



Mechanical Engineering

(INTN125)

Fall 2021

Project Demonstration

Report

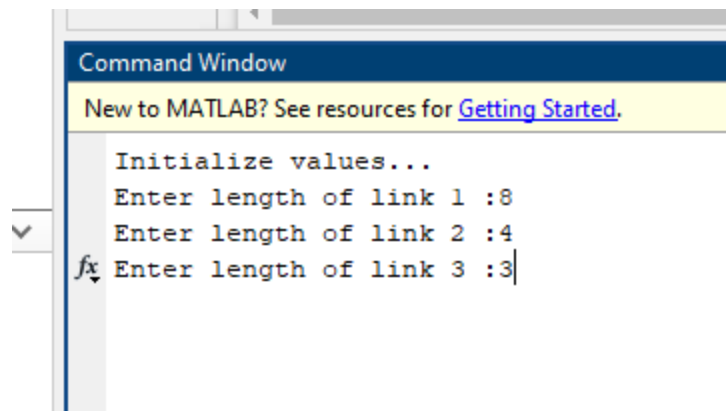
Students:

1200891

1200380

فهد احمد فرج على محمد صديق

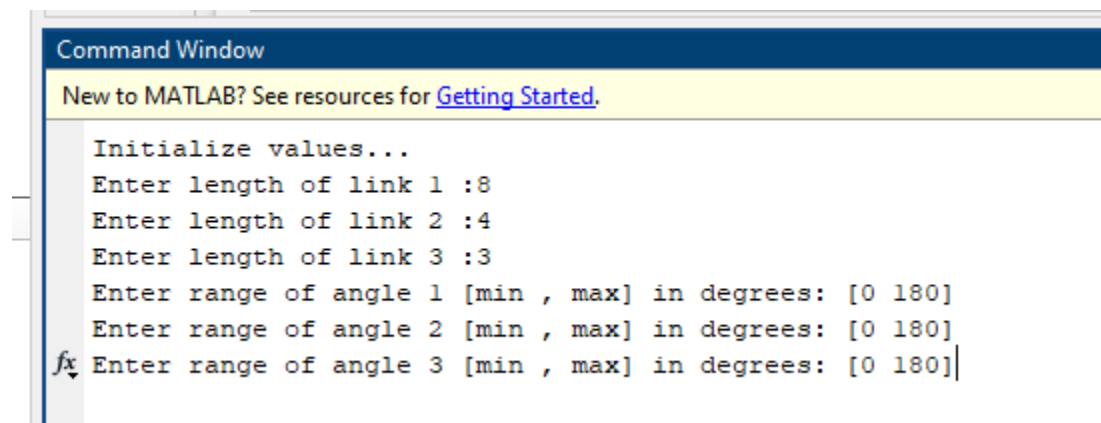
عبدالرحمن ايمن محمد فوزي البديوي



```
Command Window
New to MATLAB? See resources for Getting Started.

Initialize values...
Enter length of link 1 :8
Enter length of link 2 :4
fx Enter length of link 3 :3
```

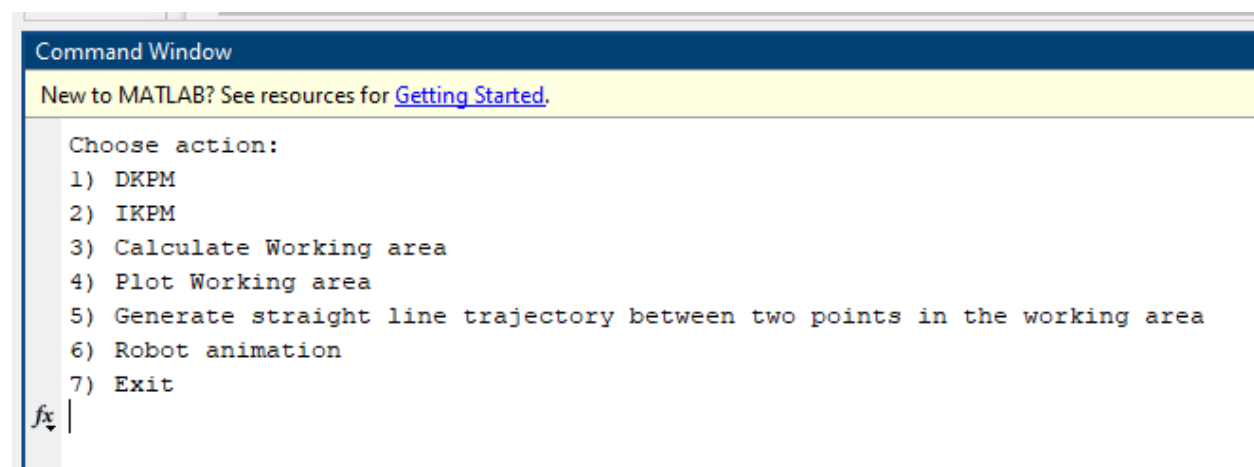
Enter lengths of the arm links (links 1,2, and 3)



```
Command Window
New to MATLAB? See resources for Getting Started.

Initialize values...
Enter length of link 1 :8
Enter length of link 2 :4
Enter length of link 3 :3
Enter range of angle 1 [min , max] in degrees: [0 180]
Enter range of angle 2 [min , max] in degrees: [0 180]
fx Enter range of angle 3 [min , max] in degrees: [0 180]
```

Enter range of angles in the format shown



```
Command Window
New to MATLAB? See resources for Getting Started.

Choose action:
1) DKPM
2) IKPM
3) Calculate Working area
4) Plot Working area
5) Generate straight line trajectory between two points in the working area
6) Robot animation
7) Exit
fx |
```

Choose from menu the action you want

Action 1 (DKPM)

```
Command Window
New to MATLAB? See resources for Getting Started.

Enter angle 1(degrees): 50
Enter angle 2(degrees): 60
Enter angle 3(degrees): 30
(X , Y) = (1.476 , 11.815)
1) DKPM
2) IKPM
3) Calculate Working area
4) Plot Working area
5) Generate straight line trajectory between two points in the working area
6) Robot animation
7) Exit
```

Enter angles 1,2 and 3 and the X, Y coordinates will be printed out

You will then be returned to the menu

Action 2 (IKPM)

```
Command Window
New to MATLAB? See resources for Getting Started.

Enter x: 1.476
Enter y: 11.815
Enter phi (q1+q2+q3): 140
(theta1 , theta2 , theta3) = (49.996 , 60.011 , 29.993)
1) DKPM
2) IKPM
3) Calculate Working area
4) Plot Working area
5) Generate straight line trajectory between two points in the working area
6) Robot animation
7) Exit
```

Enter X, Y and orientation(phi) then theta1, theta2, theta3 will be printed.

As shown, we used the same example and got the same angle of Action1.

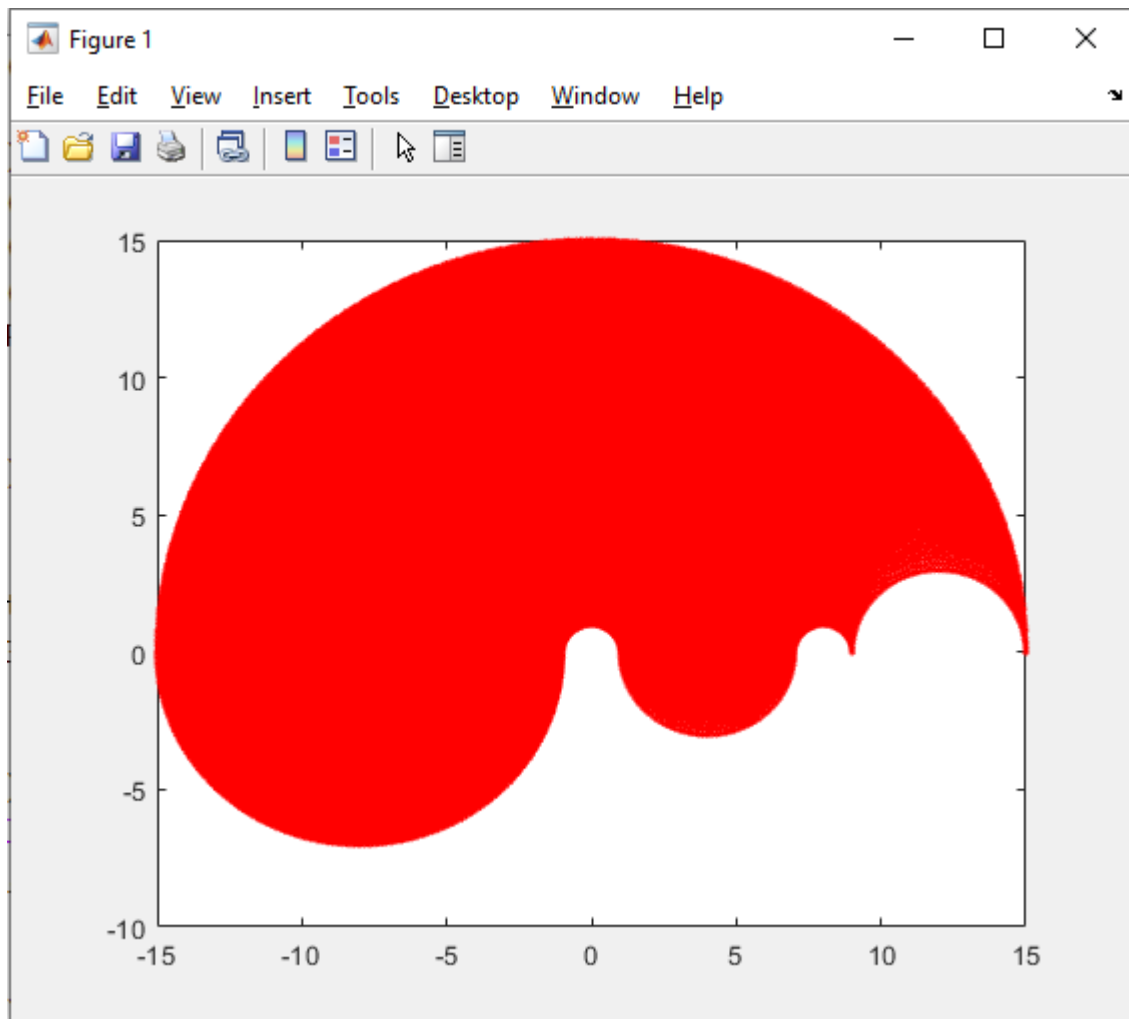
You will then be returned to the menu

Action 3 (Calculating Working area)

```
Command Window
New to MATLAB? See resources for Getting Started.

Calculating working area...
Area = 537.190
1) DKPM
2) IKPM
3) Calculate Working area
4) Plot Working area
5) Generate straight line trajectory between two points in the working area
6) Robot animation
7) Exit
fx |
```

Action 4 (Plot Working area)

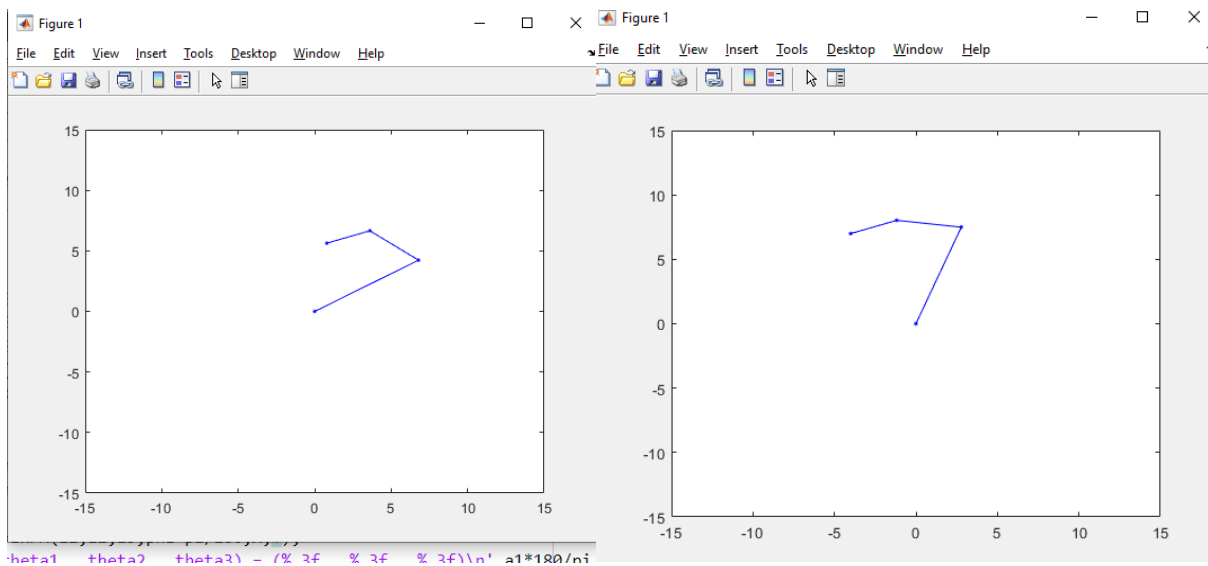


Action 5 (Trajectory)

```
Command Window
New to MATLAB? See resources for Getting Started.

Enter point 1 [x,y]: [3 5]
Enter point 2 [x,y]: [-4 7]
fx Enter orientation of end effector (angle): 200
```

Enter two points in the format shown with orientation



The robotic arm will animate and move between the two points.

Action 6 (Robot Animation)

