

# Lekcia 10

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Praktikum z MATLABu  
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# GUI

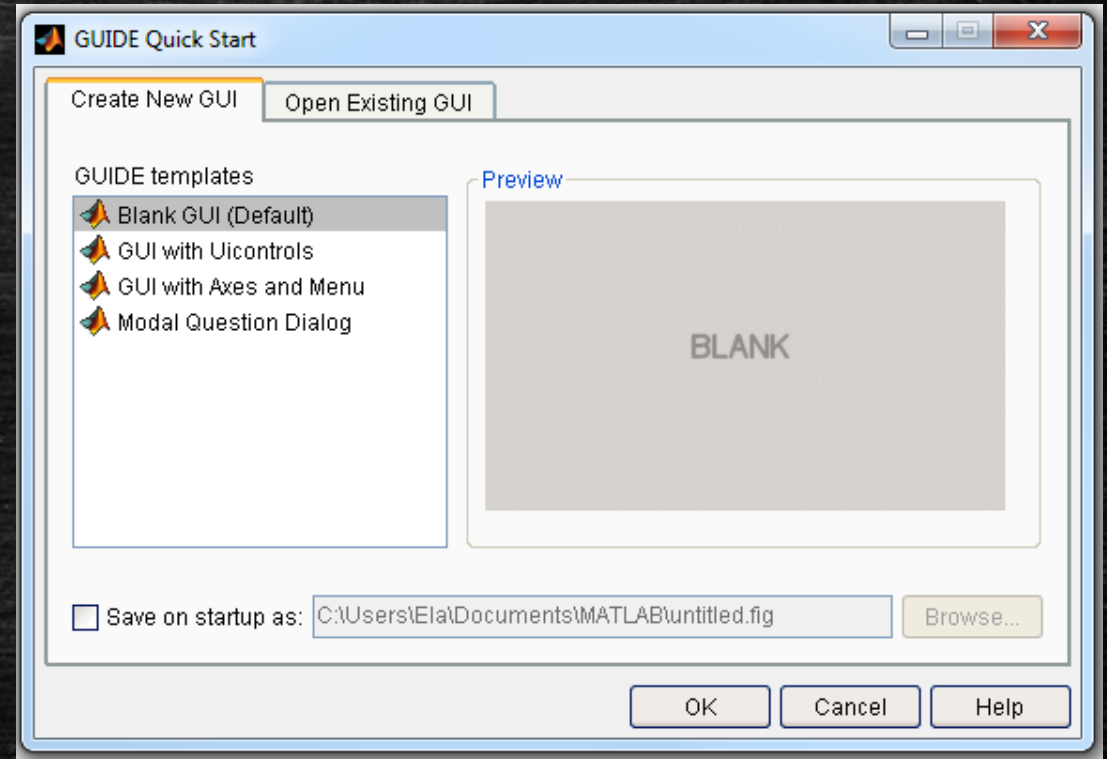
```
>> guide
```

## Blank GUI

Vytvorí dva súbory:

```
meno.fig
```

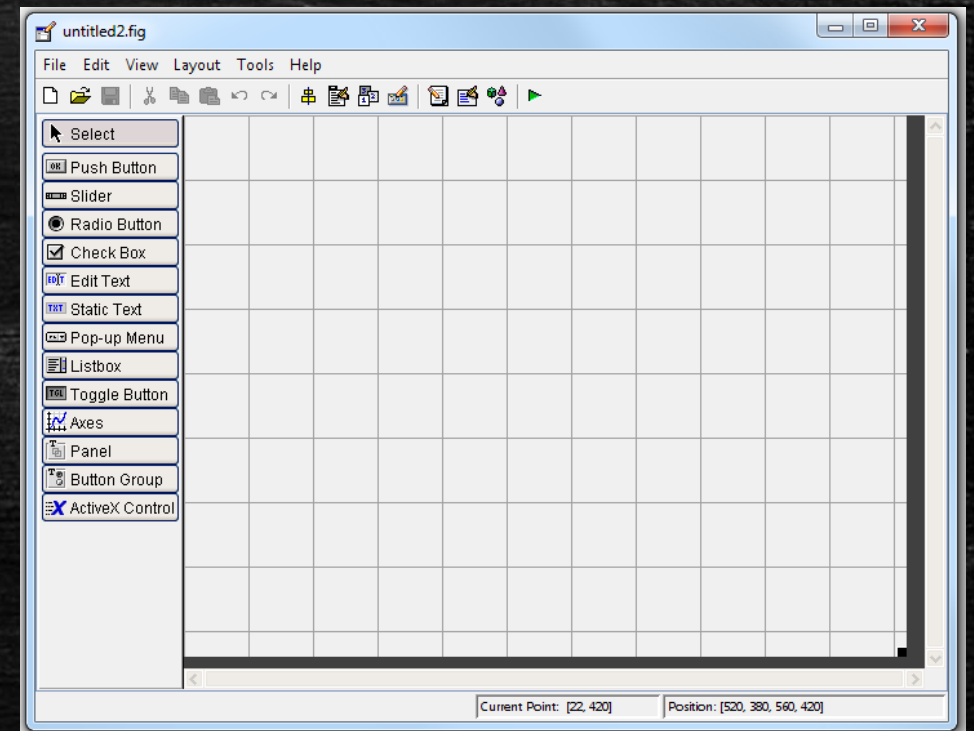
```
meno.m
```



Nemeniť meno už vytvoreného GUI

# GUI

- GUI objekty:
  - Button, radio button, check box, slider
  - Edit text, Static text
  - Axes
  - Pop-up menu
  - List box
  - Panel
  - Button group...



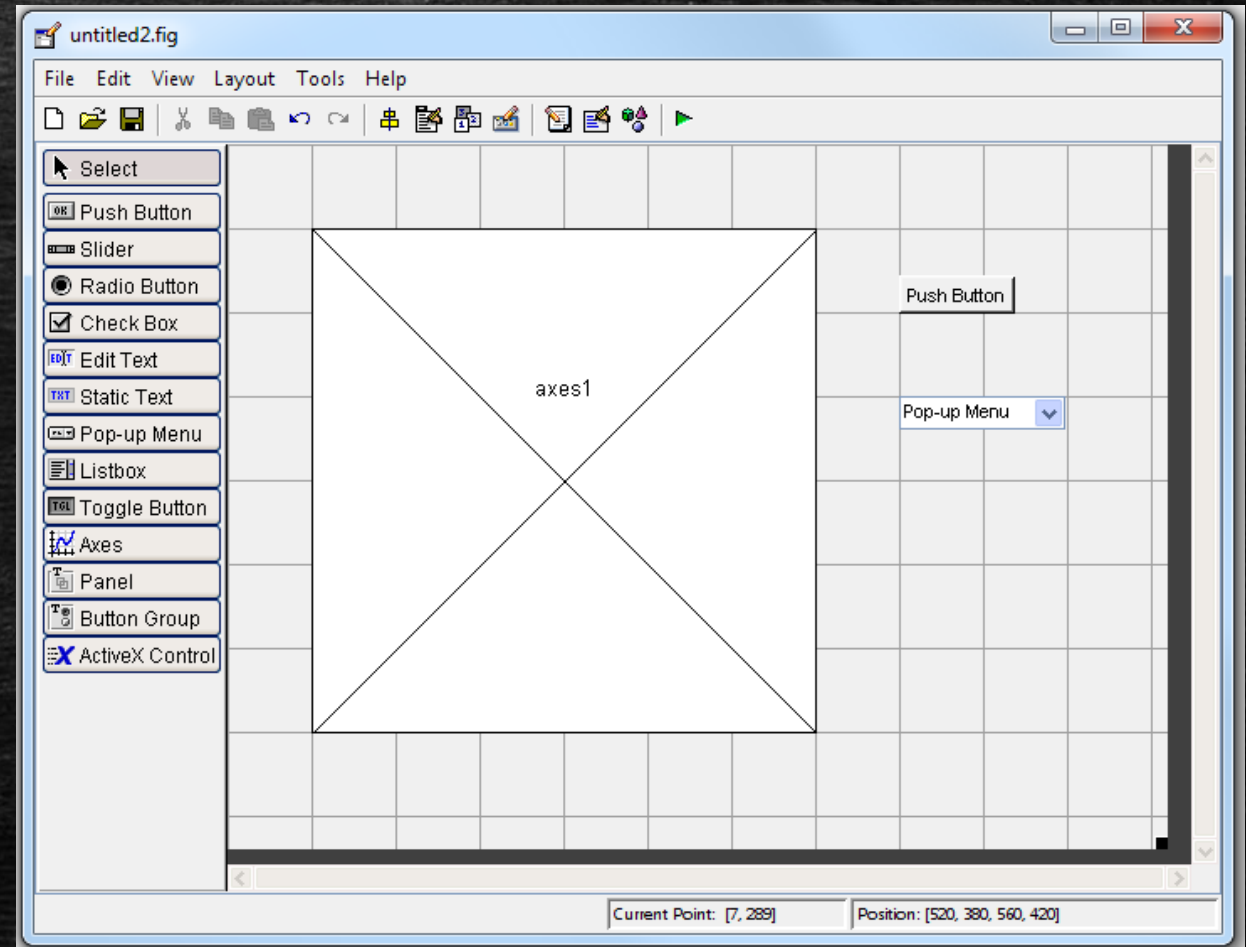
# GUI

Jednoduchá aplikácia:

Načítať dáta

Vykresliť (originál alebo  
histogram)

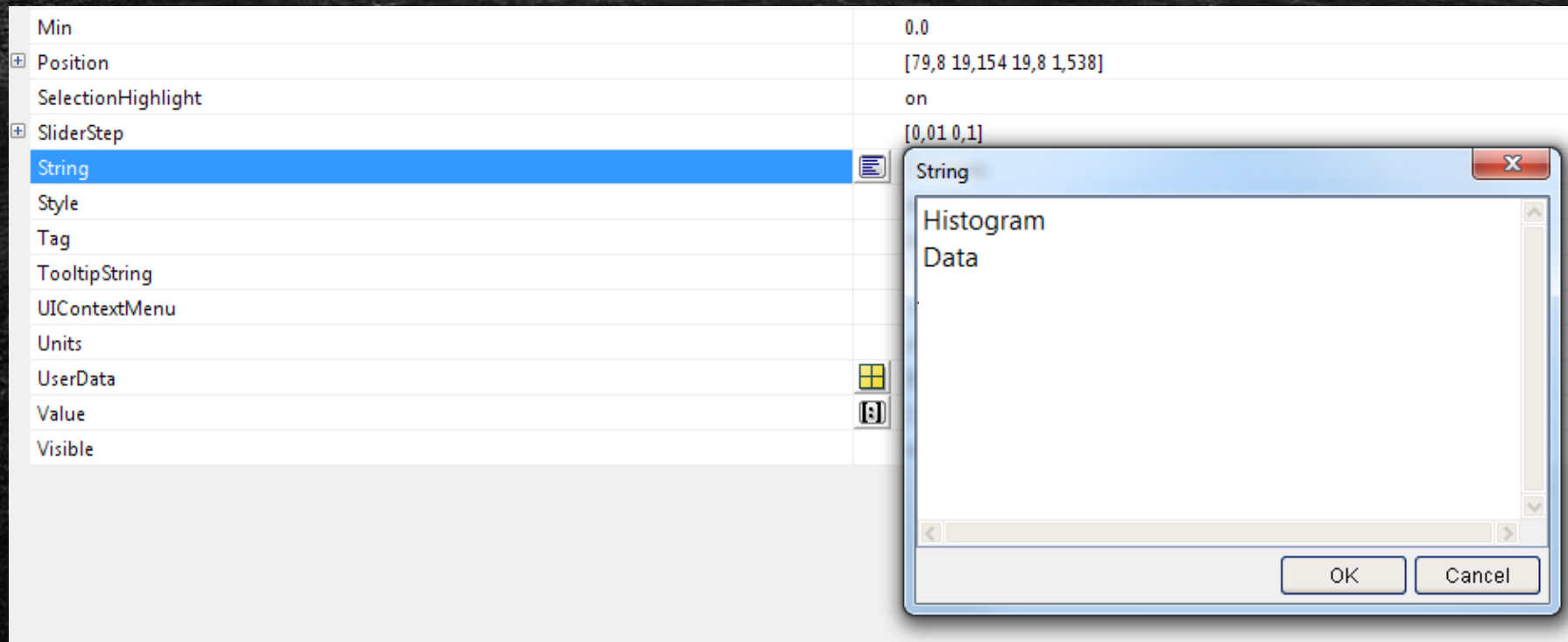
Aplikovať funkciu



# GUI

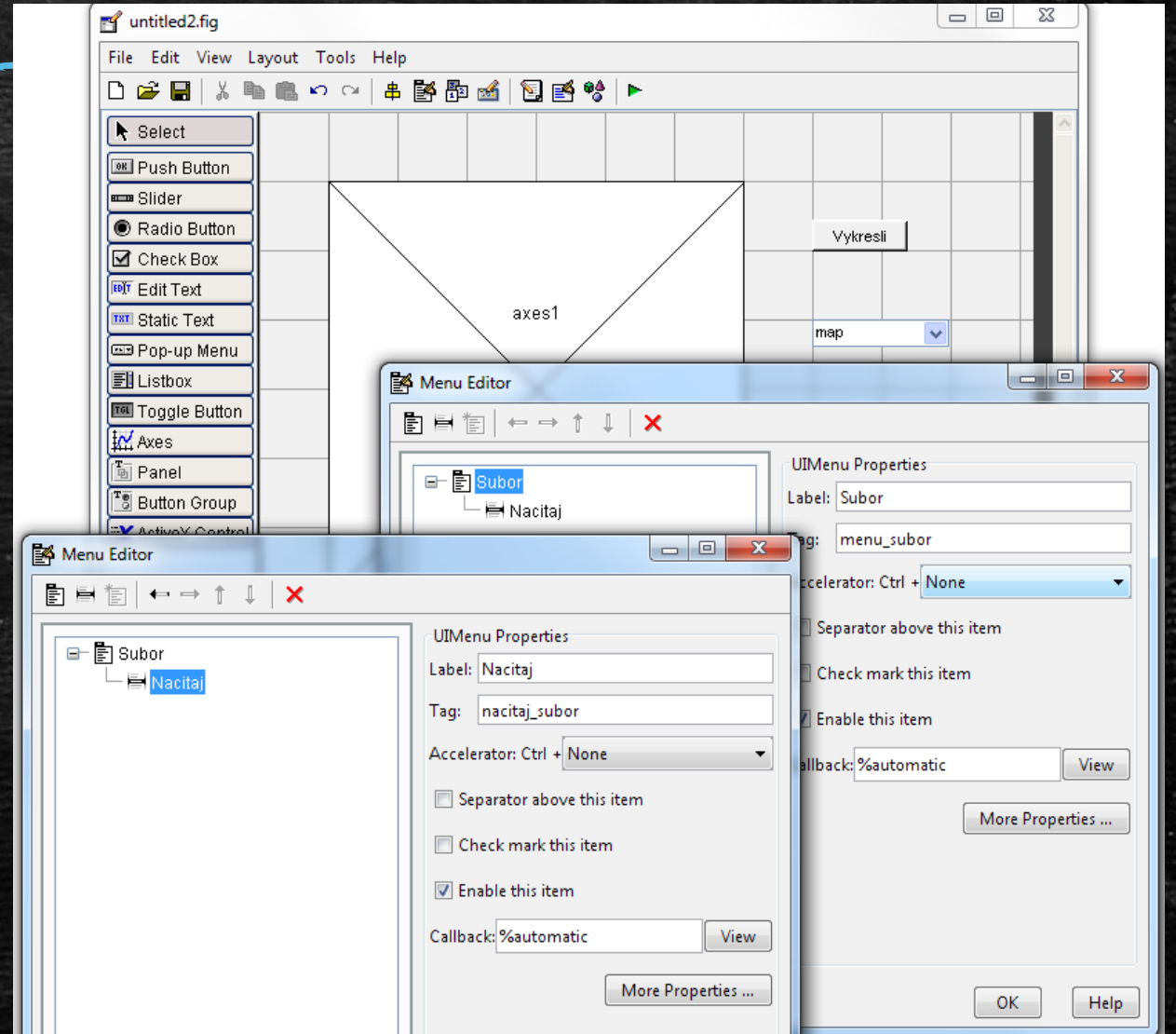
## Property Inspector

Color, text, name, position, opacity, **String**



# GUI

## Tools - Menu Editor



# GUI

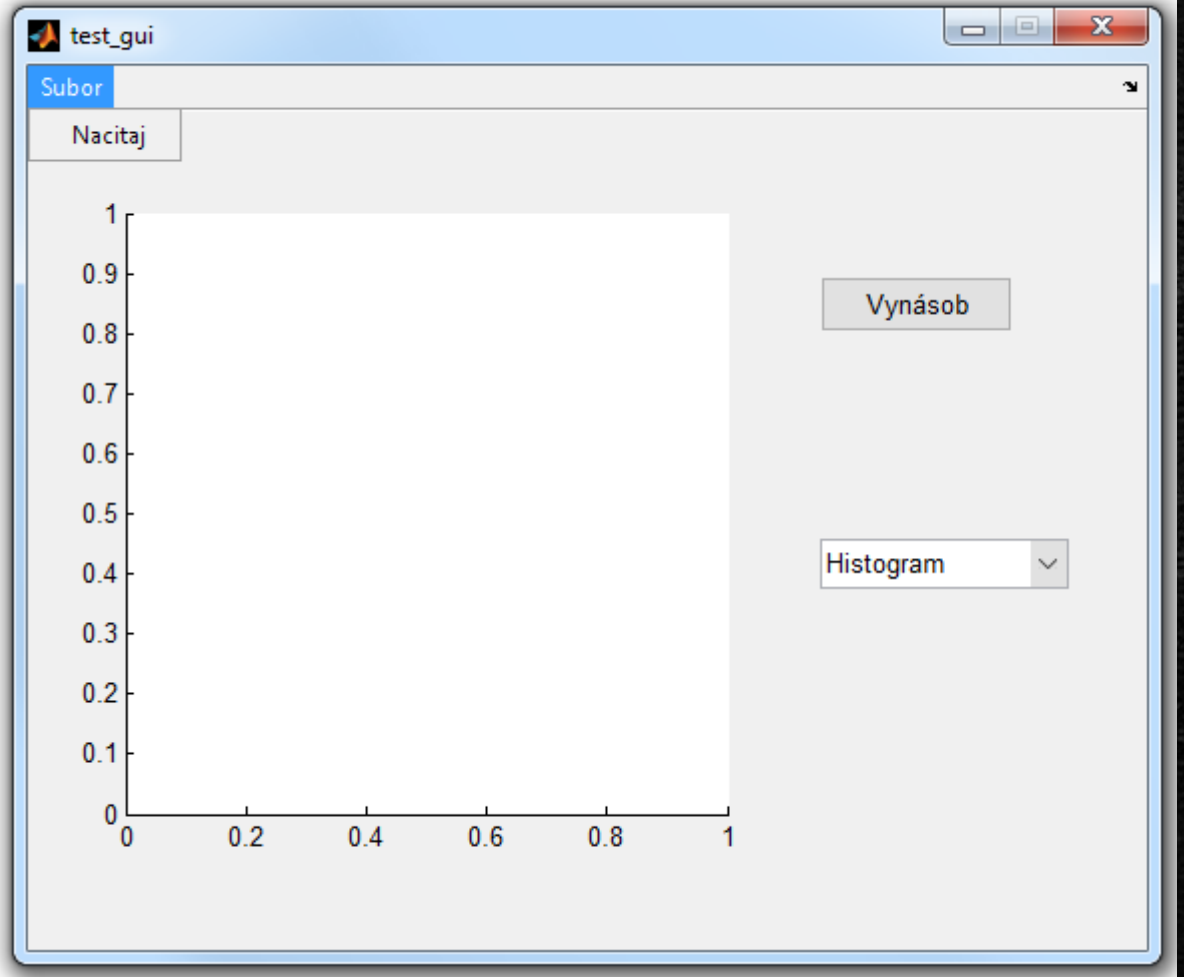
Save (as)

Spusti

Nič sa nedeje!

Treba dopísať kód

```
>> pm7_gui  
>>
```



# GUI callbacks

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Callbacks = funkcie, ktoré sa vykonajú po aktivácii objektu

Callback

ButtonDownFcn

KeyPressFcn

CreateFcn

...



# GUI dáta

---

ak chceme využívať v jednom callbacku premennú ktorú sme vytvorili v inom, použijeme funkcie get a set

handles = štruktúra uchovávajúca data

```
set(handles.text2, 'Visible', 'on');
```

```
g = get(handles.radiobutton1, 'Value');
```

```
set(object, 'property', value)
```

```
get(object, 'property')
```

# GUI dáta

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Vlastné dáta:

```
handles.moje_data = hodnota;  
guidata(hObject,handles)
```

# GUI - po spustení

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```
function pm10_gui_OpeningFcn(hObject, eventdata, handles, varargin)
% This function has no output args, see OutputFcn.
% hObject    handle to figure
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
% varargin   command line arguments to pm10_gui (see VARARGIN)

% Visualize random matrix
handles.data=randi(64,25,25);
image(handles.data)
colormap(gray(256))

% Reset PopUp menu to 2nd value (Data)
set(handles.popupmenu1,'Value',2)

% Update handles structure
guidata(hObject, handles);
```

# GUI - popup

---

```
function popupmenu1_Callback(hObject, eventdata, handles)
% hObject      handle to popupmenu1 (see GCBO)
% eventdata    reserved - to be defined in a future version of MATLAB
% handles      structure with handles and user data (see GUIDATA)

% Hints: contents = get(hObject,'String') returns popupmenu1 contents as
cell array
%           contents{get(hObject,'Value')} returns selected item from
popupmenu1

% Determine the selected visualization
val = get(hObject,'Value');
```

# GUI - popup

---

```
% Visualize data using the selected method
if val==1 % histogram
    histogram(handles.data(:))
else % data - image
    % TODO Here should be a check if the file can be displayed
    image(handles.data)
    colormap(gray(256))
end

% Update handles structure
guidata(hObject, handles);
```

# GUI - pushbutton

---

```
function pushbutton1_Callback(hObject, eventdata, handles)  
  
% hObject      handle to pushbutton1 (see GCBO)  
  
% eventdata   reserved - to be defined in a future version of MATLAB  
  
% handles      structure with handles and user data (see GUIDATA)  
  
% Multiply data by 2  
handles.data=2*handles.data;  
  
% Determine the selected visualization  
val = get(handles.popupmenu1, 'Value');
```

# GUI - pushbutton

---

```
% Visualize data using the selected method
if val==1 % histogram
    histogram(handles.data(:))
else % data - image
    image(handles.data)
    colormap(gray(256))
end

% Update handles structure
guidata(hObject, handles);
```

# GUI - načítaj súbor

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```
function nacitaj_subor_Callback(hObject, eventdata, handles)
% hObject      handle to nacitaj_subor (see GCBO)
% eventdata    reserved - to be defined in a future version of MATLAB
% handles      structure with handles and user data (see GUIDATA)

[s_file,s_PathName] = uigetfile({'*.txt', 'ASCII file (*.txt)'}, 'Select the
    data file',[cd '\']);
if ~isequal(s_file, 0)
    s_file = fullfile(s_PathName,s_file);
    % TODO Here should be a check if the file can be read and displayed
    handles.data=load(s_file,'-ascii');
    % Determine where to draw
    axes(handles.axes1)
    image(handles.data)
    colormap(gray(256))
    % Reset PopUp menu to 2nd value (Data)
    set(handles.popupmenu1,'Value',2)
end
% Save the handles structure.
guidata(hObject,handles)
```



# Tutoriál na doma

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<http://www.mathworks.com/matlabcentral/fileexchange/27773-matlab-video-tutorial-in-czech-lesson-12--creating-gui>

<https://www.mathworks.com/matlabcentral/fileexchange/24861-41-complete-gui-examples>