No Date

monday tuesday wednesday thursday friday saturday

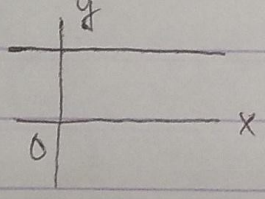
Nama: Faiz Ridwan

NIM : 20142000Z6

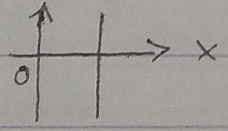
Kelas: IF4A

1. Apa yang di maksud dengan algoritma garis!
* Algoritma untuk menentukan lokasi pixel yang paling dekat dengan garis sebenarnya.

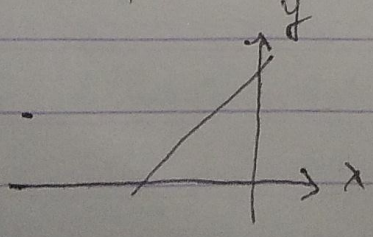
2. Gambarkan 4 kemiringan garis dan jelaskan
* jika nilai m=0, maka garis sejajar dengan sumbu x



jika m tak terdefinisi (lurus dengan 0) maka akan terbentuk garis lurus:



jika m bernilai positif, akan terbentuk garis miring kanan.



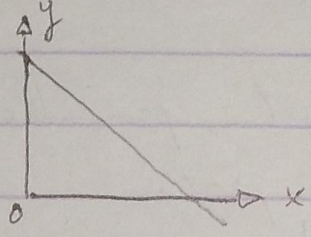
No. Date :

O monday O tuesday O wednesday O thursday O friday O saturday

Nama : Fauzi Ridwan

NIM : 2014200026

jika nilai m negatif, garis akan jatuh ke kanan.



3. Tuliskan dua cara membuat persamaan garis lurus

1.) Buatlah 2 titik atau lebih yang dilalui oleh grafik

2.) Buatlah nilai kemiringan atau I kemiringan garis dan sebuah titik yang dilalui grafik

4. Tuliskan 4 kriteria algoritma garis yang baik

- Garis harus lurus
- Komputer tidak lemot
- Komputer tidak terputus pada kemiringan garis
- waktu proses algoritma harus cepat

5. Tuliskan algoritma DDA

1.) Tentukan 2 titik yang akan di hubungkan sebagai titik awal (x_1, y_1) dan titik akhir (x_2, y_2)

No. Date :

O monday O tuesday O wednesday O thursday O friday O saturday

Nama : Faiz Ridwyat

NIM : 20114200126

2.) Hitung nilai x & y dgn pers. berikut:

$dx = x_2 - x_1$

$dy = y_2 - y_1$

3.) Tentukan nilai steps, yaitu nilai penambahan x dan y, dgn menggunakan pers.

$steps = \begin{cases} |dx|, & |dy| < |dx| \\ |dy|, & \text{selain itu} \end{cases}$

4.) Tentukan kenaikan berikutnya dgn pers.

$x+ = \frac{dx}{steps}$

$y+ = \frac{dy}{steps}$

5.) Tentukan koordinat titik yaitu

$(x_1 + x_2,\ y_1 + Y+),\ (x_1 + X+ + X+,\ y_1 + Y_1 + Y+)$

dst.

6.) Ulangi langkah 5 sampai koordinat akhir (x_2, y_2)

7.) Gambar titik dari koordinat awal sampai akhir.

Nama : Fauz Ridyat

NIDN : 2049 20026

6. Algoritma DDA, untuk menggambar garis dari titik (1,1) ke (4,5)!

$x_1 = 1$, $y_1 = 1$, $x_2 = 4$, $y_2 = 5$

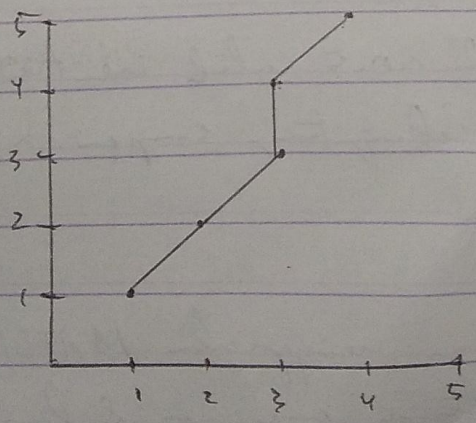
$dx = 4 - 1 = 3$

$dy = 5 - 1 = 4$

$dy > dx$, maka nilai step $= 4$

$x_t = \frac{3}{4} = 0{,}75$ $\quad y_t = \frac{4}{4} = 1$

x	y	(x, y)
1	1	(1,1)
1,75	2	(2,2)
2,5	3	(3,3)
3,25	4	(3,4)
4	5	(4,5)



Nama : Faiz Ridwyt

NIM : 201420026

7. Tuliskan algoritma Bresham

a.) Tentukan dua titik yang akan di hubungkan dalam pembuatan garis

b.) Tentukan salah satu titik di sebelah kiri sebagai titik awal (x_0, y_0) & titik akhir (x_1, y_1)

c.) Hitung x, y 2x dan $2y - 2x$

d.) Hitung parameter $P_0 = 2y - x$

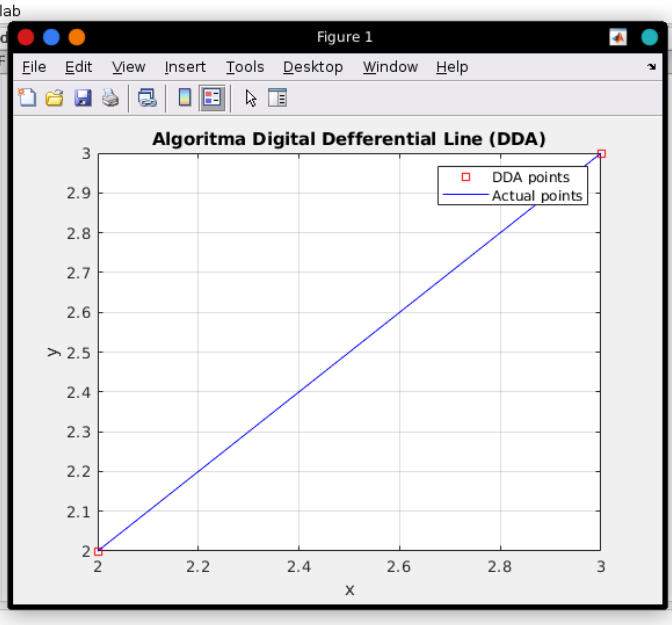
e.) Untuk setiap x_k sepanjang garis dimulai dari $k = 0$ lalu $P_k < 0$ maka titik selanjutnya (x_{k+1}, y_k) dan $P_{k+1} = P_k + 2y$, lain halnya titik maka titik selanjutnya adalah (x_{k+1}, y_{k+1}) dan $P_{k+1} = P_k + 2y - 2x$

f.) Ulangi langkah no. 5 untuk menentukan posisi pixel selanjutnya sampai $x = x_1$ dan $y = y_1$

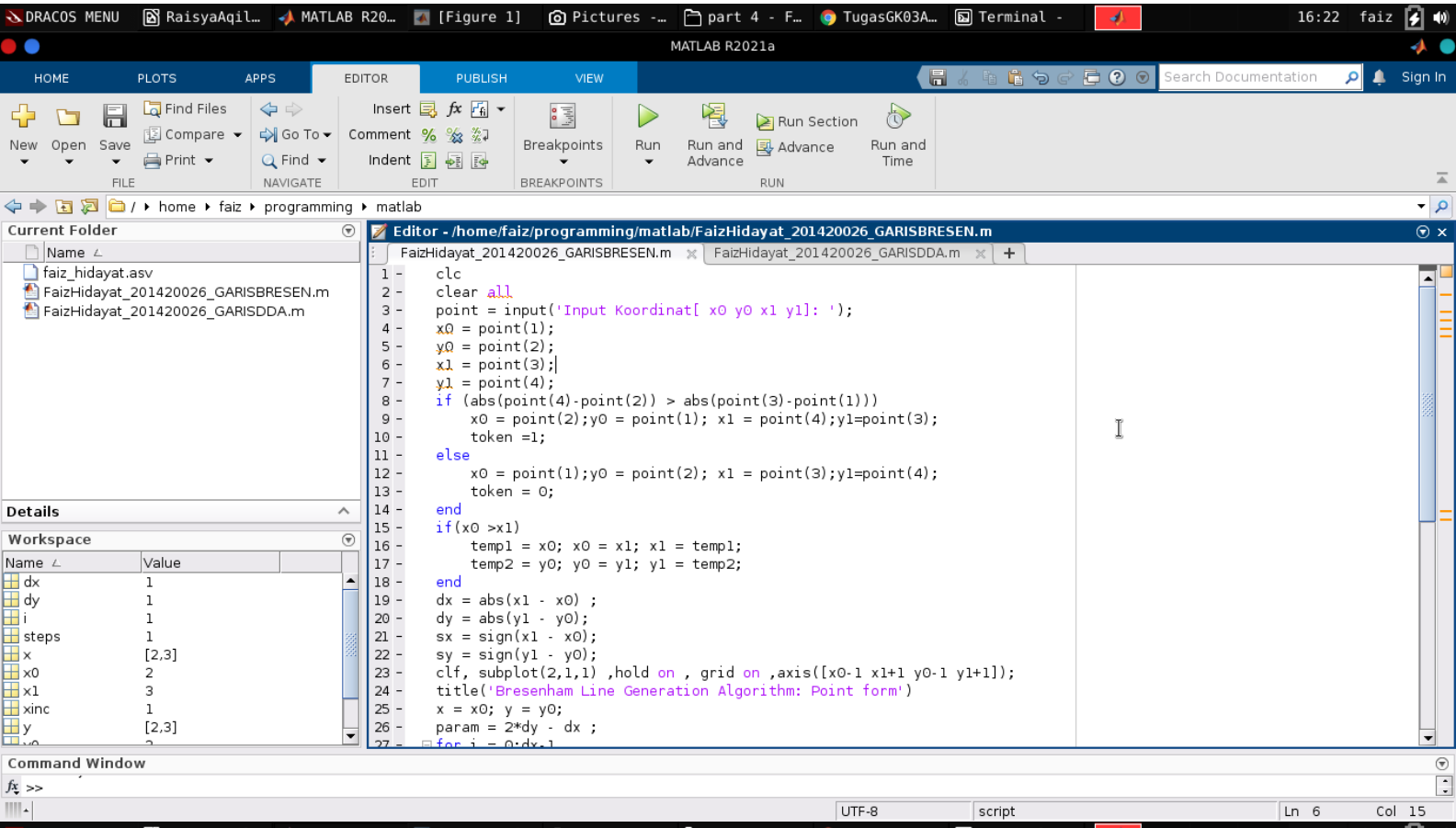
8. Buat program DDA dengan menggunakan MATLAB, lalu tunjukkan hasil listing program & hasil run.!

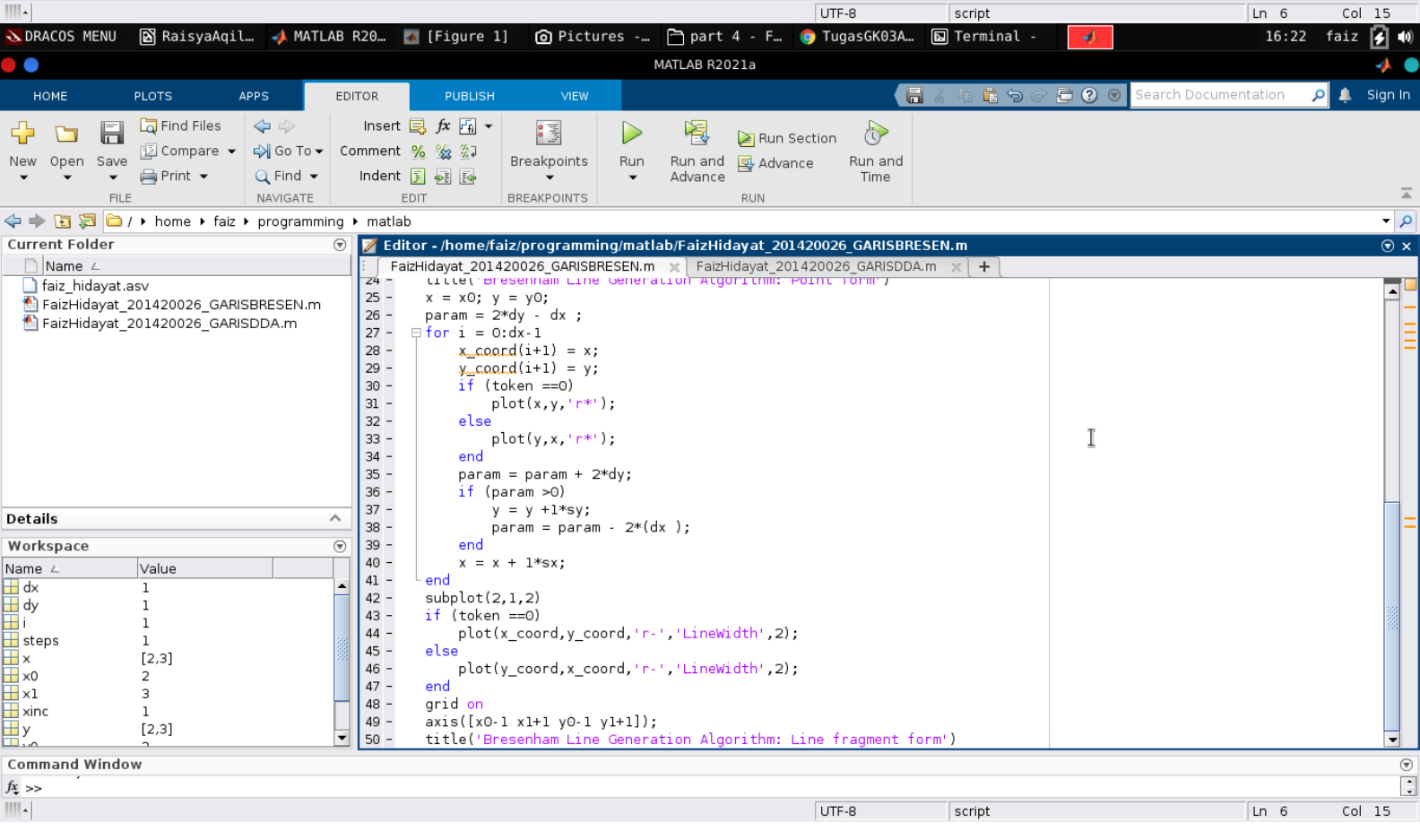
8. DDA

```
clc
clear all
x0=input('Enter x0=');
y0=input('Enter y0=');
x1=input('Enter x1=');
y1=input('Enter y1=');
dx=x1-x0;
dy=y1-y0;
if(abs(dx)>abs(dy))
    steps=abs(dx);
else
    steps=abs(dy);
end
xinc=(dx/steps);
yinc=(dy/steps);
x(1)=x0; y(1)=y0;
for i=1:steps
    x(i+1)=x(i)+ xinc;
    y(i+1)=y(i)+ yinc;
end
plot(round(x),round(y),'rs');
grid on, hold on
plot(x,y,'b');
legend('DDA points','Actual points');
xlabel('x');
ylabel ('y');
title ('Algoritma Digital Defferential Line (DDA)')
```



9. Bresen


MATLAB R2021a
HOME PLOTS APPS EDITOR PUBLISH VIEW
Search Documentation
Sign In
New Open Save Find Files Compare Print
Go To Find
Insert Comment Indent
Breakpoints
Run Run and Advance Run Section Advance Run and Time
FILE NAVIGATE EDIT BREAKPOINTS RUN
/ home faiz programming matlab
Current Folder
Name
faiz_hidayat.asv
FaizHidayat_201420026_GARISBRESEN.m
FaizHidayat_201420026_GARISDDA.m
Editor - /home/faiz/programming/matlab/FaizHidayat_201420026_GARISBRESEN.m
FaizHidayat_201420026_GARISBRESEN.m
FaizHidayat_201420026_GARISDDA.m
1 - clc
2 - clear all
3 - point = input('Input Koordinat[x0 y0 x1 y1]: ');
4 - x0 = point(1);
5 - y0 = point(2);
6 - x1 = point(3);
7 - y1 = point(4);
8 - if (abs(point(4)-point(2)) > abs(point(3)-point(1)))
9 - x0 = point(2);y0 = point(1); x1 = point(4);y1=point(3);
10 - token =1;
11 - else
12 - x0 = point(1);y0 = point(2); x1 = point(3);y1=point(4);
13 - token = 0;
14 - end
15 - if(x0 >x1)
16 - temp1 = x0; x0 = x1; x1 = temp1;
17 - temp2 = y0; y0 = y1; y1 = temp2;
18 - end
19 - dx = abs(x1 - x0) ;
20 - dy = abs(y1 - y0);
21 - sx = sign(x1 - x0);
22 - sy = sign(y1 - y0);
23 - clf, subplot(2,1,1) ,hold on , grid on ,axis([x0-1 x1+1 y0-1 y1+1]);
24 - title('Bresenham Line Generation Algorithm: Point form')
25 - x = x0; y = y0;
26 - param = 2*dy - dx ;
Details
Workspace
Name Value
dx 1
dy 1
i 1
steps 1
x [2,3]
x0 2
x1 3
xinc 1
y [2,3]
Command Window
>>
UTF-8 script Ln 6 Col 15


MATLAB R2021a
HOME PLOTS APPS EDITOR PUBLISH VIEW
Search Documentation
Sign In
New Open Save Find Files Compare Print
Go To Find
Insert Comment Indent
Breakpoints
Run Run and Advance Run Section Advance Run and Time
FILE NAVIGATE EDIT BREAKPOINTS RUN
/ home faiz programming matlab
Current Folder
Name
faiz_hidayat.asv
FaizHidayat_201420026_GARISBRESEN.m
FaizHidayat_201420026_GARISDDA.m
Editor - /home/faiz/programming/matlab/FaizHidayat_201420026_GARISBRESEN.m
FaizHidayat_201420026_GARISBRESEN.m
FaizHidayat_201420026_GARISDDA.m
25 - x = x0; y = y0;
26 - param = 2*dy - dx ;
27 - for i = 0:dx-1
28 - x_coord(i+1) = x;
29 - y_coord(i+1) = y;
30 - if (token ==0)
31 - plot(x,y,'r*');
32 - else
33 - plot(y,x,'r*');
34 - end
35 - param = param + 2*dy;
36 - if (param >0)
37 - y = y +1*sy;
38 - param = param - 2*(dx);
39 - end
40 - x = x + 1*sx;
41 - end
42 - subplot(2,1,2)
43 - if (token ==0)
44 - plot(x_coord,y_coord,'r-','LineWidth',2);
45 - else
46 - plot(y_coord,x_coord,'r-','LineWidth',2);
47 - end
48 - grid on
49 - axis([x0-1 x1+1 y0-1 y1+1]);
50 - title('Bresenham Line Generation Algorithm: Line fragment form')
Details
Workspace
Name Value
dx 1
dy 1
i 1
steps 1
x [2,3]
x0 2
x1 3
xinc 1
y [2,3]
Command Window
>>
UTF-8 script Ln 6 Col 15

DRACOS MENU | MATLAB R2021a | Figure 1 | [TugasGK03Algoritma … | [Terminal -] | 16:26 | faiz

MATLAB R2021a

HOME | PLOTS | APPS | EDITOR | PUBLISH | VIEW

Search Documentation | Sign In

New | Open | Save | Find Files | Compare | Print | Go To | Find | Insert | Comment | Indent | Breakpoints | Run | Run and Advance | Run Section | Advance | Run and Time

FILE | NAVIGATE | EDIT | BREAKPOINTS | RUN

/ ▸ home ▸ faiz ▸ programming ▸ matlab

Current Folder

Name

- faiz_hidayat.asv
- FaizHidayat_201420026_GARISBRESEN.m
- FaizHidayat_201420026_GARISDDA.m

Details

Workspace

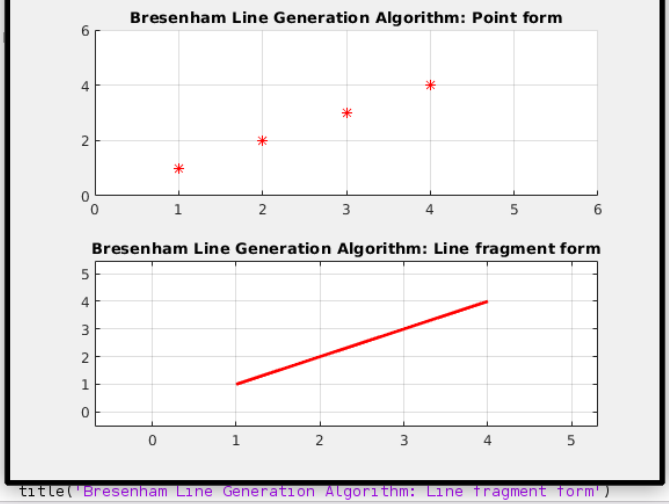
Name	Value
dx	4
dy	4
i	3
param	4
point	[1,1,5,5]
sx	1
sy	1
token	0
x	5
x0	1

Edit

```
24 -
25 -
26 -
27 -
28 -
29 -
30 -
31 -
32 -
33 -
34 -
35 -
36 -
37 -
38 -
39 -
40 -
41 -
42 -
43 -
44 -
45 -
46 -
47 -
48 -
49 -
50 - title('Bresenham Line Generation Algorithm: Line fragment form')
```

Figure 1

File Edit View Insert Tools Desktop Window Help



Command Window

>>