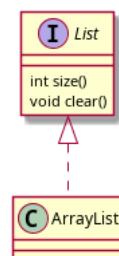
$description"
!endprocedure

$element(myalias, "This description is %newline()on several lines", $size=10, $technology="Java")
@enduml
```

**uml/reference_25-11-1_Including-files-or-URL**

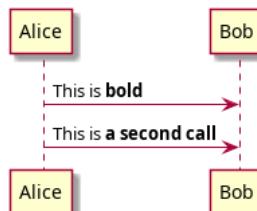
```
@startuml

interface List
List : int size()
List : void clear()
List <|.. ArrayList
@enduml
```

**uml/reference_25-14-1Logging**

```
@startuml
!function bold($text)
!$result = "<b>" + $text + "</b>"
!log Calling bold function with $text. The result is $result
!return $result
!endfunction

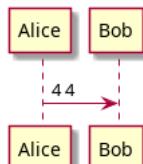
Alice -> Bob : This is bold("bold")
Alice -> Bob : This is bold("a second call")
@enduml
```



uml/reference_25-15-1_Memory-dump

```
@startuml
!function $inc($string)
!$val = %intval($string)
!log value is $val
!dump_memory
!return $val+1
!endfunction

Alice -> Bob : 4 $inc("3")
!unused = "foo"
!dump_memory EOF
@enduml
```

**uml/reference_25-16-1_Assertion**

```
@startuml
Alice -> Bob : Hello
!assert %strpos("abcdef", "cd")==3 : "This always fails"
@enduml
```

Welcome to PlantUML!

You can start with a simple UML Diagram like:



Bob->Alice: Hello

Or

```
class Example
```

You will find more information about PlantUML syntax on <https://plantuml.com>

(If you use this software, you accept its license)
(Details by typing license keyword)

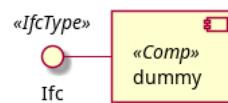
PlantUML 1.2021.16

[From reference_25-16-1_Assertion.uml (line 3)]

```
@startuml
Alice -> Bob : Hello
!assert %strpos("abcdef", "cd")==3 : "This always fails"
Assertion error : This always fails
```

uml/reference_25-19-1_Argument-concatenation

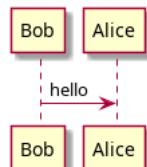
```
@startuml
!unquoted procedure COMP_TEXTGENCOMP(name)
[name] << Comp >>
interface Ifc << IfcType >> AS name##Ifc
name##Ifc - [name]
!endprocedure
COMP_TEXTGENCOMP(dummy)
@enduml
```

**uml/reference_25-20-1_Dynamic-invocation**

```
@startuml
!procedure $go()
Bob -> Alice : hello
!endprocedure

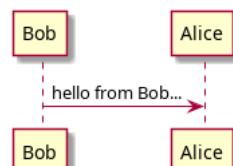
!$wrapper = "$go"

%invoke_procedure($wrapper)
@enduml
```

**uml/reference_25-20-2_Dynamic-invocation**

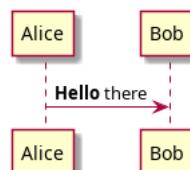
```
@startuml
!procedure $go($txt)
Bob -> Alice : $txt
!endprocedure

%invoke_procedure("$go", "hello from Bob...")
@enduml
```

**uml/reference_25-20-3_Dynamic-invocation**

```
@startuml
!function bold($text)
!return "<b>" + $text + "</b>"
!endfunction

Alice -> Bob : %call_user_func("bold", "Hello") there
@enduml
```



uml/reference_25-21-1_Evaluation-of-addition-depending-of-data-types

```
@startuml
title
<#LightBlue>|= |= $a |= $b |= <U+0025>string($a + $b) |
<#LightGray>| type | str | str | str (concatenation) |
| example |= "a" |= "b" |= %string("a" + "b") |
<#LightGray>| type | str | int | str (concatenation) |
| ex.|= "a" |= 2 |= %string("a" + 2) |
<#LightGray>| type | str | int | str (concatenation) |
| ex.|= 1 |= "b" |= %string(1 + "b") |
<#LightGray>| type | bool | str | str (concatenation) |
| ex.|= <U+0025>true() |= "b" |= %string(%true() + "b") |
<#LightGray>| type | str | bool | str (concatenation) |
| ex.|= "a" |= <U+0025>false() |= %string("a" + %false()) |
<#LightGray>| type | int | int | int (addition of int) |
| ex.|= 1 |= 2 |= %string(1 + 2) |
<#LightGray>| type | bool | int | int (addition) |
| ex.|= <U+0025>true() |= 2 |= %string(%true() + 2) |
<#LightGray>| type | int | bool | int (addition) |
| ex.|= 1 |= <U+0025>false() |= %string(1 + %false()) |
<#LightGray>| type | int | int | int (addition) |
| ex.|= 1 |= <U+0025>intval("2") |= %string(1 + %intval("2")) |
end title
@enduml
```

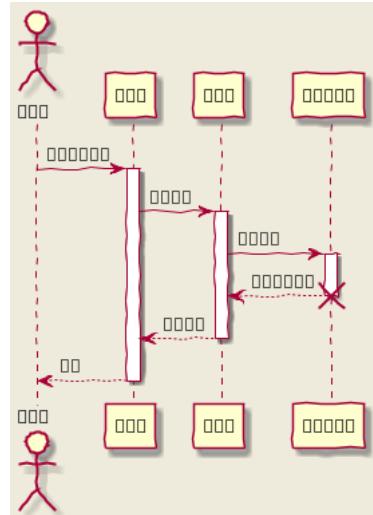
	\$a	\$b	%string(\$a + \$b)
type	str	str	str (concatenation)
example	"a"	"b"	ab
type	str	int	str (concatenation)
ex.	"a"	2	a2
type	str	int	str (concatenation)
ex.	1	"b"	1b
type	bool	str	str (concatenation)
ex.	%true()	"b"	1b
type	str	bool	str (concatenation)
ex.	"a"	%false()	a0
type	int	int	int (addition of int)
ex.	1	2	3
type	bool	int	int (addition)
ex.	%true()	2	3
type	int	bool	int (addition)
ex.	1	%false()	1
type	int	int	int (addition)
ex.	1	%intval("2")	3

uml/reference_26-01-1_Examples

```
@startuml
skinparam handwritten true
skinparam backgroundColor #EEEBDC

actor 使用者
participant "頭等艙" as A
participant "第二類" as B
participant "最後一堂課" as 別的東西

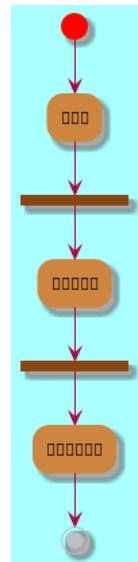
使用者 -> A: 完成這項工作
activate A
A -> B: 創建請求
activate B
B -> 別的東西: 創建請求
activate 別的東西
別的東西 --> B: 這項工作完成
destroy 別的東西
B --> A: 請求創建
deactivate B
A --> 使用者: 做完
deactivate A
@enduml
```



uml/reference_26-01-2_Examples

```
@startuml
(*) --> "膩平台"
--> === S1 ===
--> 鞠躬向公眾
--> === S2 ===
--> 這傢伙波武器
--> (*)

skinparam backgroundColor #AAFFFF
skinparam activityStartColor red
skinparam activityBarColor SaddleBrown
skinparam activityEndColor Silver
skinparam activityBackgroundColor Peru
skinparam activityBorderColor Peru
@enduml
```



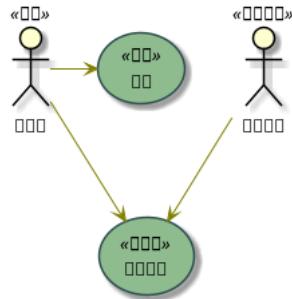
uml/reference_26-01-3_Examples

```
@startuml
skinparam usecaseBackgroundColor DarkSeaGreen
skinparam usecaseArrowColor Olive
skinparam actorBorderColor black
skinparam usecaseBorderColor DarkSlateGray

使用者 << 人類 >>
"主數據庫" as 數據庫 << 應用程式 >>
(草創) << 一桿 >>
"主数据燕" as (贏余) << 基本的 >>

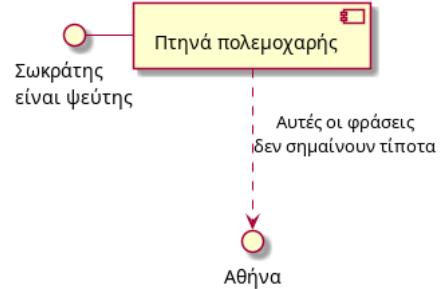
使用者 -> (草創)
使用者 --> (贏余)

數據庫 --> (贏余)
@enduml
```



uml/reference_26-01-4_Examples

```
@startuml
() "Σωκράτης\νείναι ψεύτης" as Σωκράτης
Σωκράτης - [Πτηνά πολεμοχαρής]
[Πτηνά πολεμοχαρής] ..> () Αθήνα : Αυτές οι φράσεις\νδεν σημαίνουν τίποτα
@enduml
```



archimate
Version 1.0.0
Delivered by <https://github.com/plantuml-stdlib/Archimate-PlantUML>

aws
Version 18.02.22
Delivered by <https://github.com/milo-minderbinder/AWS-PlantUML>

awslib
Version 10.0.0
Delivered by <https://github.com/awslabs/aws-icons-for-plantuml>

azure
Version 2.1.0
Delivered by <https://github.com/plantuml-stdlib/Azure-PlantUML>

c4
Version 2.4.0
Delivered by <https://github.com/plantuml-stdlib/C4-PlantUML>

cloudinsight
Version 1.0.0
Delivered by <https://github.com/plantuml-stdlib/cicon-plantuml-sprites>

cloudogu
Version 1.0.2
Delivered by <https://github.com/cloudogu/plantuml-cloudogu-sprites>

elastic
Version 0.0.1
Delivered by <https://github.com/Crashedmind/PlantUML-Elastic-icons>

kubernetes
Version 5.3.45
Delivered by <https://github.com/plantuml-stdlib/plantuml-kubernetes-sprites>

logos
Version 1.0.0
Delivered by <https://github.com/plantuml-stdlib/gilbarbara-plantuml-sprites>

material
Version 0.0.1
Delivered by <https://github.com/Templarian/MaterialDesign>

office
Version 1.0.0
Delivered by <https://github.com/Roemer/plantuml-office>

osa
Version 0.0.1
Delivered by <https://github.com/Crashedmind/PlantUML-opensecurityarchitecture-icons>

tupadr3
Version 2.2.0
Delivered by <https://github.com/tupadr3/plantuml-icon-font-sprites>



uml/reference_27-02-1_ArchiMate

```
@startuml
!include <archimate/Archimate>

title Archimate Sample - Internet Browser

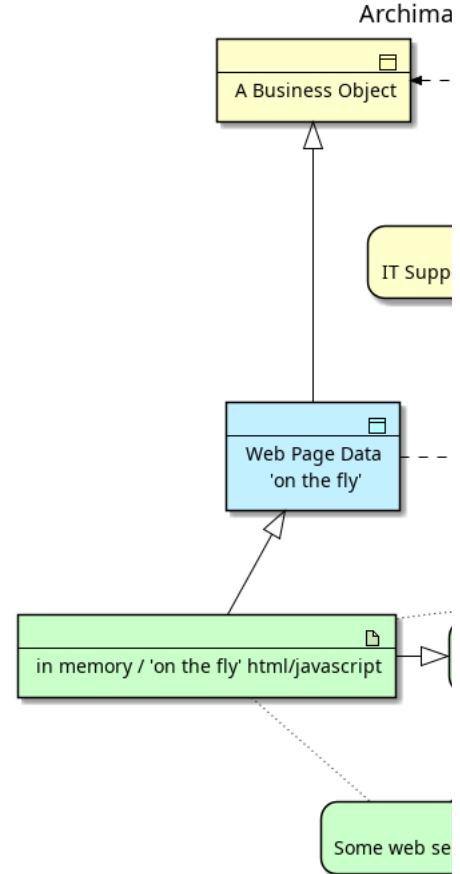
' Elements
Business_Object(businessObject, "A Business Object")
Business_Process(someBusinessProcess,"Some Business Process")
Business_Service(itSupportService, "IT Support for Business (Application Service)")

Application_DataObject(dataObject, "Web Page Data \n 'on the fly'")
Application_Function(webpageBehaviour, "Web page behaviour")
Application_Component(ActivePartWebPage, "Active Part of the web page \n 'on the fly')

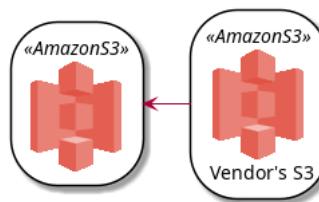
Technology_Artifact(inMemoryItem,"in memory / 'on the fly' html/javascript")
Technology_Service(internetBrowser, "Internet Browser Generic & Plugin")
Technology_Service(internetBrowserPlugin, "Some Internet Browser Plugin")
Technology_Service(webServer, "Some web server")

'Relationships
Rel_Flow_Left(someBusinessProcess, businessObject, "")
Rel_Serving_Up(itSupportService, someBusinessProcess, "")
Rel_Specialization_Up(webpageBehaviour, itSupportService, "")
Rel_Flow_Right(dataObject, webpageBehaviour, "")
Rel_Specialization_Up(dataObject, businessObject, "")
Rel_Assignment_Left(ActivePartWebPage, webpageBehaviour, "")
Rel_Specialization_Up(inMemoryItem, dataObject, "")
Rel_Realization_Up(inMemoryItem, ActivePartWebPage, "")
Rel_Specialization_Right(inMemoryItem,internetBrowser, "")
Rel_Serving_Up(internetBrowser, webpageBehaviour, "")
Rel_Serving_Up(internetBrowserPlugin, webpageBehaviour, "")
Rel_Aggregation_Right(internetBrowser, internetBrowserPlugin, "")
Rel_Access_Up(webServer, inMemoryItem, "")
Rel_Serving_Up(webServer, internetBrowser, "")

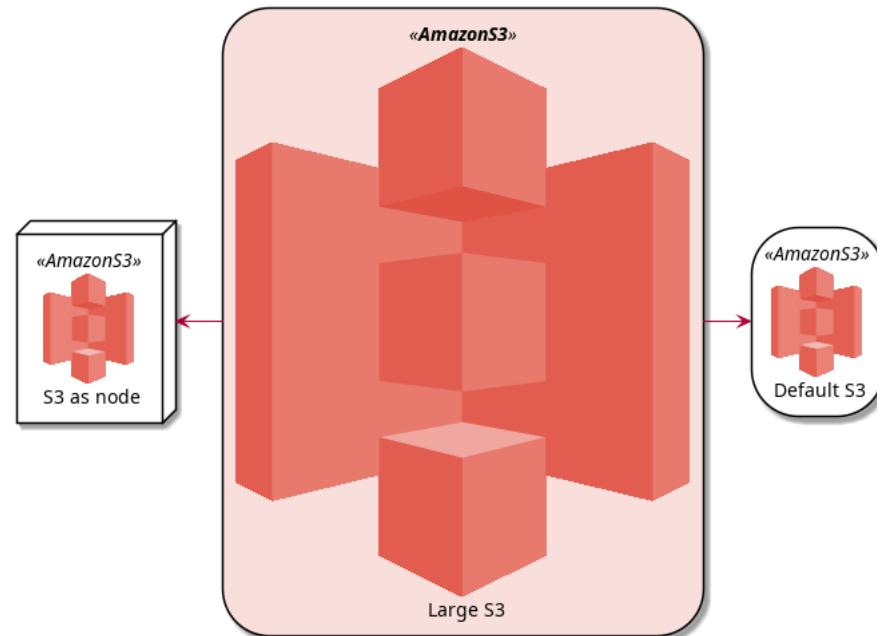
@enduml
```

**uml/reference_27-03-1_AWS-library**

```
@startuml
!include <aws/common>
!include <aws/Storage/AmazonS3/AmazonS3>
AMAZONS3(s3_internal)
AMAZONS3(s3_partner,"Vendor's S3")
s3_internal <- s3_partner
@enduml
```

**uml/reference_27-03-2_AWS-library**

```
@startuml
!include <aws/common>
!include <aws/Storage/AmazonS3/AmazonS3>
!include <aws/Storage/AmazonS3/AmazonS3_LARGE>
sktparam nodeBackgroundColor White
sktparam storage<>AmazonS3<> {
    backgroundColor #F9DFDC
}
AMAZONS3(s3_internal,"Default S3")
AMAZONS3(s3_internal2,"S3 as node",node)
AMAZONS3_LARGE(s3_partner,"Large S3")
s3_internal2 <-r- s3_partner
s3_internal <-l- s3_partner
@enduml
```

**uml/reference_27-04-1_Amazon-Labs-AWS-Library**

```
@startuml
'Copyright 2019 Amazon.com, Inc. or its affiliates. All Rights Reserved.
'SPDX-License-Identifier: MIT (For details, see https://github.com/awslabs/aws-icons-for-plantuml/blob/master/LICENSE)
!include <awslib/AWSCommon>
' Uncomment the following line to create simplified view
' !include <awslib/AWSSimplified>
!include <awslib/General/Users>
```

```

@startuml
!include <awslib/Mobile/APIGateway>
!include <awslib/SecurityIdentityAndCompliance/Cognito>
!include <awslib/Compute/Lambda>
!include <awslib/Database/DynamoDB>
left to right direction
Users(sources, "Events", "millions of users")
APIGateway(votingAPI, "Voting API", "user votes")
Cognito(userAuth, "User Authentication", "jwt to submit votes")
Lambda(generateToken, "User Credentials", "return jwt")
Lambda(recordVote, "Record Vote", "enter or update vote per user")
DynamoDB(voteDb, "Vote Database", "one entry per user")
sources --> userAuth
sources --> votingAPI
userAuth <--> generateToken
votingAPI --> recordVote
recordVote --> voteDb
@enduml

```



uml/reference_27-05-1_Azure-library

```

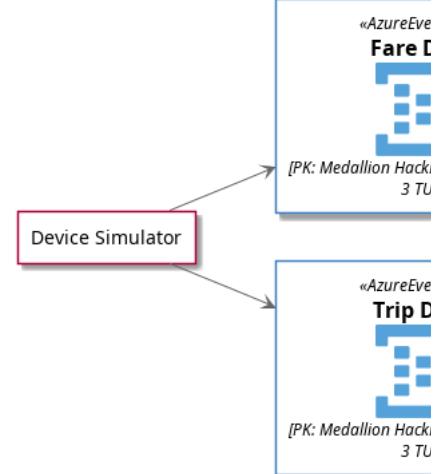
@startuml
!include <azure/AzureCommon>
!include <azure/Analytics/AzureEventHub>
!include <azure/Analytics/AzureStreamAnalytics>
!include <azure/Databases/AzureCosmosDb>

left to right direction
agent "Device Simulator" as devices #fff

AzureEventHub(fareDataEventHub, "Fare Data", "PK: Medallion Hack License VendorId; 3 TUs")
AzureEventHub(tripDataEventHub, "Trip Data", "PK: Medallion Hack License VendorId; 3 TUs")
AzureStreamAnalytics(streamAnalytics, "Stream Processing", "6 SUs")
AzureCosmosDb(outputCosmosDb, "Output Database", "1,000 RUs")

devices --> fareDataEventHub
devices --> tripDataEventHub
fareDataEventHub --> streamAnalytics
tripDataEventHub --> streamAnalytics
streamAnalytics --> outputCosmosDb
@enduml

```

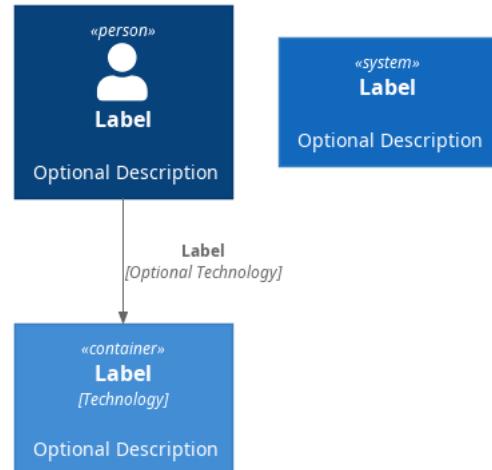


uml/reference_27-06-1_C4-library

```

@startuml
!include <C4/C4_Container>
Person(personAlias, "Label", "Optional Description")
Container(containerAlias, "Label", "Technology", "Optional Description")
System(systemAlias, "Label", "Optional Description")
Rel(personAlias, containerAlias, "Label", "Optional Technology")
@enduml

```



uml/reference_27-07-1_Cloud-Insight

```

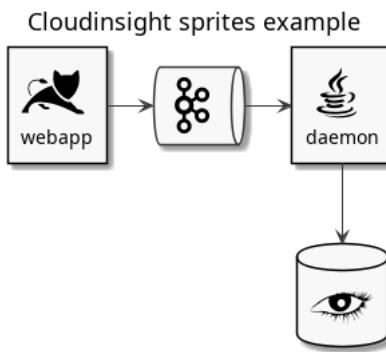
@startuml
!include <cloudinsight/tomcat>
!include <cloudinsight/kafka>
!include <cloudinsight/java>
!include <cloudinsight/cassandra>

title Cloudinsight sprites example
skinparam monochrome true

rectangle "<$tomcat>\nwebapp" as webapp
queue "<$kafka>" as kafka
rectangle "<$java>\ndaemon" as daemon
database "<$cassandra>" as cassandra

webapp -> kafka
kafka -> daemon
daemon --> cassandra
@enduml

```



uml/reference_27-08-1_Cloudogu

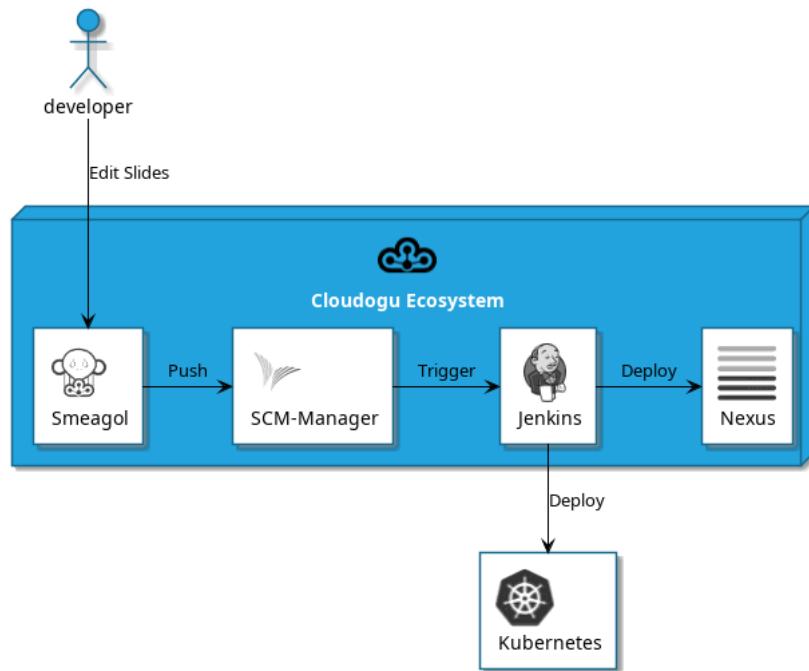
```
@startuml
!include <cloudogu/common>
!include <cloudogu/dogus/jenkins>
!include <cloudogu/dogus/cloudogu>
!include <cloudogu/dogus/scm>
!include <cloudogu/dogus/smeagol>
!include <cloudogu/dogus/nexus>
!include <cloudogu/tools/k8s>

node "Cloudogu Ecosystem" <<$cloudogu>> {
    DOGU_JENKINS(jenkins, Jenkins) #ffffff
    DOGU_SCM(scm, SCM-Manager) #ffffff
    DOGU_SMEAGOL(smeagol, Smeagol) #ffffff
    DOGU_NEXUS(nexus, Nexus) #ffffff
}

TOOL_K8S(k8s, Kubernetes) #ffffff

actor developer

developer --> smeagol : "Edit Slides"
smeagol -> scm : Push
scm -> jenkins : Trigger
jenkins -> nexus : Deploy
jenkins -> k8s : Deploy
@enduml
```

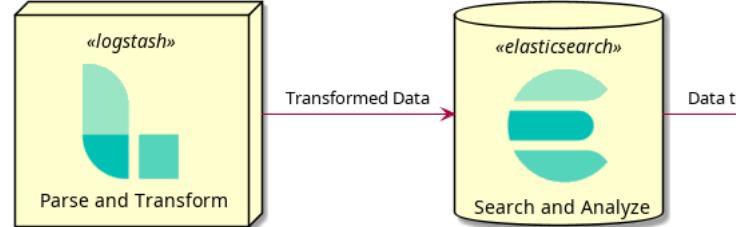


uml/reference_27-09-1_Elastic-library

```
@startuml
!include <elastic/common>
!include <elastic/elasticsearch/elasticsearch>
!include <elastic/logstash/logstash>
!include <elastic/kibana/kibana>

ELASTICSEARCH(ElasticSearch, "Search and Analyze", database)
LOGSTASH(Logstash, "Parse and Transform", node)
KIBANA(Kibana, "Visualize", agent)

Logstash -right-> ElasticSearch: Transformed Data
ElasticSearch -right-> Kibana: Data to View
@enduml
```



uml/reference_27-09-2_Elastic-library

```
@startuml
'Adapted from https://github.com/Crashedmind/PlantUML-Elastic-icons/blob/master/All.puml
```

```
'Elastic stuff here
'=====

!include <elastic/common>
!include <elastic/apm/apm>
!include <elastic/app_search/app_search>
!include <elastic/beats/beats>
!include <elastic/cloud/cloud>
!include <elastic/cloud_in_kubernetes/cloud_in_kubernetes>
!include <elastic/code_search/code_search>
!include <elastic/ece/ece>
!include <elastic/eck/eck>
'Beware of the difference between Crashedmind and plantuml-stdlib version: with '_' usage!
!include <elastic/elasticsearch/elasticsearch>
!include <elastic/endpoint/endpoint>
!include <elastic/enterprise_search/enterprise_search>
!include <elastic/kibana/kibana>
!include <elastic/logging/logging>
!include <elastic/logstash/logstash>
!include <elastic/maps/maps>
!include <elastic/metrics/metrics>
!include <elastic/siem/siem>
!include <elastic/site_search/site_search>
!include <elastic/stack/stack>
!include <elastic/uptime/uptime>
```

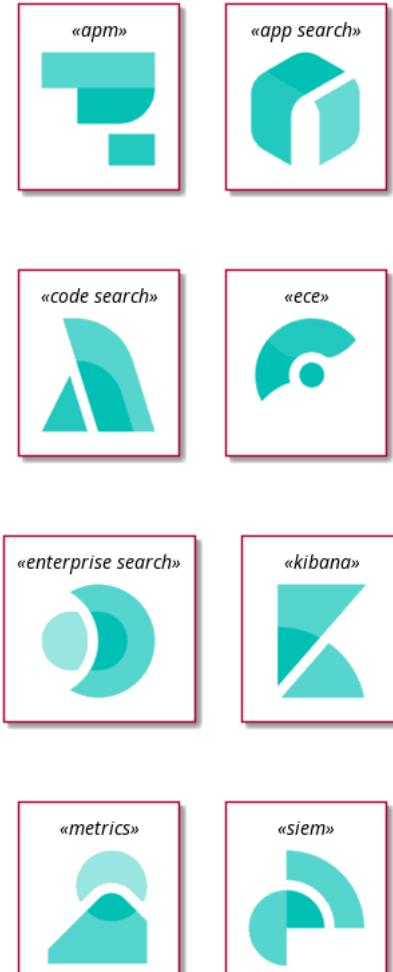
```
skinparam agentBackgroundColor White
```

```
APM(apm)
APP_SEARCH(app_search)
BEATS(beats)
CLOUD(cloud)
CLOUD_IN_KUBERNETES(cloud_in_kubernetes)
CODE_SEARCH(code_search)
ECE(ece)
ECK(eck)
ELASTICSEARCH(elastic_search)
ENDPOINT(endpoint)
ENTERPRISE_SEARCH(enterprise_search)
KIBANA(kibana)
LOGGING(logging)
```

```

LOGSTASH(logstash)
MAPS(maps)
METRICS(metrics)
SIEM(siem)
SITE_SEARCH(site_search)
STACK(stack)
UPTIME(uptime)
@enduml

```



uml/reference_27-10-1_Google-Material-Icons

```

@startuml
!include <material/common>
' To import the sprite file you DON'T need to place a prefix!
!include <material/folder_move>

MA_FOLDER_MOVE(Red, 1, dir, rectangle, "A label")
@enduml

```



uml/reference_27-10-2_Google-Material-Icons

```

@startuml
!include <material/common>
' To import the sprite file you DON'T need to place a prefix!
!include <material/folder_move>

MA_FOLDER_MOVE(Red, 1, dir, rectangle, "A label") {
}

class foo {
    bar
}
@enduml

```

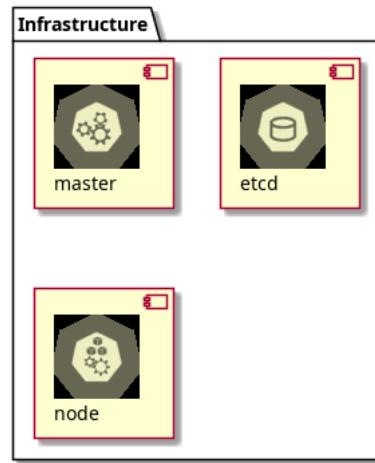


uml/reference_27-11-1_Kubernetes

```

@startuml
!include <kubernetes/k8s-sprites-unlabeled-25pct>
package "Infrastructure" {
    component "<$master>\nmaster" as master
    component "<$etcd>\netcd" as etcd
    component "<$node>\nnode" as node
}
@enduml

```

**uml/reference_27-12-1_Logos**

```

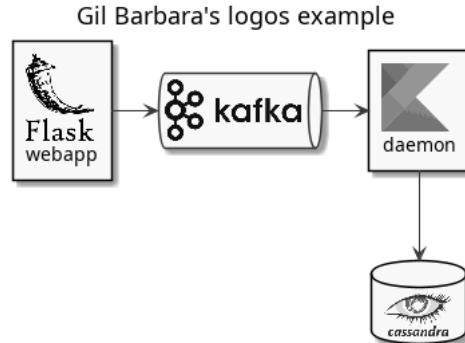
@startuml
!include <logos/flask>
!include <logos/kafka>
!include <logos/kotlin>
!include <logos/cassandra>

title Gil Barbara's logos example
skinparam monochrome true

rectangle "<$flask>\nwebapp" as webapp
queue "<$kafka>" as kafka
rectangle "<$kotlin>\ndaemon" as daemon
database "<$cassandra>" as cassandra

webapp -> kafka
kafka -> daemon
daemon --> cassandra
@enduml

```

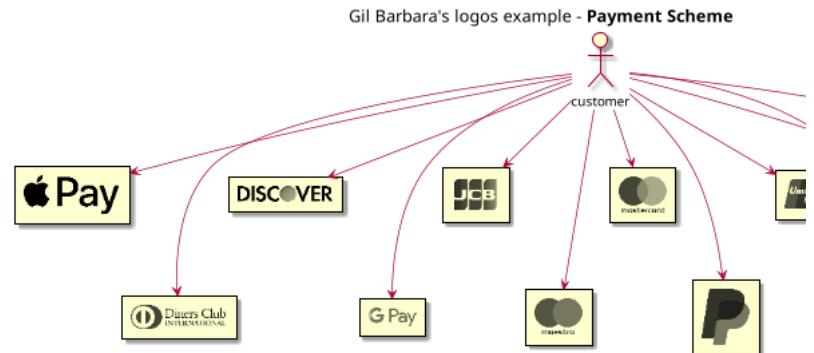
**uml/reference_27-12-2_Logos**

```

@startuml
scale 0.7
!include <logos/apple-pay>
!include <logos/dinersclub>
!include <logos/discover>
!include <logos/google-pay>
!include <logos/jcb>
!include <logos/maestro>
!include <logos/mastercard>
!include <logos/paypal>
!include <logos/unionpay>
!include <logos/visaelectron>
!include <logos/visa>
' ...
title Gil Barbara's logos example - **Payment Scheme**
actor customer
rectangle "<$apple-pay>" as ap
rectangle "<$dinersclub>" as dc
rectangle "<$discover>" as d
rectangle "<$google-pay>" as gp
rectangle "<$jcb>" as j
rectangle "<$maestro>" as ma
rectangle "<$mastercard>" as m
rectangle "<$paypal>" as p
rectangle "<$unionpay>" as up
rectangle "<$visa>" as v
rectangle "<$visaelectron>" as ve
rectangle "... as etc

customer --> ap
customer --> dc
customer --> d
customer --> gp
customer --> j
customer --> ma
customer --> m
customer --> p
customer --> up
customer --> v
customer --> ve
customer --> etc
@enduml

```



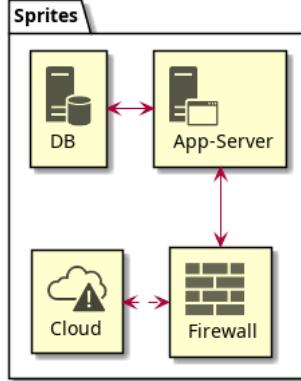
uml/reference_27-13-1_Office

```
@startuml
!include <tupadr3/common>

!include <office/Servers/database_server>
!include <office/Servers/application_server>
!include <office/Concepts/firewall_orange>
!include <office/Clouds/cloud_disaster_red>

title Office Icons Example

package "Sprites" {
    OFF_DATABASE_SERVER(db,DB)
    OFF_APPLICATION_SERVER(app,App-Server)
    OFF_FIREWALL_ORANGE(fw,Firewall)
    OFF_CLOUD_DISASTER_RED(cloud,Cloud)
    db <-> app
    app <-> fw
    fw <.left.> cloud
}
@enduml
```

Office Icons Example**uml/reference_27-13-2_Office**

```
@startuml
!include <tupadr3/common>

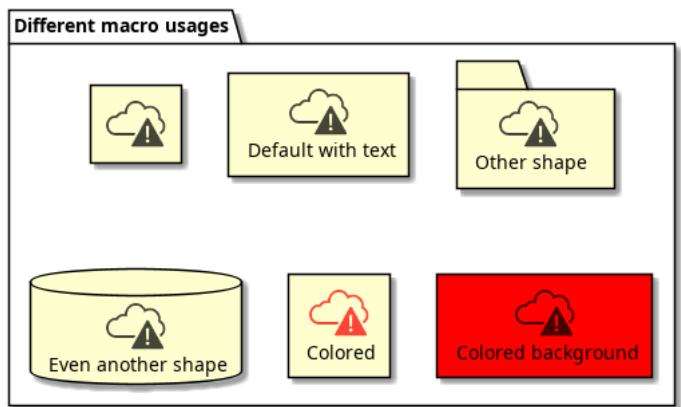
!include <office/servers/database_server>
!include <office/servers/application_server>
!include <office/Concepts/firewall_orange>
!include <office/Clouds/cloud_disaster_red>

' Used to center the label under the images
skinparam defaultTextAlignment center

title Extended Office Icons Example

package "Use sprite directly" {
    [Some $cloud_disaster_red object]
}

package "Different macro usages" {
    OFF_CLOUD_DISASTER_RED(cloud1)
    OFF_CLOUD_DISASTER_RED(cloud2,Default with text)
    OFF_CLOUD_DISASTER_RED(cloud3,Other shape,Folder)
    OFF_CLOUD_DISASTER_RED(cloud4,Even another shape,Database)
    OFF_CLOUD_DISASTER_RED(cloud5,Colored,Rectangle, red)
    OFF_CLOUD_DISASTER_RED(cloud6,Colored background) #red
}
@enduml
```

Extended Office Icons Example**uml/reference_27-14-1_Open-Security-Architecture**

```
@startuml
'Adapted from https://github.com/Crashedmind/PlantUML-opensecurityarchitecture-icons/blob/master/all
scale .5
!include <osa/arrow/green/left/left>
!include <osa/arrow/yellow/right/right>
!include <osa/awareness/awareness>
!include <osa/contract/contract>
!include <osa/database/database>
!include <osa/desktop/desktop>
!include <osa/desktop/imac/imac>
!include <osa/device_music/device_music>
!include <osa/device_scanner/device_scanner>
!include <osa/device_usb/device_usb>
!include <osa/device_wireless_router/device_wireless_router>
!include <osa/disposal/disposal>
!include <osa/drive_optical/drive_optical>
!include <osa/firewall/firewall>
!include <osa/hub/hub>
!include <osa/ics/drive/drive>
!include <osa/ics/plc/plc>
!include <osa/ics/thermometer/thermometer>
!include <osa/id/card/card>
!include <osa/laptop/laptop>
!include <osa/lifecycle/lifecycle>
!include <osa/lightning/lightning>
!include <osa/media_flash/media_flash>
!include <osa/media_optical/media_optical>
!include <osa/media_tape/media_tape>
!include <osa/mobile/pda/pda>
!include <osa/padlock/padlock>
!include <osa/printer/printer>
!include <osa/site_branch/site_branch>
!include <osa/site_factory/site_factory>
!include <osa/vpn/vpn>
!include <osa/wireless/network/network>

rectangle "OSA" {
    rectangle "Left:\n<$left>" 
    rectangle "Right:\n<$right>" 
    rectangle "Awareness:\n<$awareness>" 
    rectangle "Contract:\n<$contract>" 
    rectangle "Database:\n<$database>" 
}
```

```

rectangle "Desktop:\n <$desktop>" 
rectangle "Imac:\n <$imac>" 
rectangle "Device_music:\n <$device_music>" 
rectangle "Device_scanner:\n <$device_scanner>" 
rectangle "Device_usb:\n <$device_usb>" 
rectangle "Device_wireless_router:\n <$device_wireless_router>" 
rectangle "Disposal:\n <$disposal>" 
rectangle "Drive_optical:\n <$drive_optical>" 
rectangle "Firewall:\n <$firewall>" 
rectangle "Hub:\n <$hub>" 
rectangle "Drive:\n <$drive>" 
rectangle "Plc:\n <$plc>" 
rectangle "Thermometer:\n <$thermometer>" 
rectangle "Card:\n <$card>" 
rectangle "Laptop:\n <$laptop>" 
rectangle "Lifecycle:\n <$lifecycle>" 
rectangle "Lightning:\n <$lightning>" 
rectangle "Media_flash:\n <$media_flash>" 
rectangle "Media_optical:\n <$media_optical>" 
rectangle "Media_tape:\n <$media_tape>" 
rectangle "Pda:\n <$pda>" 
rectangle "Padlock:\n <$padlock>" 
rectangle "Printer:\n <$printer>" 
rectangle "Site_branch:\n <$site_branch>" 
rectangle "Site_factory:\n <$site_factory>" 
rectangle "Vpn:\n <$vpn>" 
rectangle "Network:\n <$network>" 
}
@enduml

```



uml/reference_27-15-1_Tupadr3-library

```

@startuml
!include <tupadr3/common>
!include <tupadr3/font-awesome/server>
!include <tupadr3/font-awesome/database>

title Styling example

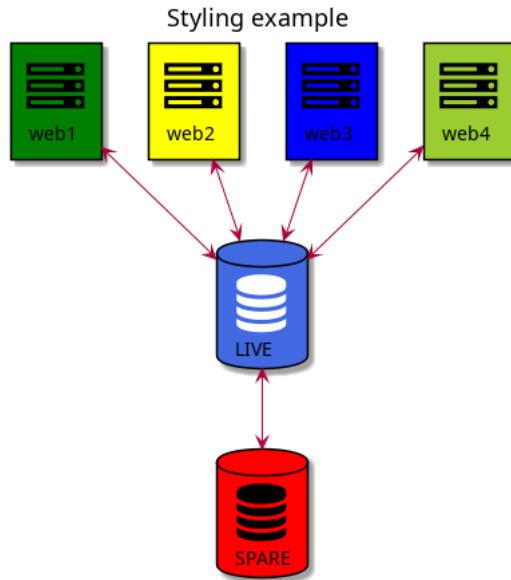
FA_SERVER(web1,web1) #Green
FA_SERVER(web2,web2) #Yellow
FA_SERVER(web3,web3) #Blue
FA_SERVER(web4,web4) #YellowGreen

FA_DATABASE(db1,LIVE,database,white) #RoyalBlue
FA_DATABASE(db2,SPARE,database) #Red

db1 <--> db2

web1 <--> db1
web2 <--> db1
web3 <--> db1
web4 <--> db1
@enduml

```



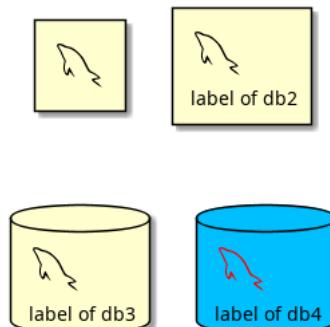
uml/reference_27-15-2_Tupadr3-library

```

@startuml
!include <tupadr3/common>
!include <tupadr3/devicons/mysql>

DEV_MYSQL(db1)
DEV_MYSQL(db2,label of db2)
DEV_MYSQL(db3,label of db3,database)
DEV_MYSQL(db4,label of db4,database,red) #DeepSkyBlue
@enduml

```



uml/sequence-autonumber

```

@startuml
autonumber 10 10

```

B -> A: Hello
A -> B: Yes?
B -> A: Fresh foo!

@enduml



uml/sequence

```
@startuml
== Initialize ==
Alice->Bob : hello
note left: this is a first note
Bob->Alice : ok
note right: this is another note
Bob-->Bob : I am thinking
note left
    a note
    can also be defined
    on several lines
end note
== Repeat ==
Alice -> Bob: message 1
Bob --> Alice: ok
|||
Alice -> Bob: message 2
Bob --> Alice: ok
||45||
Alice -> Bob: message 3
Bob --> Alice: ok
== Get Funky ==
Bob -->x Alice
Bob -->> Alice
Bob -->\ Alice
Bob \\\--> Alice
Bob -->o Alice
Bob <-->o Alice
Bob <-->> Alice
note right: These are\nthe Funky arrows,\nYes,...
```

