

PROGRAM SIMULASI

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function varargout = program(varargin)
% PROGRAM MATLAB code for program.fig
%     PROGRAM, by itself, creates a new PROGRAM or raises the existing
%     singleton*.
%
%     H = PROGRAM returns the handle to a new PROGRAM or the handle to
%     the existing singleton*.
%
%     PROGRAM('CALLBACK',hObject,eventData,handles,...) calls the
local
%     function named CALLBACK in PROGRAM.M with the given
input arguments.
%
%     PROGRAM('Property','Value',...) creates a new PROGRAM or raises
%     the existing singleton*. Starting from the left, property value
pairs are
%     applied to the GUI before program_OpeningFcn gets called. An
%     unrecognized property name or invalid value makes
property application
%     stop. All inputs are passed to program_OpeningFcn via varargin.
%
%     *See GUI Options on GUIDE's Tools menu. Choose "GUI allows only
one
%     instance to run (singleton)".
%
% See also: GUIDE, GUIDATA, GUIHANDLES

% Edit the above text to modify the response to help program

% Last Modified by GUIDE v2.5 24-Jul-2017 07:02:42

% Begin initialization code - DO NOT EDIT
gui_Singleton = 1;
gui_State = struct('gui_Name',       mfilename, ...
                  'gui_Singleton',   gui_Singleton, ...
                  'gui_OpeningFcn', @program_OpeningFcn, ...
                  'gui_OutputFcn',  @program_OutputFcn, ...
                  'gui_LayoutFcn',   [] , ...
                  'gui_Callback',    []);
if nargin && ischar(varargin{1})
    gui_State.gui_Callback = str2func(varargin{1});
end

if nargout
    [varargout{1:nargout}] = gui_mainfcn(gui_State,
varargin{:}); else
    gui_mainfcn(gui_State, varargin{:});
end
% End initialization code - DO NOT EDIT
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% --- Executes just before program is made visible.
function program_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 program (see VARARGIN)

% Choose default command line output for
program handles.output = hObject;

% Update handles structure
guidata(hObject, handles);

initialize_gui(hObject, handles, false);

% UIWAIT makes program wait for user response (see UIRESUME)
% uiwait(handles.figure1);

% --- Outputs from this function are returned to the command line.
function varargout = program_OutputFcn(hObject, eventdata, handles)
% varargout  cell array for returning output args (see VARARGOUT);
% hObject    handle to figure
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

% Get default command line output from handles
structure varargout{1} = handles.output;

% --- Executes during object creation, after setting all
properties. function fc_CreateFcn(hObject, eventdata, handles)
% hObject    handle to fc (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns
called

% Hint: popupmenu controls usually have a white background on Windows.
%       See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function fc_Callback(hObject, eventdata, handles)
% hObject    handle to fc (see GCBO)

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% eventdata reserved - to be defined in a future version of MATLAB
% handles structure with handles and user data (see GUIDATA)

% Hints: get(hObject,'String') returns contents of fc as text
% str2double(get(hObject,'String')) returns contents of fc as a
double
fc = str2double(get(hObject,
'String')); if isnan(fc)
    set(hObject, 'String', 0);
    errordlg('Input must be a number','Error');
end

% Save the new fc value
handles.metricdata.fc= fc;
guidata(hObject,handles)

% --- Executes during object creation, after setting all
properties. function volume_CreateFcn(hObject, eventdata, handles)
% hObject handle to volume (see GCBO)
% eventdata reserved - to be defined in a future version of MATLAB
% handles empty - handles not created until after all CreateFcns
called

% Hint: popupmenu controls usually have a white background on Windows.
% See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

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

% Hints: get(hObject,'String') returns contents of volume as text
% str2double(get(hObject,'String')) returns contents of
volume as a double
volume = str2double(get(hObject,
'String')); if isnan(volume)
    set(hObject, 'String', 0);
    errordlg('Input must be a number','Error');
end

% Save the new volume value
handles.metricdata.volume = volume;
guidata(hObject,handles)

% --- Executes on button press in proses.

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

%mass = handles.metricdata.density *
handles.metricdata.volume; ai = handles.metricdata.amp ;
ac = handles.metricdata.tegangan;
fc = handles.metricdata.fc;
fi = handles.metricdata.fi;
af = handles.metricdata.akerja;

if (handles.metricdata.pilihan == 0)
Ap=ac; %Amplitudo pembawa
fp=fc; %Frekuensi pembawa
Ai=ai; %Amplitudo informasi
Fi=fi; %Frekuensi informasi
af=af; %amplitudo kerja

m=Ai/af;
Ta=1/fi;
t=0:Ta/999:6*Ta;
ym=Ai*cos(2*pi*fi*t);
Tc=1/fp;
yc=Ap*cos(2*pi*fp*t);
y=Ap.*(1+m*cos(2*pi*fi*t)).*cos(2*pi*fp*t);

im = Ai/af;
handles.indexMod.String = im;

ampp = (im * Ap)/2;
handles.amplitudo.String=ampp;

fusb = fp + fi;
flsb = fp-fi;
handles.usb.String=fusb;
handles.lsb.String=flsb;

%handles.usb.String = fusb&' '&flsb;

axes(handles.axes1);
%subplot(3,1,1); %Plotting untuk sinyal
informasi plot(t,ym);
xlabel('time');
ylabel('Sinyal Informasi');
grid on;

axes(handles.axes2);
%subplot(3,1,2); %Plotting untuk gelombang sinyal informasi
plot(t,yc);
xlabel('time');

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ylabel('Sinyal Pembawa');
grid on;

axes(handles.axes3);
%subplot(3,1,3); %Plotting untuk modulasi AM
plot(t,y);
grid on;
xlabel('time');
ylabel('Sinyal AM');
grid on;
end

if (handles.metricdata.pilihan == 2)
Ap=ac; %Amplitudo pembawa
fp=fc; %Frekuensi pembawa
Ai=ai; %Amplitudo informasi
Fi=fi; %frekuensi informasi

m=Ai/Ap;
Ta=1/fi
t=0:Ta/999:6*Ta;
Tc=1/fp
ym= Ai.*sin(2*pi*fi*t);
yc=sin(2*pi*fp*t);
y=ym.*m.*yc;

im = Ai/Ap;
handles.indexMod.String = 'im';

ampp = (im * Ap)/2;
handles.amplitudo.String='ampp';

fusb = fp + fi;
flsb = fp - fi;
handles.usb.String=fusb;
handles.lsb.String=flsb;

%handles.usb.String = fusb&' '&flsb;

axes(handles.axes1);
%subplot(3,1,1); %Plotting untuk sinyal informasi
plot(t,ym);
xlabel('time');
ylabel('sinyal informasi');
grid on;

axes(handles.axes2);
%subplot(3,1,2); %Plotting untuk gelombang sinyal informasi
plot(t,yc);
xlabel('time');
ylabel('sinyal carrier');

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grid on;

axes(handles.axes3);
%subplot(3,1,3); %Plotting untuk modulasi AM
plot(t,y);
xlabel('time');
ylabel('sinyal amdsbsc');
grid on;
end

if (handles.metricdata.pilihan == 1)
Ap=ac; %Amplitudo pembawa
fp=fc; %Frekuensi pembawa
Ai=ai; %Amplitudo informasi
Fi=fi; %frekuensi informasi

Ta=1/fi
t=0:Ta/999:6*Ta; %interval waktu
Tc=1/fp
ym=Ai*cos(2*pi*fi*t); %persamaan sinyal informasi
yc=Ap*cos(2*pi*fp*t); %persamaan sinyal pemodulasi
ym1=Ai*sin(2*pi*fi*t); %persamaan sinyal informasi
yc2=Ap*sin(2*pi*fp*t); %persamaan sinyal
pemodulasi z= ym.*yc-ym1.*yc2;

im = Ai/Ap;
handles.indexMod.String = 'im';

ampp = (im * Ap)/2;
handles.amplitudo.String='ampp';

fusb = fp + fi;
flsb = 0;
handles.usb.String=fusb;
handles.lsb.String='flsb';

%handles.usb.String = fusb&' '&flsb;

axes(handles.axes1);
%subplot(3,1,1); %Plotting untuk sinyal informasi
plot(t,ym);
xlabel('time');
ylabel('Sinyal Informasi');
grid on;

axes(handles.axes2);
%subplot(3,1,2); %Plotting untuk gelombang sinyal informasi
plot(t,yc);
xlabel('time');
ylabel('sinyal carrier');
grid on;

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axes(handles.axes3);
%subplot(3,1,3); %Plotting untuk modulasi
AM plot(t,z);
xlabel('time');
ylabel('sinyal amssb-usb');
grid on;
end
guidata(hObject,handles)

%set(handles.mass, 'String', mass);

% --- Executes on button press in reset.
function reset_Callback(~, eventdata, handles)
% hObject    handle to reset (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

initialize_gui(gcbof, handles, true);

% --- Executes when selected object changed in unitgroup.
function unitgroup_SelectionChangedFcn(hObject, eventdata, handles)
% hObject    handle to the selected object in unitgroup
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)

if (hObject == handles.mam)
    handles.metricdata.pilihan = 0;
elseif (hObject == handles.dsbfc)
    handles.metricdata.pilihan = 1;
elseif (hObject == handles.dsbsc)
    handles.metricdata.pilihan = 2;
end
guidata(hObject,handles)

% -----
function initialize_gui(fig_handle, handles, isreset)
% If the metricdata field is present and the reset flag is false,
it means
% we are we are just re-initializing a GUI by calling it from the
cmd line
% while it is up. So, bail out as we dont want to reset the data.
if isfield(handles, 'metricdata') &&
    ~isreset return;
end

handles.metricdata.fc = 0;
handles.metricdata.fi = 0;
handles.metricdata.amp = 0;

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handles.metricdata.tegangan = 0;
handles.metricdata.akerja = 0;
handles.metricdata.pilihan = 0;

set(handles.fc, 'String', handles.metricdata.fc);
set(handles.fi, 'String', handles.metricdata.fi);
set(handles.amp, 'String', handles.metricdata.amp);
set(handles.tegangan, 'String', handles.metricdata.tegangan);
set(handles.akerja, 'String', handles.metricdata.akerja);

set(handles.unitgroup, 'SelectedObject', handles.mam);
% Update handles structure
guidata(handles.figure1, handles);

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

% Hints: get(hObject, 'String') returns contents of fi as text
%        str2double(get(hObject, 'String')) returns contents of fi as a
double
fi = str2double(get(hObject,
'String')); if isnan(fi)
    set(hObject, 'String', 0);
    errordlg('Input must be a number', 'Error');
end

% Save the new fc value
handles.metricdata.fi= fi;
guidata(hObject, handles)

% --- Executes during object creation, after setting all
properties. function fi_CreateFcn(hObject, eventdata, handles)
% hObject    handle to fi (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns
called

% Hint: edit controls usually have a white background on Windows.
%        See ISPC and COMPUTER.
if ispc && isequal(get(hObject, 'BackgroundColor'),
get(0, 'defaultUiControlBackgroundColor'))
    set(hObject, 'BackgroundColor', 'white');
end

function amp_Callback(hObject, eventdata, handles)

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

% Hints: get(hObject,'String') returns contents of amp as text
%        str2double(get(hObject,'String')) returns contents of amp as a
double
amp = str2double(get(hObject,
'String')); if isnan(amp)
    set(hObject, 'String', 0);
    errordlg('Input must be a number','Error');
end

% Save the new fc value
handles.metricdata.amp= amp;
guidata(hObject,handles)

% --- Executes during object creation, after setting all
properties. function amp_CreateFcn(hObject, eventdata, handles)
% hObject     handle to amp (see GCBO)
% eventdata   reserved - to be defined in a future version of MATLAB
% handles     empty - handles not created until after all CreateFcns
called

% Hint: edit controls usually have a white background on Windows.
%         See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUiControlBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function tegangan_Callback(hObject, eventdata, handles)
% hObject     handle to tegangan (see GCBO)
% eventdata   reserved - to be defined in a future version of MATLAB
% handles     structure with handles and user data (see GUIDATA)
tegang = str2double(get(hObject,
'String')); if isnan(tegang)
    set(hObject, 'String', 0);
    errordlg('Input must be a number','Error');
end

% Save the new fc value
handles.metricdata.tegang=
tegang; guidata(hObject,handles)
% Hints: get(hObject,'String') returns contents of tegangan as text
%        str2double(get(hObject,'String')) returns contents of
tegang as a double

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% --- Executes during object creation, after setting all properties.
function tegangan_CreateFcn(hObject, eventdata, handles)
% hObject    handle to tegangan (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns
called

handles.metricdata.amp= amp;
% Hint: edit controls usually have a white background on Windows.
%       See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

function akerja_Callback(hObject, eventdata, handles)
% hObject    handle to akerja (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
akerja = str2double(get(hObject,
'String')); if isnan(akerja)
    set(hObject, 'String', 0);
    errordlg('Input must be a number','Error');
end
% Save the new fc value
handles.metricdata.akerja=
akerja; guidata(hObject,handles)
% Hints: get(hObject,'String') returns contents of akerja as text
%       str2double(get(hObject,'String')) returns contents of
akerja as a double

% --- Executes during object creation, after setting all
properties. function akerja_CreateFcn(hObject, eventdata, handles)
% hObject    handle to akerja (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    empty - handles not created until after all CreateFcns
called
handles.metricdata.akerja= akerja;
% Hint: edit controls usually have a white background on Windows.
%       See ISPC and COMPUTER.
if ispc && isequal(get(hObject,'BackgroundColor'),
get(0,'defaultUicontrolBackgroundColor'))
    set(hObject,'BackgroundColor','white');
end

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