OPERASI GEOMETRI CITRA

Mata Kuliah : Pengolahan Citra Digital

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KELAS : PTIK B 2020

PROGRAM STUDI PENDIDIKAN TEKNIK INFORMATIKA DAN KOMPUTER

JURUSAN TEKNIK INFORMATIKA DAN KOMPUTER

FAKULTAS TEKNIK

UNIVERSITAS NEGERI MAKASSAR

Tahun 2021

TUGAS GEOMETRI CITRA

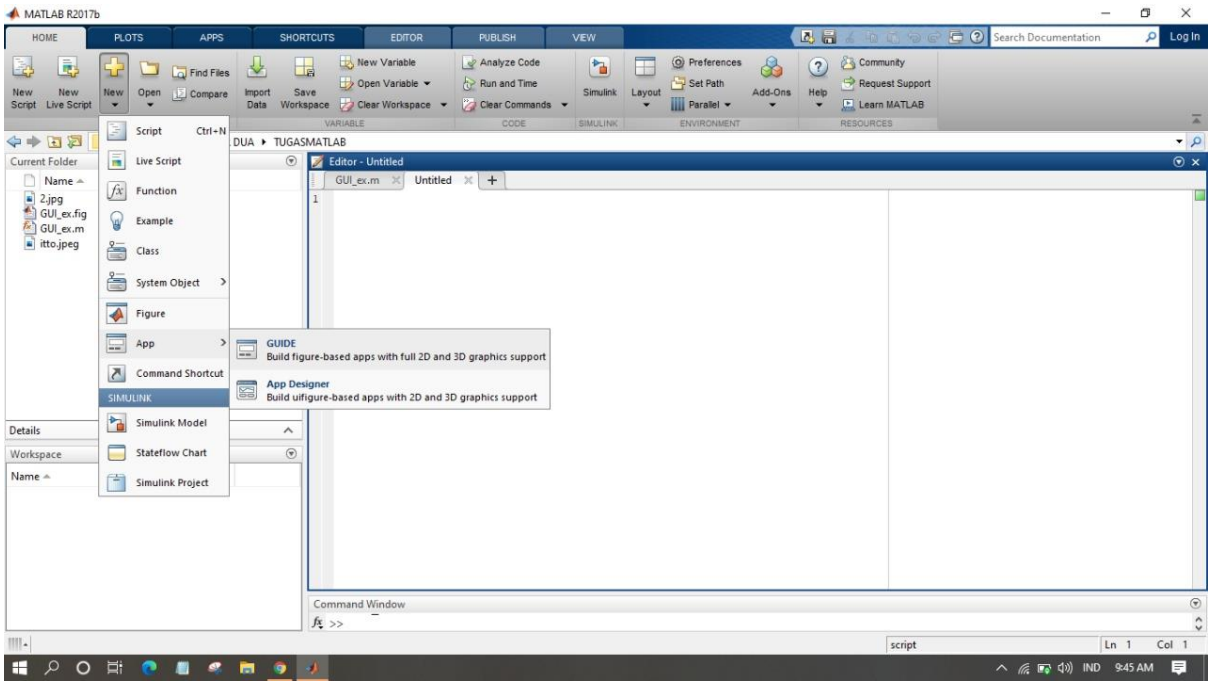
Buat program gui matlab pengolahan citra berikut ini:

1. Penjumlahan
2. Pengurangan
3. Perkalian
4. Pembagian
5. Logika AND/NAND
6. Logika OR/NOR
7. Logika XOR/XNOR
8. Logika NOT
9. Operasi Penskalaan
10. Operasi Refleksi

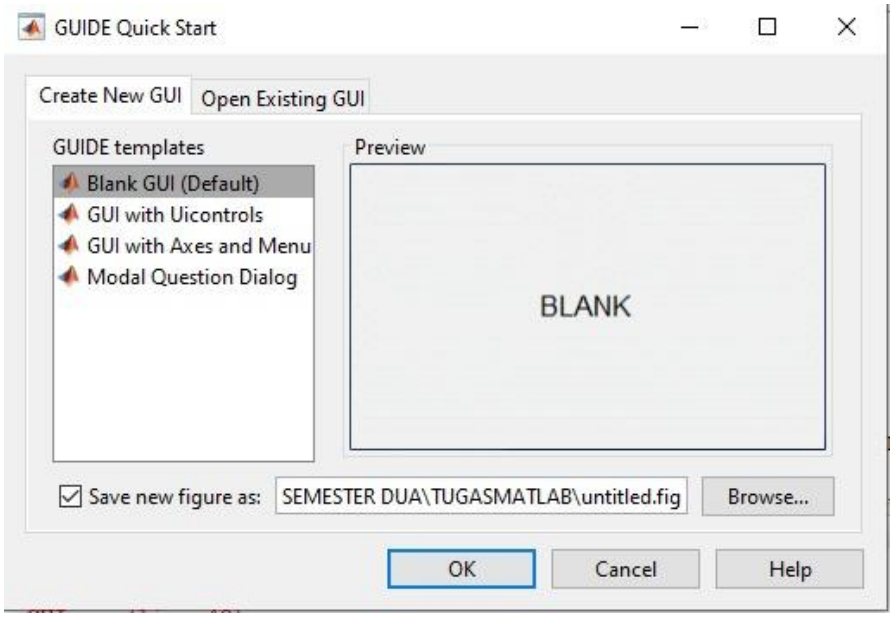
Jawaban :

LANGKAH-LANGKAH PRAKTIKUM

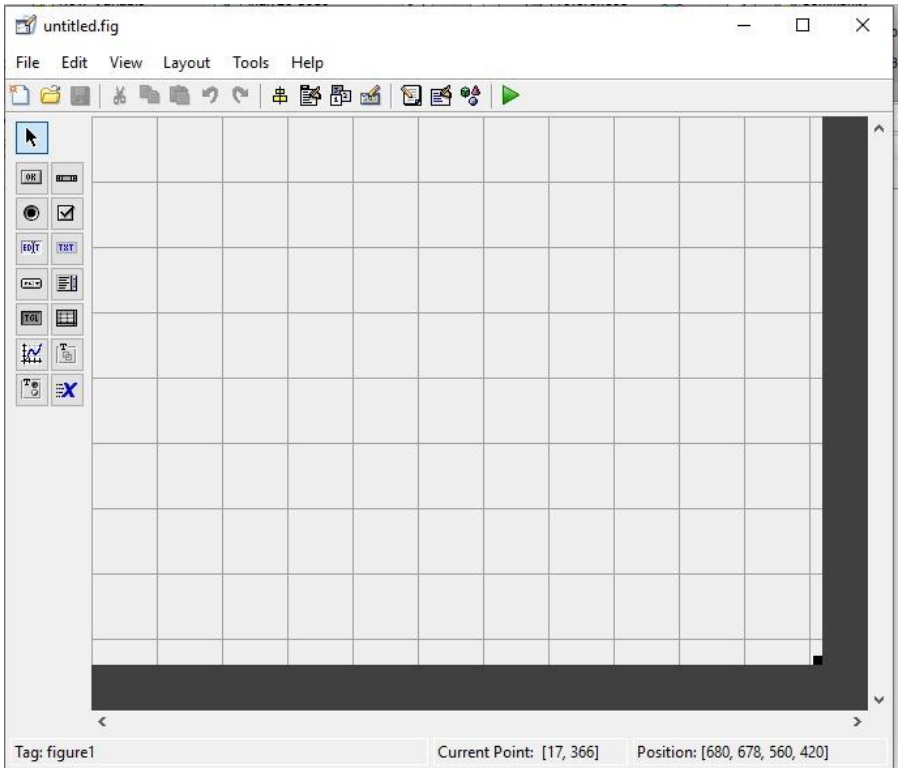
Buka Matlab pada komputer atau laptop terus ketika sudah berada di MATLAB klik New yang berada di Home kemudian klik App lalu klik GUIDE



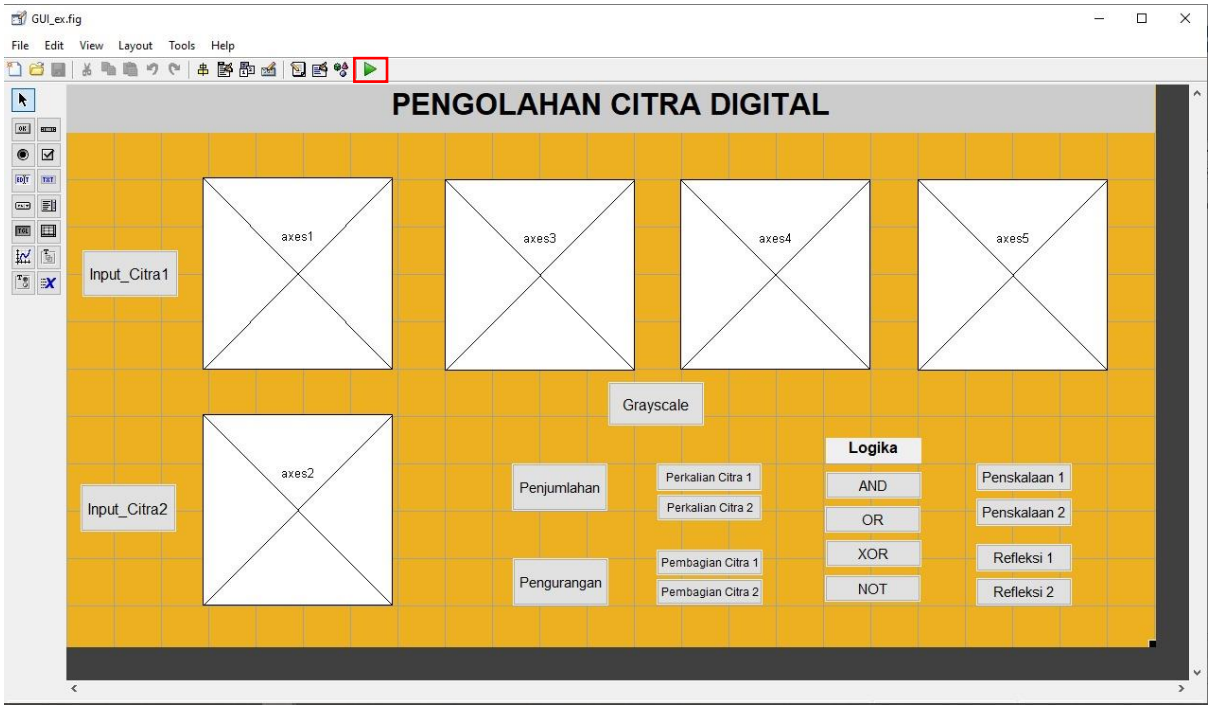
Lalu akan muncul jendela baru kemudian pilih Blank GUI (Default) lalu berikan centang pada kotak kemudian klik OK



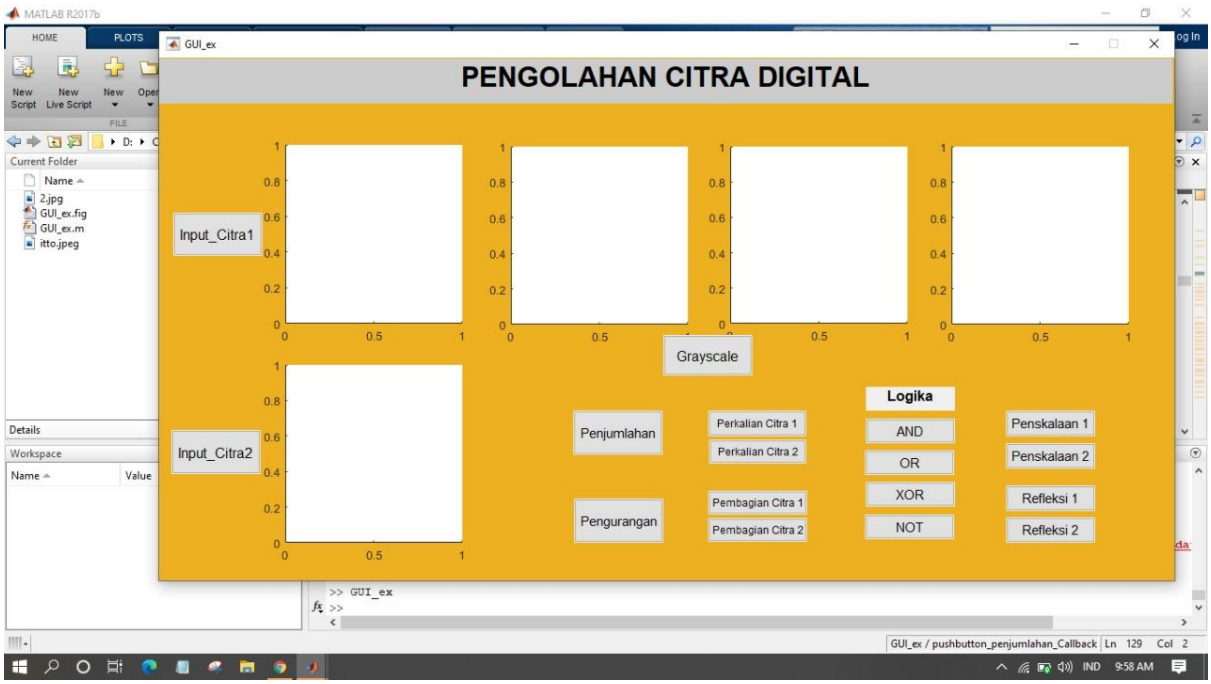
Lalu akan muncul tampilan editor GUI



Kemudian buat tampilan GUI seperti gambar dibawah kemudian klik tanda merah kotak yang sudah saya tandai digambar



Kemudian akan muncul tampilan seperti gambar dibawah



Lalu masukkan syntax setiap push button seperti gambar dibawah

Editor - D:\CITRA SEMESTER DUA\TUGASMATLAB\GUI_ex.m

GUI_ex.m

```
74
75
76      % --- Executes on button press in pushbutton_inputcitral.
77      function pushbutton_inputcitral_Callback(hObject, eventdata, handles)
78      % hObject    handle to pushbutton_inputcitral (see GCBO)
79      % eventdata  reserved - to be defined in a future version of MATLAB
80      % handles    structure with handles and user data (see GUIDATA)
81 -    [namefile,namepath] = uigetfile(...
82          {'*.jpg*.png*.jpeg', 'File of Type(*.jpg,*.png,*.jpeg)';
83          '*.jpg', 'File JPG (*.jpg)';...
84          '*.png', 'File PNG (*.PNG)';...
85          '*.jpeg', 'File JPEG (*.jpeg)';...
86          '*.*', 'All Type(*.*)'},...
87          'Open Image');
88 -    if ~isequal (namefile,0)
89 -        img1 = imread(fullfile(namepath,namefile));
90 -        axes(handles.axes1);
91 -        handles.img1 = img1;
92 -        guidata (hObject, handles);
93 -        imshow(img1);
94 -        title('Citra Asli 1');
95 -    else
96 -        return;
97 -    end
98
```

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GUI_ex.m

```
100     function pushbutton_grayscale_Callback(hObject, eventdata, handles)
101     % hObject    handle to pushbutton_grayscale (see GCBO)
102     % eventdata  reserved - to be defined in a future version of MATLAB
103     % handles    structure with handles and user data (see GUIDATA)
104 -   img1 = handles.img1;
105 -   img2 = handles.img2;
106 -   Gray1 = rgb2gray(img1);
107 -   Gray2 = rgb2gray(img2);
108 -   axes(handles.axes3);
109 -   imshow(Gray1);title('Citra Grayscale 1')
110 -   axes(handles.axes4);
111 -   imshow(Gray2);title('Citra Grayscale 2');
112
113     % --- Executes on button press in pushbutton_penjumlahan.
114     function pushbutton_penjumlahan_Callback(hObject, eventdata, handles)
115     % hObject    handle to pushbutton_penjumlahan (see GCBO)
116     % eventdata  reserved - to be defined in a future version of MATLAB
117     % handles    structure with handles and user data (see GUIDATA)
118 -   img1 = handles.img1;
119 -   img2 = handles.img2;
120 -   Gray1 = rgb2gray(img1);
121 -   Gray2 = rgb2gray(img2);
122 -   a = double(Gray1);
123 -   b = double(Gray2);
124 -   [r1,c1] = size(a);
```

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GUI_ex.m

```
125 -     [r2,c2] = size(b);
126 -     if (r1 == r2) && (c1 == c2)
127 -   for x = 1 : r1
128 -   for y = 1 : c1
129 -     i1(x,y) = a(x,y) + b(x,y);
130 -   end
131 -   end
132 -   end
133 -     axes(handles.axes5);
134 -     imshow(uint8(i1));title('Citra Penjumlahan');
135
136       % --- Executes on button press in pushbutton_pengurangan.
137     function pushbutton_pengurangan_Callback(hObject, eventdata, handles)
138     % hObject    handle to pushbutton_pengurangan (see GCBO)
139     % eventdata  reserved - to be defined in a future version of MATLAB
140     % handles    structure with handles and user data (see GUIDATA)
141 -     img1 = handles.img1;
142 -     img2 = handles.img2;
143 -     Gray1 = rgb2gray(img1);
144 -     Gray2 = rgb2gray(img2);
145 -     a = double(Gray1);
146 -     b = double(Gray2);
147 -     [r1,c1] = size(a);
148 -     [r2,c2] = size(b);
149 -     if (r1 == r2) && (c1 == c2)
```

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GUI_ex.m

```
150 -   for x = 1 : r1
151 -   for y = 1 : c1
152 -     i2(x,y) = a(x,y) - b(x,y);
153 -   end
154 -   end
155 -   end
156 -     axes(handles.axes5);
157 -     imshow(uint8(i2));title('Citra Pengurangan');
158
159       % --- Executes on button press in pushbutton_perkaliancitral.
160     function pushbutton_perkaliancitral_Callback(hObject, eventdata, handles)
161     % hObject    handle to pushbutton_perkaliancitral (see GCBO)
162     % eventdata  reserved - to be defined in a future version of MATLAB
163     % handles    structure with handles and user data (see GUIDATA)
164 -     img1 = handles.img1;
165 -     Gray1 = rgb2gray(img1);
166 -     a = double(Gray1);
167 -     [r c] = size(a);
168 -   for x = 1 : r
169 -   for y = 1 : c
170 -     i3(x,y) = a(x,y) * 2;
171 -   end
172 -   end
173 -     axes(handles.axes5);
174 -     imshow(uint8(i3));title('Citra Perkalian');
```

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GUI_ex.m

```
176     % --- Executes on button press in pushbutton9.
177     function pushbutton9_Callback(hObject, eventdata, handles)
178     % hObject    handle to pushbutton9 (see GCBO)
179     % eventdata  reserved - to be defined in a future version of MATLAB
180     % handles    structure with handles and user data (see GUIDATA)
181
182
183     % --- Executes on button press in pushbutton_penskalaan1.
184     function pushbutton_penskalaan1_Callback(hObject, eventdata, handles)
185     % hObject    handle to pushbutton_penskalaan1 (see GCBO)
186     % eventdata  reserved - to be defined in a future version of MATLAB
187     % handles    structure with handles and user data (see GUIDATA)
188 -   img1 = handles.img1;
189 -   Gray1 = rgb2gray(img1);
190 -   i10 = imresize(Gray1,0.2);
191 -   axes(handles.axes5);
192 -   imshow(i10);title('Penskalaan 1');
193
194     % --- Executes on button press in pushbutton_inputcitra2.
195     function pushbutton_inputcitra2_Callback(hObject, eventdata, handles)
196     % hObject    handle to pushbutton_inputcitra2 (see GCBO)
197     % eventdata  reserved - to be defined in a future version of MATLAB
198     % handles    structure with handles and user data (see GUIDATA)
199 -   [namefile,namepath] = uigetfile(...
200         {'*.jpg*.png*.jpeg', 'File of Type(*.jpg,*.png,*.jpeg)';
```

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GUI_ex.m

```
201         '*.jpg', 'File JPG (*.jpg)';...
202         '*.png', 'File PNG (*.PNG)';...
203         '*.jpeg', 'File JPEG (*.jpeg)';...
204         '*.*', 'All Type(*.*)'},...
205         'Open Image');
206 -   if ~isequal (namefile,0)
207 -       img2 = imread(fullfile(namepath,namefile));
208 -       axes(handles.axes2);
209 -       handles.img2 = img2;
210 -       guidata (hObject, handles);
211 -       imshow(img2);
212 -       title('Citra Asli 2');
213 -   else
214 -       return;
215 -   end
216
217
218     % --- Executes on button press in pushbutton_logikaand.
219     function pushbutton_logikaand_Callback(hObject, eventdata, handles)
220     % hObject    handle to pushbutton_logikaand (see GCBO)
221     % eventdata  reserved - to be defined in a future version of MATLAB
222     % handles    structure with handles and user data (see GUIDATA)
223 -   img1 = handles.img1;
224 -   img2 = handles.img2;
225 -   Gray1 = rgb2gray(img1);
```

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GUI_ex.m

```
Gray2 = rgb2gray(img2);
a = not(Gray1);
b = not(Gray2);
[r1,c1] = size(a);
[r2,c2] = size(b);
for x = 1 : r1
for y = 1 : c1
i7(x,y) = and(a(x,y),b(x,y));
end
end
axes(handles.axes5);
imshow(i7);title('Citra Logika AND');

% --- Executes on button press in pushbutton_perkaliancitra2.
function pushbutton_perkaliancitra2_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton_perkaliancitra2 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
img2 = handles.img2;
Gray2 = rgb2gray(img2);
b = double(Gray2);
[r c] = size(b);
for x = 1 : r
for y = 1 : c
i4(x,y) = b(x,y) * 2;
```

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GUI_ex.m

```
end
end
axes(handles.axes5);
imshow(uint8(i4));title('Citra Perkalian');

% --- Executes on button press in pushbutton_pembagiancitra2.
function pushbutton_pembagiancitra2_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton_pembagiancitra2 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
img2 = handles.img2;
Gray2 = rgb2gray(img2);
b = double(Gray2);
[r c] = size(b);
for x = 1 : r
for y = 1 : c
i6(x,y) = b(x,y) / 2;
end
end
axes(handles.axes5);
imshow(uint8(i6));title('Citra Pembagian');

% --- Executes on button press in pushbutton_pembagiancitral.
function pushbutton_pembagiancitral_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton_pembagiancitral (see GCBO)
```

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GUI_ex.m

```
276     % eventdata  reserved - to be defined in a future version of MATLAB
277     % handles    structure with handles and user data (see GUIDATA)
278 -   img1 = handles.img1;
279 -   Gray1 = rgb2gray(img1);
280 -   a = double(Gray1);
281 -   [r c] = size(a);
282 -   for x = 1 : r
283 -   for y = 1 : c
284 -   i5(x,y) = a(x,y) / 2;
285 -   end
286 -   end
287 -   axes(handles.axes5);
288 -   imshow(uint8(i5));title('Citra Pembagian');
289
290
291     % --- Executes on button press in pushbutton_logikaor.
292     function pushbutton_logikaor_Callback(hObject, eventdata, handles)
293     % hObject    handle to pushbutton_logikaor (see GCBO)
294     % eventdata  reserved - to be defined in a future version of MATLAB
295     % handles    structure with handles and user data (see GUIDATA)
296 -   img1 = handles.img1;
297 -   img2 = handles.img2;
298 -   Gray1 = rgb2gray(img1);
299 -   Gray2 = rgb2gray(img2);
300 -   a = not(Gray1);
```

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GUI_ex.m

```
301 -   b = not(Gray2);
302 -   [r1 c1] = size(a);
303 -   [r2 c2] = size(b);
304 -   for x = 1 : r1
305 -   for y = 1 : c1
306 -   i7(x,y) = and(a(x,y),b(x,y));
307 -   end
308 -   end
309 -   axes(handles.axes5);
310 -   imshow(i7);title('Citra Logika OR');
311
312     % --- Executes on button press in pushbutton_logikaxor.
313     function pushbutton_logikaxor_Callback(hObject, eventdata, handles)
314     % hObject    handle to pushbutton_logikaxor (see GCBO)
315     % eventdata  reserved - to be defined in a future version of MATLAB
316     % handles    structure with handles and user data (see GUIDATA)
317 -   img1 = handles.img1;
318 -   img2 = handles.img2;
319 -   Gray1 = rgb2gray(img1);
320 -   Gray2 = rgb2gray(img2);
321 -   a = not(Gray1);
322 -   b = not(Gray2);
323 -   [r1 c1] = size(a);
324 -   [r2 c2] = size(b);
325 -   for x = 1 : r1
```

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GUI_ex.m

```
for y = 1 : c1
i8(x,y) = xor(a(x,y),b(x,y));
end
end
axes(handles.axes5);
imshow(i8);title('Citra Logika XOR');


% --- Executes on button press in pushbutton_logikanot.
function pushbutton_logikanot_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton_logikanot (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
img1 = handles.img1;
img2 = handles.img2;
Gray1 = rgb2gray(img1);
Gray2 = rgb2gray(img2);
a = not(Gray1);
b = not(Gray2);
[r1 c1] = size(a);
[r2 c2] = size(b);
for x = 1 : r1
for y = 1 : c1
i9(x,y) = not(and(a(x,y),b(x,y)));
end
```

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GUI_ex.m

```
end
axes(handles.axes5);
imshow(i9);title('Citra Logika NOT');


% --- Executes on button press in pushbutton_penskalaan2.
function pushbutton_penskalaan2_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton_penskalaan2 (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
img2 = handles.img2;
Gray2 = rgb2gray(img2);
il1 = imresize(Gray2,0.2);
axes(handles.axes5);
imshow(il1);title('Penskalaan 2');

% --- Executes on button press in pushbutton_refleksil.
function pushbutton_refleksil_Callback(hObject, eventdata, handles)
% hObject    handle to pushbutton_refleksil (see GCBO)
% eventdata  reserved - to be defined in a future version of MATLAB
% handles    structure with handles and user data (see GUIDATA)
img1 = handles.img1;
Gray1 = rgb2gray(img1);
il2 = flip(Gray1,1);
axes(handles.axes5);
```

```
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GUI_ex.m
363 -     il1 = imresize(Gray2,0.2);
364 -     axes(handles.axes5);
365 -     imshow(il1);title('Penskalaan 2');
366
367       % --- Executes on button press in pushbutton_refleksi1.
368       function pushbutton_refleksi1_Callback(hObject, eventdata, handles)
369       % hObject    handle to pushbutton_refleksi1 (see GCBO)
370       % eventdata  reserved - to be defined in a future version of MATLAB
371       % handles    structure with handles and user data (see GUIDATA)
372 -     img1 = handles.img1;
373 -     Gray1 = rgb2gray(img1);
374 -     il2 = flip(Gray1,1);
375 -     axes(handles.axes5);
376 -     imshow(il2);title('Refleksi 1');
377
378       % --- Executes on button press in pushbutton_refleksi2.
379       function pushbutton_refleksi2_Callback(hObject, eventdata, handles)
380       % hObject    handle to pushbutton_refleksi2 (see GCBO)
381       % eventdata  reserved - to be defined in a future version of MATLAB
382       % handles    structure with handles and user data (see GUIDATA)
383 -     img2 = handles.img2;
384 -     Gray2 = rgb2gray(img2);
385 -     il3 = flip(Gray2,1);
386 -     axes(handles.axes5);
387 -     imshow(il3);title('Refleksi 2');
```
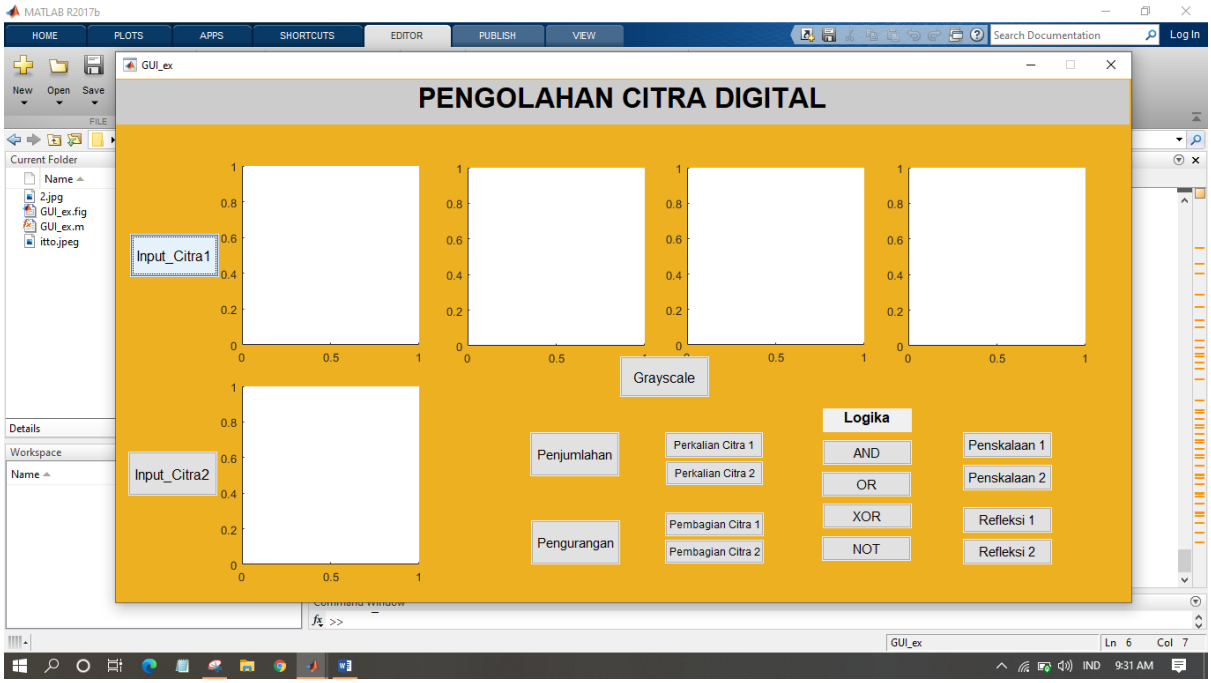
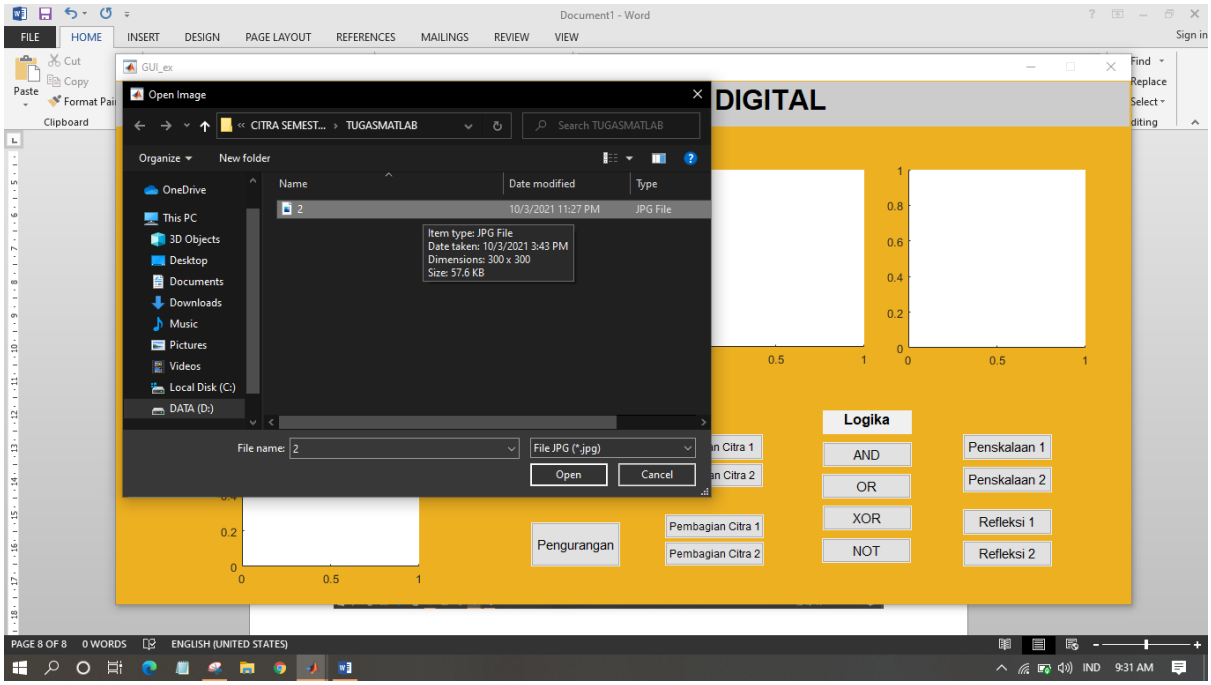
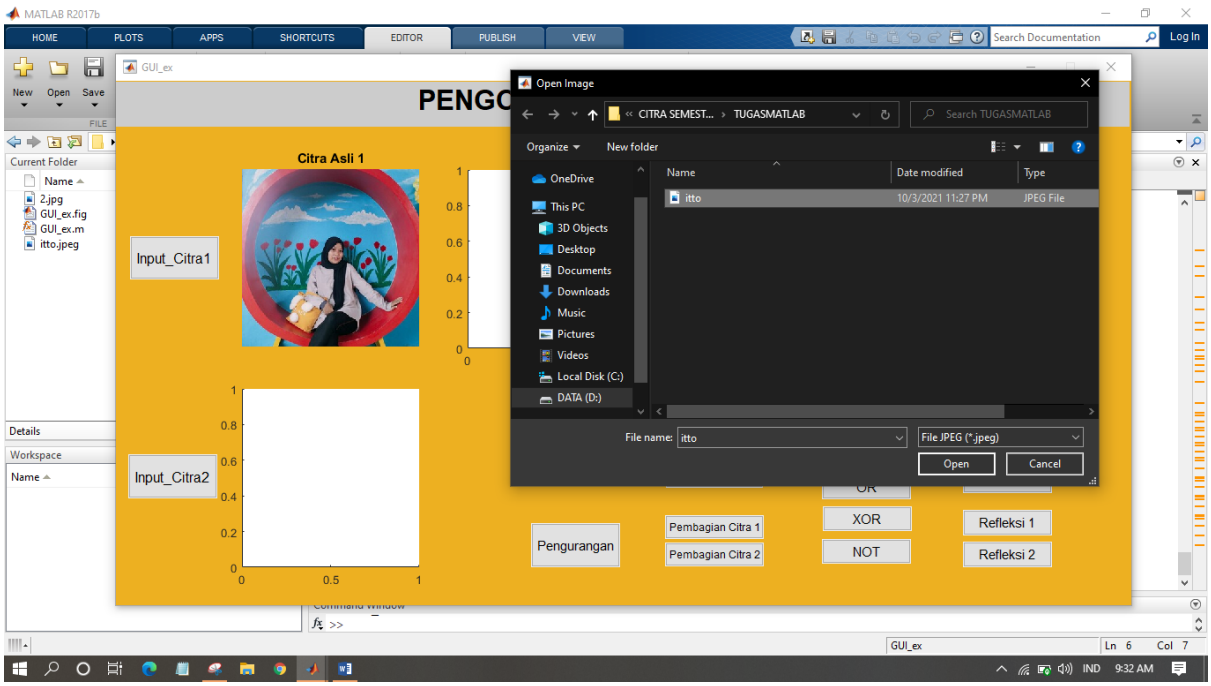

klik run pada editor kemudian akan muncul tampilan GUI yang telah kita buat tadi



Klik input citra 1 kemudian pilih gambar yang akan digunakan kemudian klik open



Lalu klik input citra 2 kemudian pilih gambar yang akan digunakan kemudian klik open lalu ingat bahwa ukuran piksel atau dimensi citra 1 dan 2 harus sama



Kemudian klik Grayscale untuk melakukan citra keabuan pada kedua citra

Klik penjumlahan untuk melakukan operasi citra penjumlahan

Lalu klik pengurangan untuk memunculkan citra pengurangan

Setelah itu klik perkalian citra 1 untuk melakukan perkalian pada citra 1

Lalu klik Perkalian Citra 2 untuk memunculkan citra perkalian pada pada citra2

Selanjutnya klik Pembagian Citra1 untuk memunculkan Citra Pembagian pada Citra 1

Lalu klik pembagian citra 2 untuk memunculkan citra pembagian pada citra 2

Setelah itu klik AND untuk memunculkan Citra Logika AND

Kemudian klik OR untuk memunculkan citra logika OR

Lalu klik XOR untuk memunculkan Citra Logika XOR

Setelah itu klik NOT untuk memunculkan Citra Logika NOT

Lalu klik Penskalaan1 untuk memunculkan citra penskalaan1

Kemudian klik Penskalaan 2 untuk memunculkan citra penskalaan2

Lalu klik Refleksi1 untuk memunculkan citra Refleksi1

Kemudian klik Refleksi2 untuk memunculkan citra Refleksi2