Eigenschaften

- *Bisher:* kompliziert, aufwendig
- *XForms:*
  - Intuitiv
  - Einfach zu nutzen
  - Mächtig
  - Mehrere Möglichkeiten der Kommunikation mit der GUI
  - 'Makros'
  - Form Designer

Begriffe

- Form
- Objekt
- Klasse

Einführung in XForms

```
#include "forms.h"

FL_FORM *my_form;

int main(int argc, char *argv[])
{
  fl_initialize(&argc, argv,
                "Demo 1", 0, 0);
  my_form=fl_bgn_form(FL_UP_BOX, 230, 160);
     fl_add_button(FL_NORMAL_BUTTON,
                   40, 50, 150, 60,
                   "Hello World!");
  fl_end_form();
  fl_show_form(my_form, FL_PLACE_MOUSE,
               FL_TRANSIENT, "Hello World!");
  fl_do_forms();
  fl_hide_form(simpleform);
  return 0;
}
```


Einführung in XForms 2

```
#include "forms.h"

FL_FORM *my_form;
FL_OBJECT *ja, *nein, *antwort;

main(int argc, char *argv[])
{ fl_initialize(&argc, argv, "Demo 2", 0, 0);
  my_form=fl_bgn_form(FL_UP_BOX, 320, 120);
     fl_add_box(FL_NO_BOX, 160, 40, 0, 0,
                "Windows loeschen?");
     ja=fl_add_button(FL_NORMAL_BUTTON,
                   40, 70, 80, 30, "Ja");
     nein=fl_add_button(FL_NORMAL_BUTTON,
                   200, 70, 80, 30, "Nein");
  fl_end_form();
  fl_show_form(my_form, FL_PLACE_MOUSE,
               FL_TRANSIENT, "Frage");
  while((antwort=fl_do_forms())!=ja);
  fl_hide_form(simpleform); return 0; }
```

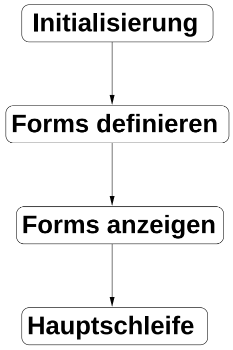
Einführung in XForms 3

```
#include "forms.h"

void ja_callback(FL_OBJECT *ob, long user_data)
{
  printf("Es wurde 'Ja' gedrueckt.\n");
  fl_finish();
  exit(0);
}

void nein_callback(FL_OBJECT *ob,long user_data)
{
  printf("Es wurde 'Nein' gedrueckt.\n");
  fl_finish();
  exit(0);
}
```


Einführung in XForms 3b

```
FL_FORM *my_form;
FL_OBJECT *obj;

void main(int argc, char *argv[])
{
  fl_initialize(&argc, argv, "Demo 3", 0, 0);
  my_form=fl_bgn_form(FL_UP_BOX, 320, 120);
   fl_add_box(FL_NO_BOX, 160, 40, 0, 0,
              "Windows loeschen?");
   obj=fl_add_button(FL_NORMAL_BUTTON,
                 40, 70, 80, 30, "Ja");
   fl_set_object_callback(obj,ja_callback,0);
   obj=fl_add_button(FL_NORMAL_BUTTON,
                 200, 70, 80, 30, "Nein");
   fl_set_object_callback(obj,nein_callback,0);
  fl_end_form();
  fl_show_form(my_form, FL_PLACE_MOUSE,
             FL_TRANSIENT, "Frage");
  fl_do_forms();
}
```


Einführung in XForms 5



Form Designer

- Interaktiver Interface Builder
- WYSIWYG
- Erzeugt C-Code:

  `create_form_xxx()`

- Direkte Unterstützung des Callback-Mechanismus

Form Designer 2

- Menüleiste
- Form-Liste (bis zu 50)
- Objektleiste
- Funktionsleiste
- `test.c test.h test.fd test_cb.c test_main.c`

Interaktion - fl_do_forms

```
FL_OBJECT *fl_do_forms()
```

Box/Text	keine Änderung möglich, keine Rückgabe
Button	Drücken des Mausknopfes
Slider	Wertänderung
Eingabefeld	Deaktivierung

```
/* Form definieren */
/* Form anzeigen */
while ( !ready)
{
  obj = fl_do_forms();
  /* Aenderungen in obj verarbeiten */
}
```


Interaktion 2 - fl_check_forms

```
FL_OBJECT *fl_check_forms()
```

Änderung	Rückgabe des geänderten Objektes
keine Änderung	Rückgabe NULL

```
/* Form definieren */
/* Form anzeigen */
while ( !ready)
{
  obj = fl_check_forms();
  if (obj != NULL)
     /* Aenderungen in obj verarbeiten */;
  /* Weiterer Programmablauf */
}
```


Interaktion 3 - Callbacks

```
fl_do_forms()
fl_check_forms()
```

```
void callback(FL_OBJECT *obj, long argument)
```

```
void fl_set_form_callback(
      FL_FORM *form,
      void (*callback)(FL_OBJECT *, void *),
      void *data)
void callback(FL_OBJECT *obj, void data)
```

Interaktion 4 - Mehrere Fenster

```
void fl_deactivate_form(FL_FORM *form)
```

```
void fl_activate_form(FL_FORM *form)
```


Klassen - Statische Objekte

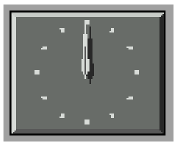
- Box

- Frame

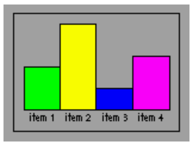
- Text

Klassen - Statische Objekte 2

- Bitmap
- Pixmap
- Clock



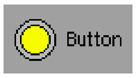
- Chart



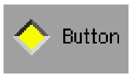
Klassen - Buttons

- Button

- Roundbutton



- Checkbutton



Klassen - Statische Objekte 2

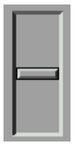
- Lightbutton

- Bitmapbutton

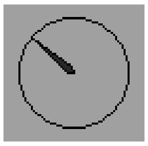
- Pixmapbutton

Klassen - Numerische Eingabeobjekte

- Slider

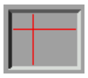


- Dial

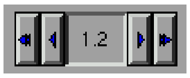


Klassen - Statische Objekte 2

- Positioner

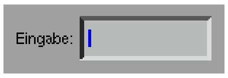


- Counter



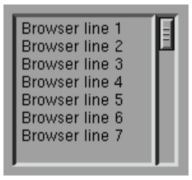
Klassen - Eingabefelder

- Input



Klassen - Auswahlobjekte

- Menu
- Choice
- Browser



Klassen - Andere Objekte

- Timer
- XYPlot
- Popups
- Canvas

Makros

- Nachrichten
- Fragen
- Colormap
- Dateiselektor

Bezugsquellen & Infos

- Homepage
  `http://bragg.phys.uwm.edu/xforms/`
- Mailingliste
  `listserv@ra.york.cuny.edu`
  `subscribe xforms`
- FTP
  `ftp://laue.phys.uwm.edu/pub/xforms/`
  `ftp://ftp.cs.ruu.nl/pub/XFORMS/`