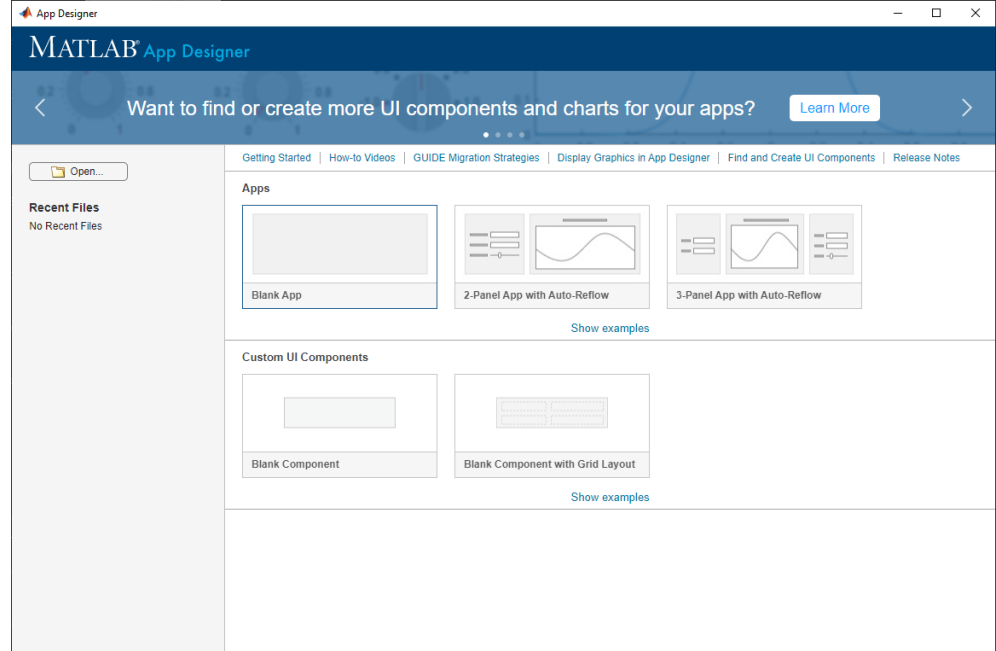
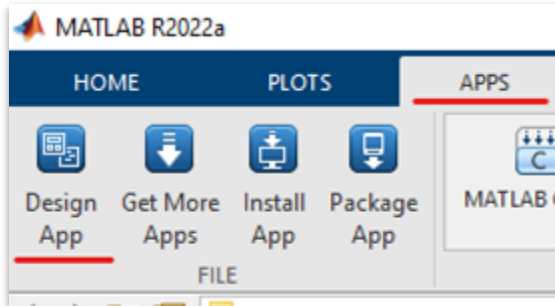
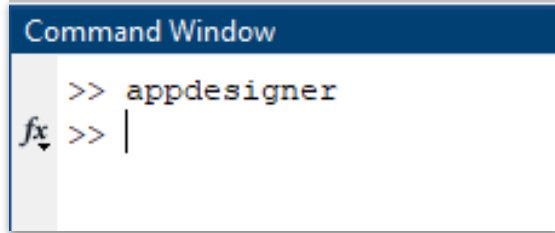
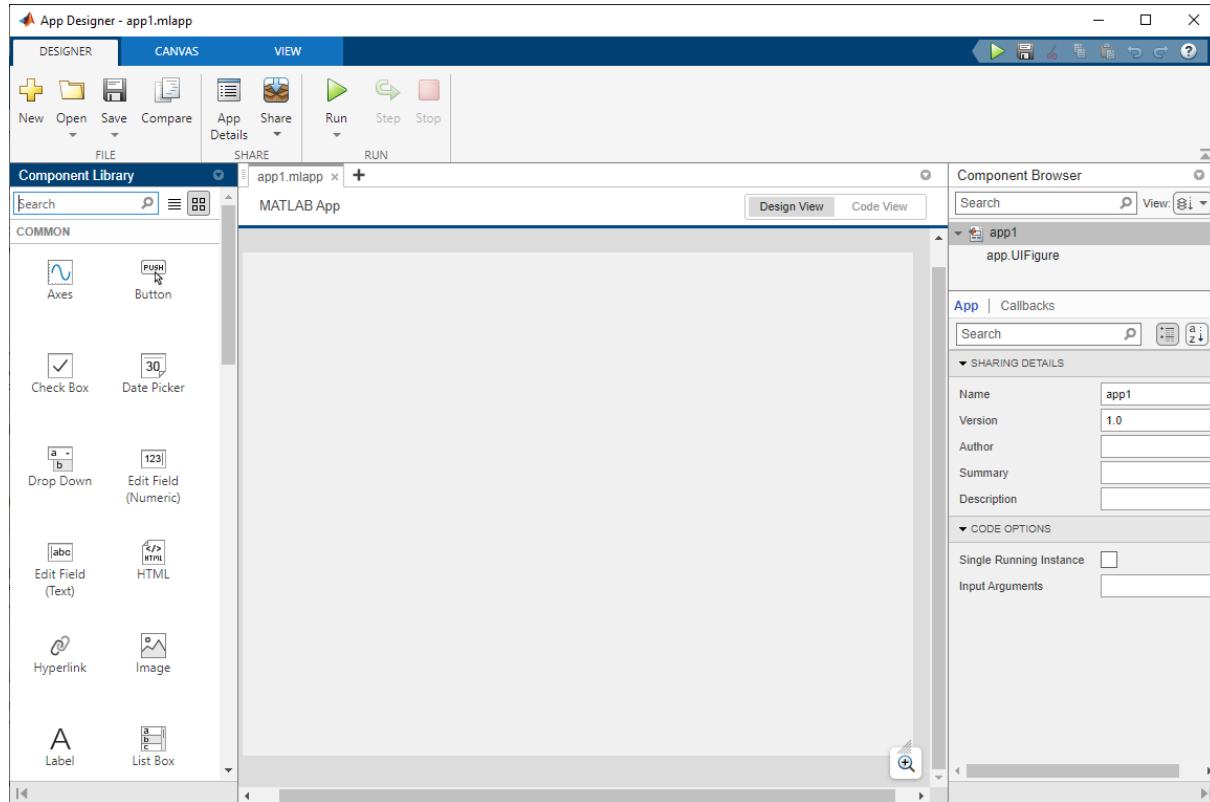


GUI в MatLab

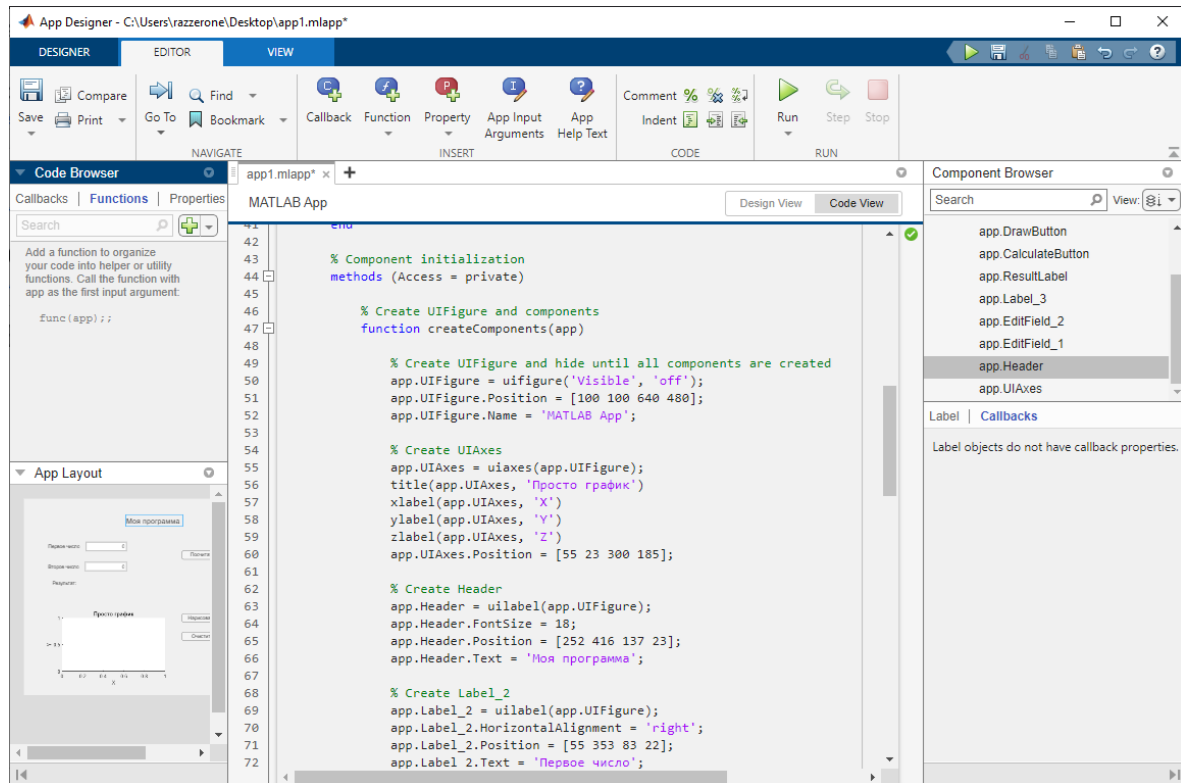
App designer



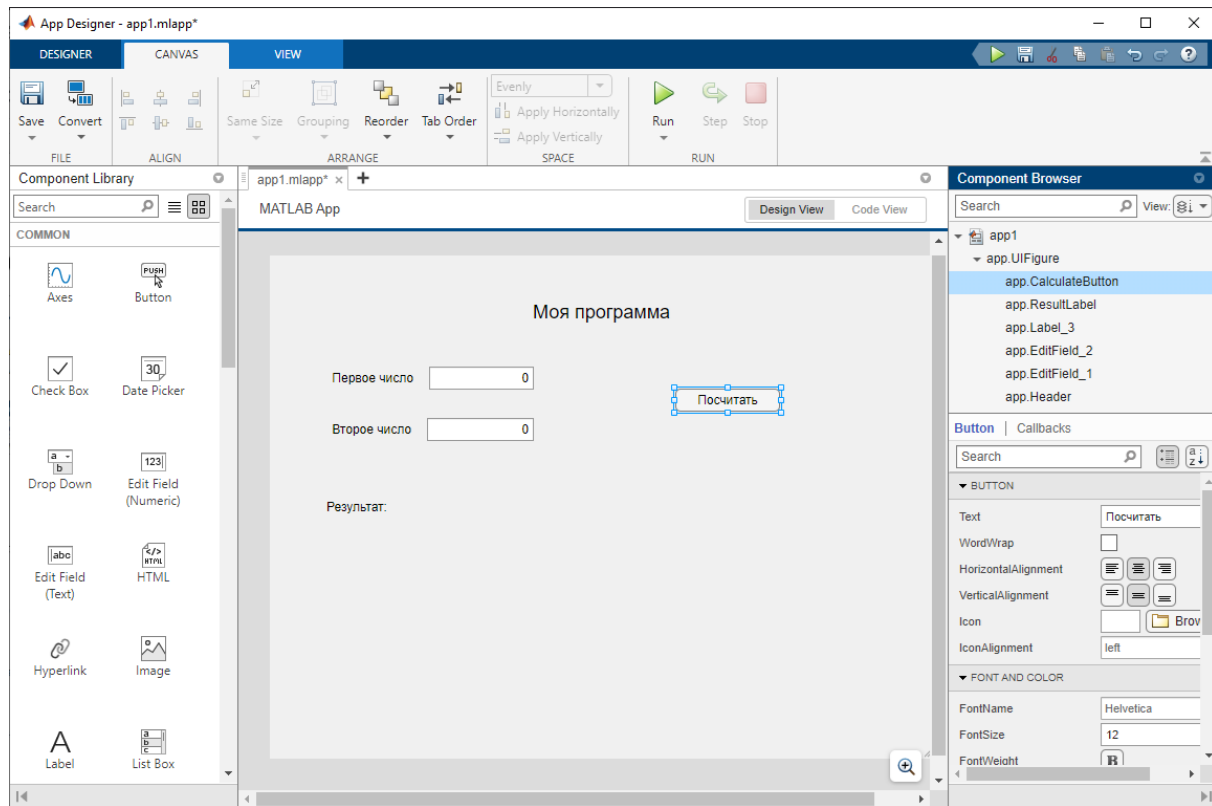
App designer



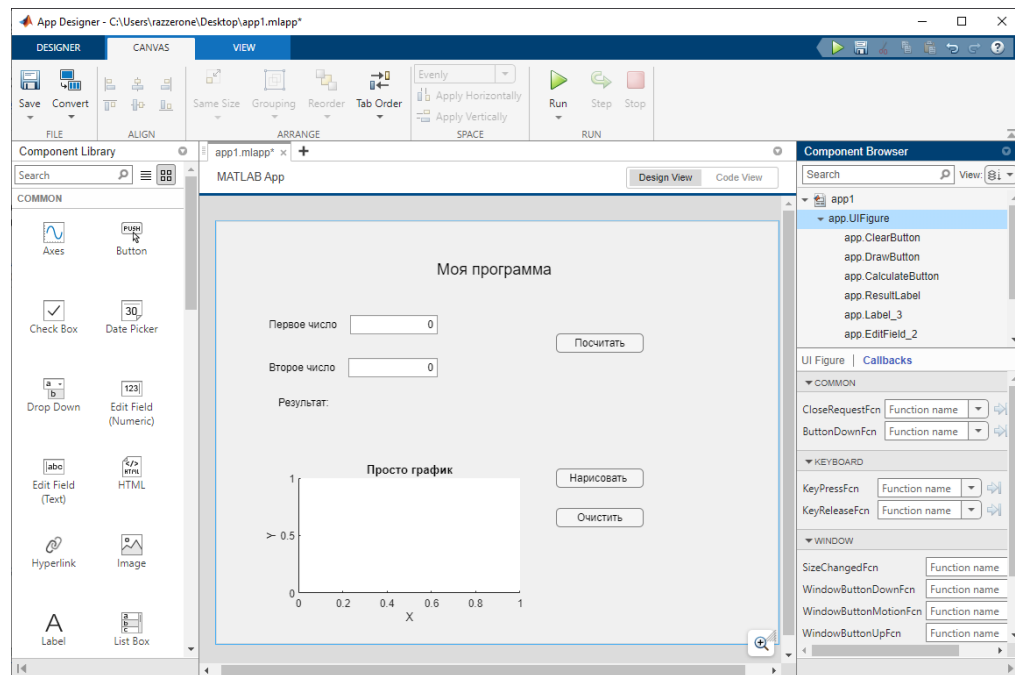
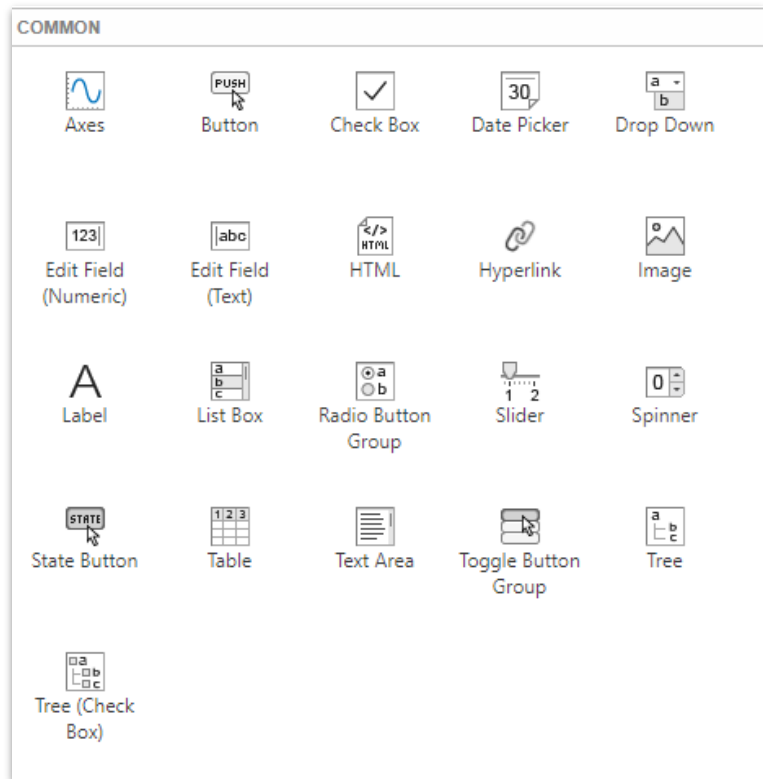
App designer



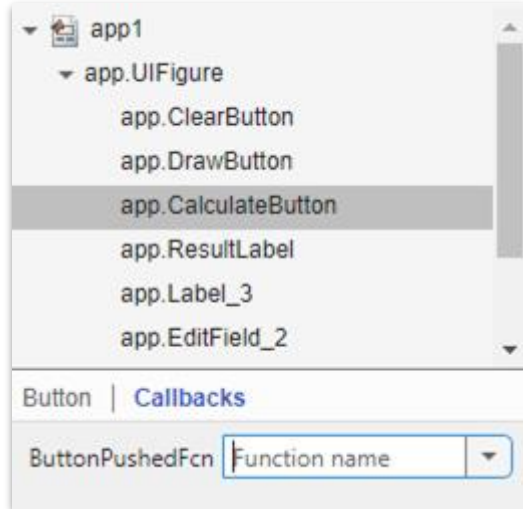
App designer



Элементы



Callback function

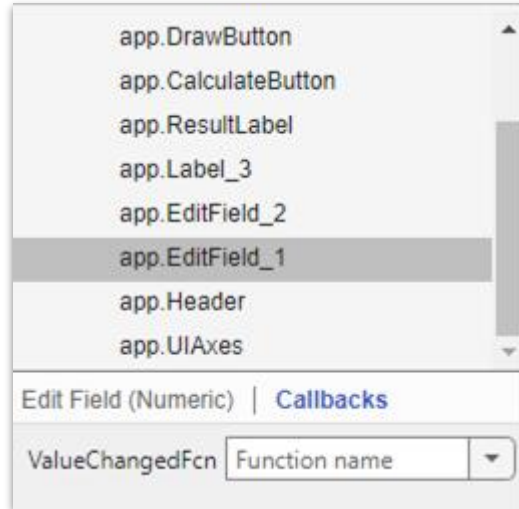


app1

- app.UIFigure
 - app.ClearButton
 - app.DrawButton
 - app.CalculateButton
 - app.ResultLabel
 - app.Label_3
 - app.EditField_2

Button | Callbacks

ButtonPushedFcn



app.DrawButton

app.CalculateButton

app.ResultLabel

app.Label_3

app.EditField_2

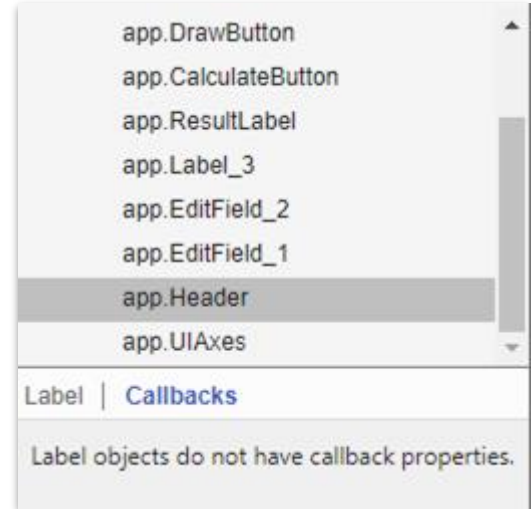
app.EditField_1

app.Header

app.UIAxes

Edit Field (Numeric) | Callbacks

ValueChangedFcn



app.DrawButton

app.CalculateButton

app.ResultLabel

app.Label_3

app.EditField_2

app.EditField_1

app.Header

app.UIAxes

Label | Callbacks

Label objects do not have callback properties.

Callback function

```
% Callbacks that handle component events
methods (Access = private)

% Button pushed function: CalculateButton
function CalculateButtonPushed(app, event)
    app.ResultLabel.Text = num2str( ...
        app.EditField_1.Value + app.EditField_2.Value ...
    );
end

% Button pushed function: DrawButton
function DrawButtonPushed(app, event)|
    x = linspace(0, 3);
    y = log(x);

    plot(app.UIAxes, x, y);
end

% Button pushed function: ClearButton
function ClearButtonPushed(app, event)
    cla(app.UIAxes);
end
end
```


Считывание данных с формы

```
% Button pushed function: CalculateButton
function CalculateButtonPushed(app, event)
    app.ResultLabel.Text = num2str( ...
        app.EditField_1.Value + app.EditField_2.Value ...
    );
end
```

Моя программа

Первое число

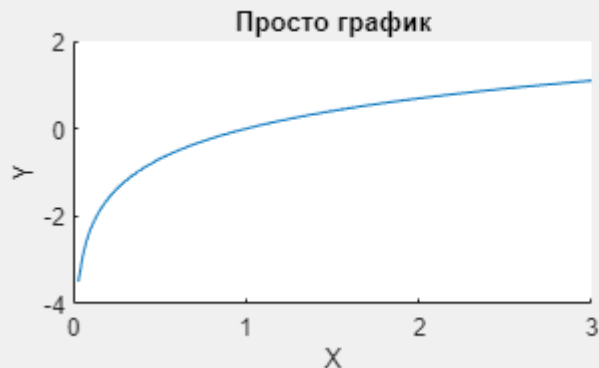
Второе число

Посчитать

Результат: 33

Отображение графиков

```
% Button pushed function: DrawButton  
function DrawButtonPushed(app, event)  
    x = linspace(0, 3);  
    y = log(x);  
  
    plot(app.UIAxes, x, y);  
end
```

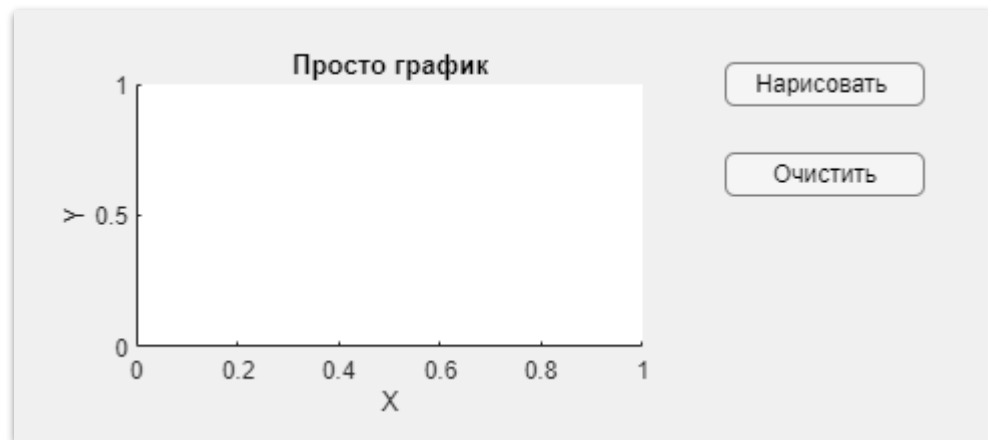


Нарисовать

Очистить

Отображение графиков

```
% Button pushed function: ClearButton  
function ClearButtonPushed(app, event)  
    cla(app.UIAxes);  
end
```



Live Script

Live Script

Homework

Use live scripts as the basis for assignments. Give students the live script used in them complete exercises that test their understanding of the material.

Use the techniques described above to complete the following exercises:

Exercise 1: Write MATLAB code to calculate the 3 cube roots of i .

% Put your code here

Exercise 2: Write MATLAB code to calculate the 5 fifth roots of -1 .

% Put your code here

Exercise 3: Describe the mathematical approach you would use to calculate the complex number. Include the equations you used in your approach.

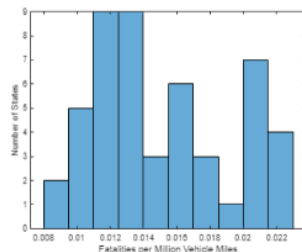
(Describe your approach here)

Distribution of Fatalities

You can include visualizations in your program. Like output, plots and figures appear together with the code that produced them.

We can use a bar chart to see the distribution of fatality rates among the states. There are 11 states that have a fatality rate greater than 0.02 per million vehicle miles.

```
histogram(rate,10)
xlabel('Fatalities per Million Vehicle Miles')
ylabel('Number of States')
```



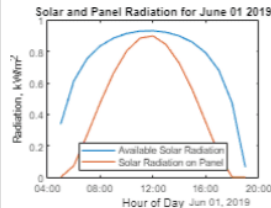
Panel Radiation and Power Generation For a Single Day

Modify parameters using interactive controls. Display plots together with the code that produced them.

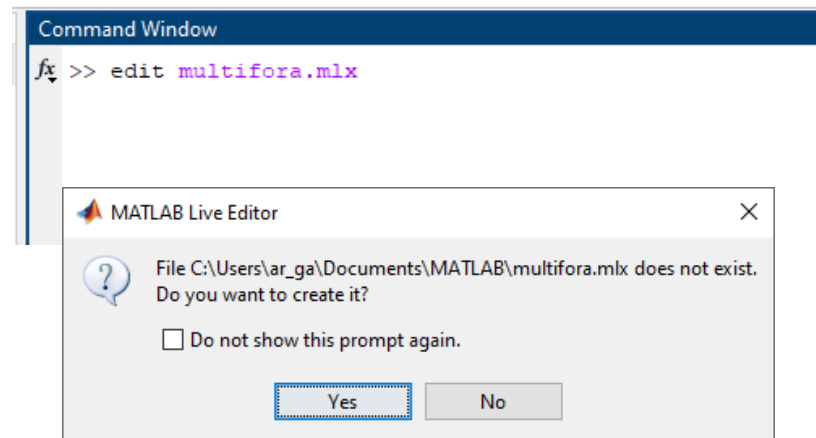
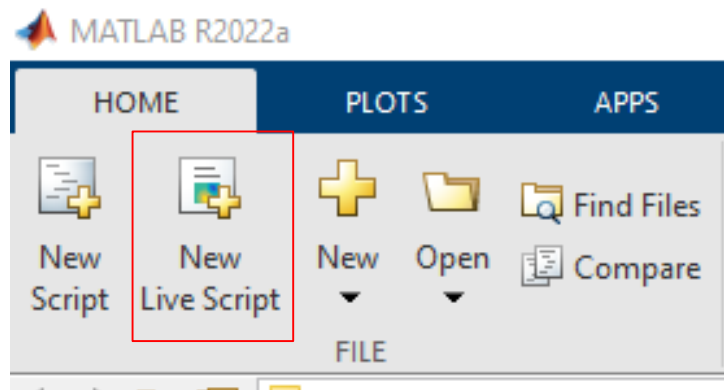
Panel Radiation

For a given day of the year, calculate the total solar radiation and the radiation on the panel. To simplify the analysis, use the panelRadiation function. Try different dates to see how the solar and panel radiation change depending on the time of year.

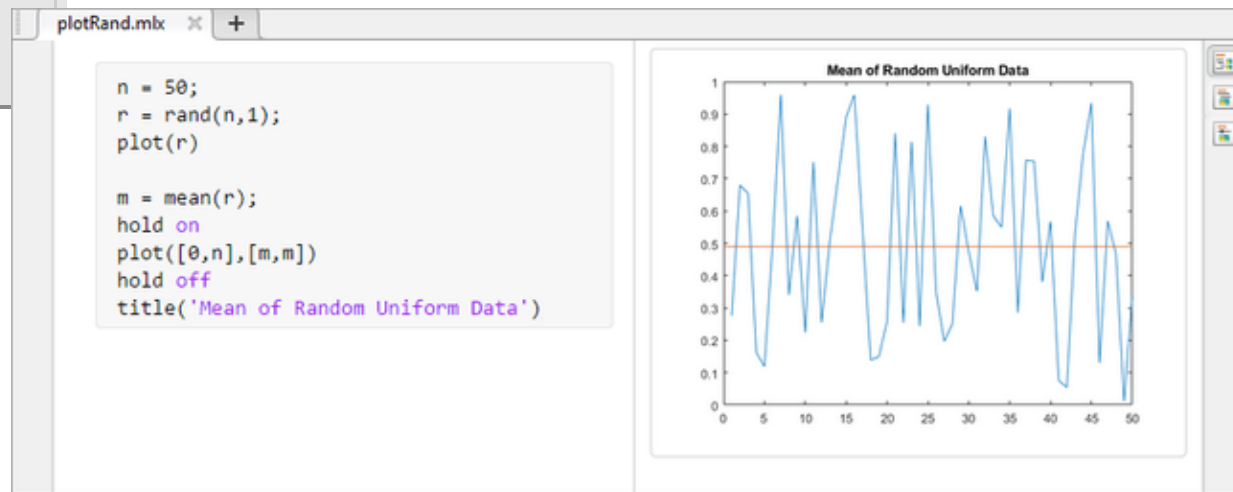
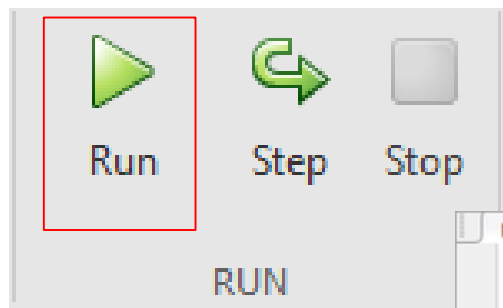
```
selectedMonth = 'June';
selectedDay = 1;
selectedDate = datetime(2019,selectedMonth,selectedDay);
[times,solarRad,panelRad] = panelRadiation(selectedDate,lambda,phi,UTCo,tau,beta);
plot(times,solarRad,panelRad);
title('Solar and Panel Radiation for ' datestr(selectedDate,'mmm dd yyyy'));
xlabel('Hour of Day');
ylabel('Radiation, kW/m^2');
legend('Available Solar Radiation','Solar Radiation on Panel','Location','South');
```



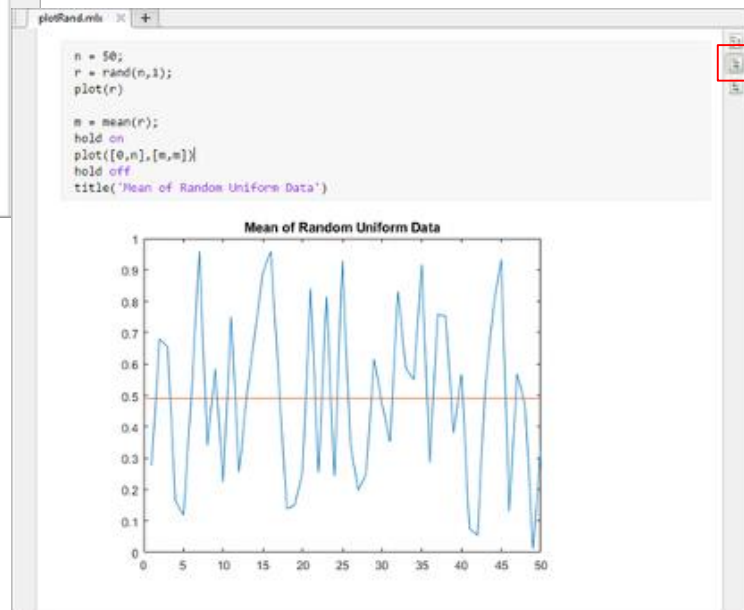
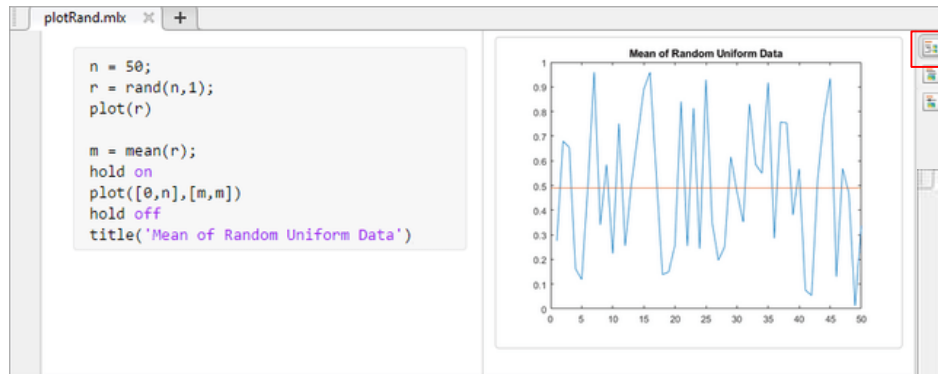
Создание и редактирование



Запуск и отображение



Изменение вида отображения



Интерактивные элементы управления

Control

Numeric Slider

50 -100 100

Numeric Spinner

2

Drop-Down List

County General Ho...
County General Hospital
VA Hospital
St. Mary's Medical Center

Check Box

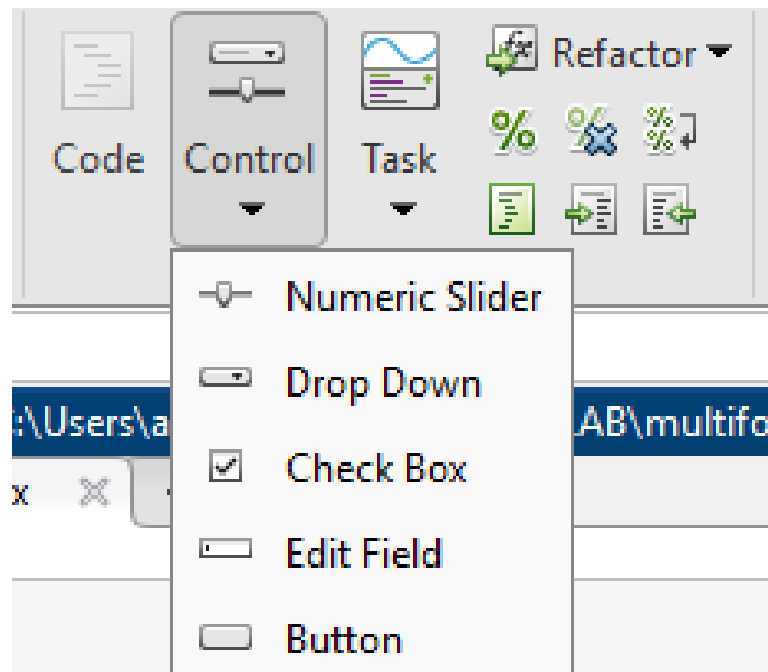
☒

Edit Field

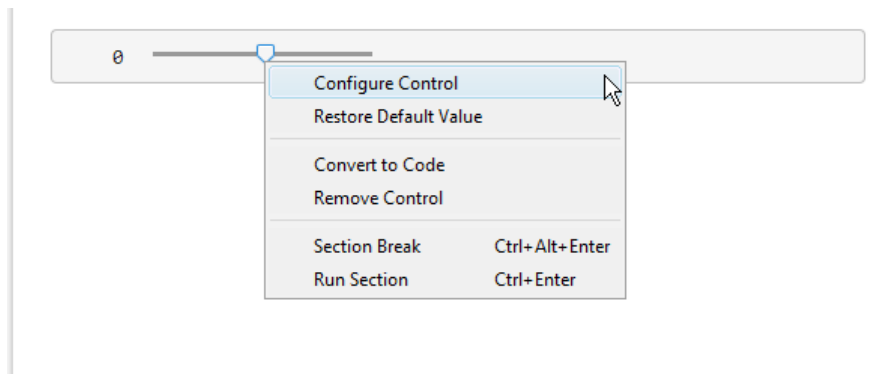
Enter text

Button

Run

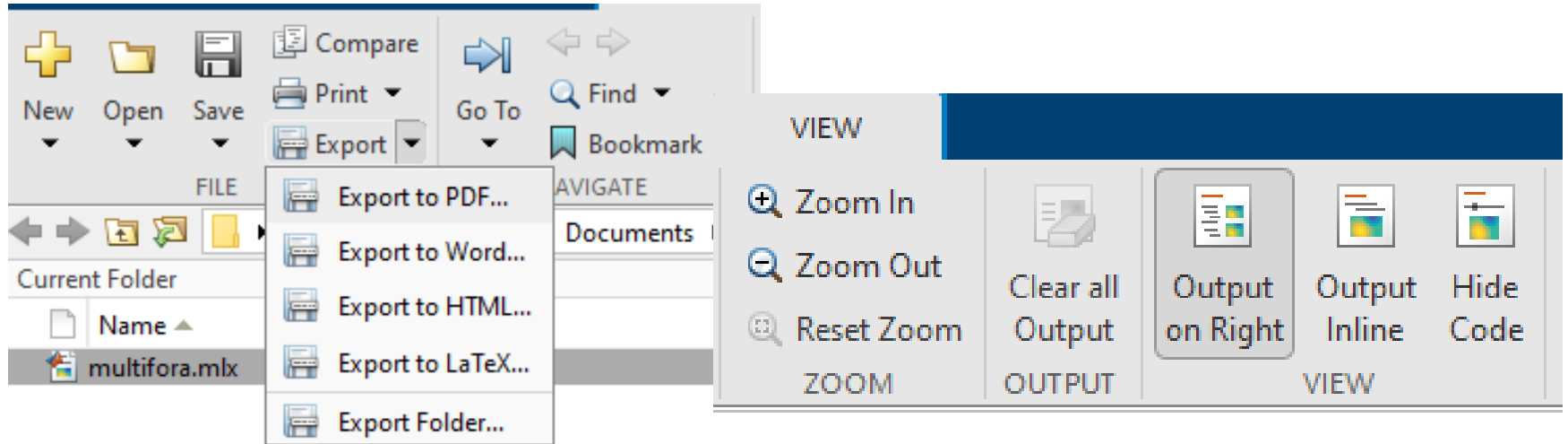


Создание и привязка ИЭУ к переменным



▼ LABEL	
Enter text to display when code is hidden	
Label	Drop down
▼ ITEMS	
Enter labels or values to add to drop down	
Item labels	one two
Item values	"one" "two"
Select a variable to add its content to drop down	
Variable	select ▼
▼ DEFAULTS	
Default value	▼
▼ EXECUTION	
Run	Current section ▼

Live-Script Sharing



Spasibo za vnimanie

