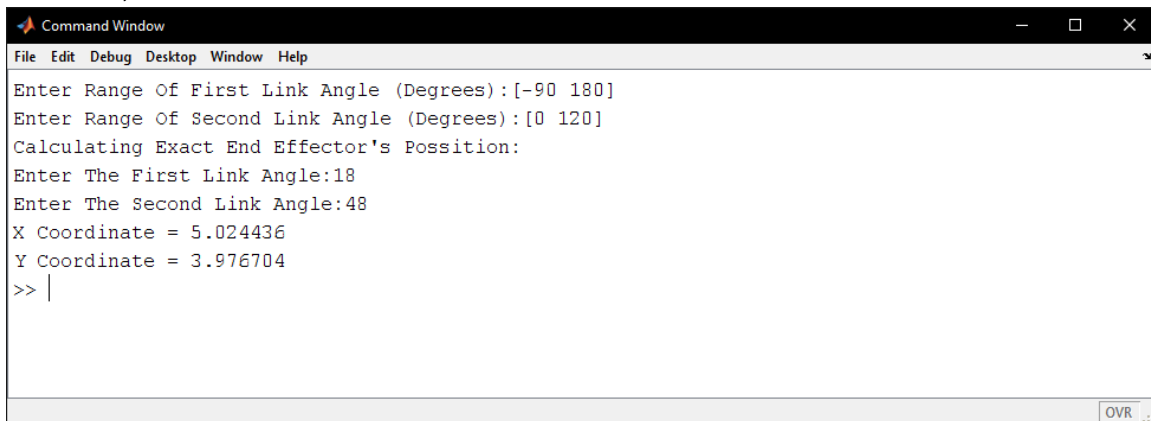


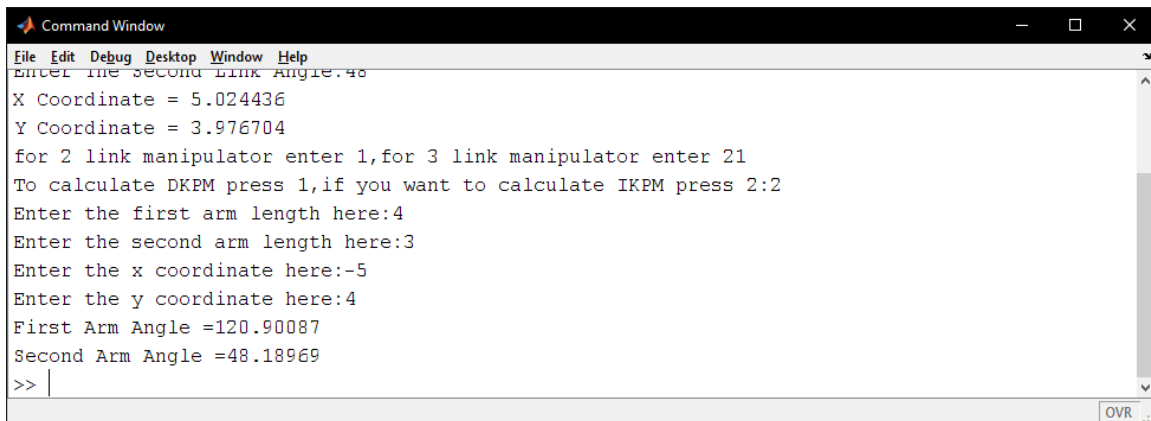
First of all, we discuss the DKPM and IKPM



```
Command Window
File Edit Debug Desktop Window Help
Enter Range Of First Link Angle (Degrees):[-90 180]
Enter Range Of Second Link Angle (Degrees):[0 120]
Calculating Exact End Effector's Position:
Enter The First Link Angle:18
Enter The Second Link Angle:48
X Coordinate = 5.024436
Y Coordinate = 3.976704
>> |
```

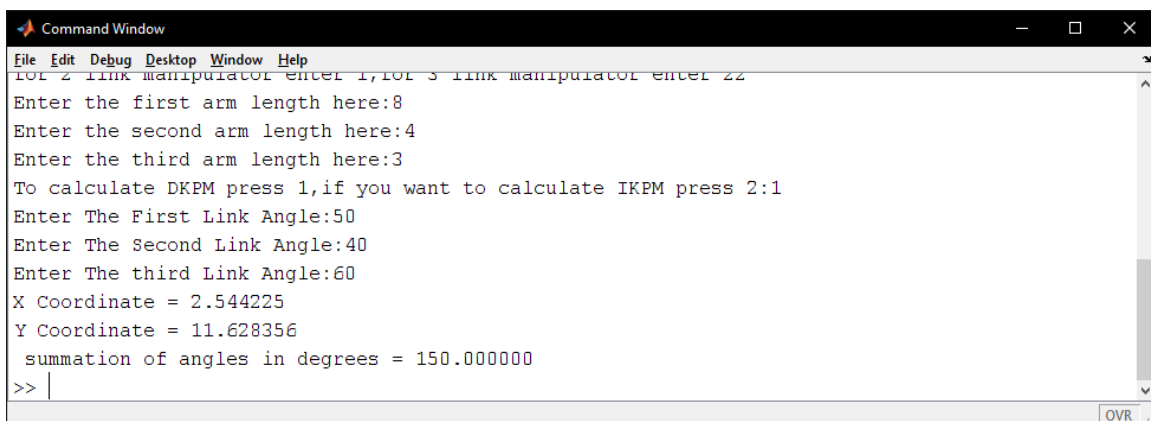
Here the user enters the first and second joint angle ranges and the length of the arms

The program gives him the x and y coordinates of the end effector that's for 2 a link manipulator



```
Command Window
File Edit Debug Desktop Window Help
Enter the second link angle:48
X Coordinate = 5.024436
Y Coordinate = 3.976704
for 2 link manipulator enter 1,for 3 link manipulator enter 21
To calculate DKPM press 1,if you want to calculate IKPM press 2:2
Enter the first arm length here:4
Enter the second arm length here:3
Enter the x coordinate here:-5
Enter the y coordinate here:4
First Arm Angle =120.90087
Second Arm Angle =48.18969
>> |
```

Here we calculate the IKPM for a 2-link manipulator by entering first, second arm lengths, x, y coordinates and the system gives us first and second arm angles in degrees

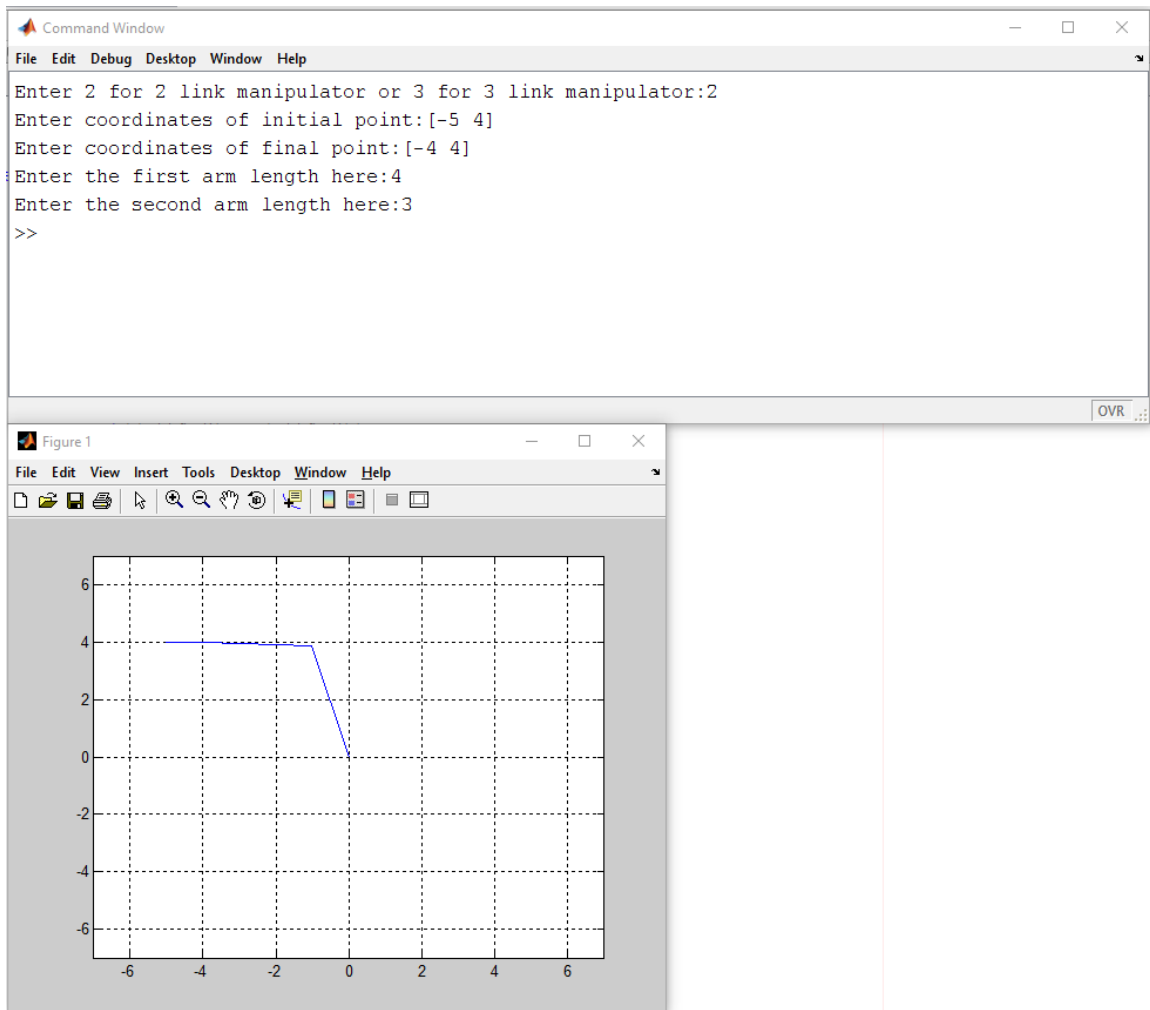


```
Command Window
File Edit Debug Desktop Window Help
for 2 link manipulator enter 1,for 3 link manipulator enter 22
Enter the first arm length here:8
Enter the second arm length here:4
Enter the third arm length here:3
To calculate DKPM press 1,if you want to calculate IKPM press 2:1
Enter The First Link Angle:50
Enter The Second Link Angle:40
Enter The third Link Angle:60
X Coordinate = 2.544225
Y Coordinate = 11.628356
summation of angles in degrees = 150.000000
>> |
```

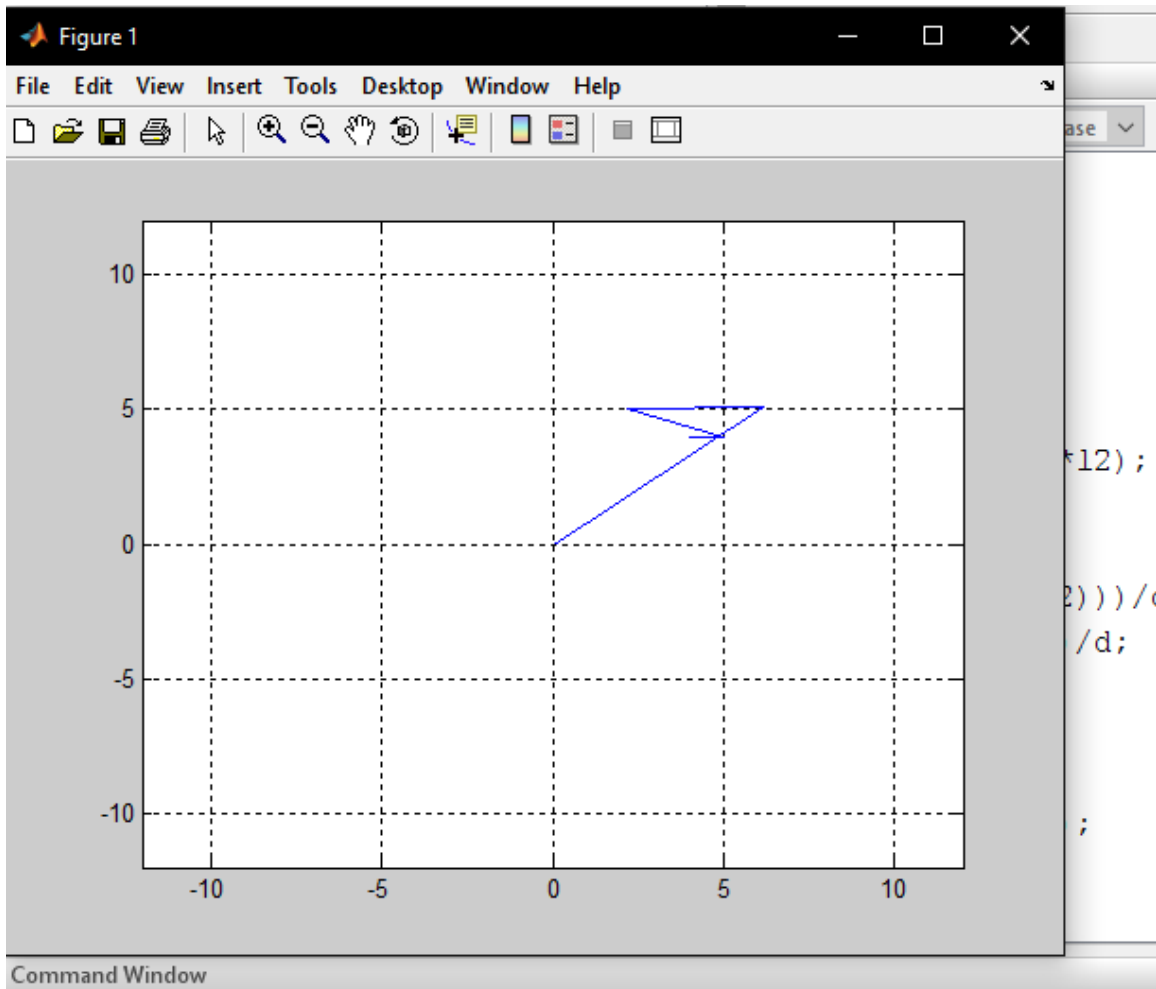
For a 3-link manipulator we have to enter the 1st, 2nd and 3rd arm lengths, 1st, 2nd and 3rd link angles and the system gives us x and y coordinates for the end effector

```
Command Window
File Edit Debug Desktop Window Help
For 2 link manipulator enter 1, for 3 link manipulator enter 2:
Enter the first arm length here:8
Enter the second arm length here:4
Enter the third arm length here:3
To calculate DKPM press 1, if you want to calculate IKPM press 2:2
Enter the x coordinate here:2.544225
Enter the y coordinate here:11.628356
Enter the phi in degrees here:150
First Arm Angle =50.00001
Second Arm Angle =39.99998
Third Arm Angle =60.00001
>> |
```

Here we calculate the IKPM by entering x, y and summation of arm angles to the system and it gives us 1st, 2nd and 3rd arm angles



here for a 2 link and 3 link manipulator robot arms we give the system the initial and final point we want to move; robot arm lengths and it gives us an animated graph showing the movement of the robot



```
Enter 2 for 2 link manipulator or 3 for 3 link manipulator:3
Enter coordinates of initial point:[4 4]
Enter coordinates of final point:[5 4]
Enter the first arm length here:8
Enter the second arm length here:4
Enter the third arm length here:3
Enter the phi coordinate here:700
>>
```