

INSTRUMENTATIE VIRTUALA

CURS 6



Reprezentarea grafica a datelor

Grafice de tip Chart, Graph, XY

Variabile alfanumerice (string-uri)

Obiective

3

- Prezentarea rezultatelor sub forma grafica
- Lucru cu variabile alfanumerice (string-uri)

Grafice (Plotting Data)

4

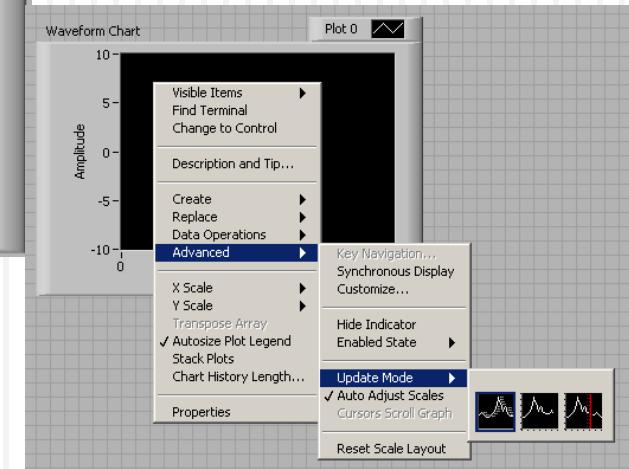
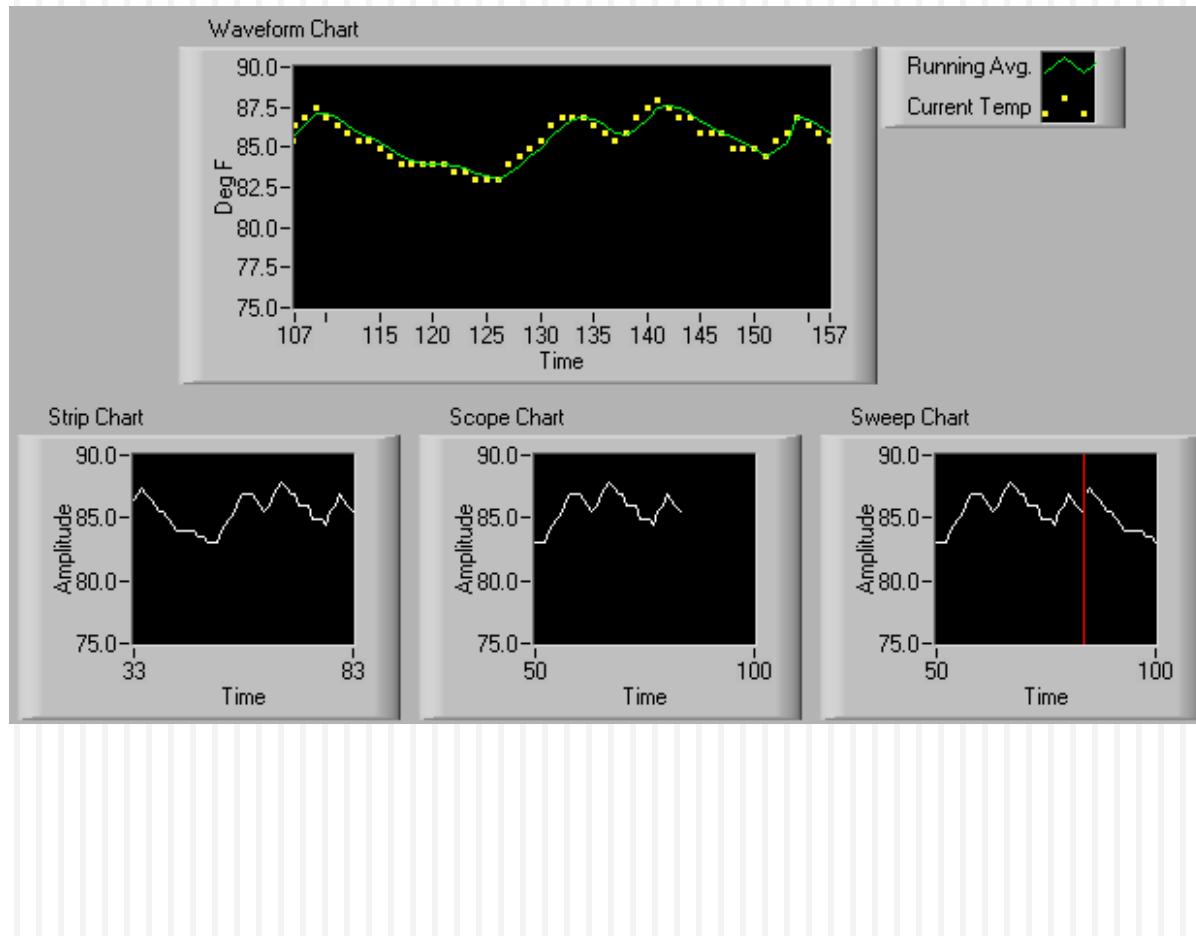
Subiecte

- A. Grafice forma de unda (**Waveform Charts WFC**)
- B. Grafice (**Waveform Graph**) **WFG** si grafice XY
- C. Plotari de “intensitate” (**Intensity Plots**)

Waveform Charts WFC

5

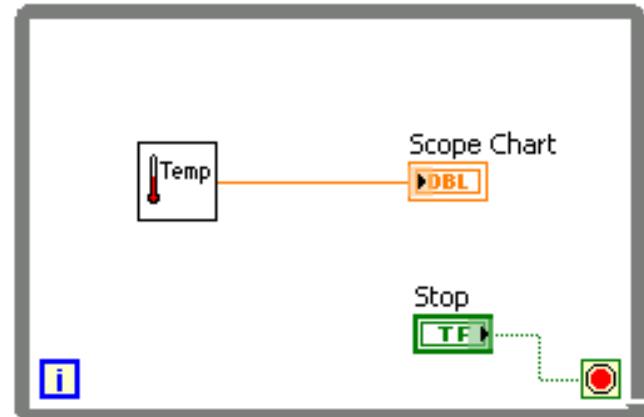
- Se alege din paleta Controls»Graphs and Charts



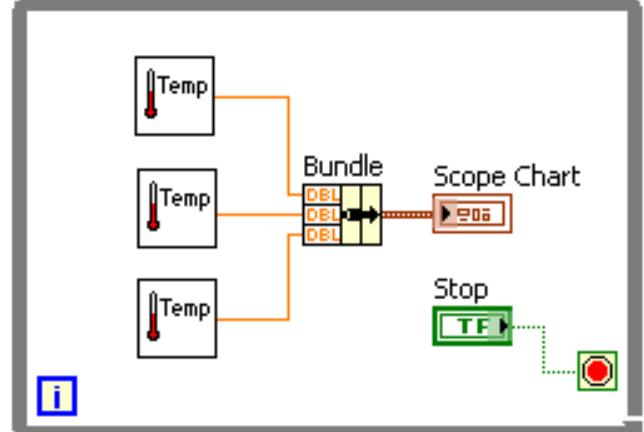
Cablarea indicatoarelor WFC

6

Plotare simplă (Single-Plot Chart)



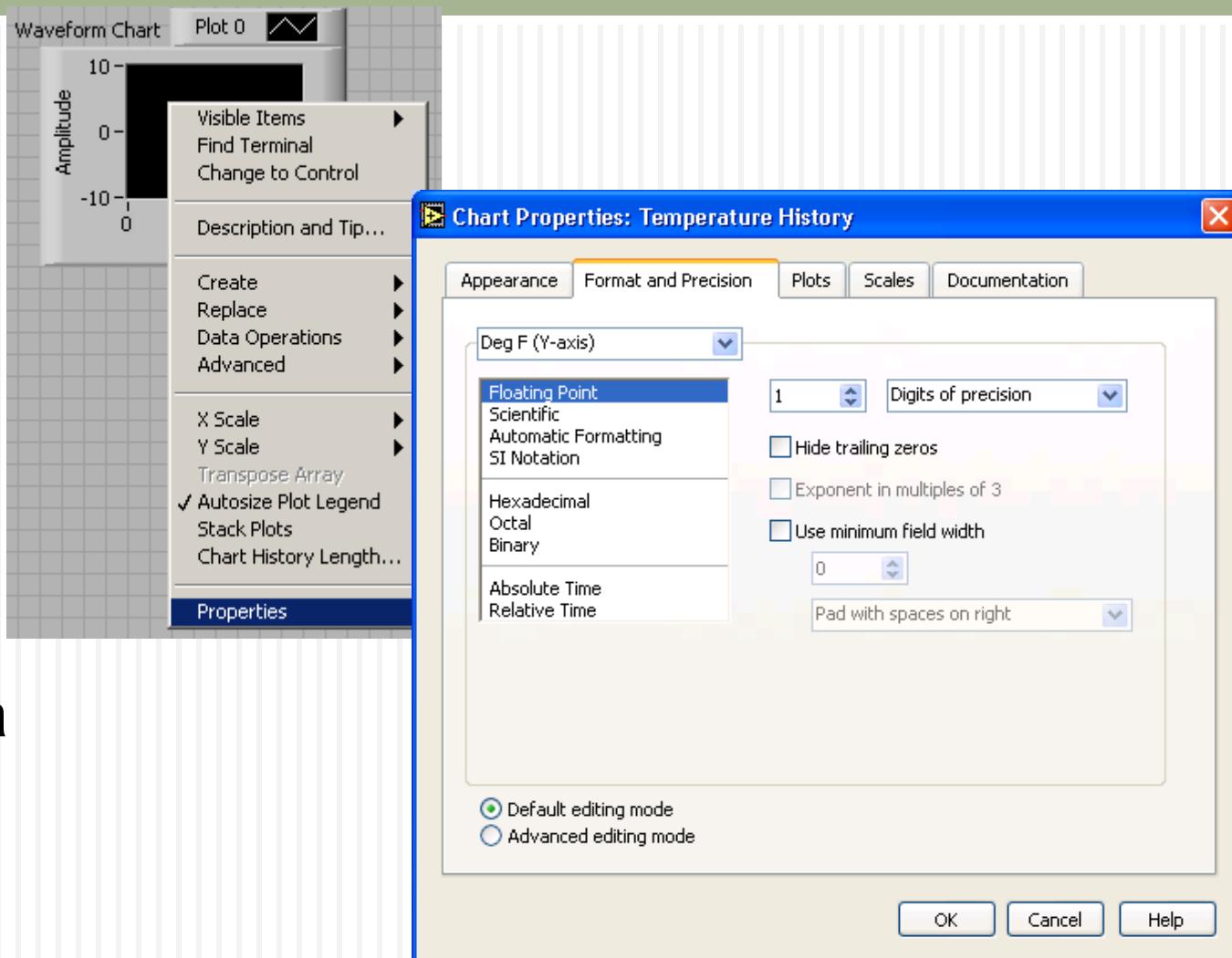
Plotare multiplă (Multiple-Plot Chart)



Modificarea proprietatilor graficului

7

- Felul in care arata
- Format si precizie la axe
- Tipul de plot
- Editare scale
- Documentarea graficului

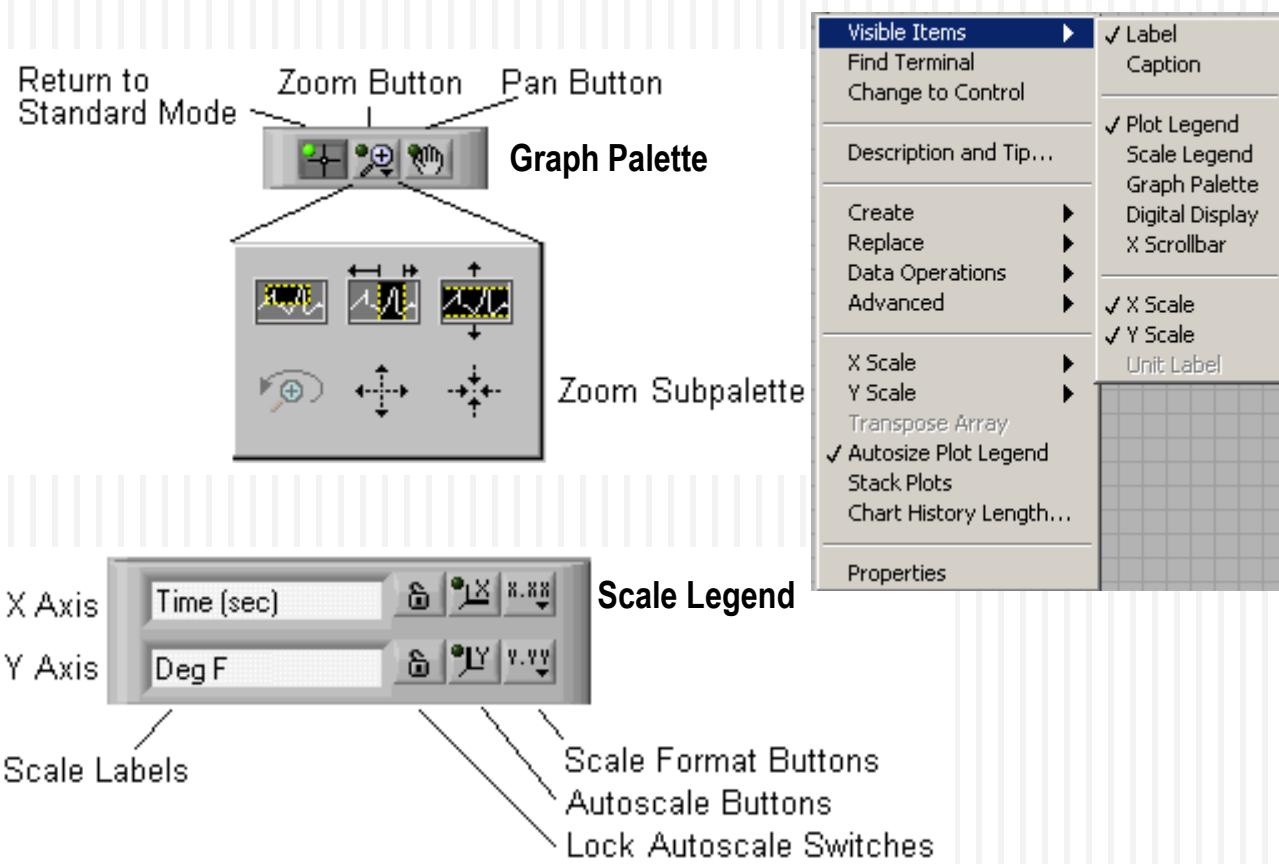


Personalizarea graficului

8

Right-click si selectati **Visible Items** pentru a vedea urmatoarele:

- Plot Legend
- Digital Display
- Scrollbar
- X and Y Scale
- Graph Palette
- Scale Legend

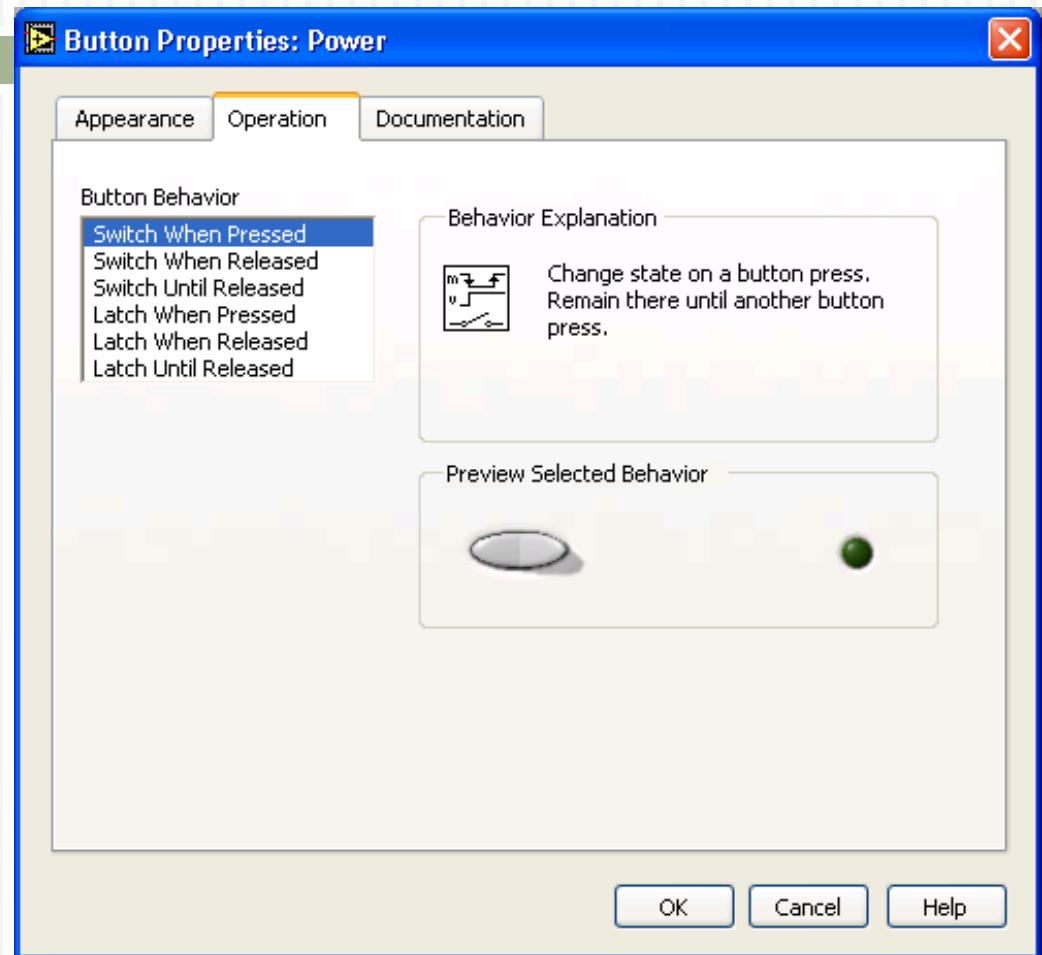
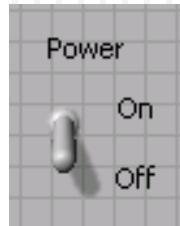


Pregatire: Actiunea mecanica

• Actiunea

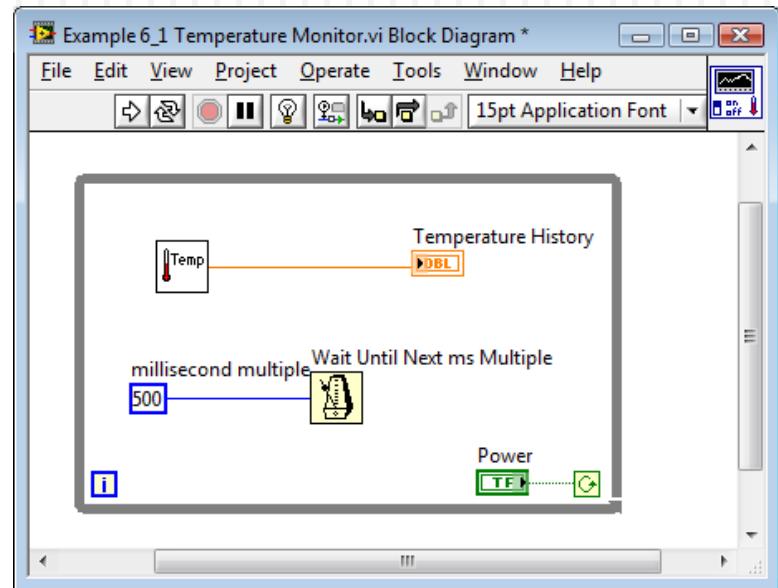
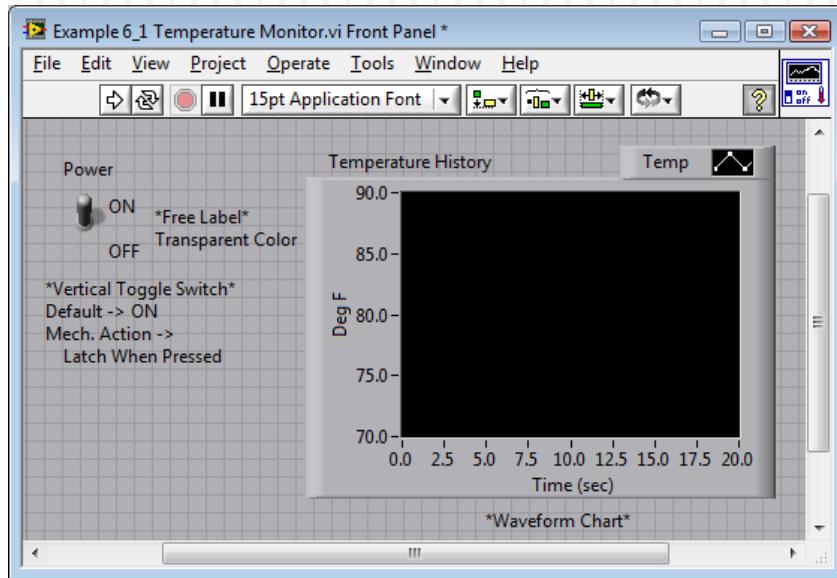
comutatorului,
controlul este facut
pina cind este
schimbat cu mina

- Actiune Latch,
controlul revine la
starea initiala cind
este citit de diagrama



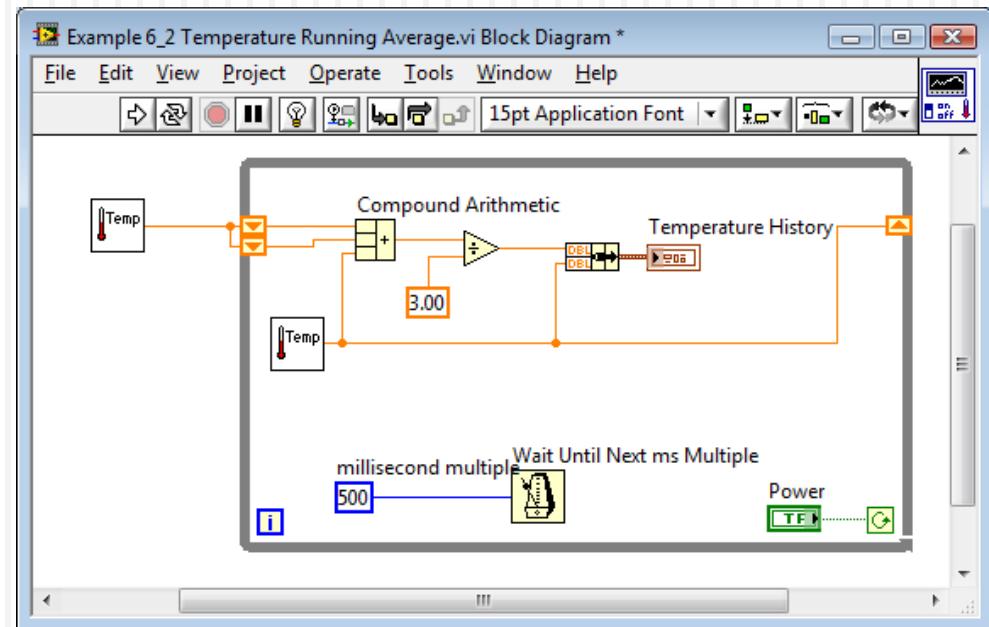
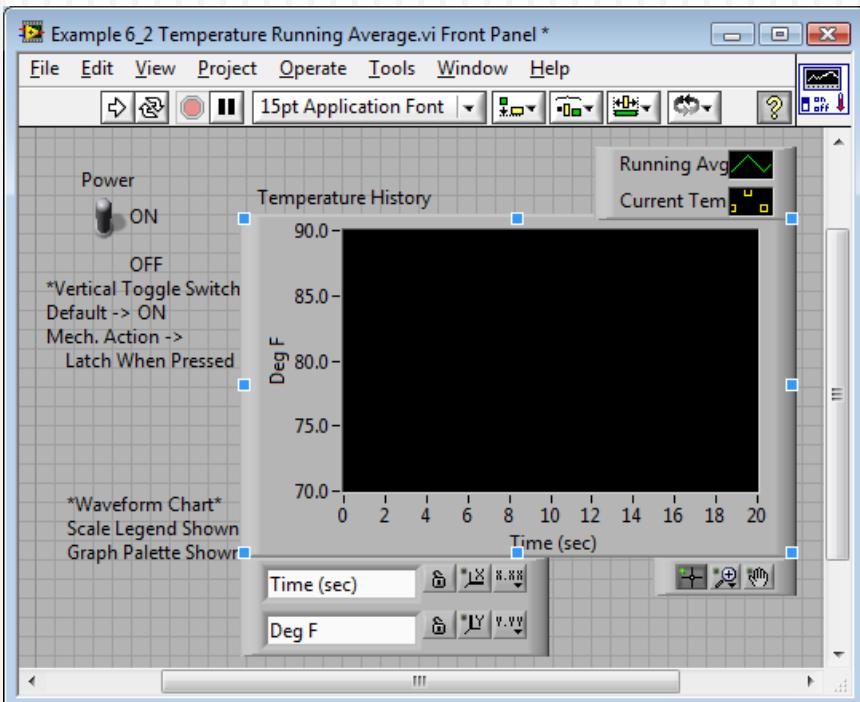
Utilizarea graficelor de tip Chart

10



Medierea pe baza registrilor

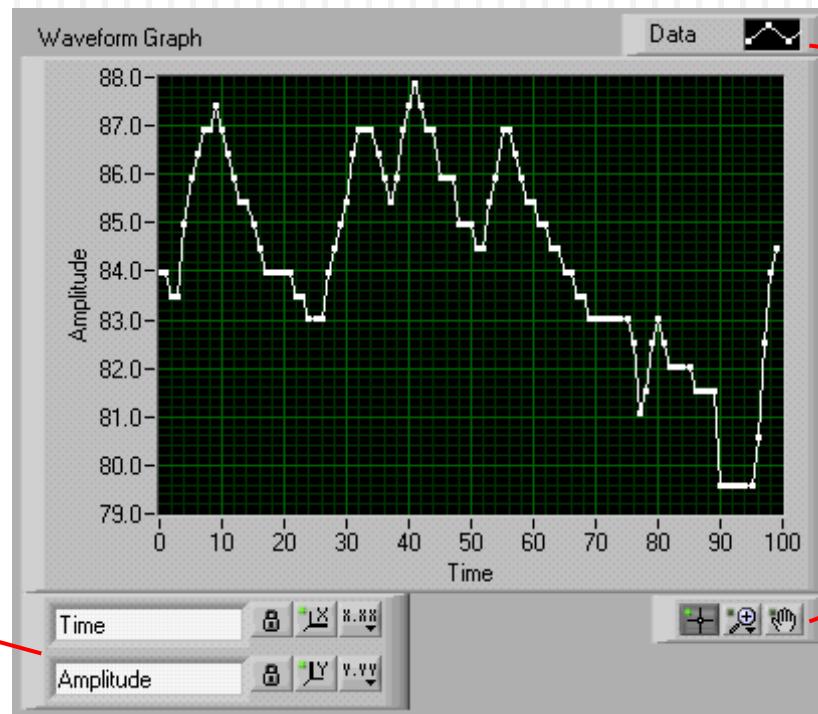
11



B. Grafice (WFG si XY)

12

- Selectati WFG si XY din subpaleta Graph
 - Waveform Graph – Ploteaza un “array” numere in functie de “index”
 - XY Graph – Ploteaza un “array” Y in functie de altul X



**Plot Legend
(point and line styles)**

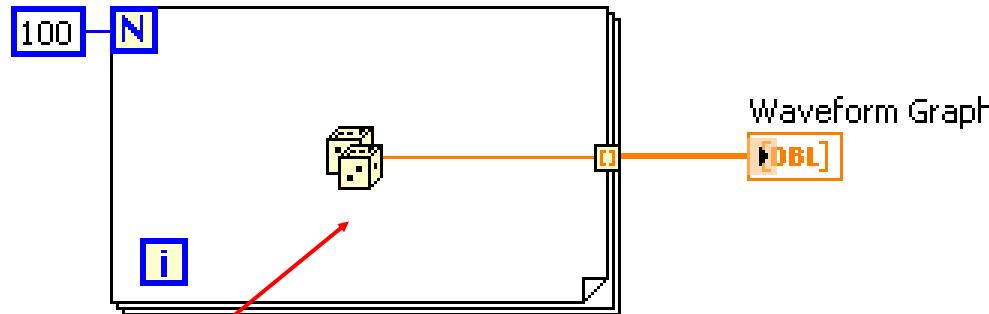
Scale Legend

**Graph
Palette**

Single-Plot Waveform Graphs

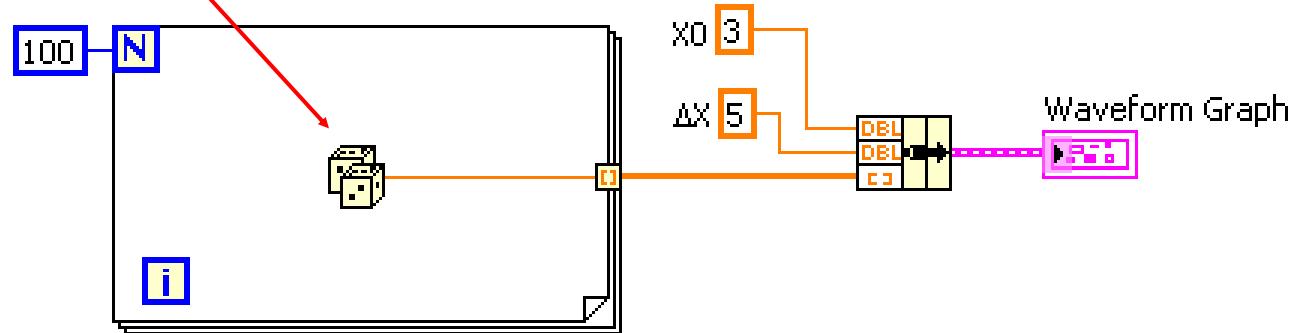
13

Axa X
uniforma
Initial X = 0.0
Delta X = 1.0



Generator numere aleatoare

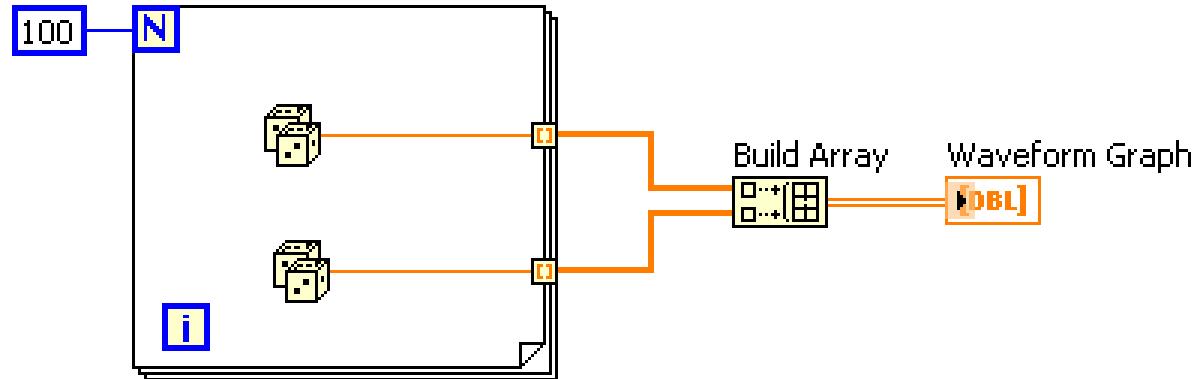
Axa X uniforma
(puteti specifica
cadena pe X)



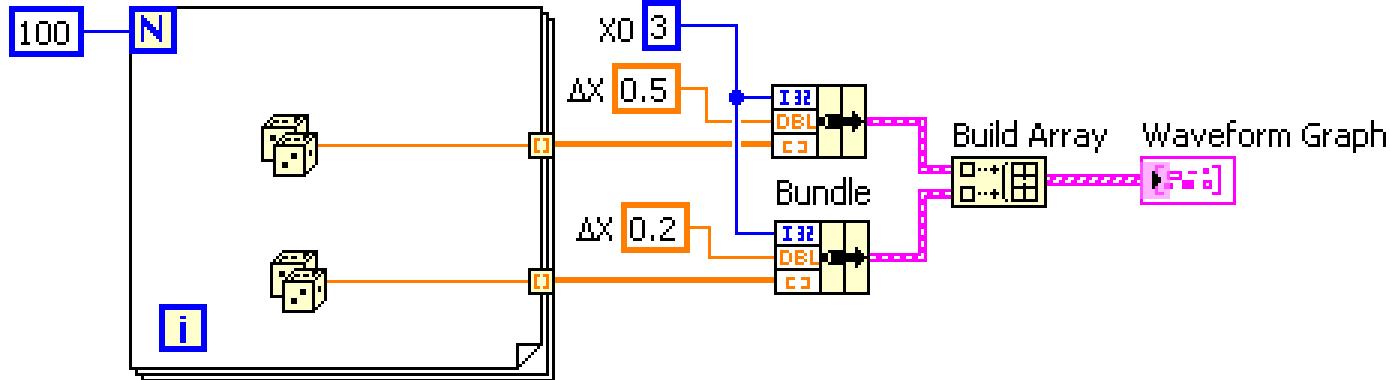
Plotari multiple pe Waveform Graphs

14

Fiecare rind este un plot separat:
Initial X = 0
Delta X = 1



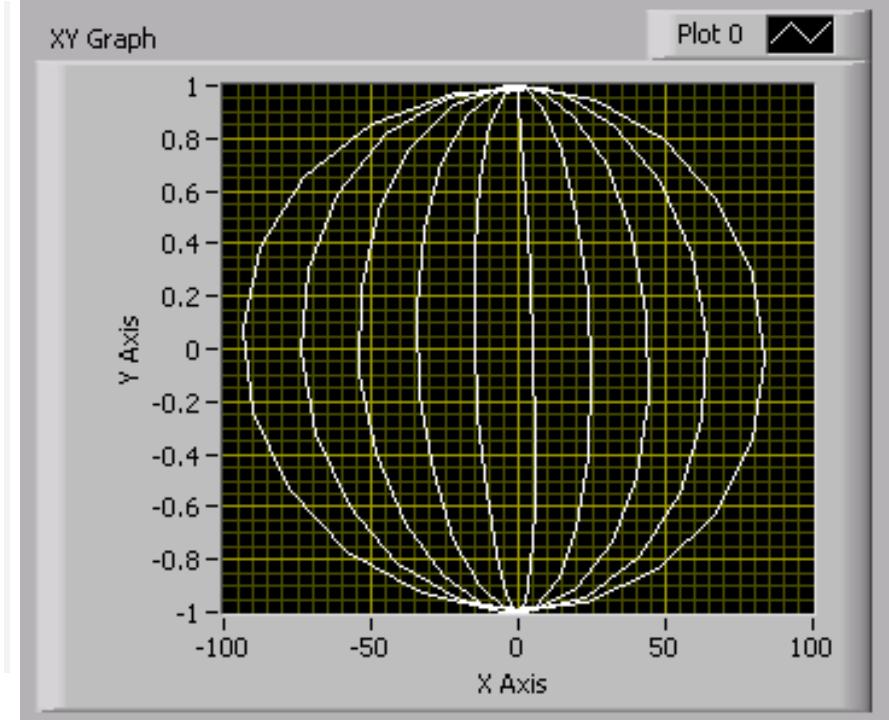
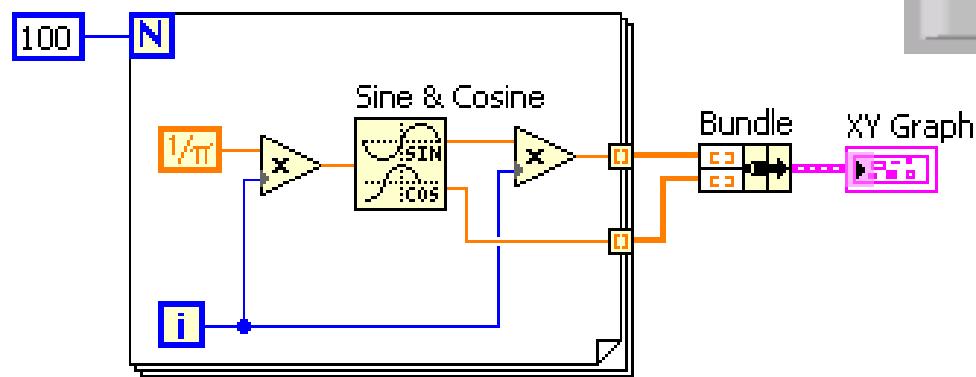
Fiecare rind este un plot separat :
se poate specifica
distanta intre
puncte pe X



Grafice XY

15

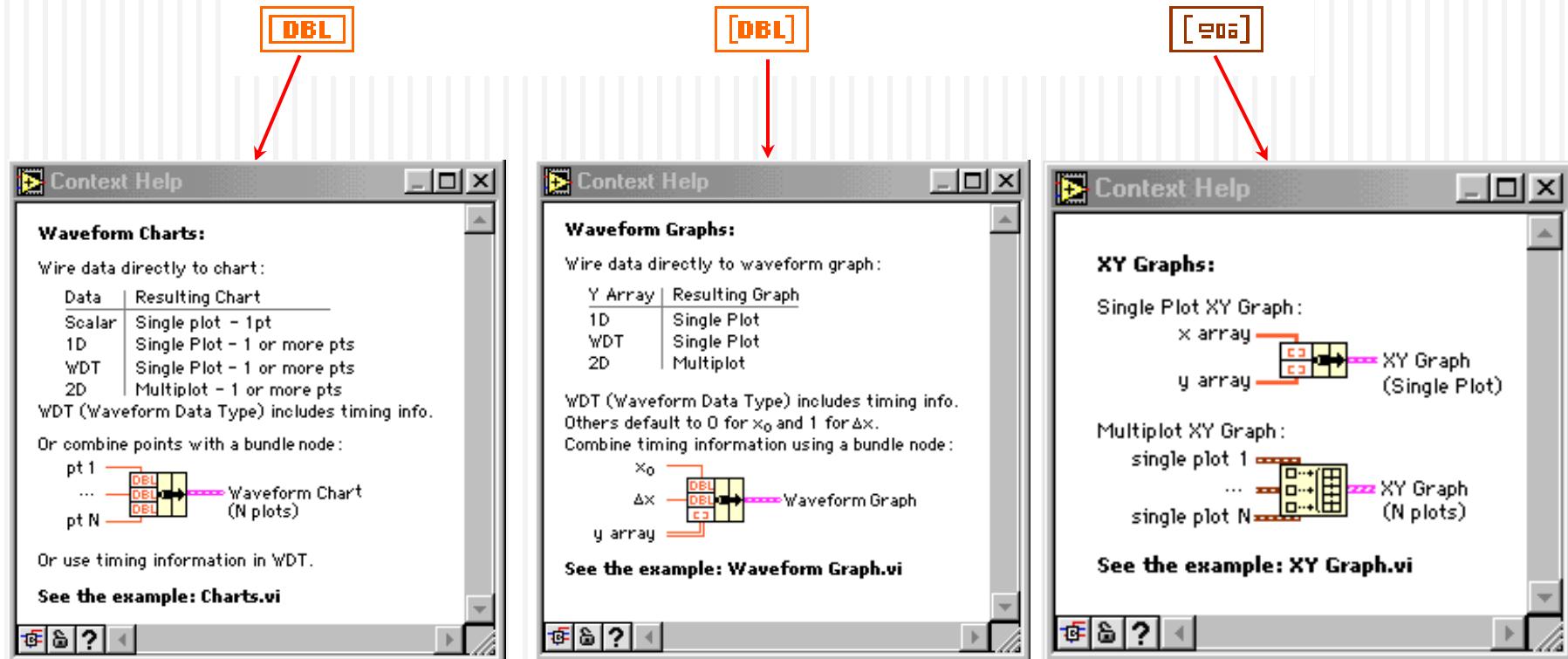
- Axa X este neuniformă
- Putem lua separat date pentru X și pentru Y



Rezumat privind utilizarea graficelor

16

Utilizarea Help-ului contextual cu diversele grafice



Exercitiul

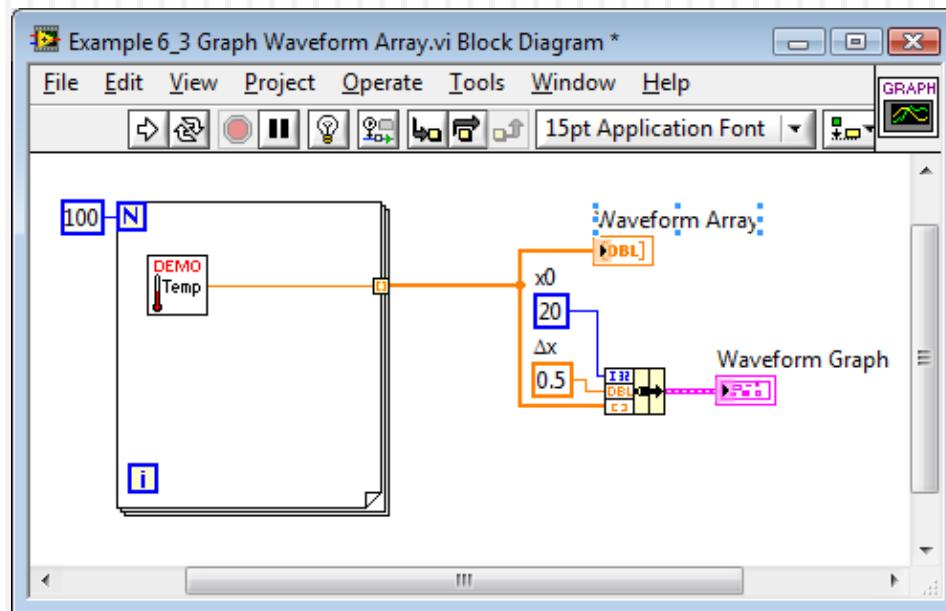
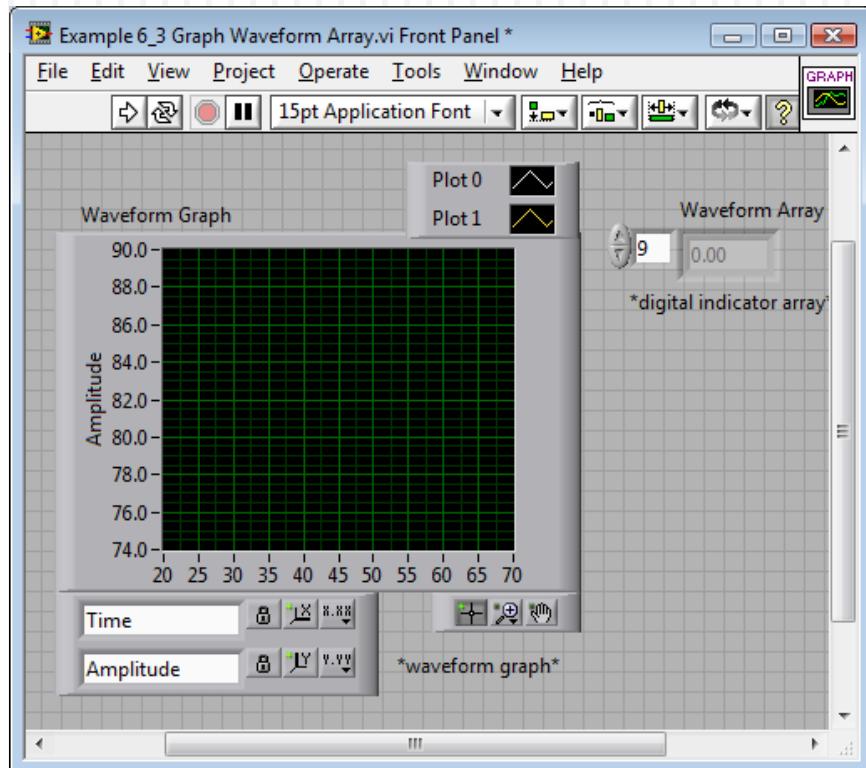
17

Graph Waveform Array VI

Realizati un “array” prin auto-indexare cu o bucla FOR si plotati acest array pe un Wave Form Graph WFG.

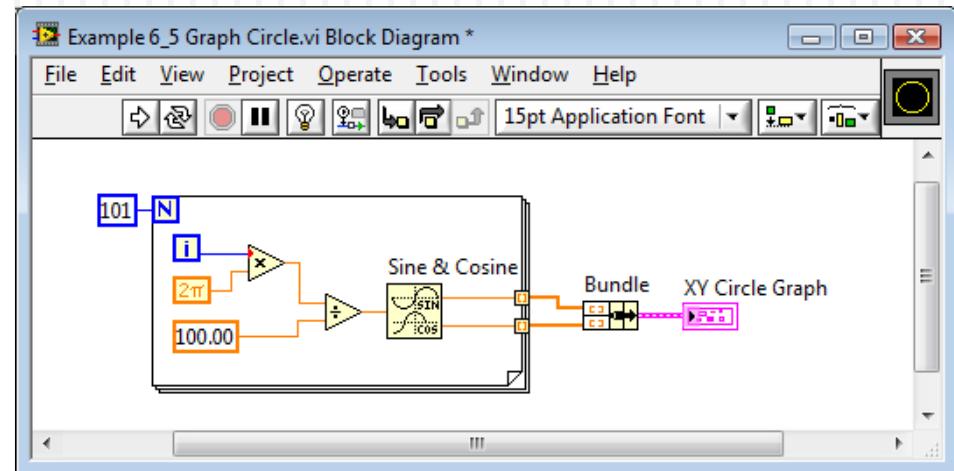
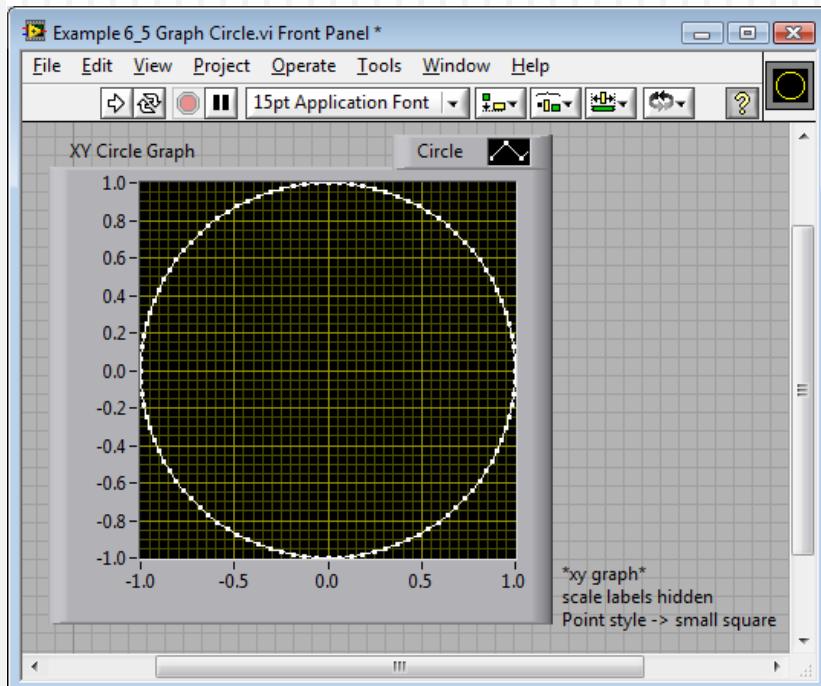
Waveform Graph

18



Exercitiul Graph Circle VI

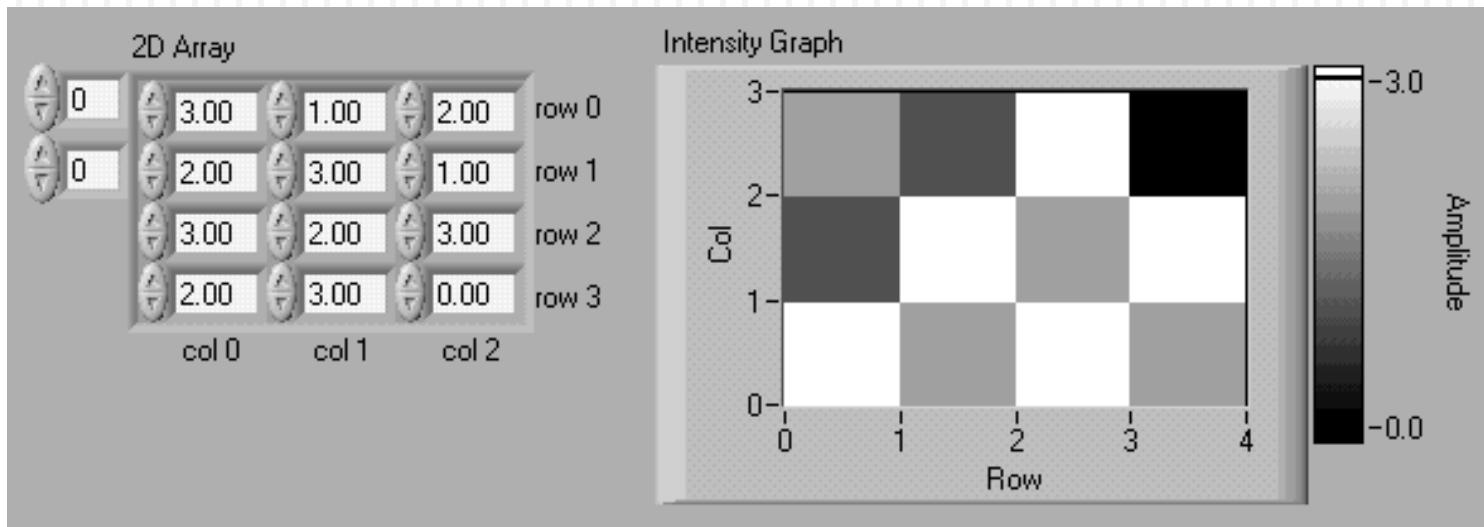
19



Plotari de tip: Intensity Plots

20

- Tehnologie utila in plotarea ariilor de teren, nivelor de temperatura, analiza spectrala si procesarea de imagine.
- Datele plotate sunt “2D array” de numere; fiecare numar reprezinta o culoare
- Folositi acesta optiune pentru a seta si prezentat mapari codate in culoare
- Cursorul de asemenea aduga o dimensiune.



Strings and File I/O

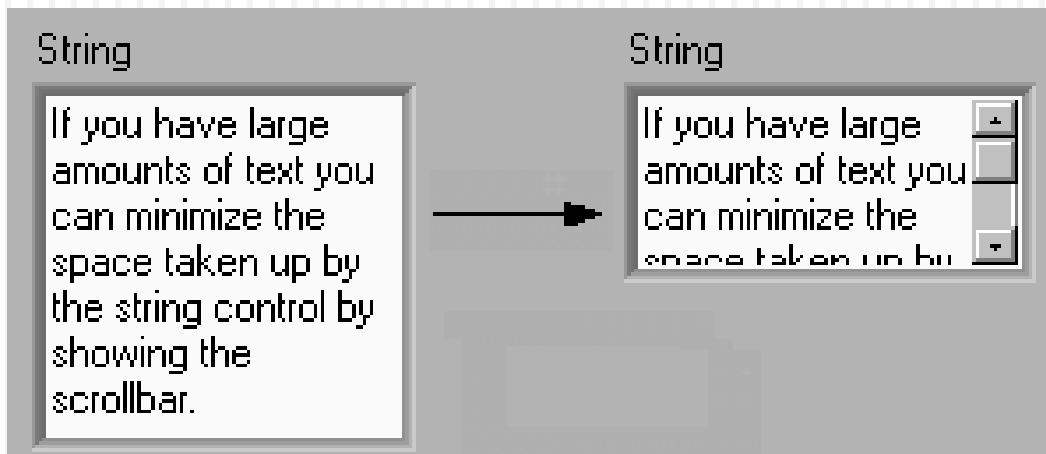
Subiecte

1. Controale si Indicatoare de **String**
2. Functii de **String**
3. Operatii **I/O** cu Fisiere
4. VI-uri de nivel inalt **I/O** cu Fisiere
5. VI-uri de nivel jos **I/O** cu Fisiere
6. Formatarea fisierelor text pentru “spreadsheets”

1. Siruri: Strings

22

- Un string este un sir de caractere displayable (ASCII)
- Au multe aplicatii: afisarea de mesaje, control de instrumente, operatii I/O cu fisiere, etc.
- Controalele/Indicatoarele de string se gasesc in subpaleta Controls»String



Moduri de afisare pentru String

23

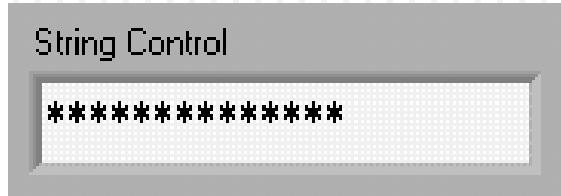
Normal display



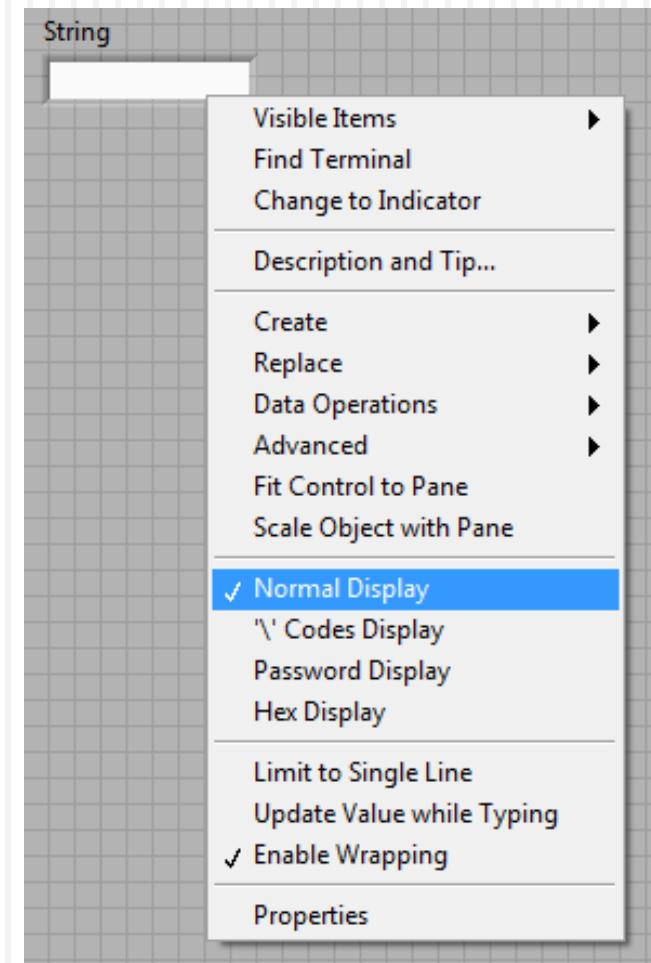
\ code display



Password display



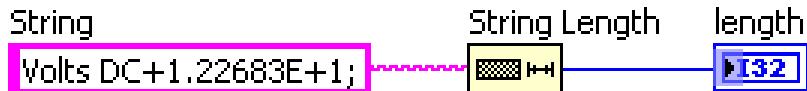
Hex display



2. Functii de String

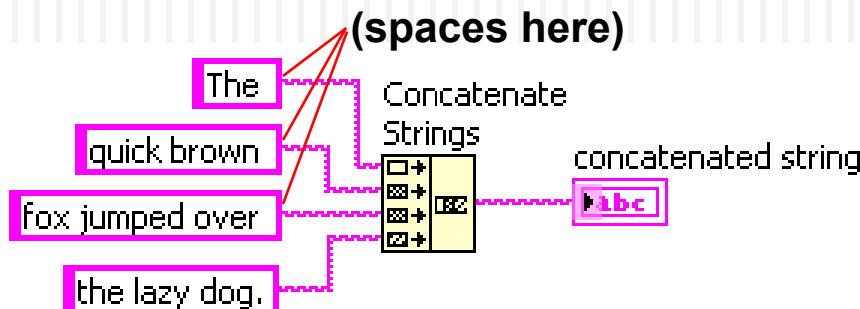
24

String Length



length
20

Concatenate Strings

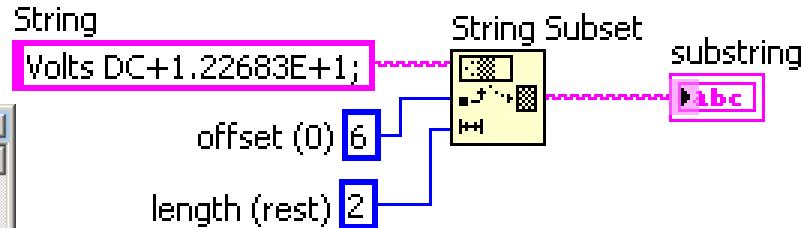
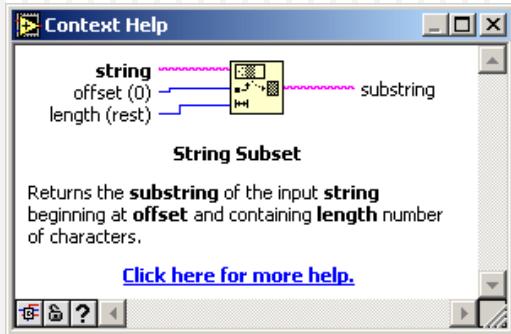


concatenated string
The quick brown fox
jumped over the lazy dog.

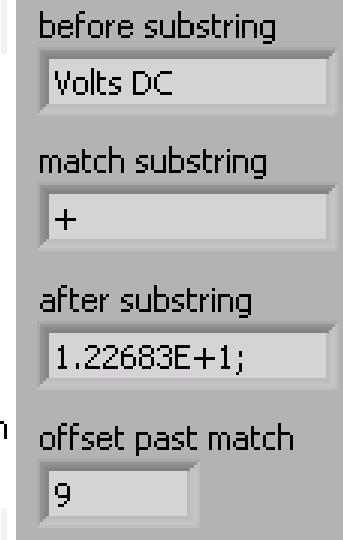
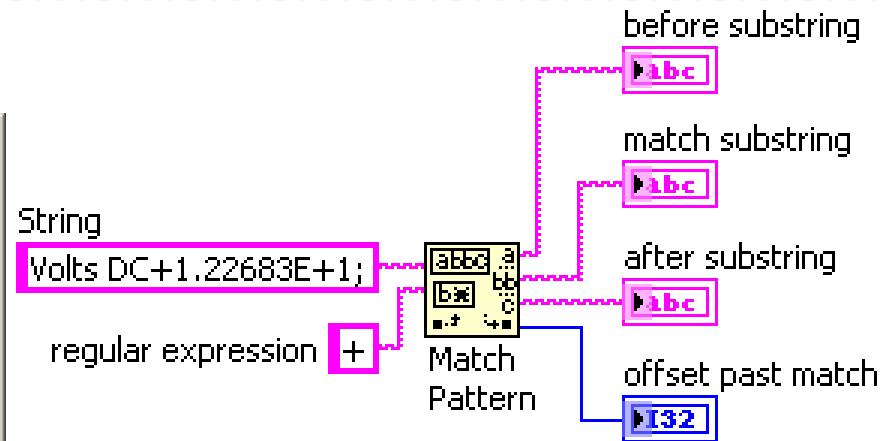
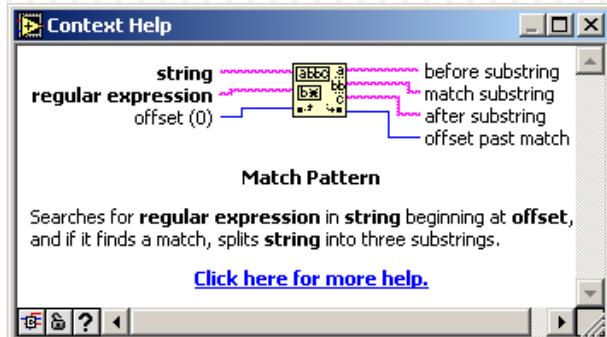
Functii de String

25

String Subset



Match Pattern



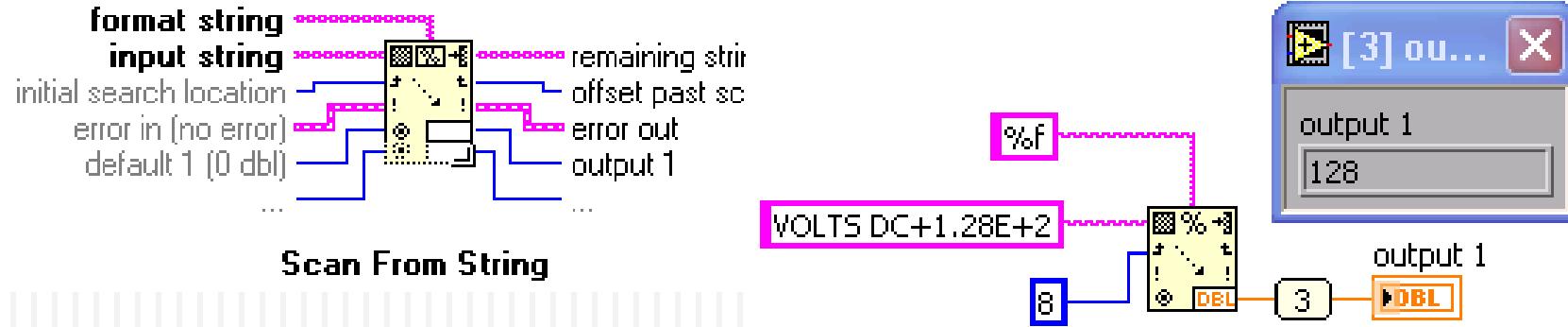
Conversia numere la string: Build String

26

The image shows a screenshot of LabVIEW. On the left, there is a block diagram with a 'Build Text' block. The input to the 'Build Text' block is '1.28'. The output of the 'Build Text' block is connected to a 'Result' indicator. The indicator displays 'Voltage is 1.2800'. Above the block diagram is a configuration window titled 'Configure Build Text [Build Text]'. The window has a preview area at the top containing the text 'Voltage is %voltage%'. Below this is a 'Configure Variables' section where 'voltage' is selected. To the right are 'Variable Properties' for 'voltage': 'Format' is set to 'Format fractional number (12.345)', 'Type' is 'Number', and 'Precision' is set to 4. There are also sections for 'Justification' (Left), 'Padding' (Using spaces), and a checked 'Use specified precision' option. At the bottom of the configuration window are 'OK', 'Cancel', and 'Help' buttons.

Conversia string la numar: Scan From String

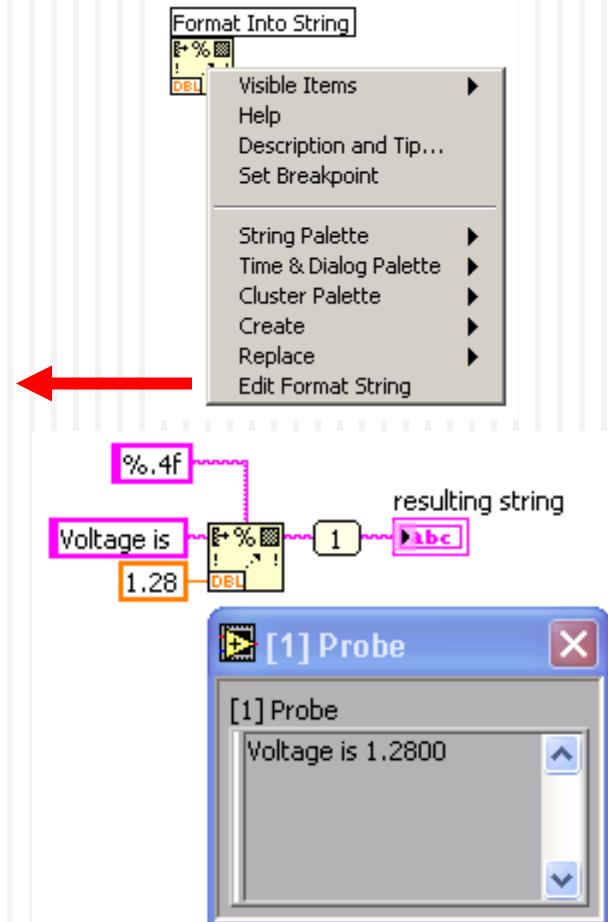
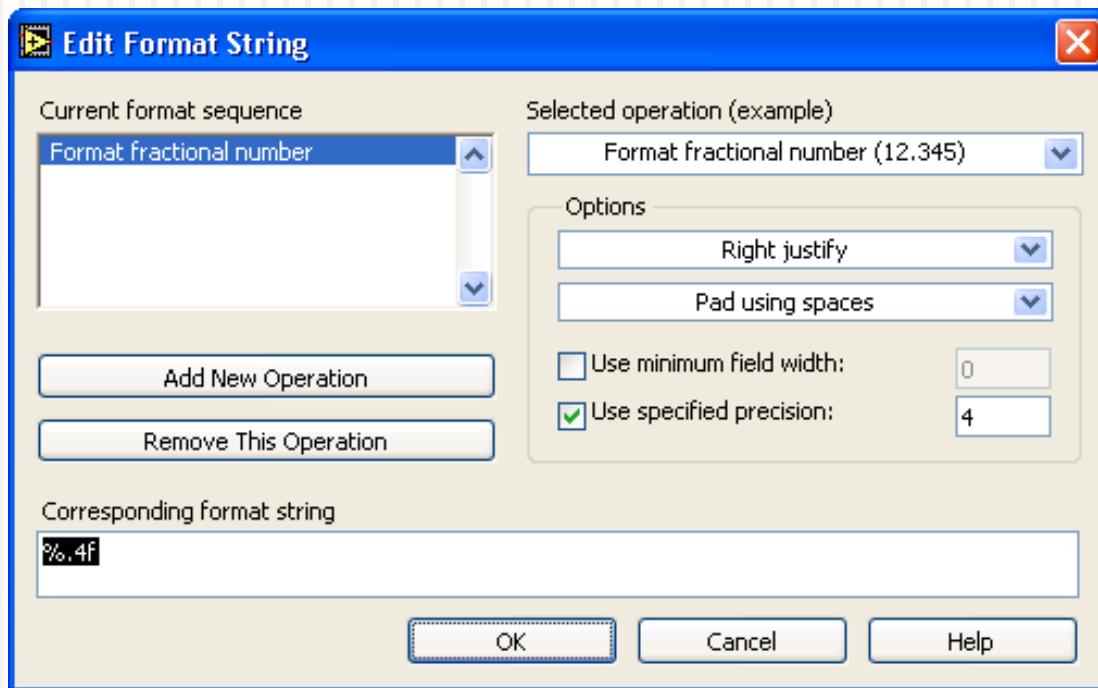
27



Editor pentru Format String

28

Disponibil cu functiile Format into String si Scan From String



Exercitiu

29

Create String VI

Folositi functiile Build String, Scan From String si String Length.

Create String VI

Front Panel:

The front panel displays the following controls and indicators:

- Header:** A string control labeled "The measurement is".
- Number:** A digital control labeled "6.00" with a numeric indicator.
- Trailer:** A string control labeled "Volts".
- String 2:** A string control labeled "Volts\sDC:\s\s+1.26E+1\r\".
- String Length:** An indicator labeled "0".
- Combined String:** An indicator labeled "Combined String".
- Representation:** A numeric indicator labeled "Representation = I32".

Block Diagram:

```

graph TD
    subgraph BuildText [Build Text]
        direction TB
        B1[Header abc] --> B2[Number dbl]
        B2 --> B3[Trailer abc]
        B3 --> B4[Result]
        B4 --> CS[Combined String]
    end
    subgraph ScanFromString [Scan From String]
        direction TB
        S1[String 2 abc] --> SP[Match Pattern abba]
        SP --> S2[regular expression :]
        S2 --> SFSS[Scan From String]
        SFSS --> NO[Number Out dbl]
        SFSS --> OPM[I32]
    end
    SL[String Length] --> B1
    SL --> SFSS
    NO --> SL
    OPM --> SL
    
```

The block diagram consists of two main sections:

- Build Text:** This section takes three inputs: Header (abc), Number (dbl), and Trailer (abc). It outputs a result string (abc) which is then assigned to the Combined String output.
- Scan From String:** This section takes String 2 (abc) and a Match Pattern (abba). It uses a regular expression (:) to scan the string. The output is Number Out (dbl) and Offset Past Match (I32).

Configure Build Text [Build Text] Dialog:

The dialog shows the following configuration for the build text parameters:

- Text:** Format string (abc)
- Number:** Minimum field width 0
- Boolean:** Use minimum field width checked
- Justification:** Right
- Padding:** Using spaces
- Precision:** 0

Sample Text: Sample Text

Sample Result: Sample Text