camos. camos Develop 12.0 **Developer training Basics Advanced geometry model**

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Contents

Prerequisite

Blank knowledge base

Target

- Learning how to handle the new geometry model
- Learning how to handle the form editor

After these exercises you should ...

- Know the advantages of the Advanced geometry model
- Be able to use margin definitions
- Be able to link form elements with each other
- Know what a reference line / a grid is

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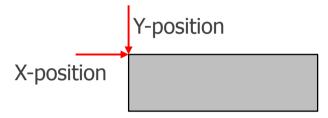
Advanced geometry model

- Advantages
 - The frontend takes on the calculation if
 - a linked element is hidden/moved
 - more contents is added to content-based form elements.
 - Merging of classical and Advanced geometry model is possible with only few exceptions
 - All four frontends support the Advanced geometry model



Alignment in the classical geometry model

 Position of the form element is determined by the left top corner



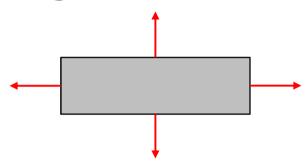
 Width and height of the form element are defined by the properties with the same name

– Width	⊬→ 100
– Height	<u>‡</u> 18

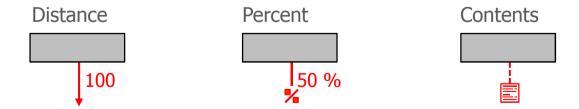


Alignment in the Advanced geometry model

Size and position of form elements is described margin by margin



Specification of width and height is carried out via margin information





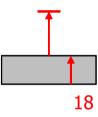
Advanced geometry model

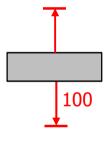
Possible alignments

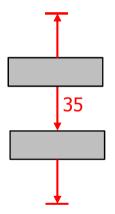
To the own margin



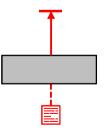
To a sibling form element



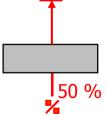




Content-based









Convert form element to Advanced geometry

- Create new class Conversion
 - Create numerical feature Whd
 - Create form Form
 - Create method new with the following contents

```
LicenseDemand('camos.Configurator');
Whd := WinOpen('Form');
RETURN;
```



Alternatively these Wasele can be created via the shortcut Ctrl+Alt+N

- Create a static label on the form Form
 - BG-color (in the example: purple)



(

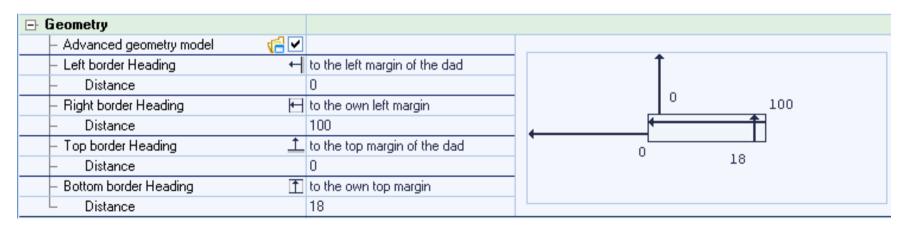
Convert form element to Advanced geometry

- Enable property Advanced geometry model
 - This property is set in order to convert the label to the Advanced geometry model

 Geometry

Advanced geometry model

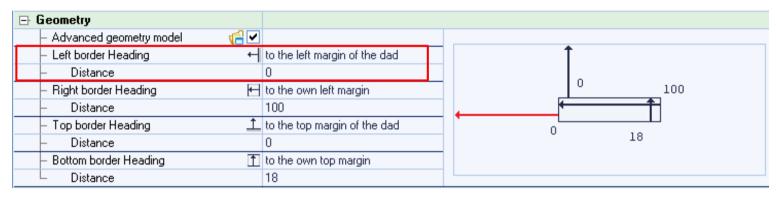
The geometry section of the form editor changes to the following display



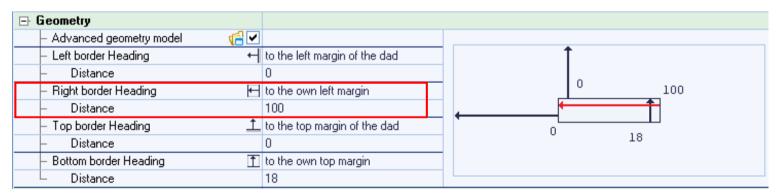


Edge definitions

Definition of the left border



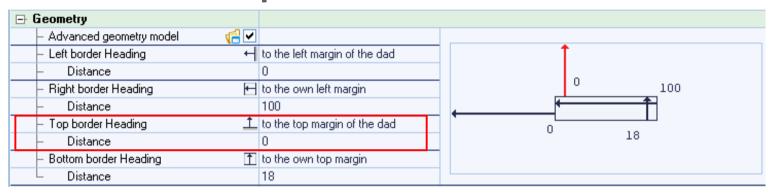
Definition of the right border



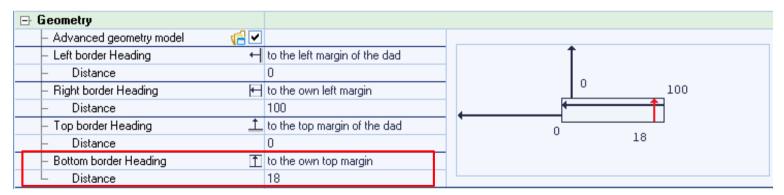


Edge definitions

Definition of the top border



Definition of the bottom border

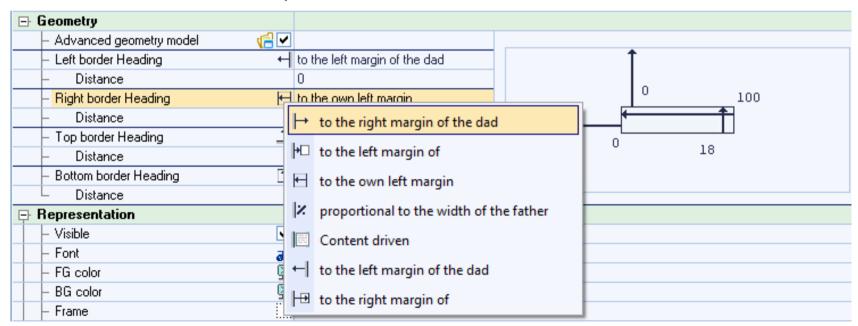




Exercise: Handling the geometry section

- The change of the edge definition can be carried out in two different ways
 - Change border definition in tabular display

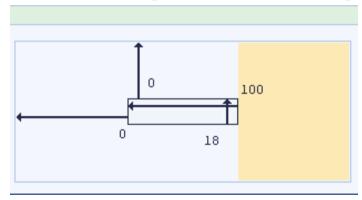
 - Then click on *to the right margin of the dad*
 - In this example the dad is the form Form



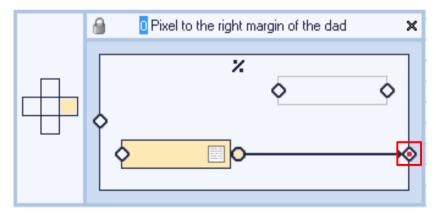


Exercise: Changing the right edge definition

- Change edge definition in graphic display
 - Click in the right section of the graphic display



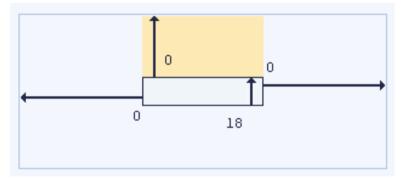
• Click on icon on the right margin of the dialog



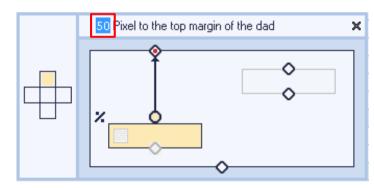


Exercise: Changing all Distance

- The change of the Alignment can be carried out in two different ways
 - Change distance in tabular display
 - Change distance in graphic display
 Left, right, top margin: 50
 Bottom margin: 35
 - Click on an border



Enter new Distance





Exercise: Changing all Distances

- The static label keeps a distance of 50 pixel to the form margin with the top, left and right margin. If the form width is changed, this affects the width of the static label.
- The static label has a fixed height via the definition of the bottom margin to the opposite margin

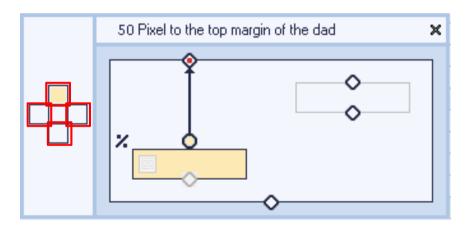


Exercise: Changing all Distances



Faster change between the borders in the graphic display

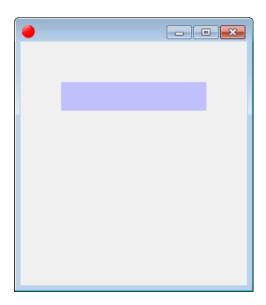
• The border can be changed via a click on the outer surfaces of the cross

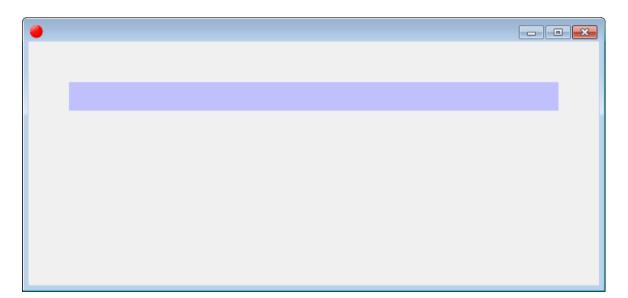




Display of the runtime

• Starting the example and widening or narrowing the form





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Edge property: Variable

- A minimum and maximum width/height can be specified on a variable of edge
 - If the form is enlarged, the form grows as to the specified maximum width/height.
 - Then the distance between form element and form is enlarged.
 - If the form is reduced, the form element reduces as to the specified minimum width/height.
 - Then the form element is moved to the not visible section.



Exercise: static label – right edge variable

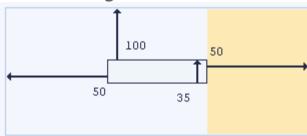
Create a static label on the form Form Geometry

Left margin

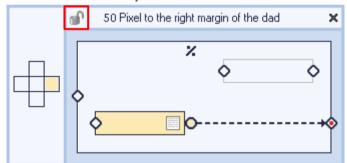
- Fix to dad
- Right margin
- Variable to dad

- Distance: 50
- Distance: 50

• Click on edge



Click on lock symbol



- Minimum width: 250
- Maximum width: 600



Exercise: static label – right edge variable

• Top edge Fixed to dad — Distance: 100

• Bottom edge To the own margin — Distance: 35

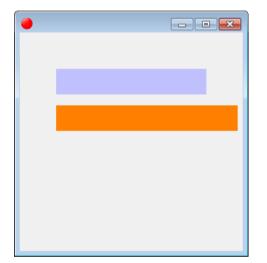
Display

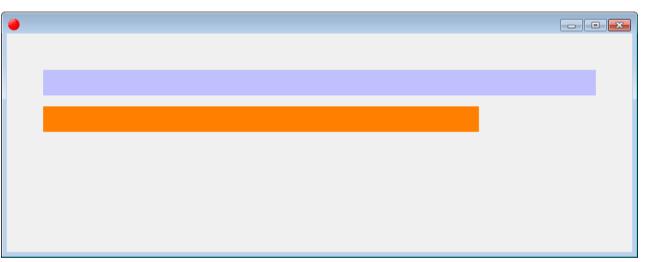
• BG-color any (in the example: orange)



Display during runtime

Start example -> Drag form wider and narrower







Exercise: static label – left edge variable

Create a static label on the form Form Geometry

• Left margin Variable to dad — Distance: 50

Minimum width: 250Maximum width: 600

• Right margin Fixed to dad — Distance: 50

• Top margin Fixed to dad — Distance: 150

• Bottom margin To the own margin — Distance: 35

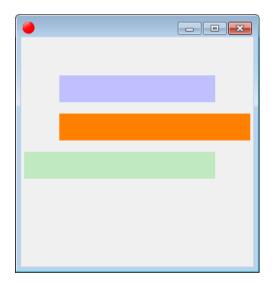
Display

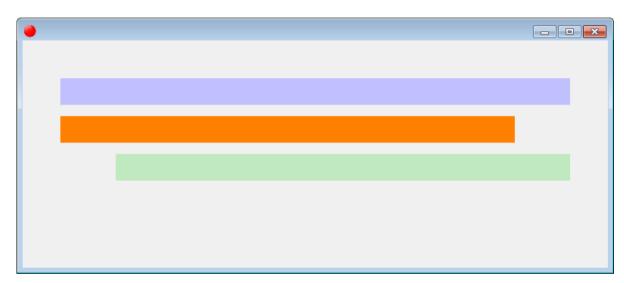
• BG-color any (in the example: green)



Display during runtime

Start example -> Drag form wider and narrower





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Edge property: To the margin of

Linking of form elements

- If a form element is moved, the form elements that are aligned with it also change their position (depending on the alignment)
- If a form element on which other form elements are aligned is set invisible, the resulting gap is closed by the linked form elements
- A form element on which other form elements are linked to is called reference- or sibling form element



- Create new class Linking
 - In the class Linking
 - Create the numerical feature Whd
 - Create the form Form
 - Create the method new with the following contents

```
LicenseDemand('camos.Configurator');
Whd := WinOpen('Form');
RETURN;
```



- Linking with a sibling form element
- Create a static label on the form Form

Name Label_top

Geometry

Left margin Fixed to dad – Distance: 50
 Right margin To the own margin – Distance: 100
 Top margin Fixed to dad – Distance: 80
 Bottom margin To the own margin – Distance: 20

Display

• BG-color any (in the example: green)



Create a further static label

Name Label_bottom

Display

• Color any (in the example: orange)

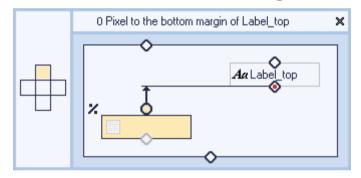
Geometry

• Left margin Fixed to dad — Distance: 50

• Right margin To the own margin — Distance: 100



- Top margin to the bottom margin of Distance: 20
 Label_top
 - Click on edge
- Click on "to the bottom margin of"



• Distance: 20

20 Pixel to the bottom margin of Label_top 🗶

- With the moving of Label_top on the Y-axis, the Label_bottom that is linked to it is also moved on the Y-axis.
- Bottom margin Fixed to the own margin Distance: 20



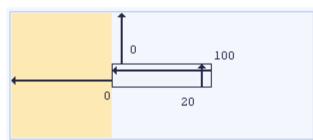
Create an editline on the form Form

• Name Edit_top

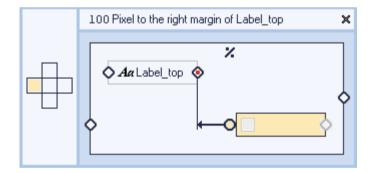
Geometry

Left margin to the right margin of Label_top

Click on border



 Click on "to the right margin of" Distance: 100



- A selection list is displayed if several form elements are possible as reference element.
- With the moving of Label_top on the X-axis, the editline is also moved on the X-axis.



• Right margin to the own margin — Distance: 100

• Top margin to the top margin of

Label_top – Distance: 0

• If Label_top is moved to the top or bottom, the editline always stays on the same height as Label_top.

Bottom margin to the own margin — Distance: 20



Create a further editline

Name Edit_bottom

Geometry

• Left margin to the left margin of

Edit_top – Distance: 0

- If Edit_top is moved to the left or right, the editline always stays directly under Edit_top.
- Right margin Fixed to the own margin Distance: 100



• Top margin to the bottom margin of

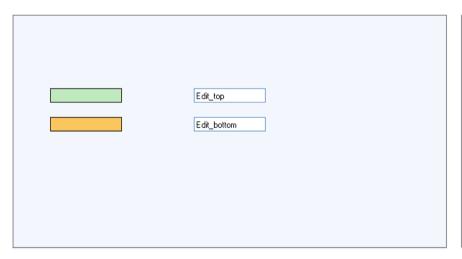
Edit_top – Distance: 20

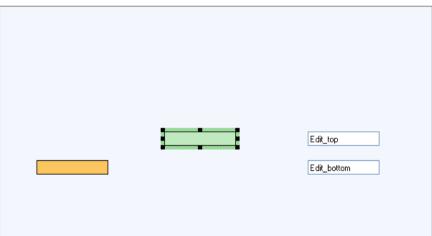
- If Edit_top is moved to the top or bottom, the editline keeps the defined distance to Edit_top.
- Bottom margin Fixed to the own margin Distance: 20



Behavior of linked form elements

- Opening the form preview
- Moving Label_top to the right and the bottom





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Border definition - Proportional

- Specification of the distance is carried out in percent %
- Proportional edges can be defined fixed and variable
- With the change of an edge definition to Proportional
 - The position of the form element is kept
 - The matching proportional ratio to the father panel is determined



Exercise: Centered alignment of a form element

- Create a new class FE_Centered
 - In the class FE_Centered
 - Create the numerical feature Whd
 - Create the string feature Text
 - Create the form Form
 - Create the method new with the following contents
 LicenseDemand('camos.Configurator');
 Whd := WinOpen('Form');
 RETURN;



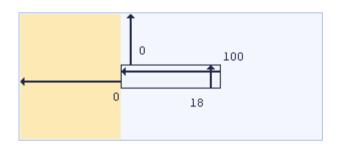
Exercise: Centered alignment of a form element

- Create a static label on the form Form
 - Name

Reference

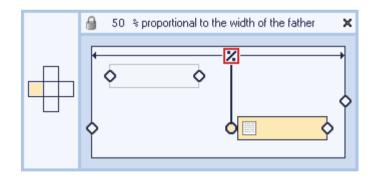
Geometry

- Left margin
 - Click on edge



Proportional – Distance: 50%

- Click on Proportional to the width of the father
- Distance: 50%





Exercise: Centered alignment of a form element

Right margin
 Proportional to the width of the father

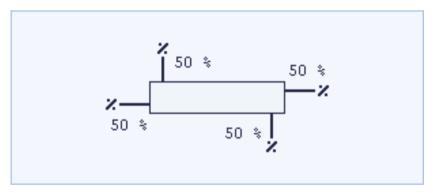
Distance: 50%

Top margin
 Proportional to the height of the father

Distance: 50%

Bottom margin Proportional to the height of the father

Distance: 50%





The element Reference is not visible on the form. The element is always in the center of the form due to the border definition 50% on all four margins.



Exercise: Centered alignment of a form element

Create a string editor Geometry

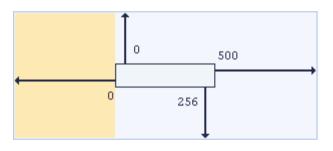
Left margin to the left margin of

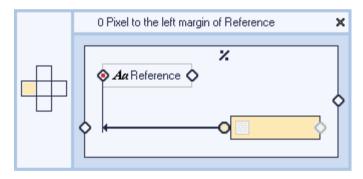
Reference

Distance: -100

Click on border

• Click on "to the right margin of"





Distance: -100

-100 Pixel to the left margin of Reference

×



The distance corresponds to the half width of the string editor. Therefore the editor always stays in the center of the form if the form width is changed.



Exercise: Centered alignment of a form element

• Right margin to the own left margin — Distance: 200

Top margin to the top margin of

Reference – Distance: -50



The distance corresponds to the half height of the string editor. Therefore the editor always stays in the center of the form if the height of the form is changed.

• Bottom margin to the own top margin — Distance: 100

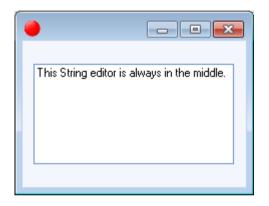
Cause variable Text

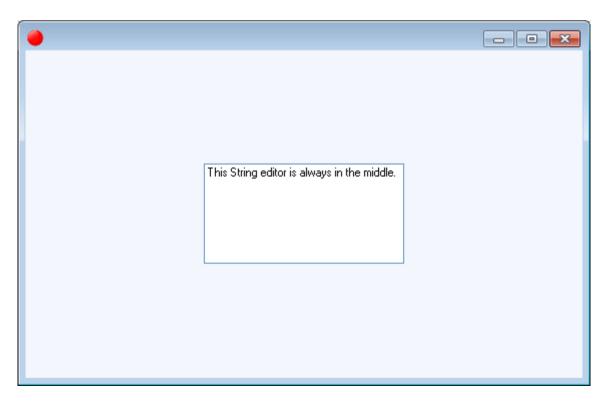
→ Create new string feature "Text"



Display of the centered aligned element

Start example and enlarge form







- Create a new class Proportional_Linking
 - In the class Proportional_Chaining
 - Create the numerical feature Whd
 - Create the form Form
 - Create the method new with the following contents

```
LicenseDemand('camos.Configurator');
Whd := WinOpen('Form');
RETURN;
```



Create a pushbutton on the form Form

Name PageBack

Geometry

Left margin
 Fixed to dad
 Distance: 0

Right margin
 Proportional
 Distance: 25%

• Pushbutton always has a fourth of the form width.

• Bottom margin Fixed to dad — Distance: 0

Top margin
 to the own
 Distance: 22

bottom margin

Texts

Text
 Multilingual
 << Page back



Create a further pushbutton

Name PageForward

Geometry

Left margin to the right margin of

PageBack – Distance: 0

• Right margin Proportional – Distance: 50%

Pushbutton always has a fourth of the form width.
 The right margin always ends exactly in the center of the form.

Bottom margin
 Fixed to dad
 Distance: 0

Top margin to the own margin – Distance: 22

Texts

Text
 Multilingual
 Page forward >>



Create a further pushbutton on the form Form

• Name OK

Geometry

Left margin to the right margin of

PageForward – Distance: 0

Right margin
 Proportional
 Distance: 75%

• Pushbutton always has a fourth of the form width.

The right margin always ends exactly after three fourths of the form width.

• Bottom margin Fixed to dad — Distance: 0

Top margin to the own margin – Distance: 22

Texts

Text Multilingual OK



Create a further pushbutton on the form Form

Name Cancel

Geometry

Left margin to the right margin of

OK – Distance: 0

Right margin
 Fixed to father
 Distance: 0

• Pushbutton always has a fourth of the form width.

The right margin is aligned with the right margin of the form in order to avoid rounding errors.

Bottom margin
 Fixed to dad
 Distance: 0

Top margin to the own margin – Distance: 22

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Exercise: Chaining of proportional form elements

Texts

Text

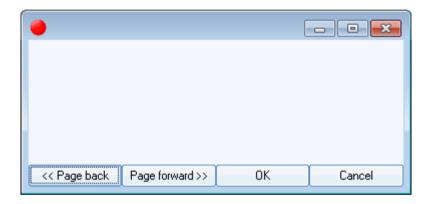
Multilingual

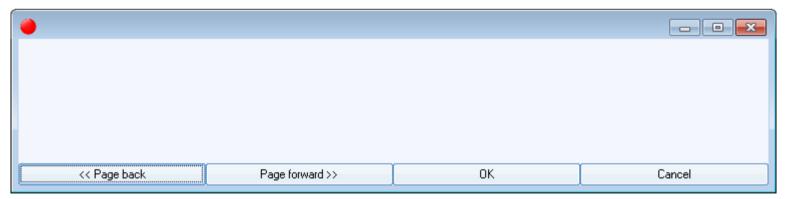
Cancel



Display during runtime

- Starting the example
- Changing the form width







Edge property: Content-based

Size of the form element adapts to the content



- A distance cannot be defined on the content-based edge
- The margin opposite the content-based edge is automatically fix
- Two opposite margins cannot be content-based at the same time



- In the frame under Languages
 - Create language English (Great Britain)
- In the frame under Fonts
 - Specify another font size for the language English
- Create a new class Content-based
 - In the class Content-based
 - Create the numerical feature Whd
 - Create the numerical feature Language
 Init value
 49
 - Create the form Form
 - Create the method new with the following contents
 LicenseDemand('camos.Configurator');
 Whd := WinOpen('Form');
 RETURN;



- Create a groupbox on the form Form Geometry
 - •Left margin
 - Right margin

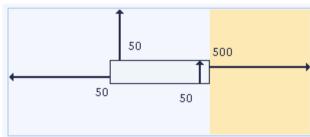
Fixed to dad

Content driven

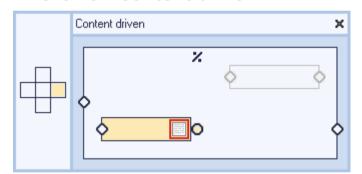
- Distance: 50

- Preview width: 300

Click on border



Click on Content driven



• Preview width: 300



Preview height and -width is only needed for the form preview

Top margin

Fixed to dad

- Distance: 50



• Bottom margin Content driven — Preview height: 50

Display

Border
 Line border

Respect border distance
 Enabled



A fix defined distance between border and contents is kept via "Respect border distance".

Texts

Heading Multilingual English: Language

German: Sprache



Create a radiobutton within the groupbox

Name German

Geometry

Left margin
 Fixed to dad
 Distance: 5

• Right margin Content-based — Preview width: 100

• Top margin Fixed to dad — Distance: 10

• Bottom margin Content-based (default)

Texts

Text
 Multilingual
 English: German language

German: Deutsch

Special

• Cause variable the feature *Language*

• Value 49



Selection trigger

- LanguageDialogSet(Language);
- The dialog language is set to the value that is contained in the feature Language (here: 49 = German).



Create a further radiobutton within the groupbox

• Name English

Geometry

Left margin to the right margin of

German

Right margin Content-based

Top margin
 Fixed to dad

• Bottom margin Content-based (default)

- Distance: 5

- Preview width: 100

- Distance: 10

Texts

• Text Multilingual English: English language

German: Englisch

Special

Cause variable the feature Language

• Value 44



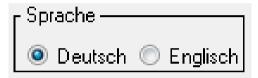
Selection trigger

- LanguageDialogSet(Language);
- The dialog language is set to the value that is contained in the feature Language (here: 44 = English).



Display during runtime

- Start example and enable the radiobuttons alternately
 - German



English



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Reference line

- Via the reference line form elements can be easily aligned with the form element that has during runtime:
 - the smallest Y-/X-value
 - the highest Y-/X-value

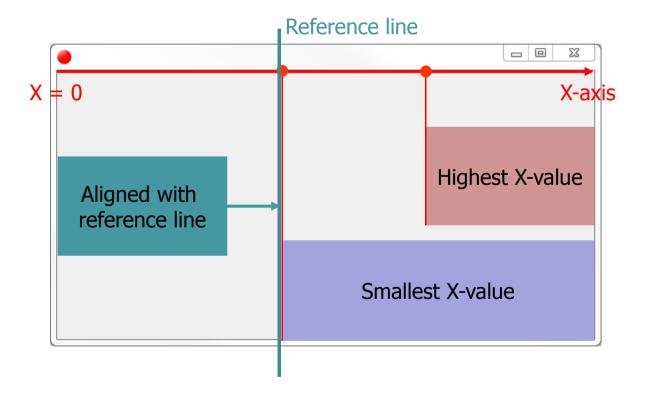


The reference line is not visible during runtime



Reference line (highest | smallest X-value)

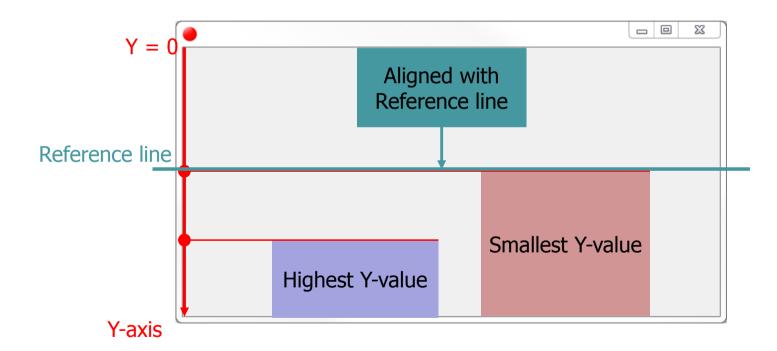
• A reference line orientates towards the form element with the smallest X-value





Reference line (highest | smallest X-value)

 A reference line orientates towards the form element with the smallest Y-value





Reference line

Properties of the reference line

Alignment

Vertical: Reference line orientates towards the reference

element with the smallest/highest X-value

— Horizontal: Reference line orientates towards the reference

element with the smallest/highest Y-value

Alignment with the margin

+☐ Left: The reference line orientates towards the left

margin of its reference elements

Right: The reference line orientates towards the right

margin of its reference elements

Top: The reference line orientates towards the top

margin of its reference elements

☐ Bottom: The reference line orientates towards the

bottom margin of its reference elements



Reference line

Reference limit

Max: Reference line orientates towards the reference

element with the highest X-/Y-value

Min: Reference line orientates towards the reference

element with the smallest X-/Y-value

Distance The reference line keeps the here specified

Distance to the reference elements

• Example 2 Reference element List of the reference elements



Only reference elements in the Advanced geometry model are considered.



Create a new class ReferenceLine

- In the class ReferenceLine
 - Create the numerical feature Whd
 - Create the string feature SName
 - Create the string feature SFirstName
 - Create the form Form
 - Create the method new with the following contents

```
LicenseDemand('camos.Configurator');
Whd := WinOpen('Form');
RETURN;
```



Create a static label on the form Form

Name
 FirstName

Geometry

Left margin
 Fixed to dad
 Distance: 10

• Right margin Content driven

• Top margin Fixed to dad — Distance: 25

Bottom margin Content driven

Texts

• Text Multilingual English: First Name

German: Vorname



Create a further static label on the form Form

Name

Geometry

Left margin
 Fixed to dad
 Distance: 10

Right margin Content driven

Top margin to the bottom margin of

First name

Bottom margin Content driven

Texts

Text
 Multilingual
 English: Family Name

German: Name

- Distance: 5



Create a reference line on the form Form Geometry

Alignment

Vertical

- Defines that the reference line either orientates towards the reference element with the highest/smallest X-value during runtime.
- Alignment to border

Right

- The reference line orientates towards the right margin of its reference elements.
- Reference limit

Max.

• The reference line orientates towards the reference element with the highest X-value.



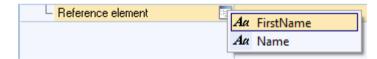
• Distance 10

• The reference line keeps a Distance of 10 pixel to the reference element with the highest X-value.

• Reference element

FirstName, Name

- Click on icon
- Select the labels FirstName and Name from the list



 The reference line orientates towards the form elements FamilyName and Name



Create an editline on the form Form

Name
 EditFirstName

Geometry

Left margin to the left margin of

reference line

- Distance: 0

Editline orientates towards the reference line

Right margin to the own left margin

– Distance: 200

Top margin to the top margin of

First name

- Distance: 0

Bottom margin Content-based (default)

Cause variable SFirstName



Create a further editline on the form Form

EditName Name

Geometry

• Left margin to the left margin of

> reference line - Distance: 0

The editline orientates towards the reference line

 Right margin to the own left margin - Distance: 200

 Top margin to the top margin of

Family name

- Distance: 0

Content-based (default) • Bottom margin

Cause variable SName



Create a pushbutton on the form Form

 Name Language

Geometry

• Right margin to the right margin of Distance: 0

FditName

Left margin to the own right margin - Distance: 100

 Top margin to the bottom margin of

FditName - Distance: 25

Bottom margin to the own margin - Distance: 23

Texts

Multilingual English: German Text

German: Englisch



Selection trigger

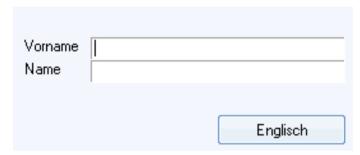
```
IF LanguageDialogGet() = 49 THEN
    LanguageDialogSet(44);
ELSE
    LanguageDialogSet(49);
ENDIF;
```

• This function call changes between the dialog languages German and English.



Display during runtime

- Starting the example and changing the language
 - German



English



camos.

Grid

A grid

- is a raster that consists of columns and lines
- serves as to position form elements
- is not visible during runtime
- can only take form elements in the Advanced geometry model

A grid cell

can contain several form elements



Only the form elements within a grid cell can be linked to each other



Exercise: Grid

Create a new class Grid

- In the class Grid
 - Create the numerical feature Whd
 - Create the string feature Name
 - Create the string feature FirstName
 - Create the string feature Street
 - Create the string feature City
 - Create the form Form
 - Create the method new with the following contents

```
LicenseDemand('camos.Configurator');
Whd := WinOpen('Form');
RETURN;
```



Create a grid on the form Form Geometry

•Left margin Fixed to dad — Distance: 10

•Right margin Content driven (default)

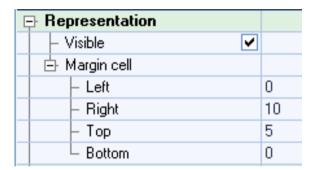
•Top margin Fixed to dad — Distance: 10

•Bottom margin Content driven (default)



Display

- Margin Distance cell
 - Margin Distance left 0
 - Margin Distance right 10
 - Margin Distance top
 - Margin Distance bottom 0



• The defined Distance is kept to the form elements within the cells.

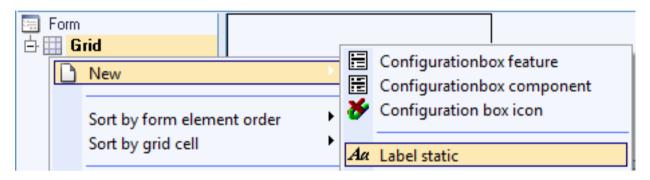
Special

- Columns
- Rows 2



Create a static label within the grid

Context menu on the form element Grid



• Label is created in cell [A1]



Name
 LabelName



Geometry

• Left margin Fixed to dad — Distance: 0

• Right margin Content driven

• Top margin Fixed to dad — Distance: 0

• Bottom margin Content driven

Texts

• Text Multilingual English: Family name

German: Name

Create an editline within a grid and move it to cell B1

Name
 EditName

Geometry

Left margin
 Fixed to dad
 Distance: 0

• Right margin to the own margin — Distance: 150

Top margin
 Fixed to dad
 Distance: 0

Bottom margin Content driven (default)

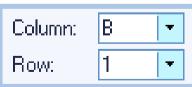
• Grid cell [B1]

• Click on icon

• Selecting the column and line via comboboxes with the same name

or Click on B1





Cause variable Name



Create three further labels within the grid

1. Label

Name
 LabelFirstName

• Grid cell [C1]

Texts
 Multilingual
 German: Vorname

English: First name

2. Label

Name LabelStreet

• Grid cell [A2]

• Texts Multilingual German: Straße

English: Street

3. Label

• Name LabelCity

• Grid cell [C2]

• Texts Multilingual German: Ort

English: City



Create three further editlines within the grid

1. Editline

Name
 EditFirstName

• Grid cell [D1]

Cause variable First name

2. Editline

• Name EditStreet

• Grid cell [B2]

Cause variable Street

3. Editline

• Name EditCity

• Grid cell [D2]

• Cause variable City



Create a pushbutton on the form Form

• Name Language

Geometry

Right margin to the right margin of
 Grid — Distance: 0

Left margin to the own right margin – Distance: 100

Top margin to the bottom margin of

Grid – Distance: 30

• Bottom margin to the own margin — Distance: 23

Texts

Text
 Multilingual
 English: German

German: Englisch



Selection trigger

```
IF LanguageDialogGet() = 49 THEN
    LanguageDialogSet(44);
ELSE
    LanguageDialogSet(49);
ENDIF;
```

• This function call changes between the dialog languages German and English.



Display during runtime

- Starting the example and changing the language
 - German



English

Family name	First name	
Street	City	
		German



Tips and tricks

- Create form elements with Advanced geometry model

 If this user option is set (index tab Other), all new form elements are
 created with Advanced geometry model.
- Templates for the Advanced geometry model

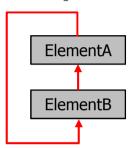
 The most common alignments for the Advanced geometry model can be set via the icon ...





Tips and tricks

• The syntax check recognizes circular references



If the top margin of ElementB is aligned with the bottom margin of ElementA and the top margin of ElementA with the bottom margin of ElementB, then this is a circular reference.

Merging of classical and Advanced geometry model

- Container form elements (e.g. groupbox) in the Advanced geometry model can only take form elements in the Advanced geometry model.
- If a container form element that contains form elements is converted to the Advanced geometry model, all form elements within the container element are also converted.

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Tips and tricks

Special functions

There are special functions for the Advanced geometry model. E.g. WinSetGeoOffset() in order to change the Distance of an margin.

camos. Thank you for your attention!