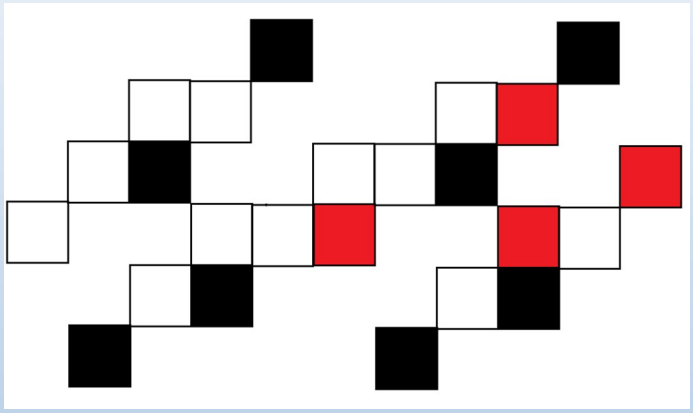
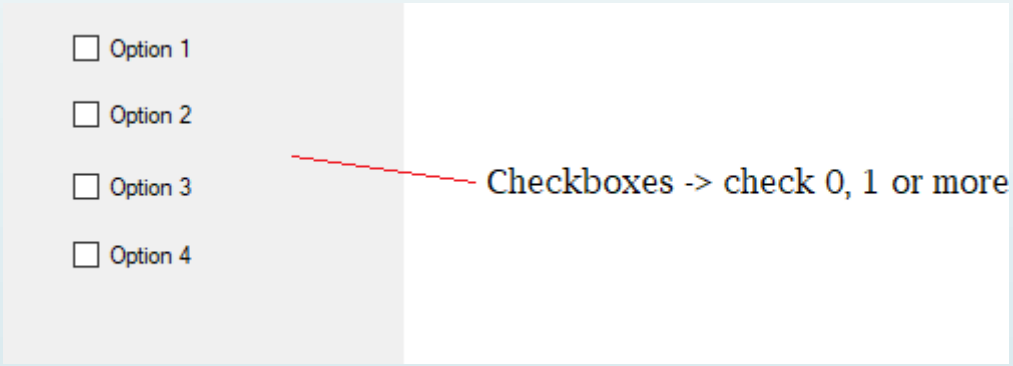
GUI & Usability
Practical Hints

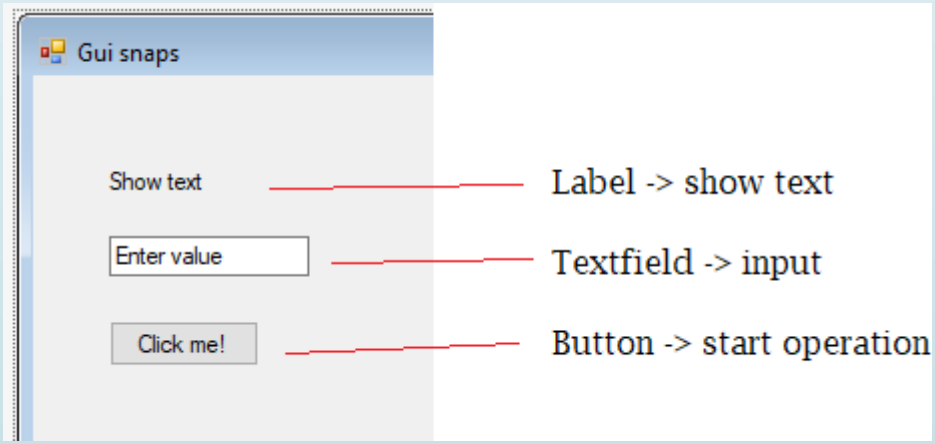


By
Adam Higherstein

Usability Snaps

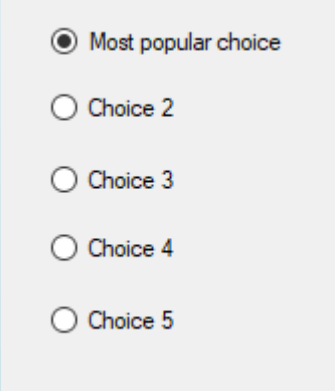
Basic controls

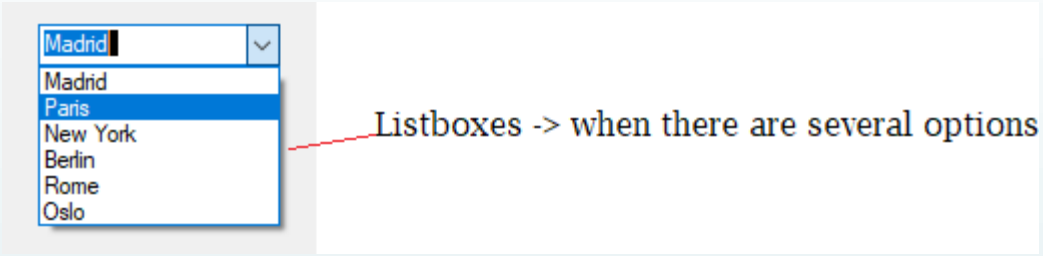




When using checkboxes or radiobuttons, user does not need to type anything.

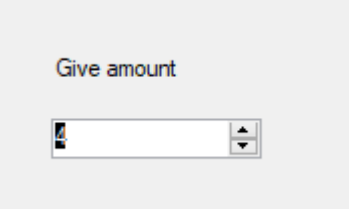
With radiobutton group the most popular option is added to the 1. place and checked.




Madrid
Madrid
Paris
New York
Berlin
Rome
Oslo
Listboxes -> when there are several options


Many lines text ...
Textarea controls -> a lot of text

Steppers: limits cane be defined and the step, user does not need to type anything and we avoid wrong values



Progressbar tells the situation

Toggling (used in above example)

Use same control to e.g. start and stop timer:

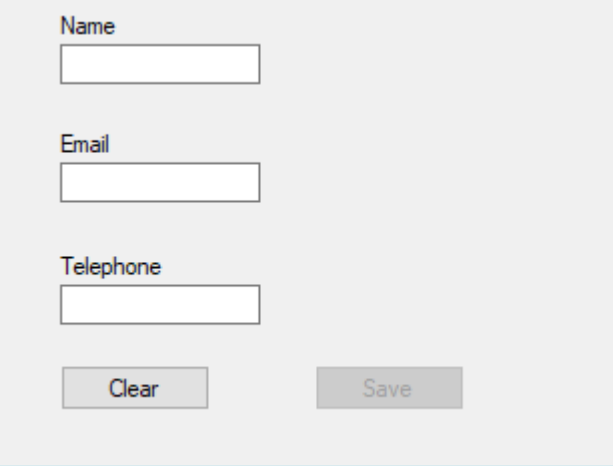
```
private void button1_Click(object sender, EventArgs e)
{
    timer1.Enabled = !timer1.Enabled;

    if (timer1.Enabled == true)
        button1.Text = "Stop";
    else
        button1.Text = "Start";

}
```

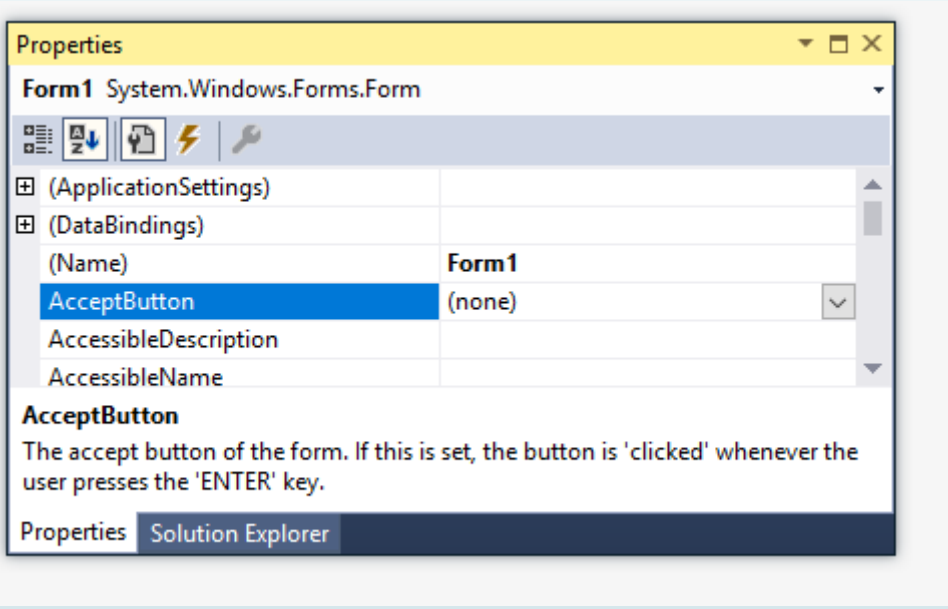
Enabled or not

Example: when user has typed values to all 3 textboxes, Save buttons becomes enabled:

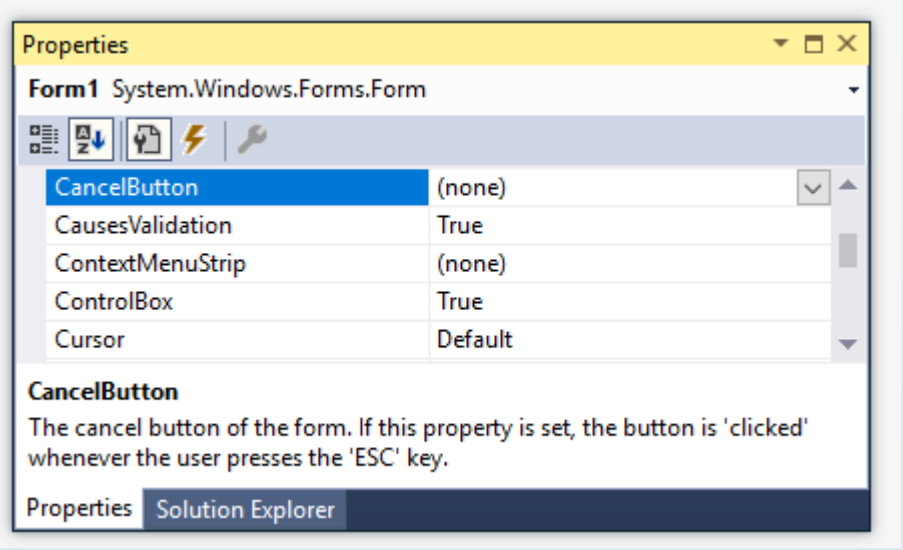


Remember also

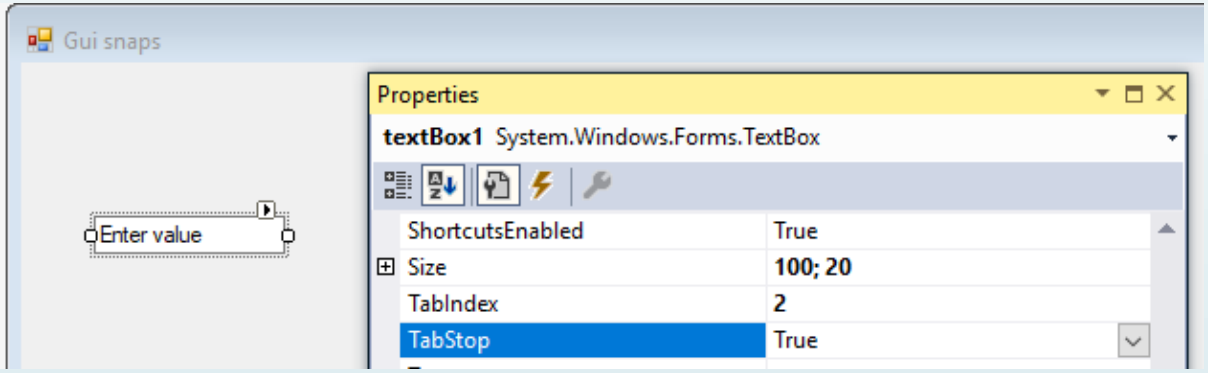
AcceptButton



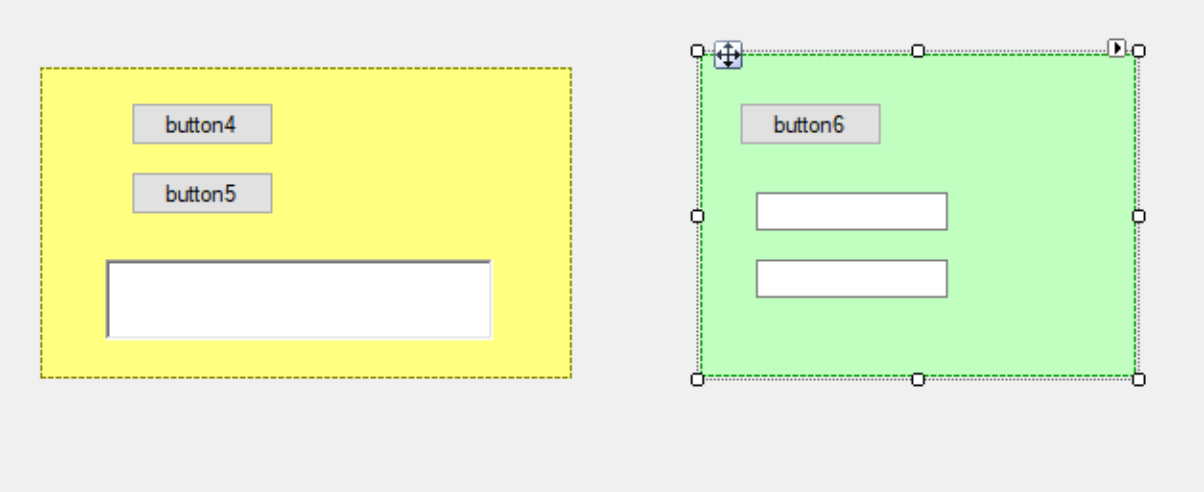
And CancelButton



Tabulator may be also used by some users: check tab stops:

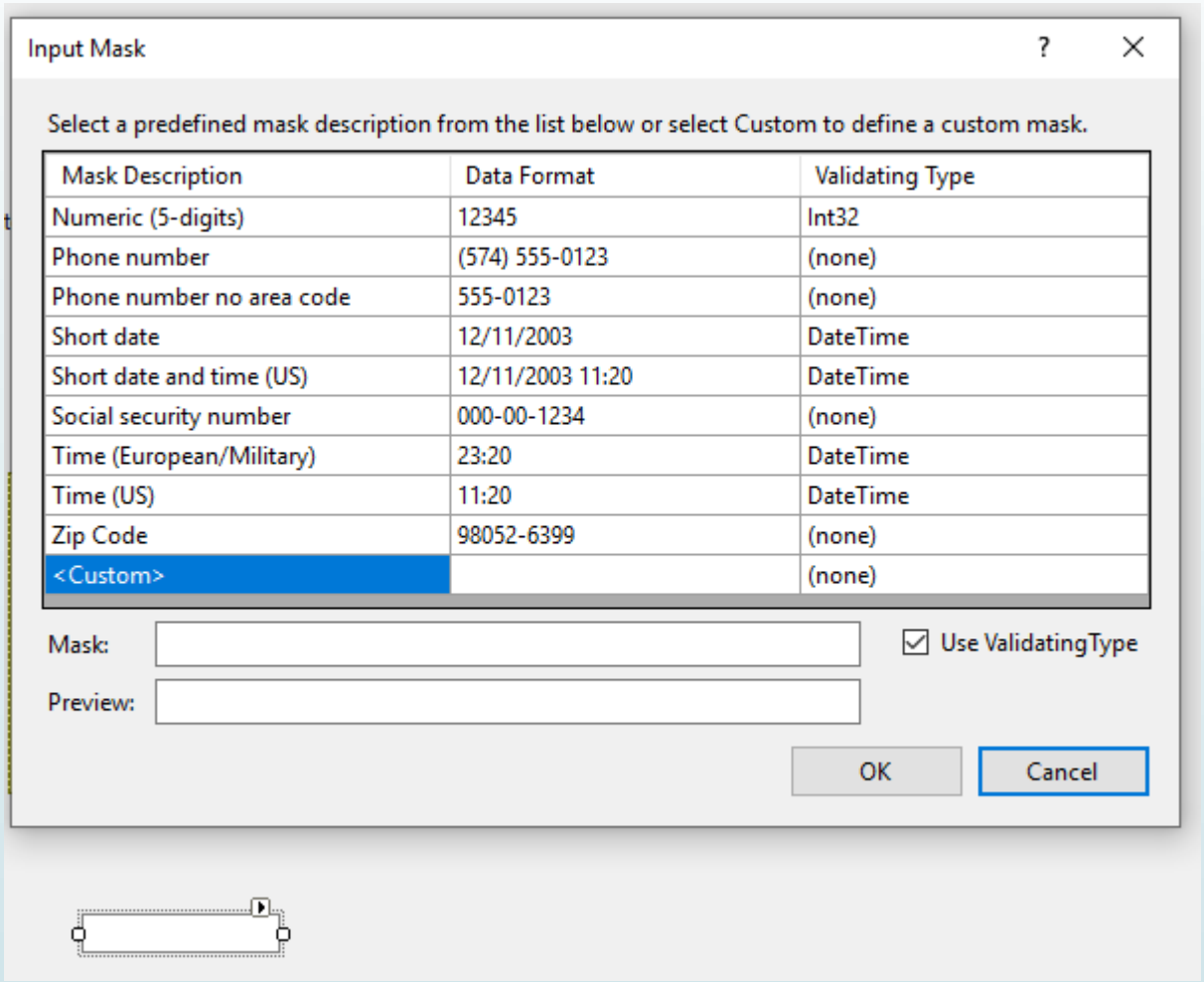


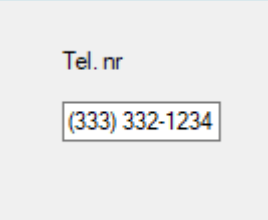
With e.g. panels you can separate parts of to window:



Panels can be hidden and moved, too.

Some tools allow masked textfields (there can be predefined patterns in use):



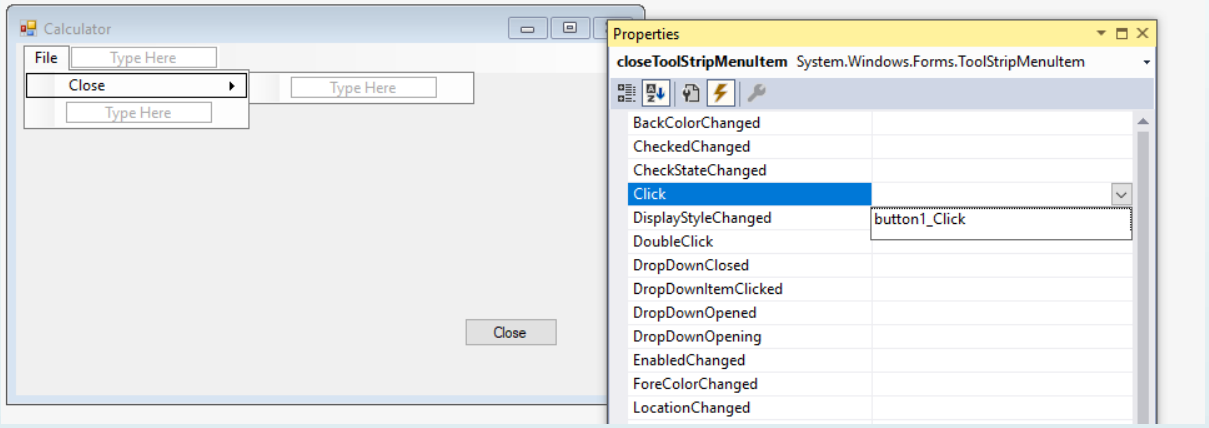


Even this helps to get the right format but time saving is near zero.

When we have several choices we can use radiobuttons, checkboxes and lists: we save filling time and avoid typing errors.

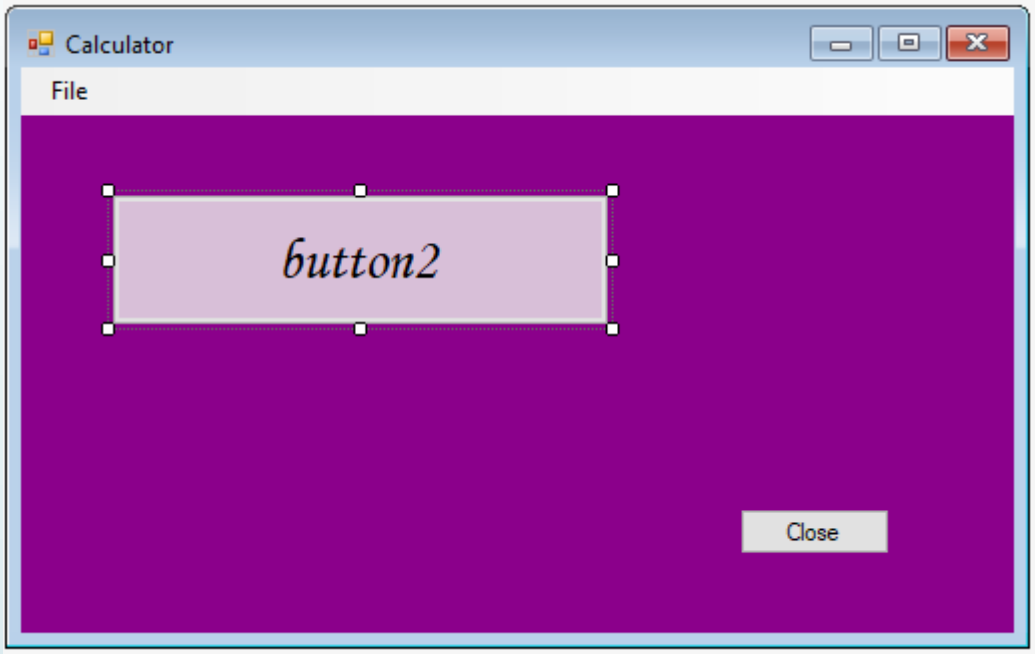
Lists can also seen as checklists: when we see the item, we remember to take it into account.

If several events (concerning more than one control) causes same operation, you can combine events: *this event causes this event (that is already handled)*:




```
private void button1_Click(object sender, EventArgs e)
{
    this.Close();
}
```

Check also colours, fonts, font sizes, contrast and so on!



Avoid weird appearances …

Tell user that some process is going on: using led, progress bar, …

Ask confirmation when user is making important decisions.

About websites

Plan:
What do you offer?
Who is your customer, visitor? What does he/she want?
Analyze pages: do all pages have visitors
Are the most important things on right places? Gather feedback -> update

Show the menu all the time.

Tell user where he/she is (the path)

Animations and/or jokes on a website?

They may be really annoying!!

Same thing with advertisements and popup windows.

AND

Who reads the same joke several times?

About GOMS

GOMS =Goals, Operators, Methods, Selection keystroke-level model
: http://www.cs.umd.edu/class/fall2002/cmsc838s/tichi/printer/goms.html

$$T_{Execute} = T_K + T_P + T_H + T_D + T_M + T_R$$

- **K (Keystroke) =0.2**
- **P (Pointing) =1.1**
- **H (Homing)**
- **D (Drawing)**
- **M (Mentally)**
- **R (Response)**

Example: calculate this using calculator

121 * 13/4.

Trial one

GOMS =Goals, Operators, Methods, Selection keystroke-level model
: http://www.cs.umd.edu/class/fall2002/cmsc838s/tichi/printer/goms.html

$$T_{Execute} = T_K + T_P + T_H + T_D + T_M + T_R$$

- **K (Keystroke) =0.2**
- **P (Pointing) =1.1**
- **H (Homing)**
- **D (Drawing)**
- **M (Mentally)**
- **R (Response)**

We got 11,2 seconds.

With mouse only:

H[keyboard]	0.4
M3K[word]	1.7 (3x0.5 +0.2)
H[mouse]	0.4
P[field]	1.1
K[mouse]	0.2
H[keyboard]	0.4
M2K[word]	1.2
H[mouse]	0.4
P[field]	1.1
K[mouse]	0.2
H[keyboard]	0.4
M2K[word]	0.7
H[mouse]	0.4
P[field]	1.1
K[mouse]	0.2
	9.9

Another way to express calculation

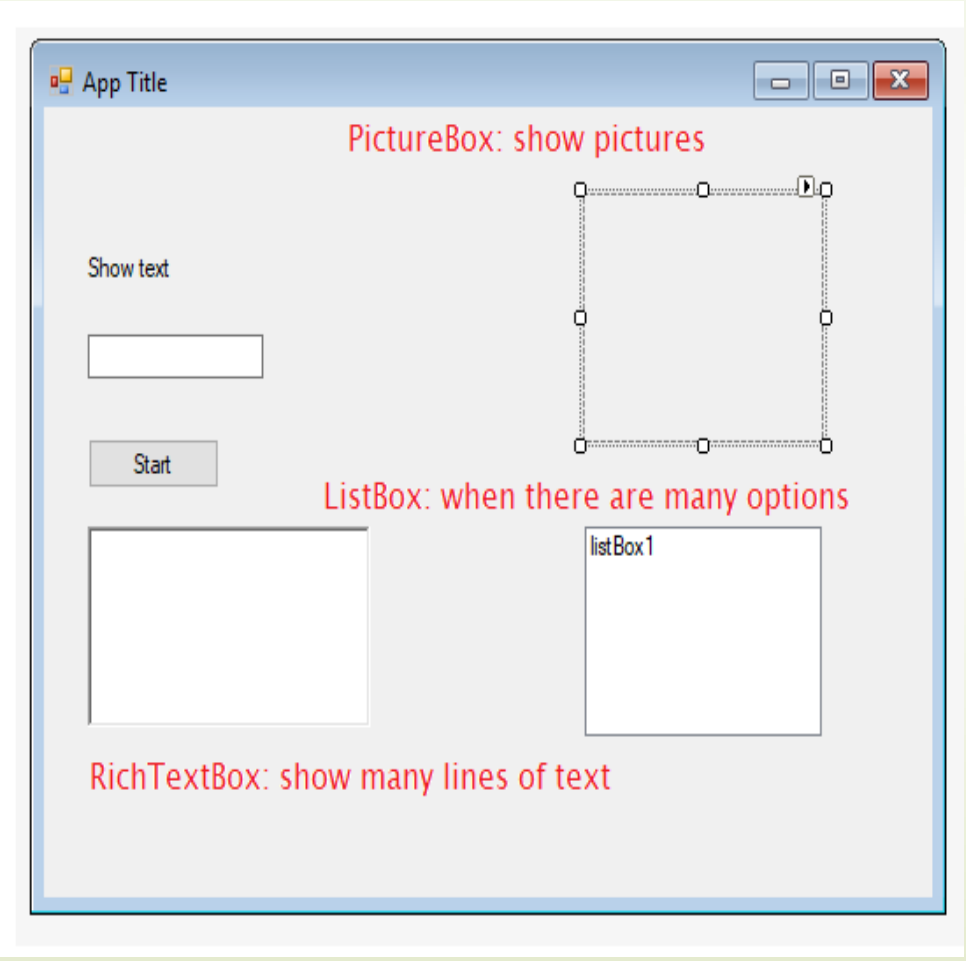
GOAL: CALCULATE-SENTENCE			
GOAL: ENTER-NUMBER ...repeat for numbers 121			
*[select**:*	*GOAL:*	*CLICK-NUMBER*	
		MOVE-CURSOR-TO-NUMBER	*1.10*
		CLICK-MOUSE-BUTTON	*0.20*
	GOAL:	*ENTER-NUMBER*	
		PRESS-NUMBER-KEY	
VERIFY-NUMBER			*1.35*
GOAL: PRESS-MULTIPLIER-KEY			
MOVE-CURSOR-TO-KEY			*1.10*
CLICK-MOUSE-BUTTON			*0.20*
VERIFY-KEY-PRESS			*1.35*
GOAL: ENTER-NUMBER ...repeat for numbers 13			
*[select**:*	*GOAL:*	*CLICK-NUMBER*	
		MOVE-CURSOR-TO-NUMBER	*1.10*
		CLICK-MOUSE-BUTTON	*0.20*
	GOAL:	*ENTER-NUMBER*	
		PRESS-NUMBER-KEY	
VERIFY-NUMBER			*1.35*
...			
GOAL: ENTER-NUMBER ... for number 4			
*[select**:*	*GOAL:*	*CLICK-NUMBER*	
		MOVE-CURSOR-TO-NUMBER	*1.10*
		CLICK-MOUSE-BUTTON	*0.20*
	GOAL:	*ENTER-NUMBER*	
		PRESS-NUMBER-KEY	
VERIFY-NUMBER			*1.35*
GOAL: PRESS-EQUALS-KEY			
MOVE-CURSOR-TO-KEY			*1.10*
CLICK-MOUSE-BUTTON			*0.20*
VERIFY-KEY-PRESS			*1.35*
TOTAL TIME PREDICTED			***19.8***

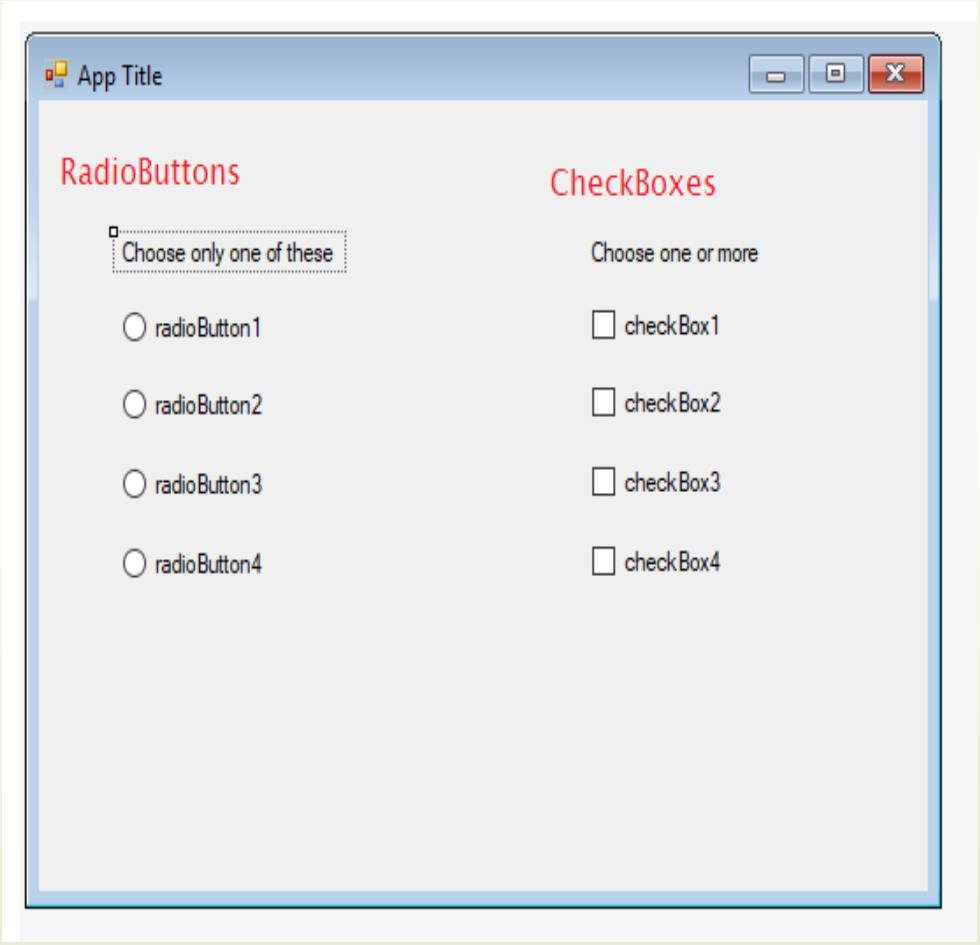
Other Usability things to consider

There are many other things, too, that make gui efficient:

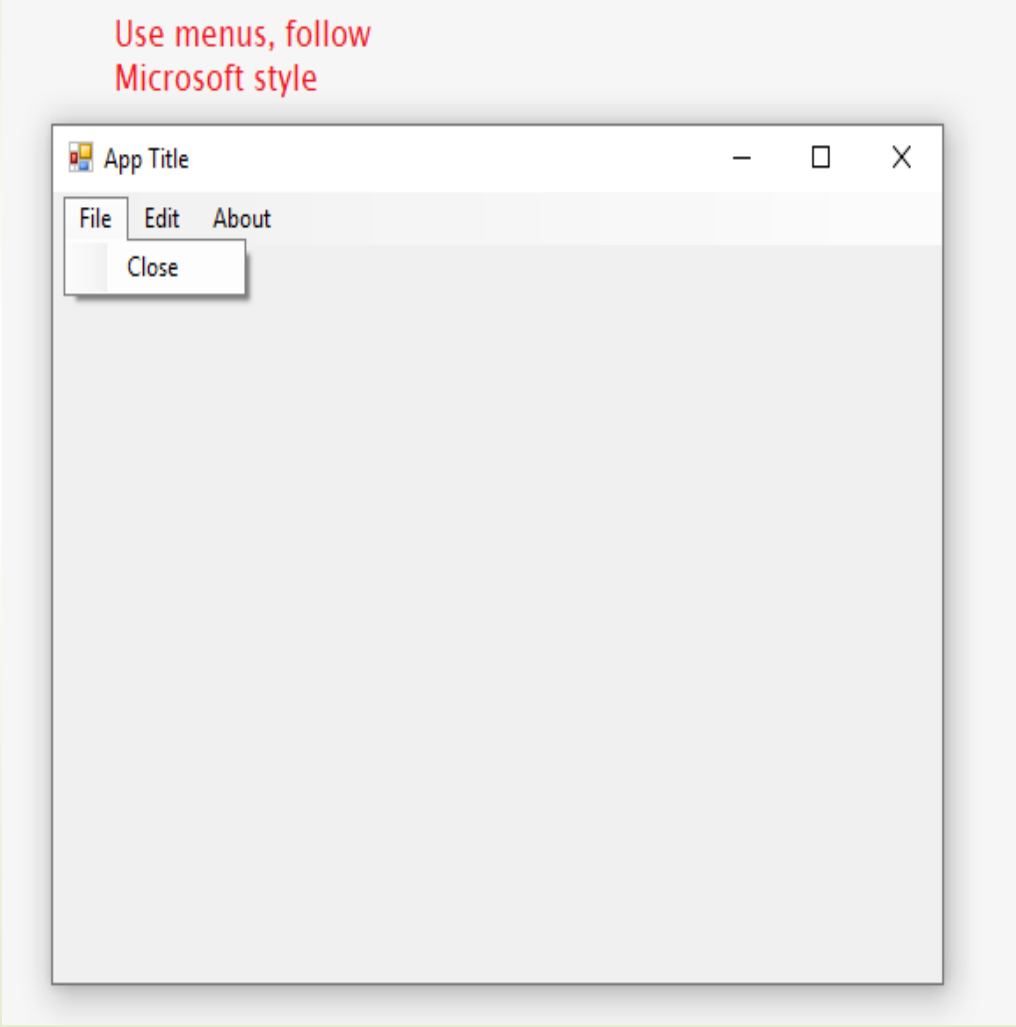
- enabled and disabled controls and menus
- distances between controls
- tool tips
- sub menus
- color code
- locations of controls (eye tracking test can be used)
- default options (most popular) re-selected
- font selections
- tabbed windows
- obligatory controls
- and so on

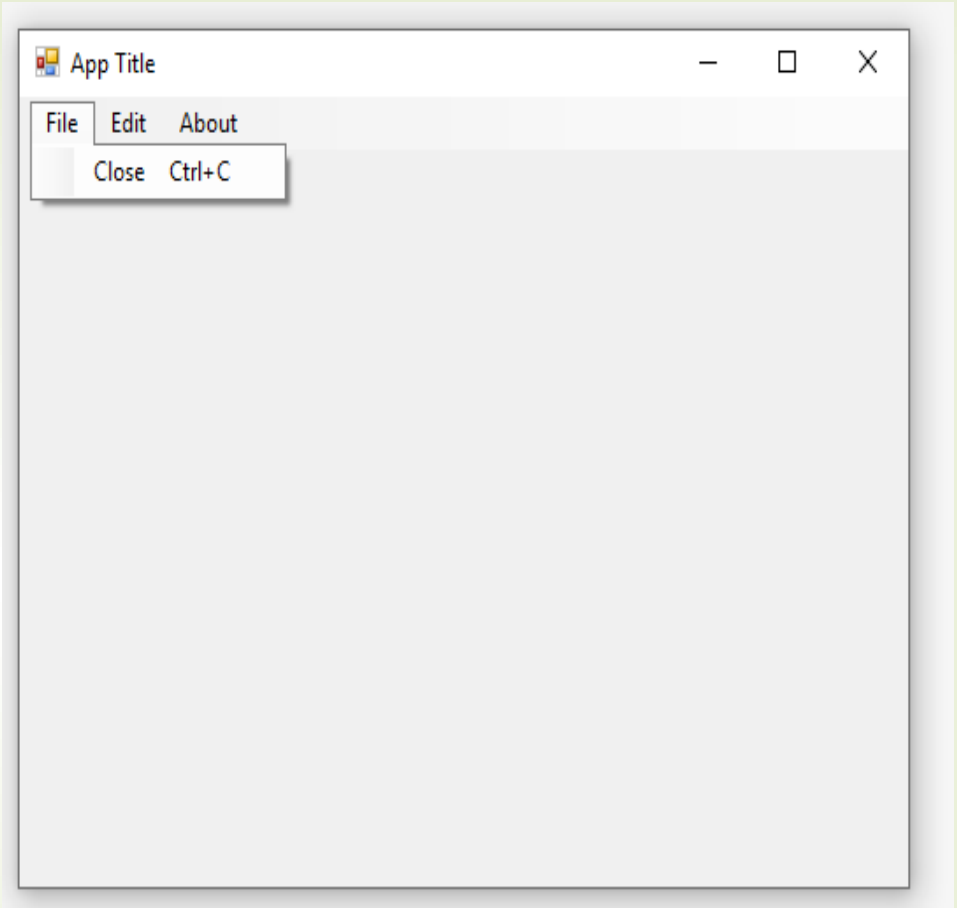
Short repetition...



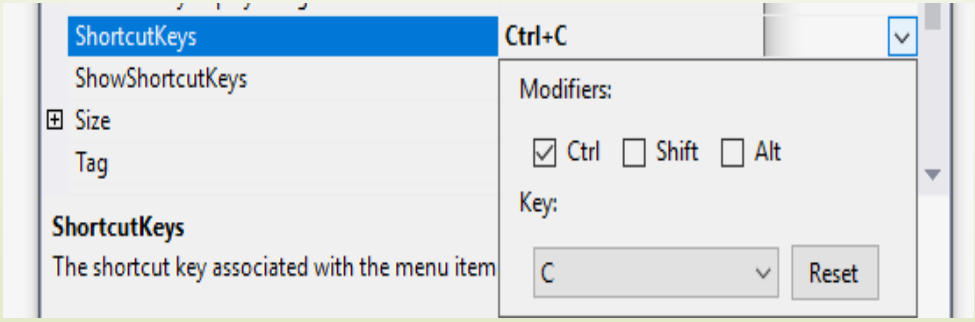

App Title
RadioButtons
Choose only one of these
radioButton1
radioButton2
radioButton3
radioButton4
CheckBoxes
Choose one or more
checkBox1
checkBox2
checkBox3
checkBox4

Use menus, follow
Microsoft style

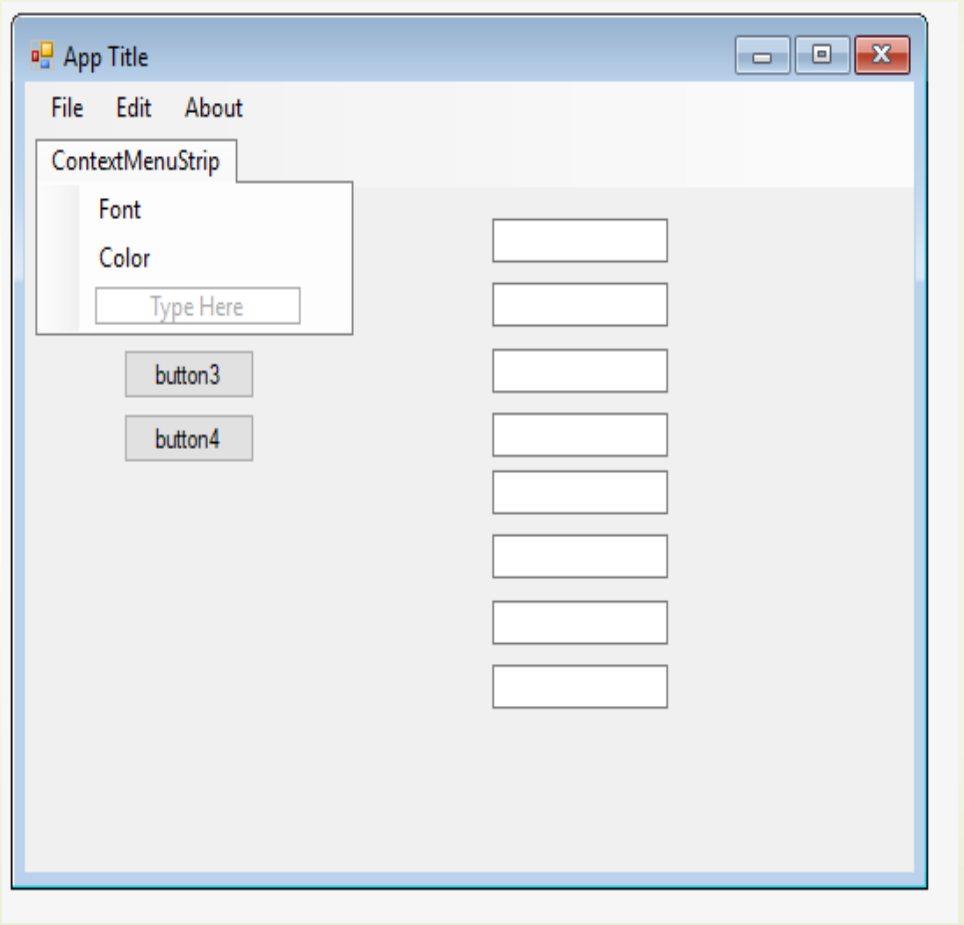




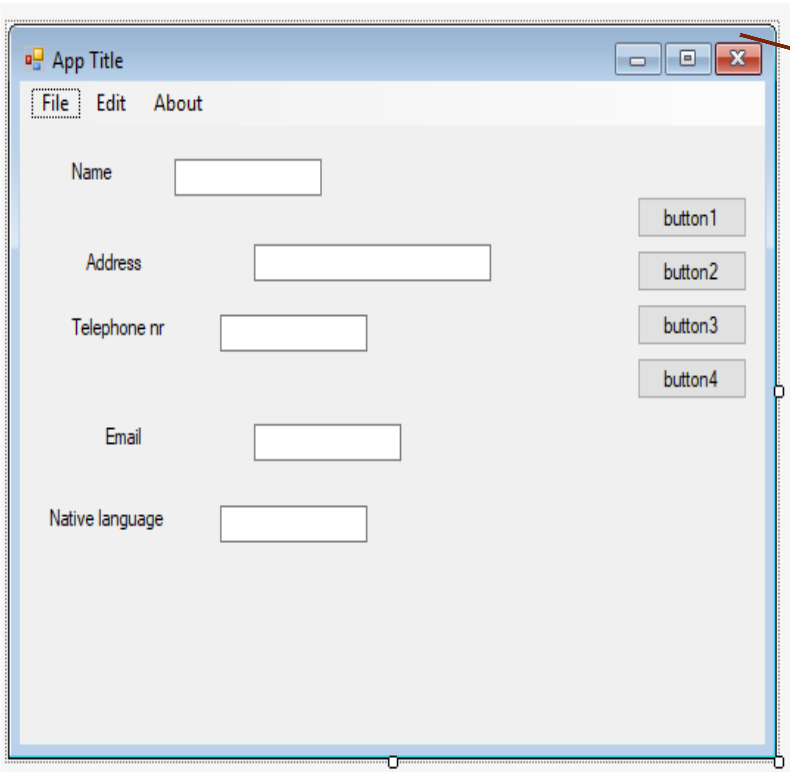
Add shortcut keys, too



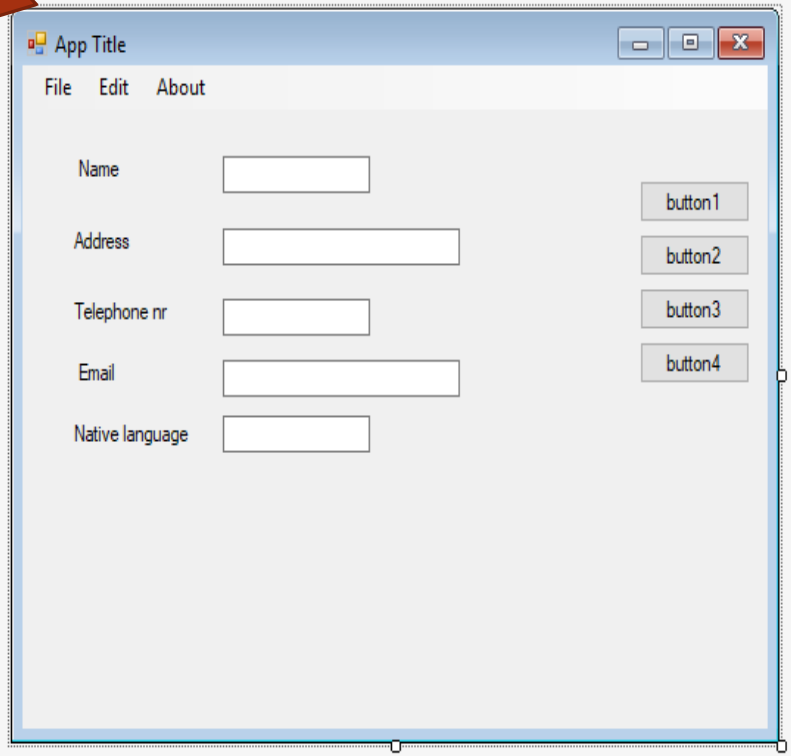
Add Context menu to help user



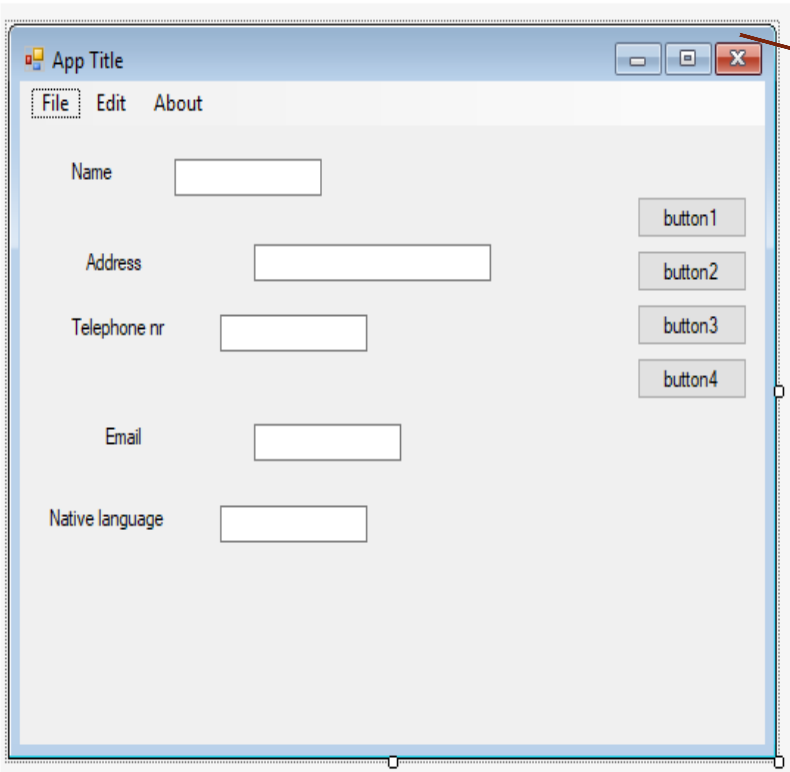
Not good!



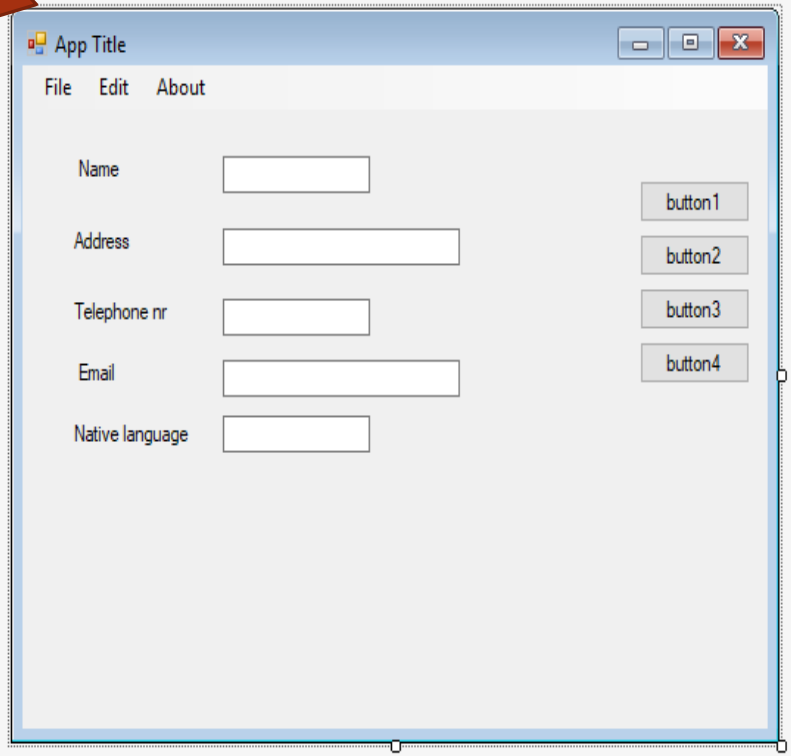
Better!



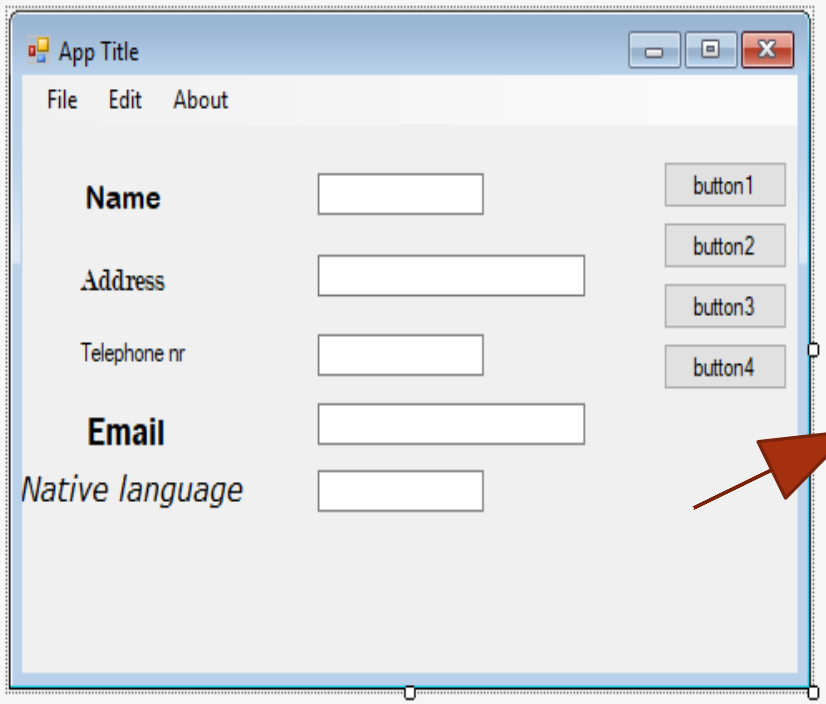
Not good!



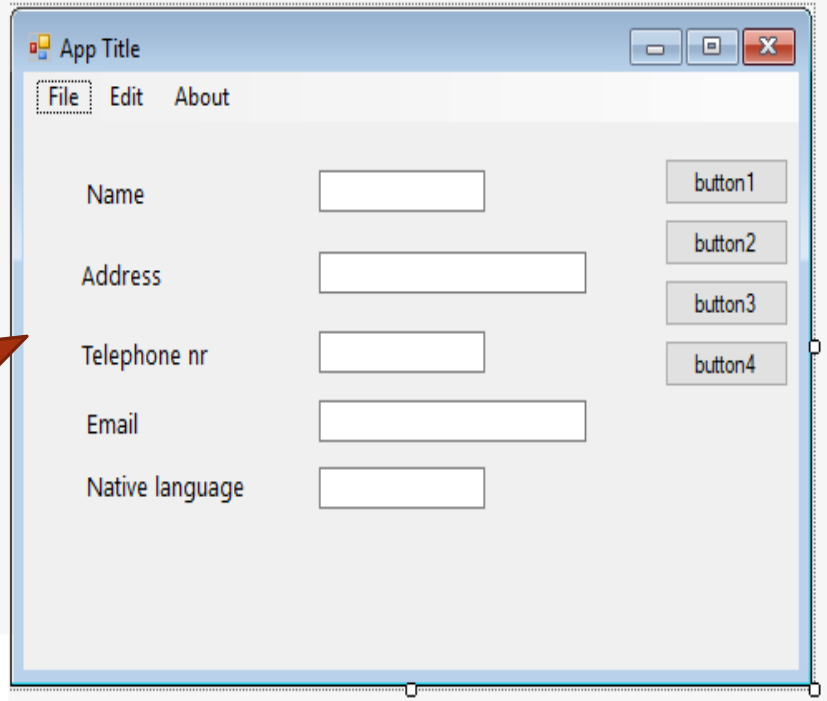
Better!



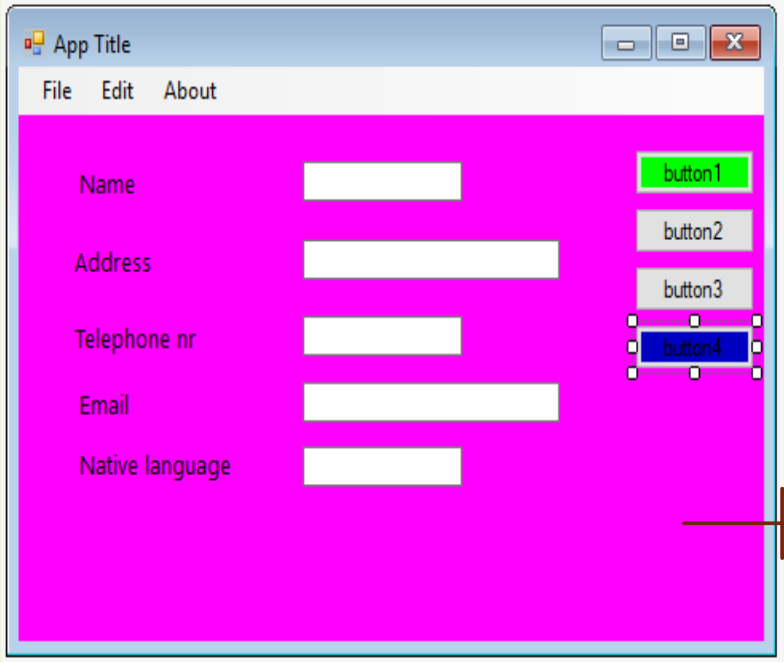
Not good: many fonts, many sizes



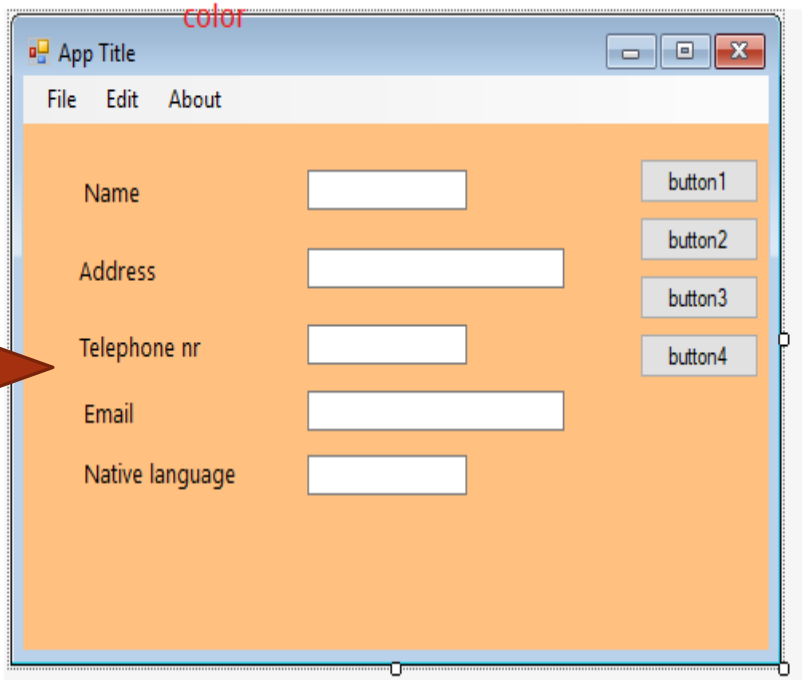
Better: 1 font, 1 size!

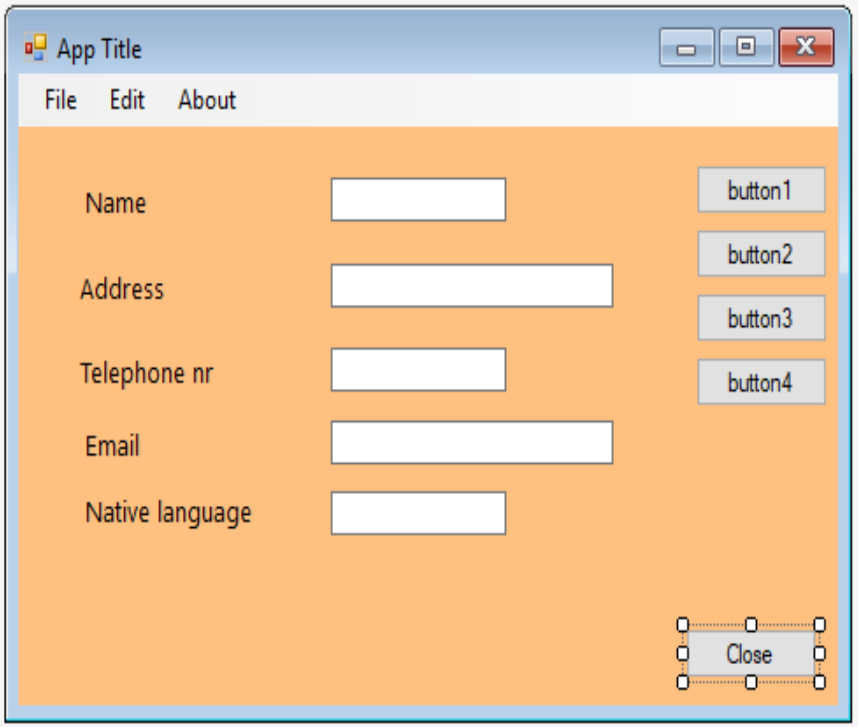


Not good: colourful, many colors



Better: 1-2 colours, light backgound color

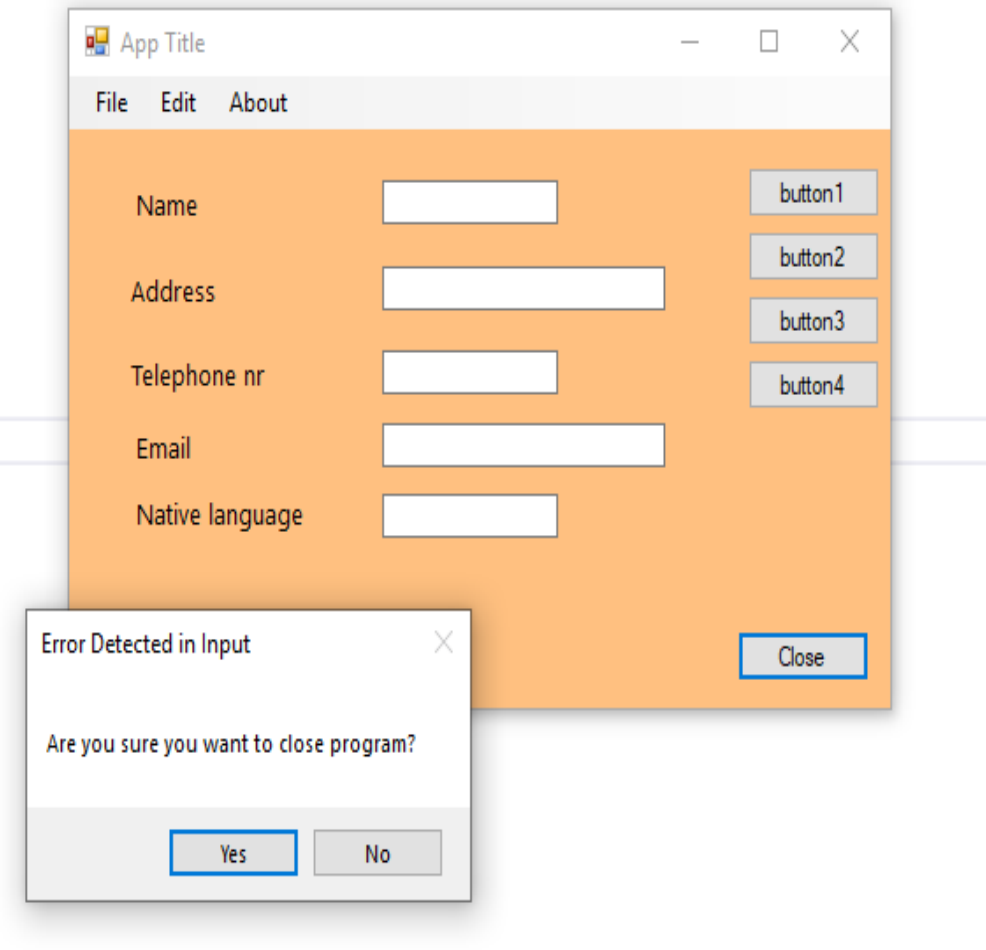




Close button: classic place, outside, not near other controls

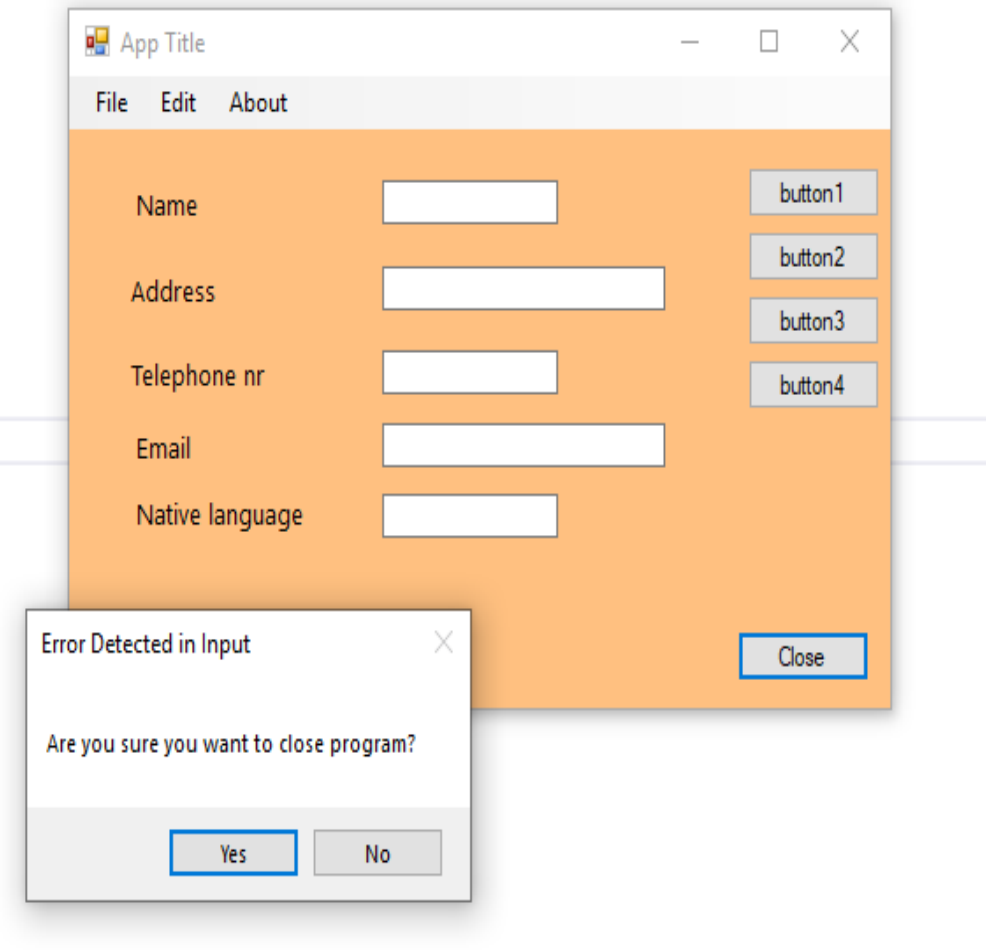
Gui – main principles

Important or dangerous activities: asking for confirmation is good to have!



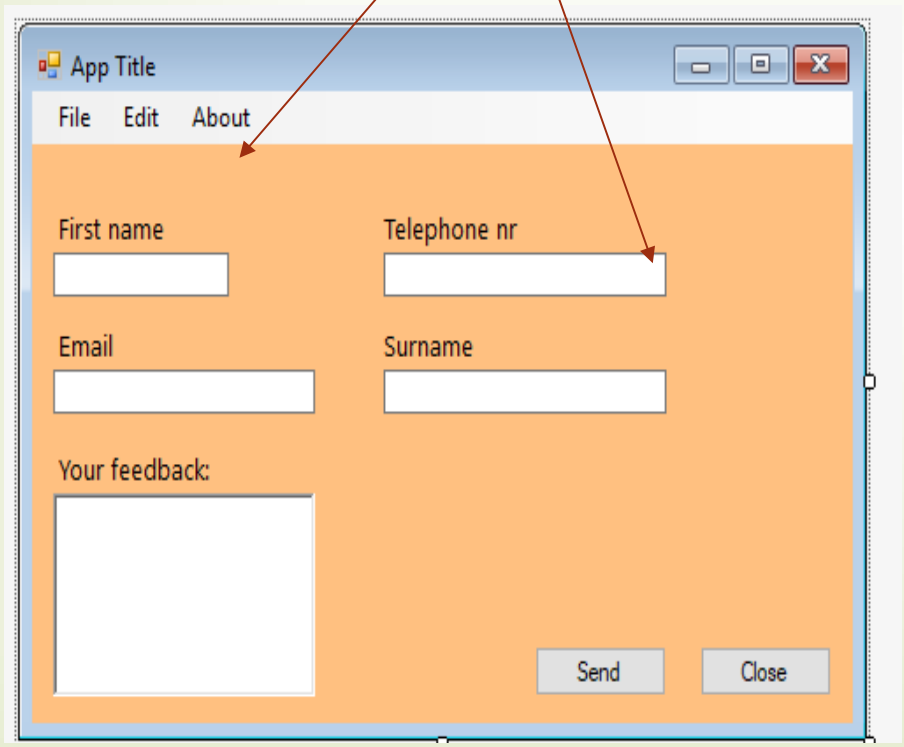
Gui – main principles

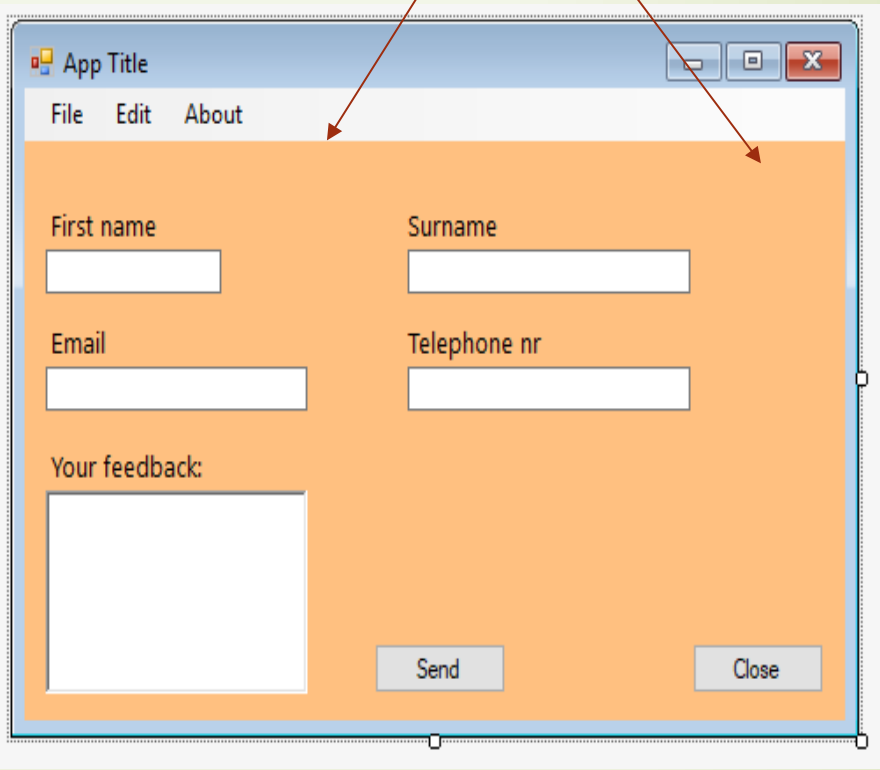
Important or dangerous activities: asking for confirmation is good to have!



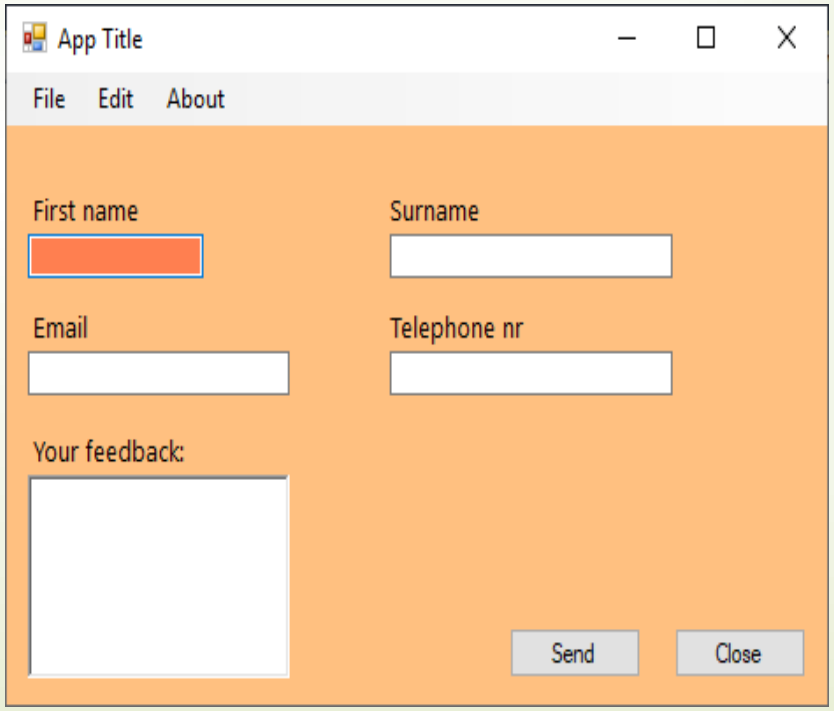
Better: after first name comes surname

Not good: order of controls is not logical!



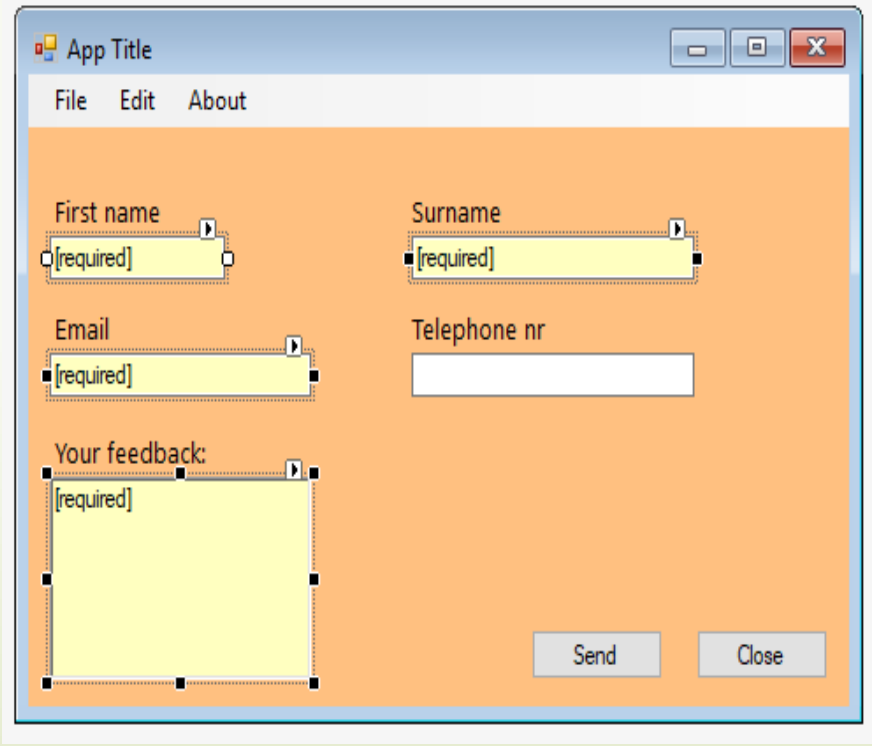


When app is started, focus is in the first control

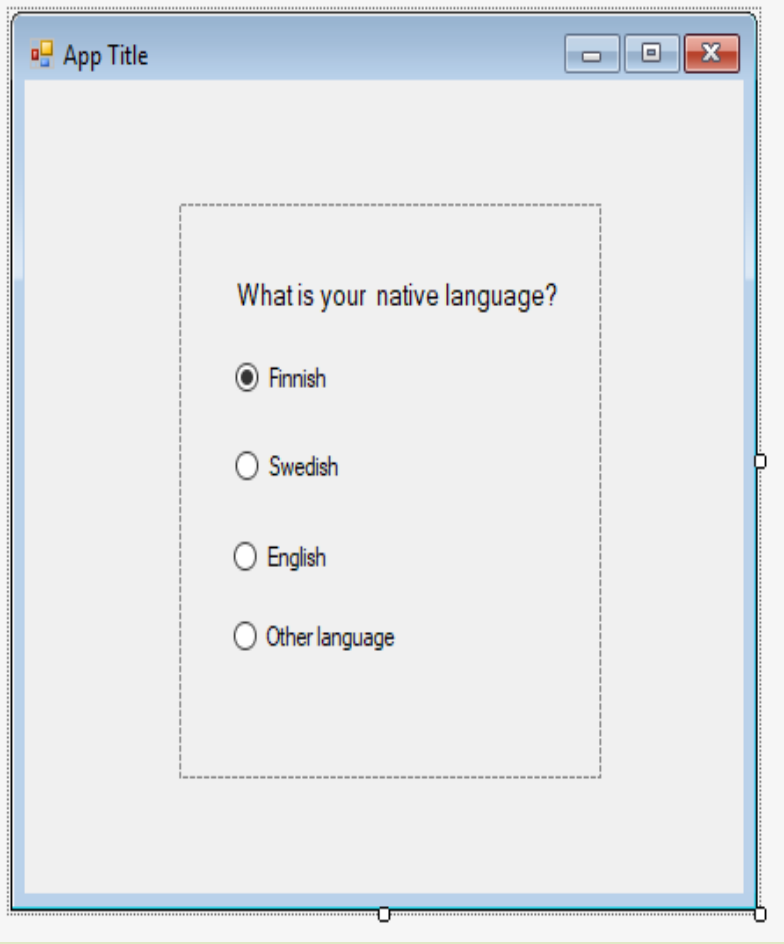


Change on background color tells user that current control has focus

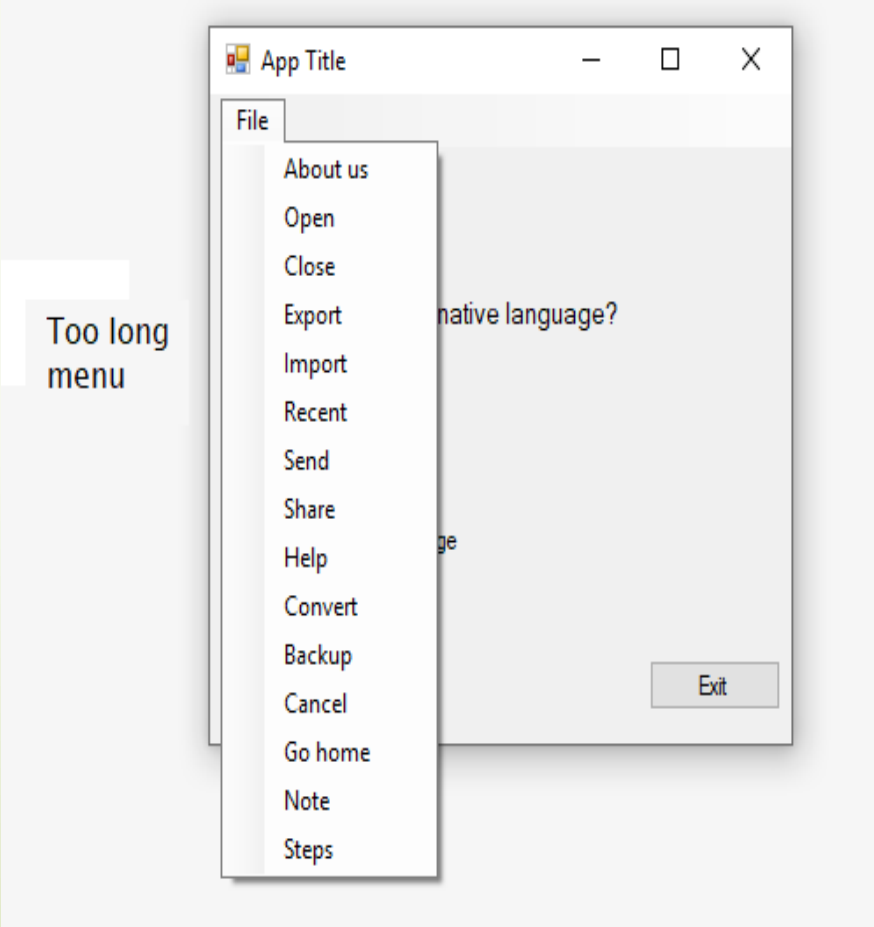
Show clearly what
info is obligatory



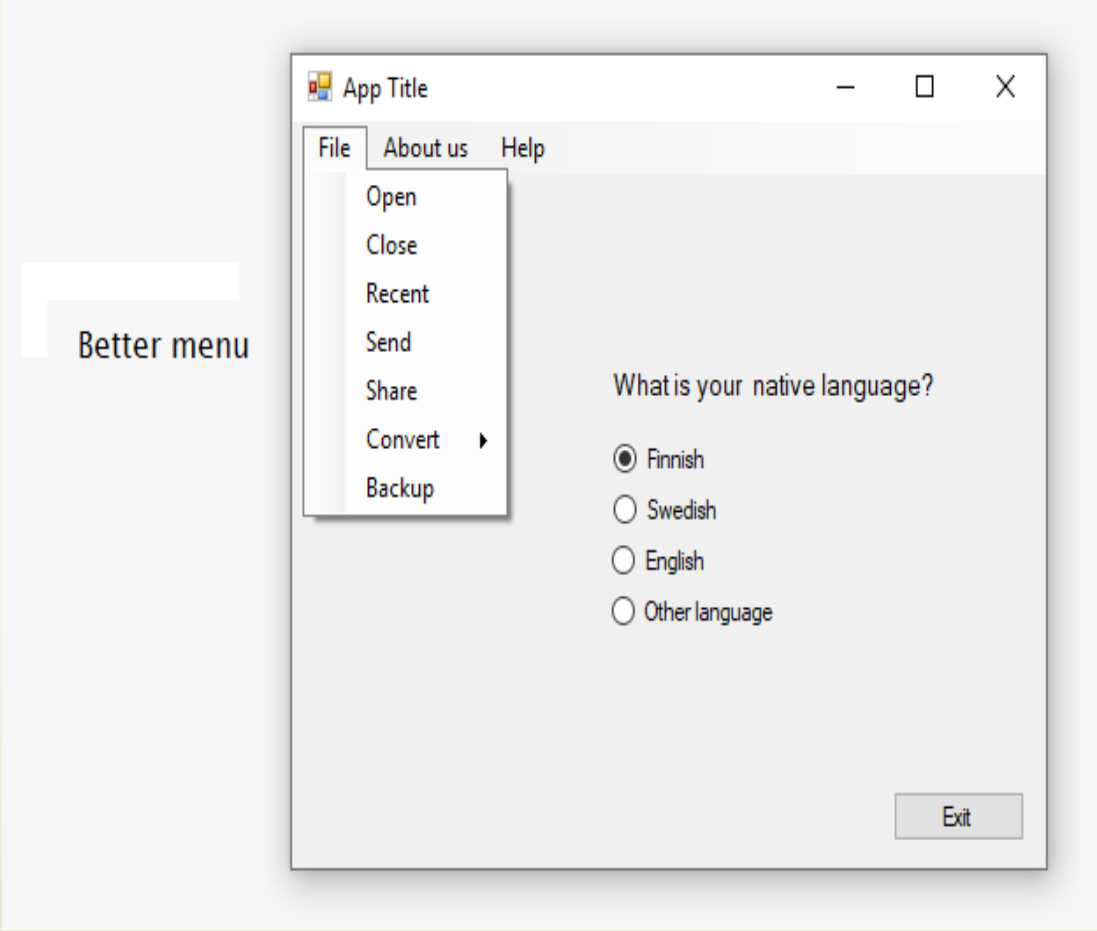
The most common option is first and it is by default checked



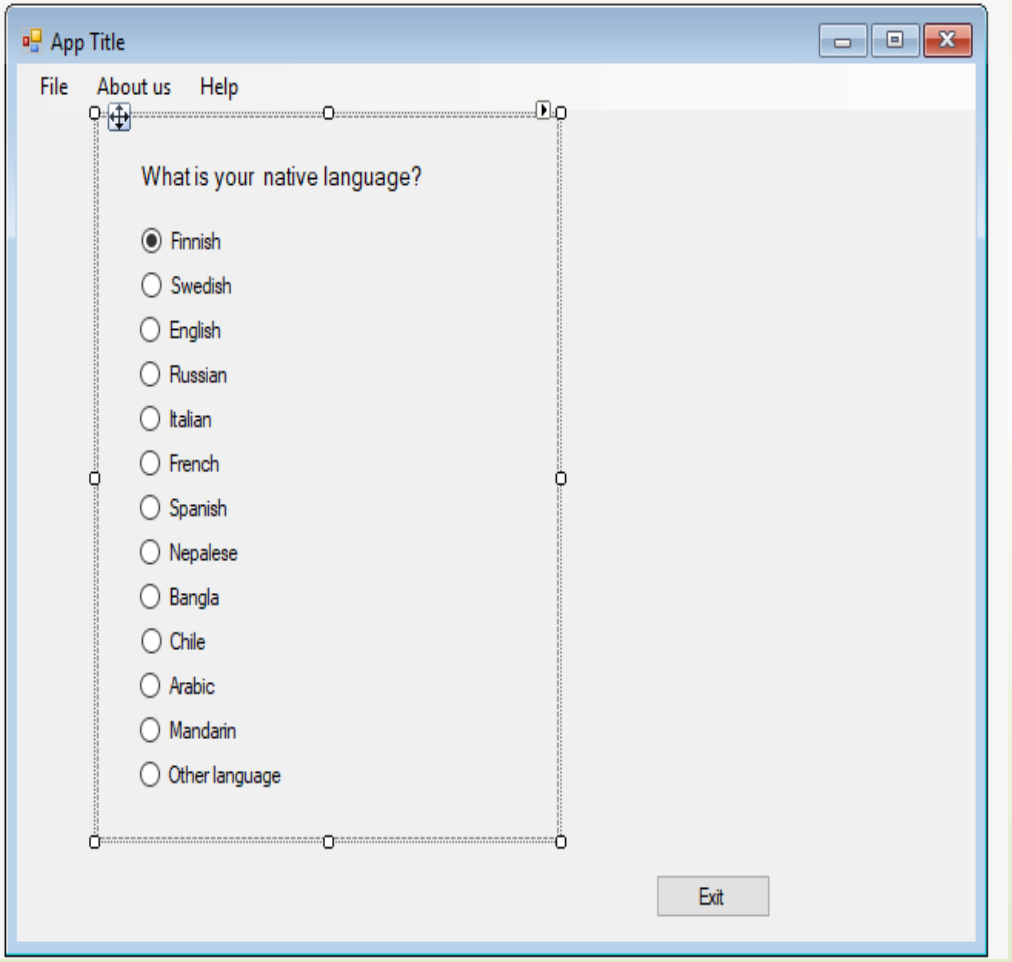
Design menus



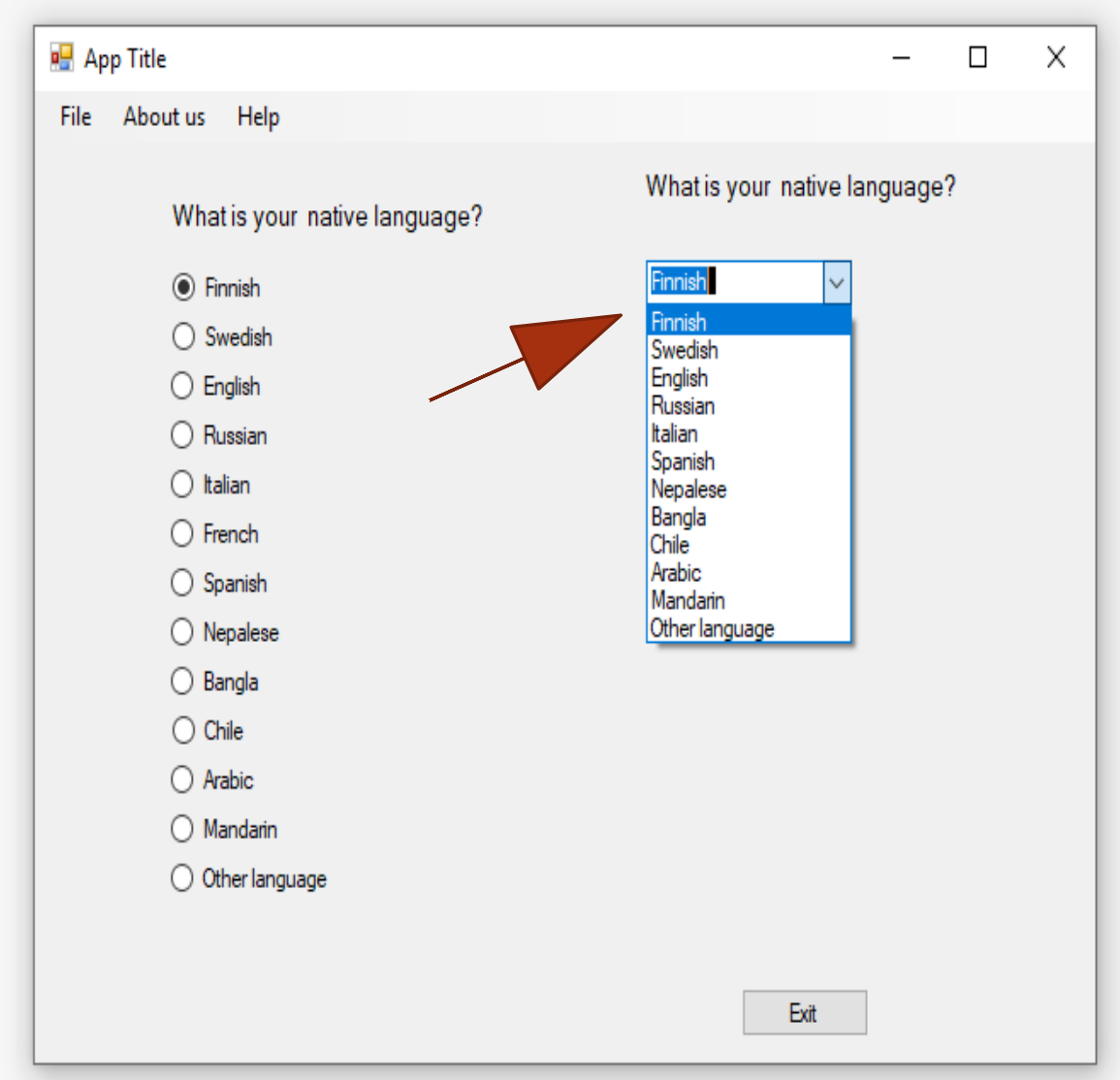
Design menus



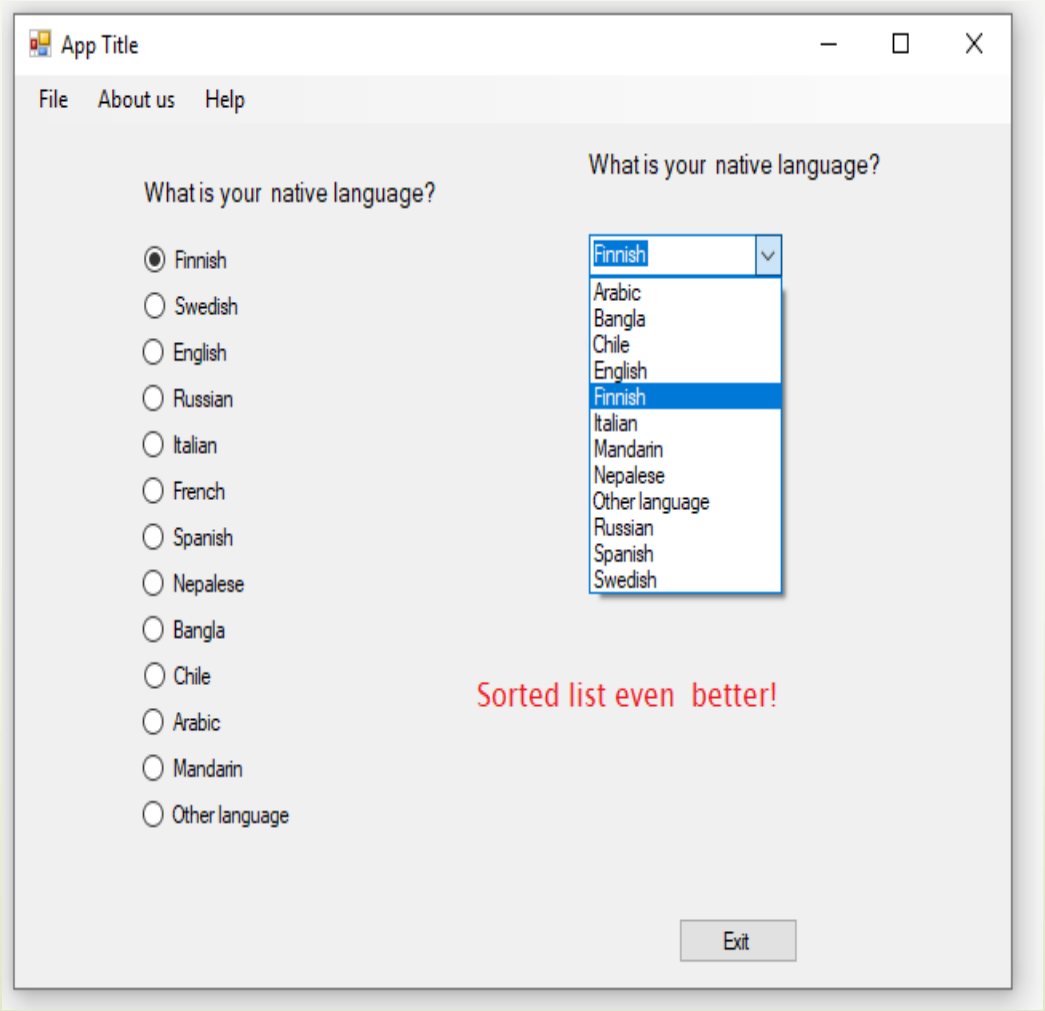
Radiobuttons: too many options



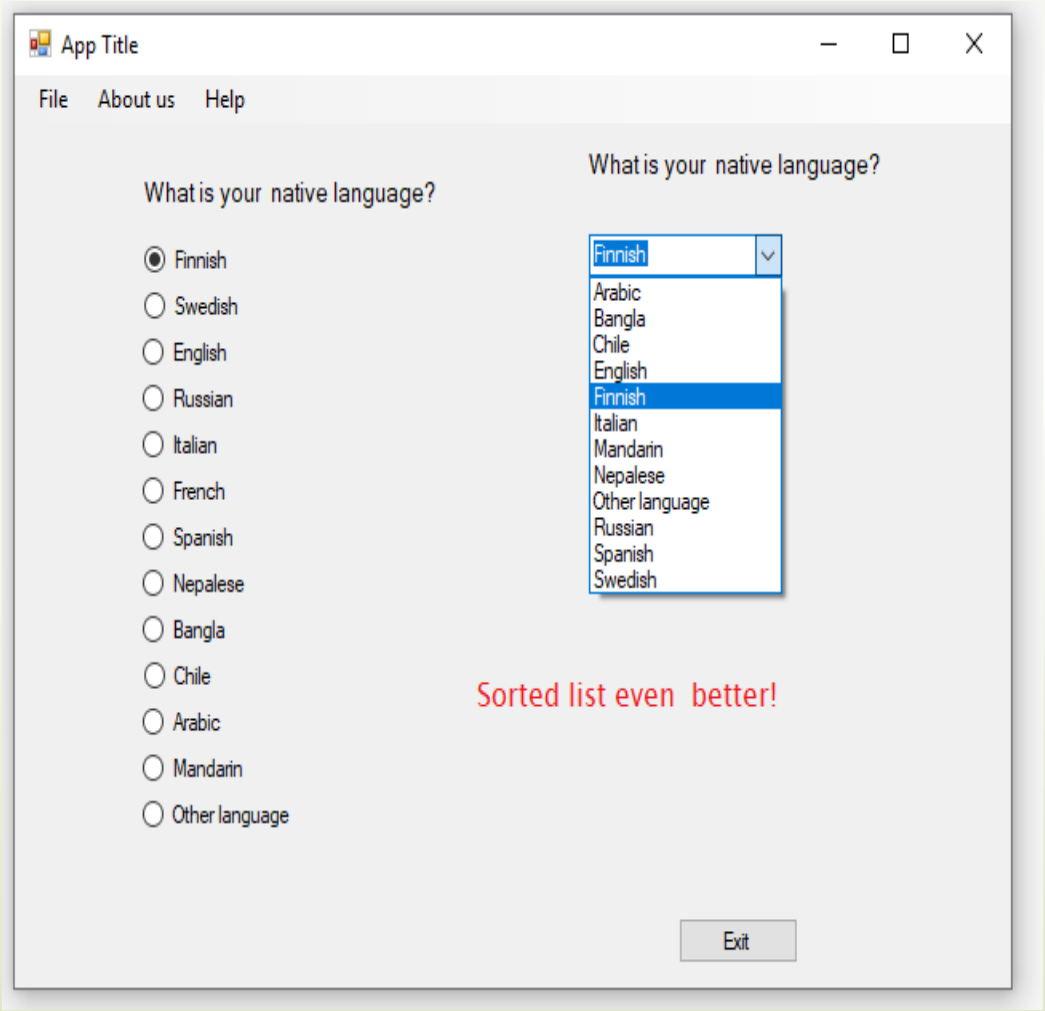
Radiobuttons: better with a list control



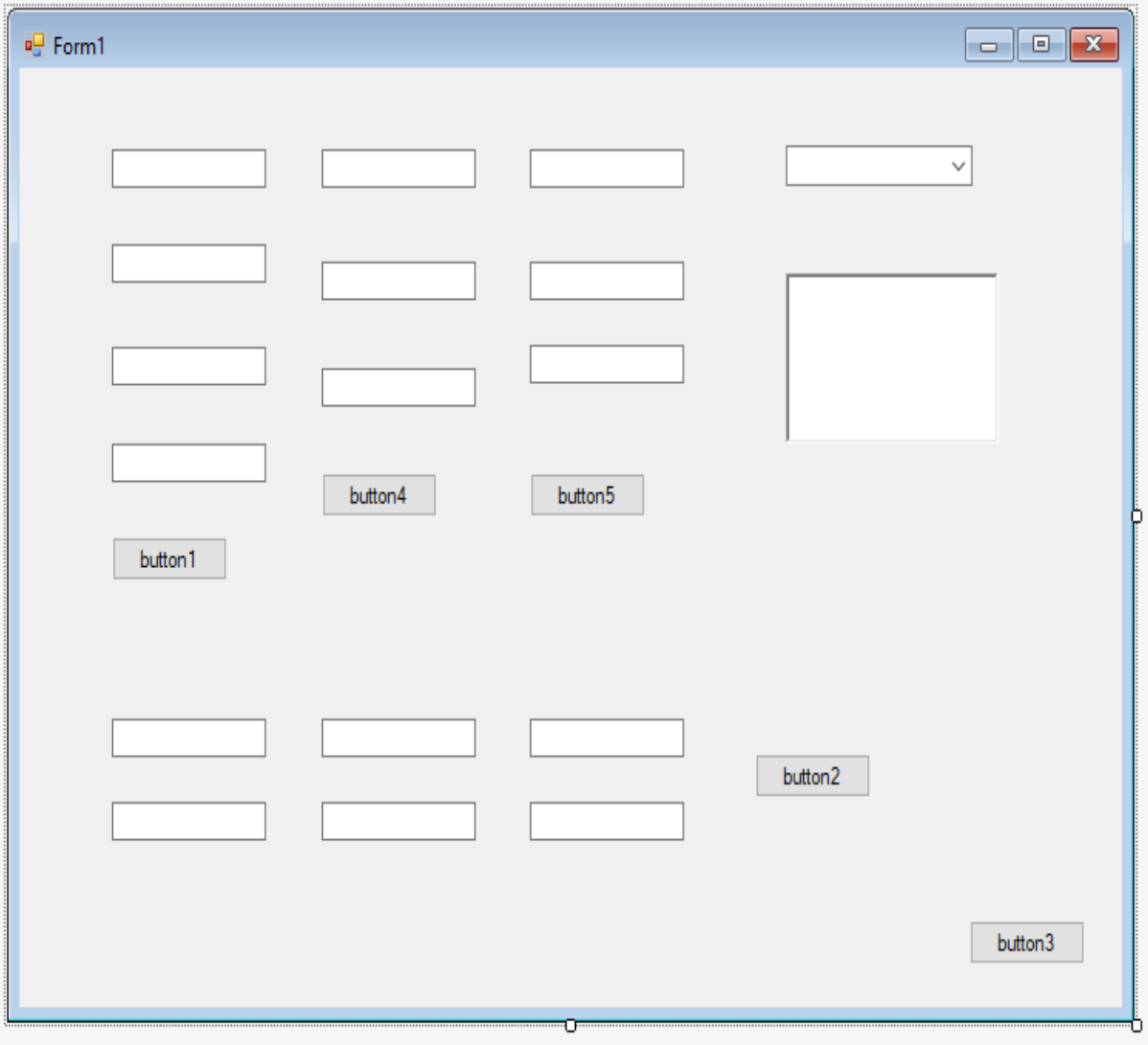
Radiobuttons: better with a list control



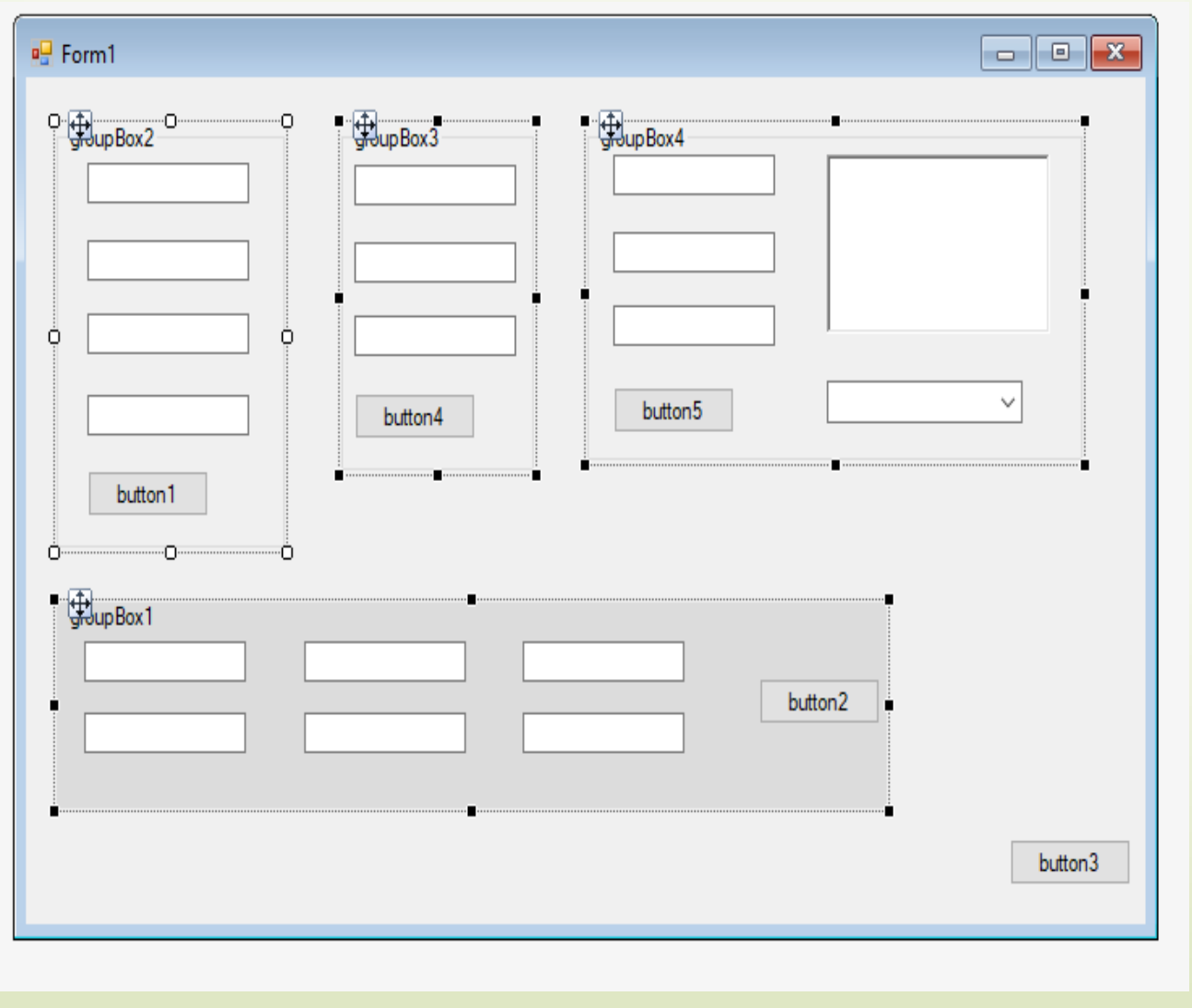
Radiobuttons: better with a list control



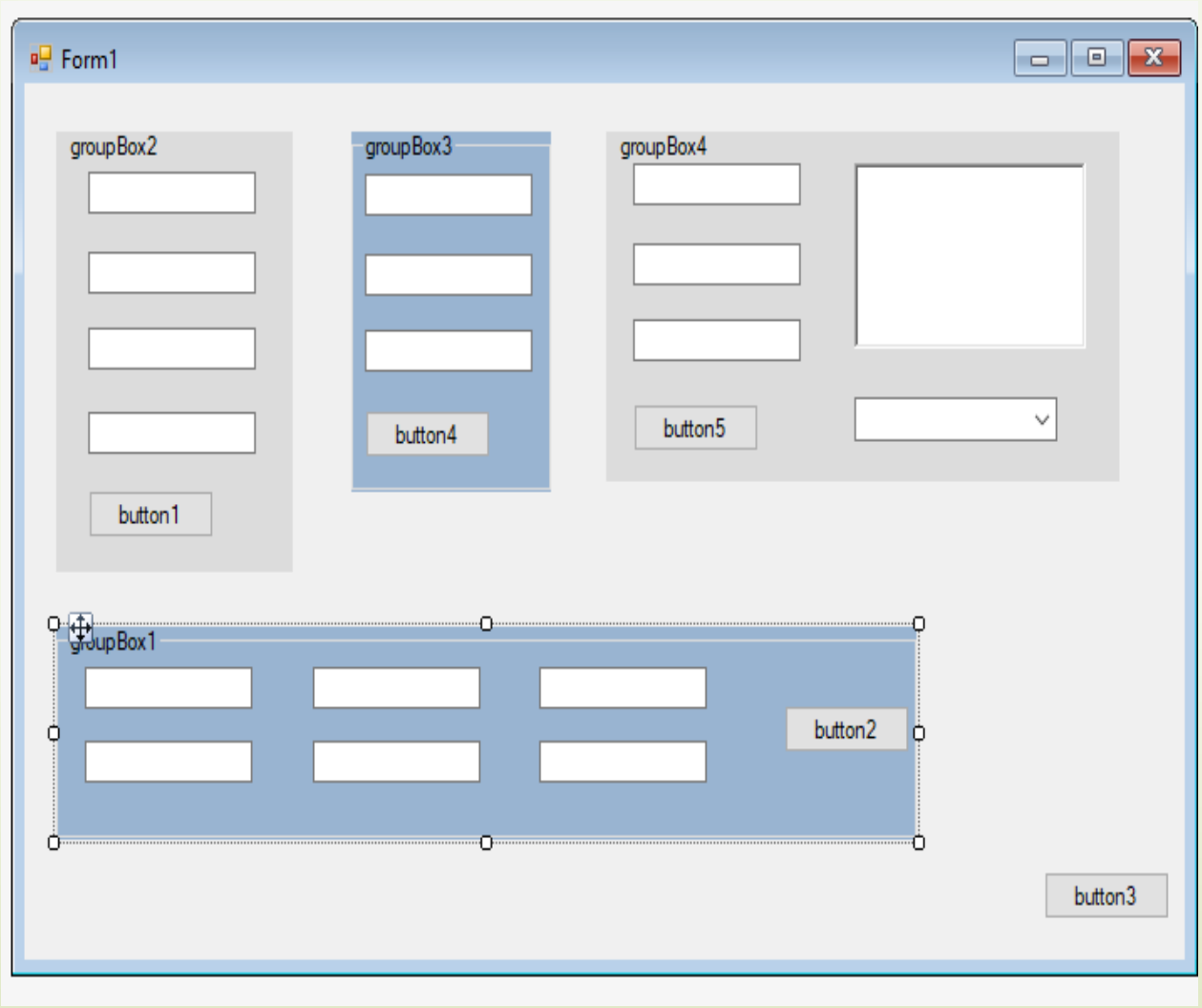
Too many controls, no clear groups, cognitive load is higher



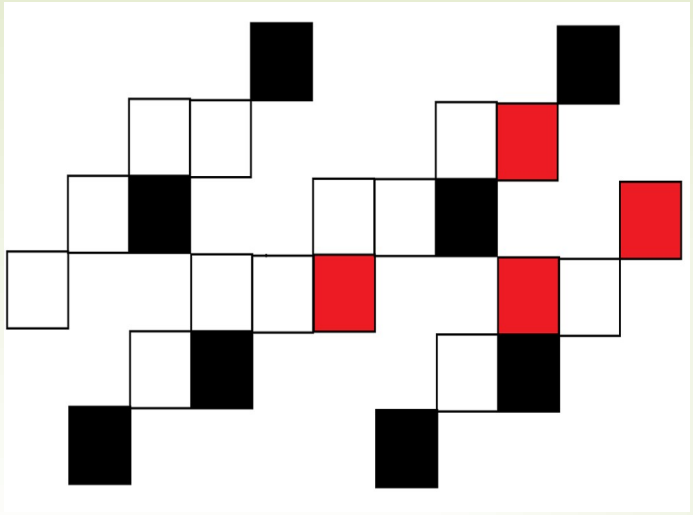
Easier to use:



Maybe even better and easier to use:



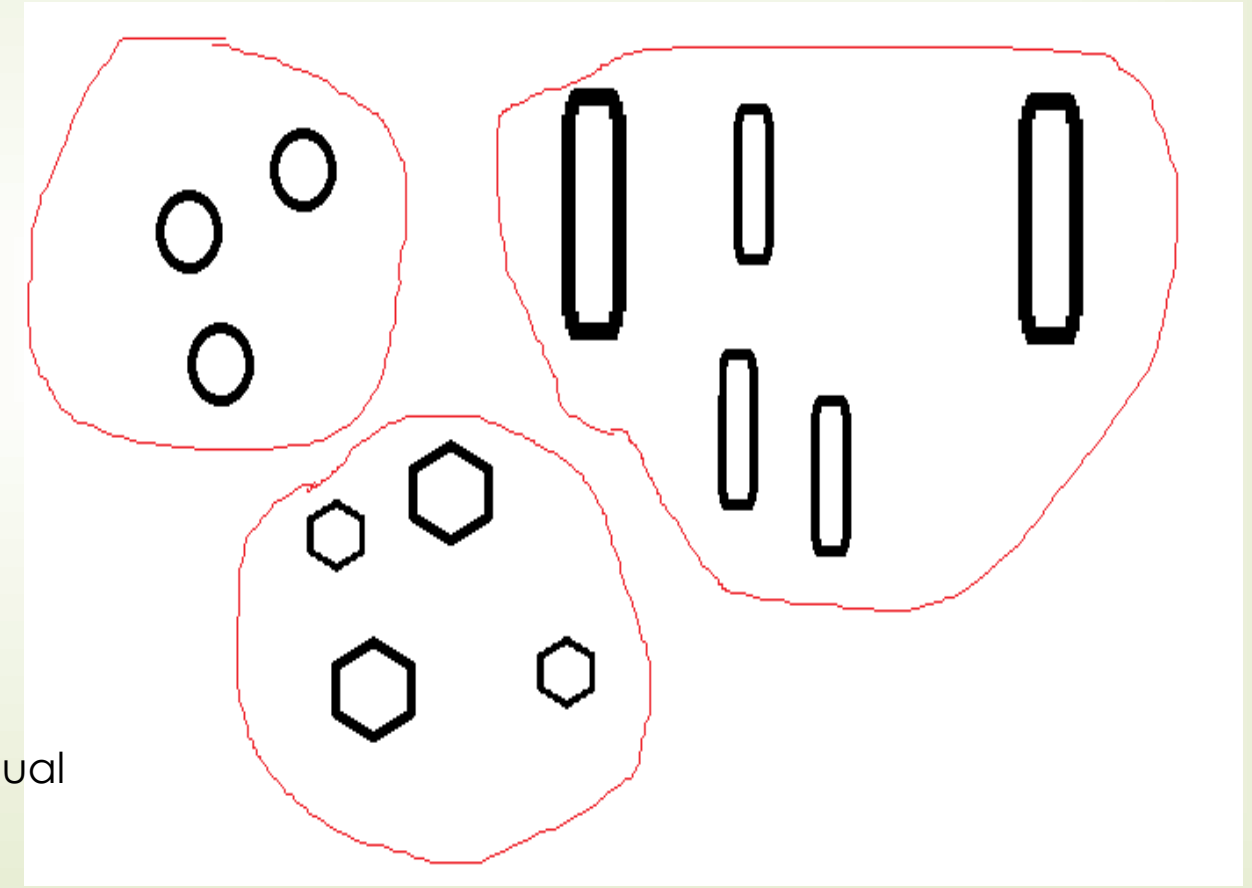
Gui – cognitive laws



Laws of similarity, pragnanz, proximity, continuity, and closure.

Gui – cognitive laws

Similarity



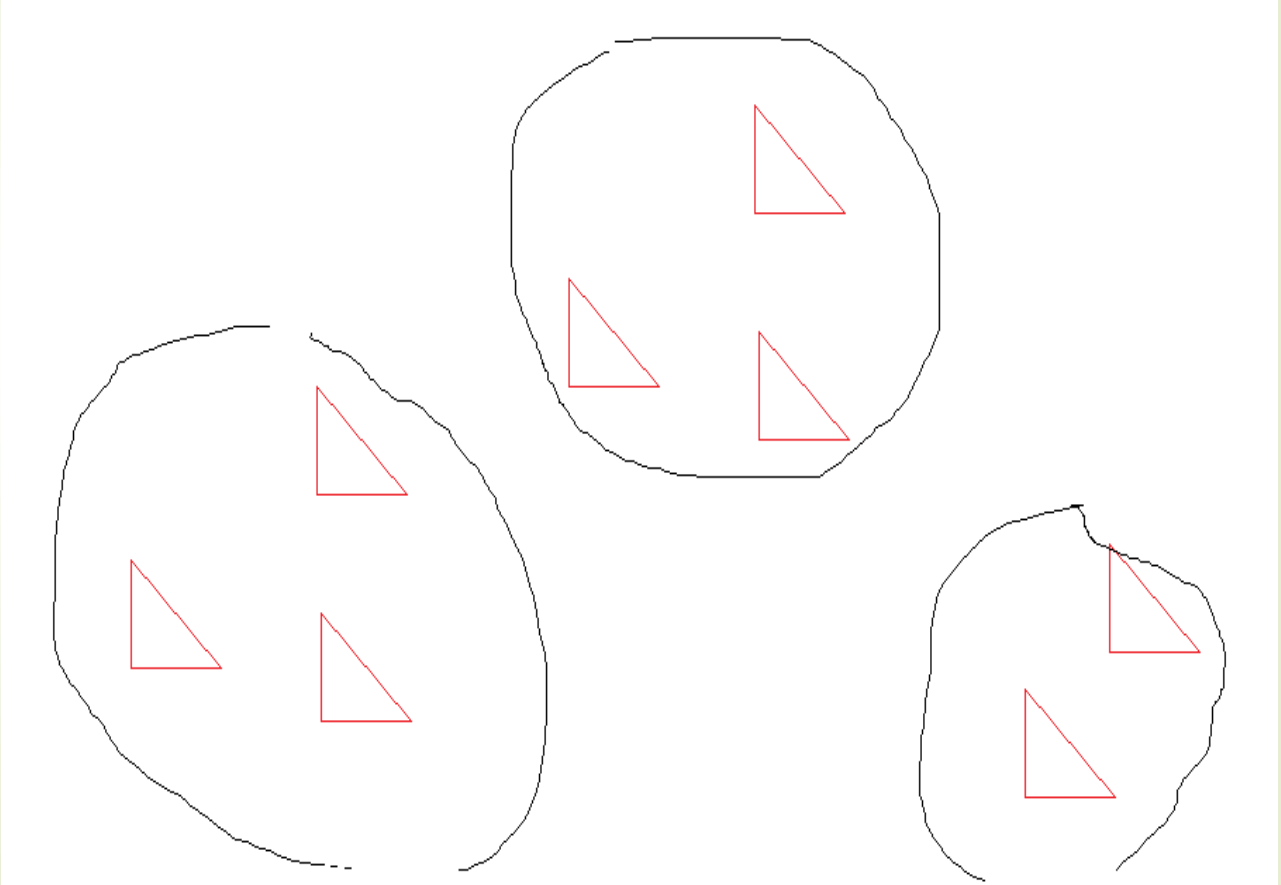
Similar items are grouped together:
they seem to be seen as one group

Items are not seen as individual shapes…

Gui – cognitive laws

Proximity

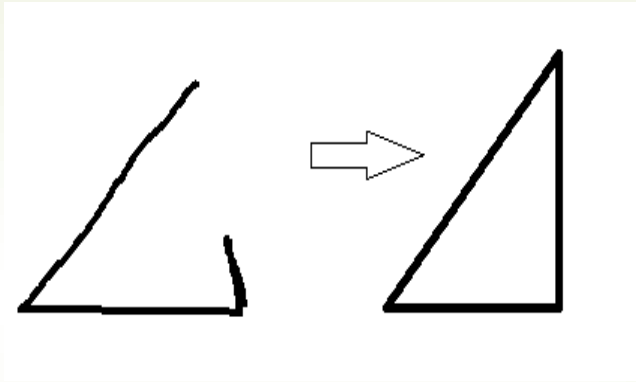
Objects near each other tend to be viewed as a group

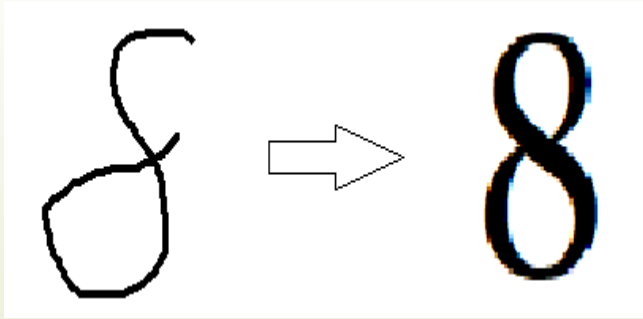


Gui – cognitive laws

Pragnanz

Objects or groups of different shapes are viewed as some real, good figure .. (are completed…)

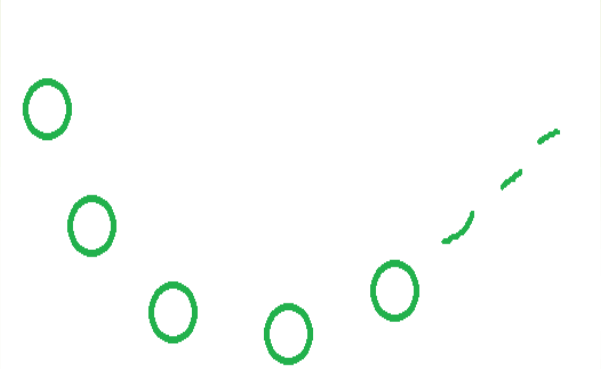


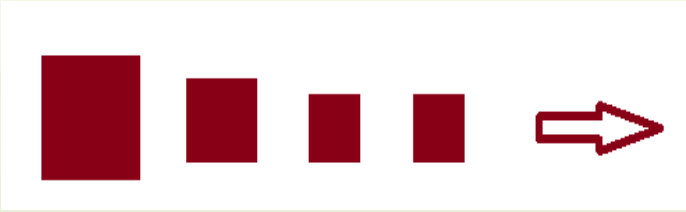


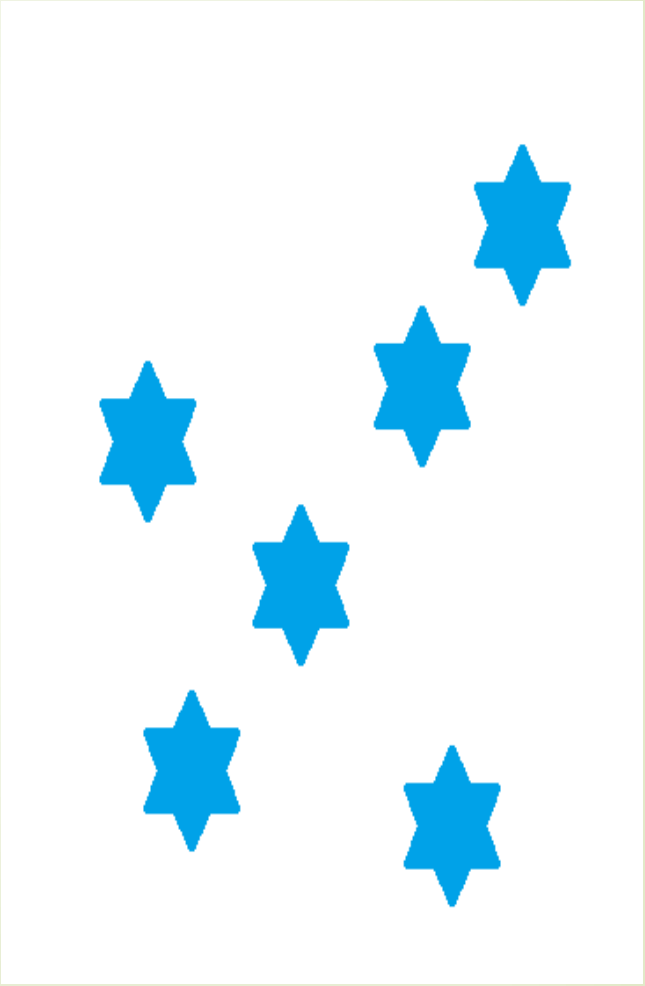
Gui – cognitive laws

Continuity

Objects are viewed to format a continuing shape (line, curve..)

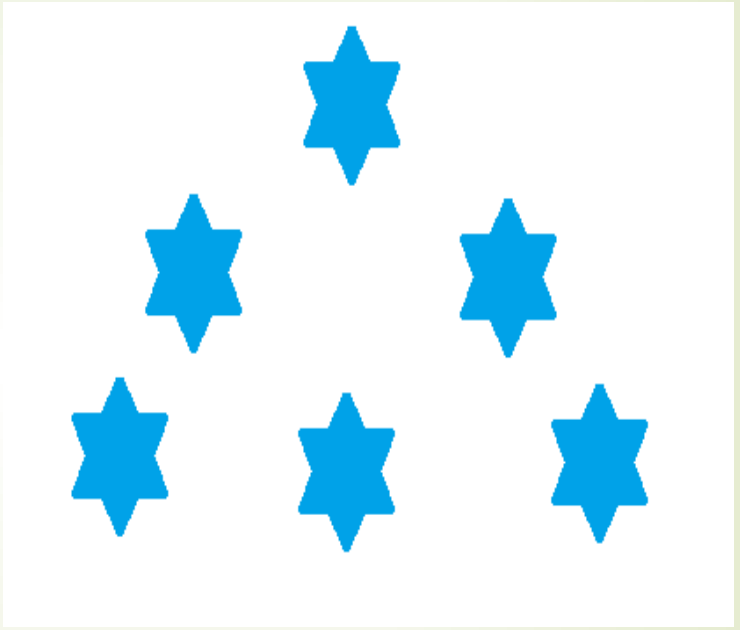




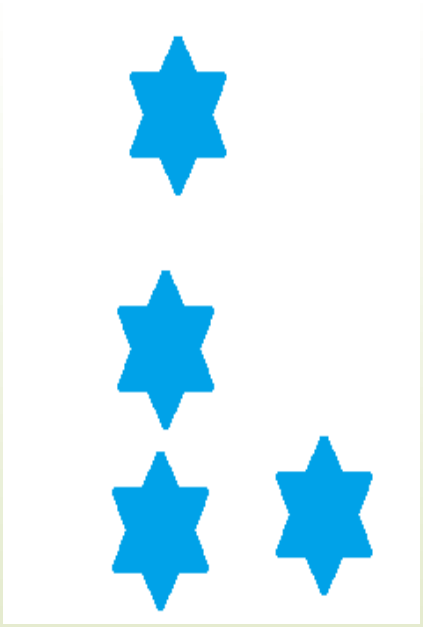


Closure

Gui – cognitive laws



Objects are viewed as one shape if there are "seen" boundaries



Gui

UI:s are everywhere:
examples!

Gui

UI:s are everywhere: examples!

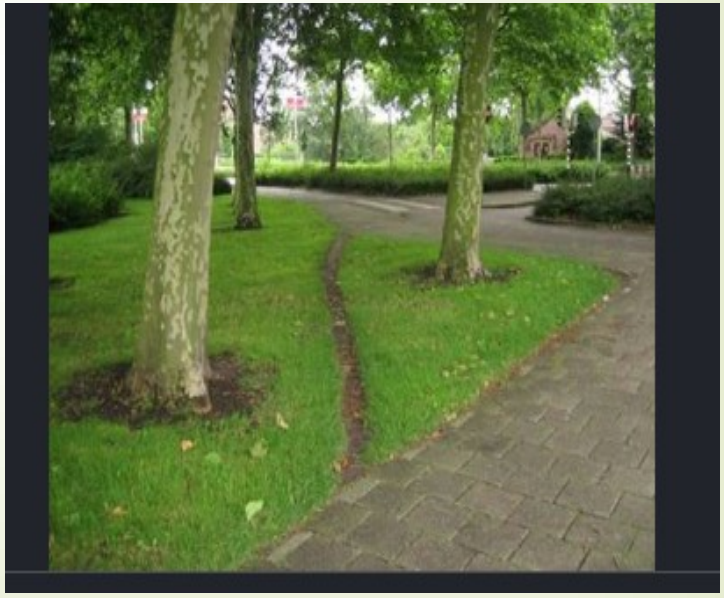
Gui

UI:s are everywhere: examples!

Gui

UI:s are everywhere:
examples!
Even new ways are found!

Time is
money!

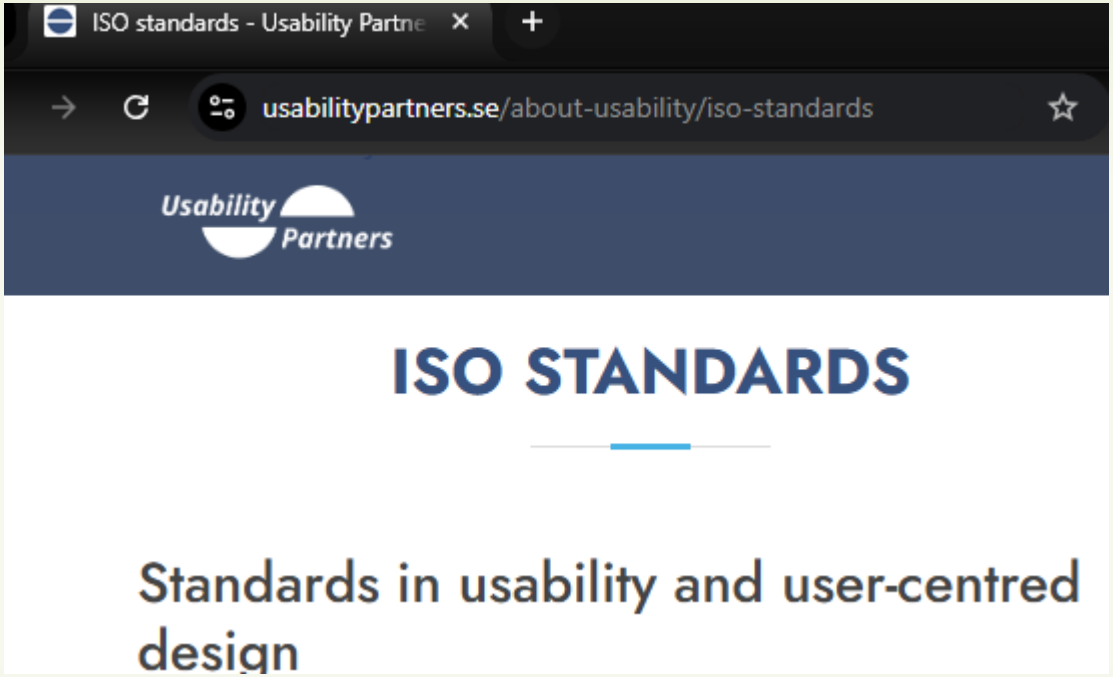


http%3A%2F%2Fwww.steve-wheeler.co.uk%2F2017%2F05%2Fdesire-lines.html&psig=AOvVaw1z-JzHthLpb8ZBaZ53Vxyh&ust=1580495596642282

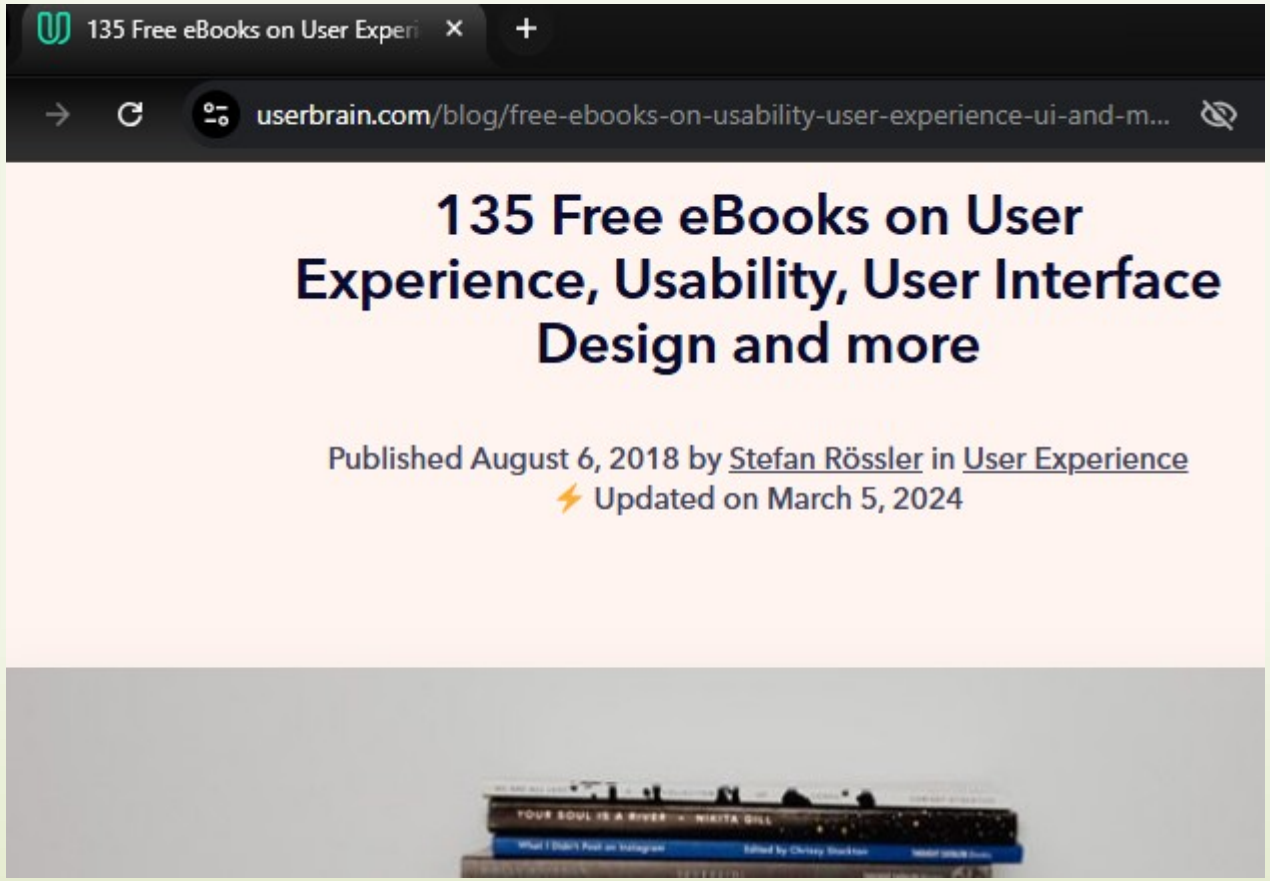
Study usability

Famous guru: Jakob Nielsen

There are also ISO standards



There are also many good books about Usability and UX, even eBooks!!



Thank you!

The eBook that is presented here, is free!

You can see the link in the description part...

Feedback is welcome!

Because of shadowed letters, text above is more difficult to read :)

But when you put energy for reading, you remember better :)