Collecting data example

Form and Database combination is used to store the data of measurements in a Database, "collectingdata.db". We place the data in a database through the form, then read the data from the database and plot graphs of this data and sort them into groups. Time taken from the last sample is then transformed into a decimal number of hours and used as the x-axis values for the graphs.

```
base := "collectingbase.db"
```

Name of database file we are working with

t :=

names
"Group 1"
"Group 2"
"Group 3"

tt :=

names
"Equipment 1"
"Equipment 2"
"Equipment 3"

Data for Select equipment and group combo boxes

```
w := widget(0 , "Collecting data")
set size(w , 290 , 340)
```

Creates widget and set his size

```
l1 := label(w , "Select Equipment")
set pos(l1 , 20 , 30)
li1 := combo box(w , tt)      // equipment
set pos(li1 , 20 , 50)
```

Creates Select Equipment label and appropriate combo box

Set positions for label and combo box

```
l11 := label(w , "Select Group")
set pos(l11 , 150 , 30)
li11 := combo box(w , t)      // group
set pos(li11 , 150 , 50)
set size(li11 , 70 , 22)
```

Creates Select Group label and appropriate combo box

Set positions and size for label and combo box

```
l2 := label(w , "Data Type")
set pos(l2 , 20 , 80)
li2 := line text box(w , "")      // data type
set pos(li2 , 20 , 100)
set size(li2 , 65 , 22)
```

Creates Data Type label and appropriate line text box

Set positions and size for label and line text box

```
l21 := label(w , "Unit")
set pos(l21 , 150 , 80)
li21 := line text box(w , "")      // unit
set pos(li21 , 150 , 100)
set size(li21 , 65 , 22)
```

Creates Unit label and appropriate line text box

Set positions and size for label and line text box

```
g1 := group box(w , "Data")
set pos(g1 , 20 , 140)
set size(g1 , 250 , 150)
```

Creates group, name it Data and set positions and size for group

```
l4 := label(g1 , "Time from last sample (hh:mm)")
set pos(l4 , 20 , 30)
li4 := line text box(g1 , "")     // time
set pos(li4 , 20 , 50)
set size(li4 , 80 , 22)
```

Creates label and appropriate line text box

Set positions and size for label and line text box

```
l5 := label(g1 , "Data")
set pos(l5 , 20 , 80)
li5 := line text box(g1 , "")     //data
set pos(li5 , 20 , 100)
set size(li5 , 80 , 22)
```

Creates label Data and appropriate line text box

Set positions and size for label and line text box

```
b := button(w , "Submit")
set pos(b , 110 , 300)
```

Creates Submit button and set his position

```
query1 := "CREATE TABLE 'data table1' (id integer primary key, equipment TEXT, dgroup TEXT, "
query1 += "data_type TEXT, unit TEXT, time TEXT, data TEXT)"
```

Creates query string that will be executed in function **database query**

If table exist do nothing, if it does't create table "data table1" with appropriate columns

```
database query(base , query1)
```

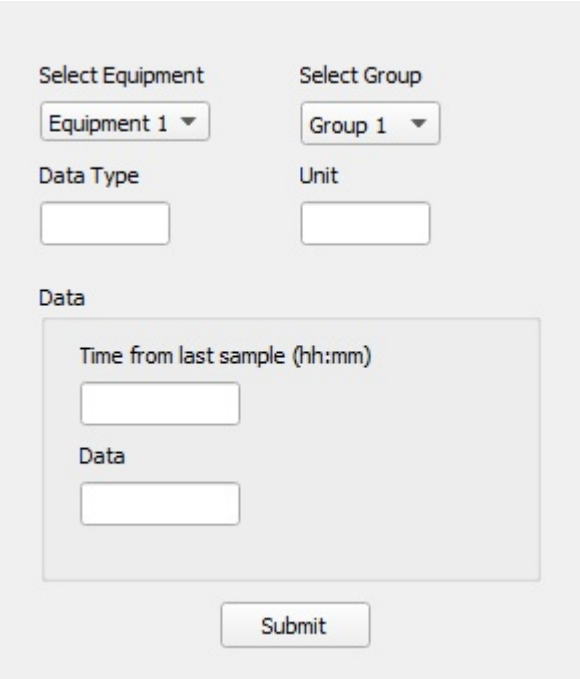
Execute query that we have created above, first argument is database name, second is query

```
on event(b , onSubmit())
```

Define what to do on Submit button press, **b** - button variable created earlier, **onSubmit()** - custom function defined in following canvas

```
onSubmit( )
{
1   q1 := "INSERT INTO 'data table1' (equipment, dgroup, data_type, unit, time, data) VALUES ("
2   q1 += "'" + widget value(li1) + "'" + ", '" + widget value(li11) + "', '" + widget value(li2)
3   q1 += "', '" + widget value(li21) + "', '" + widget value(li4) + "', '" + widget value(li5) + "')"
4   database query(base , q1)
5   set tooltip(li2 , widget value(li2))
6   set tooltip(li4 , widget value(li4))
7   set tooltip(li5 , widget value(li5))
8   set tooltip(li21 , widget value(li21))
9   set widget value(li2 , "")
10  set widget value(li4 , "")
11  set widget value(li5 , "")
12  set widget value(li21 , "")
}
```

Above is function that triggers at Submit button press
q1 - query string created to save form data into the "data table1" table of database
set tooltip - creates tooltip with data from last submit for each text box
set widget - deletes line text boxes values and set them to blank ("")



After submitting of values, a tooltip is created for each text box containing last submitted value for that text box.

```
data1 := database query(base , "SELECT data FROM 'data table1' WHERE dgroup = 'Group 1'")
data2 := database query(base , "SELECT data FROM 'data table1' WHERE dgroup = 'Group 2'")
data3 := database query(base , "SELECT data FROM 'data table1' WHERE dgroup = 'Group 3'")
```

Read data for graphs y-axis from database and store them in variables

```
time1 := database query(base , "SELECT time FROM 'data table1' WHERE dgroup = 'Group 1'")
time2 := database query(base , "SELECT time FROM 'data table1' WHERE dgroup = 'Group 2'")
time3 := database query(base , "SELECT time FROM 'data table1' WHERE dgroup = 'Group 3'")
```

Read data for graphs x-axis from database and store them in variables

```
timeToDec(dataVec)
{
  rez := vector create(size(dataVec) , false , 0)
  for(i := 1 , i < size(dataVec) , i += 1)
  {
    pom := dataVec[i]
    h := to number(split(pom , ":")[0])
    n := to number(split(pom , ":")[1])
    rez[i] = rez[i - 1] + (h · 60 + n)/60
  }
  return(rez)
}
```

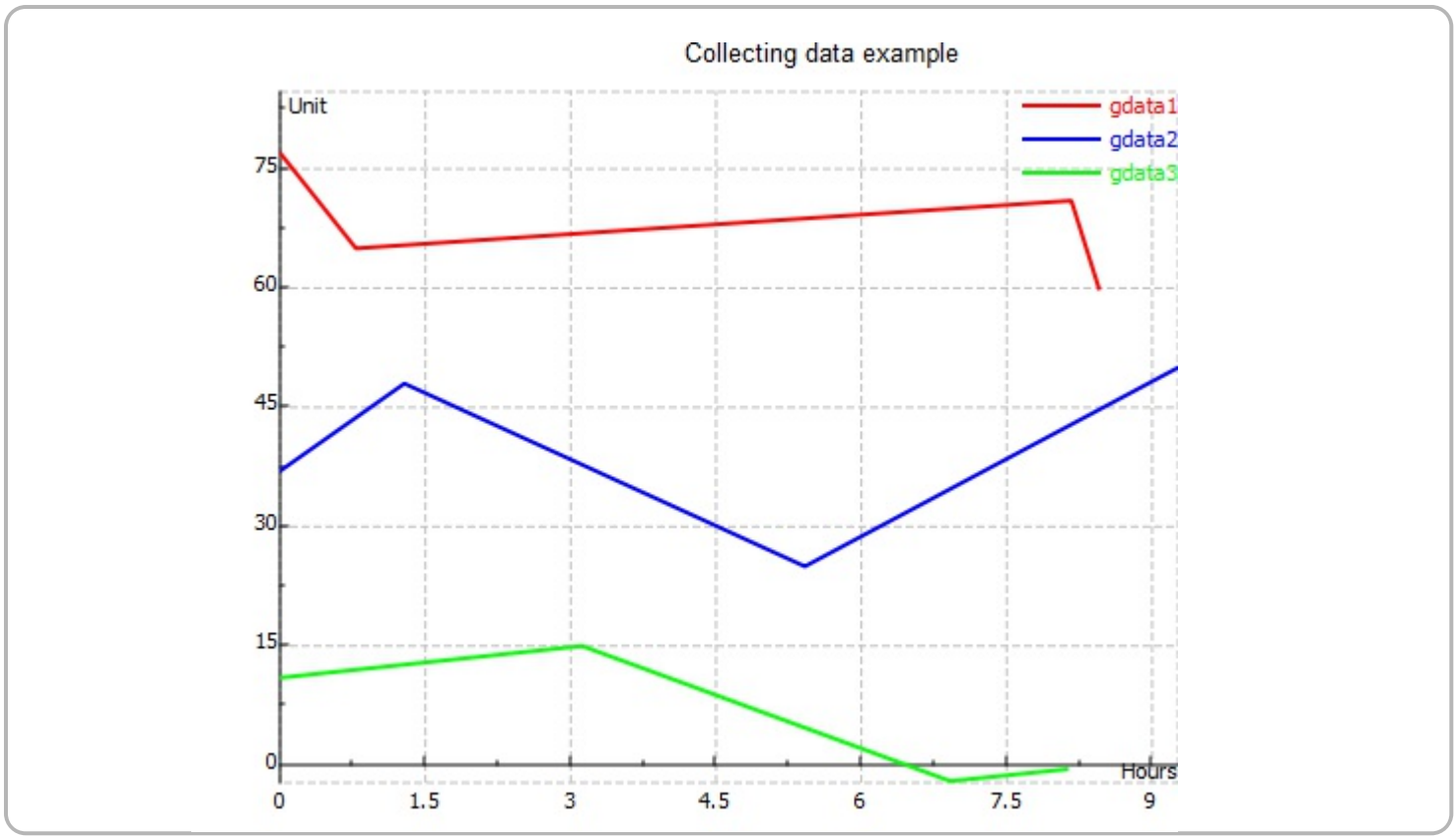
Function that transform 'Time from last sample' value,to decimal number of hours format

```
xdata1 := timeToDec(time1)
xdata2 := timeToDec(time2)
xdata3 := timeToDec(time3)
```

Transform data that we have read from database using timeToDec() function

```
gdata1 := join mat cols(xdata1 , data1)
gdata2 := join mat cols(xdata2 , data2)
gdata3 := join mat cols(xdata3 , data3)
```

Join x-axis and y-axis data for graphs into the matrices



We plotted graphs that represents dependence of measurement data and time of measurement. Every group of measurements have it's own graph.