COMP4421 (Fall 2019)

Assignment #2

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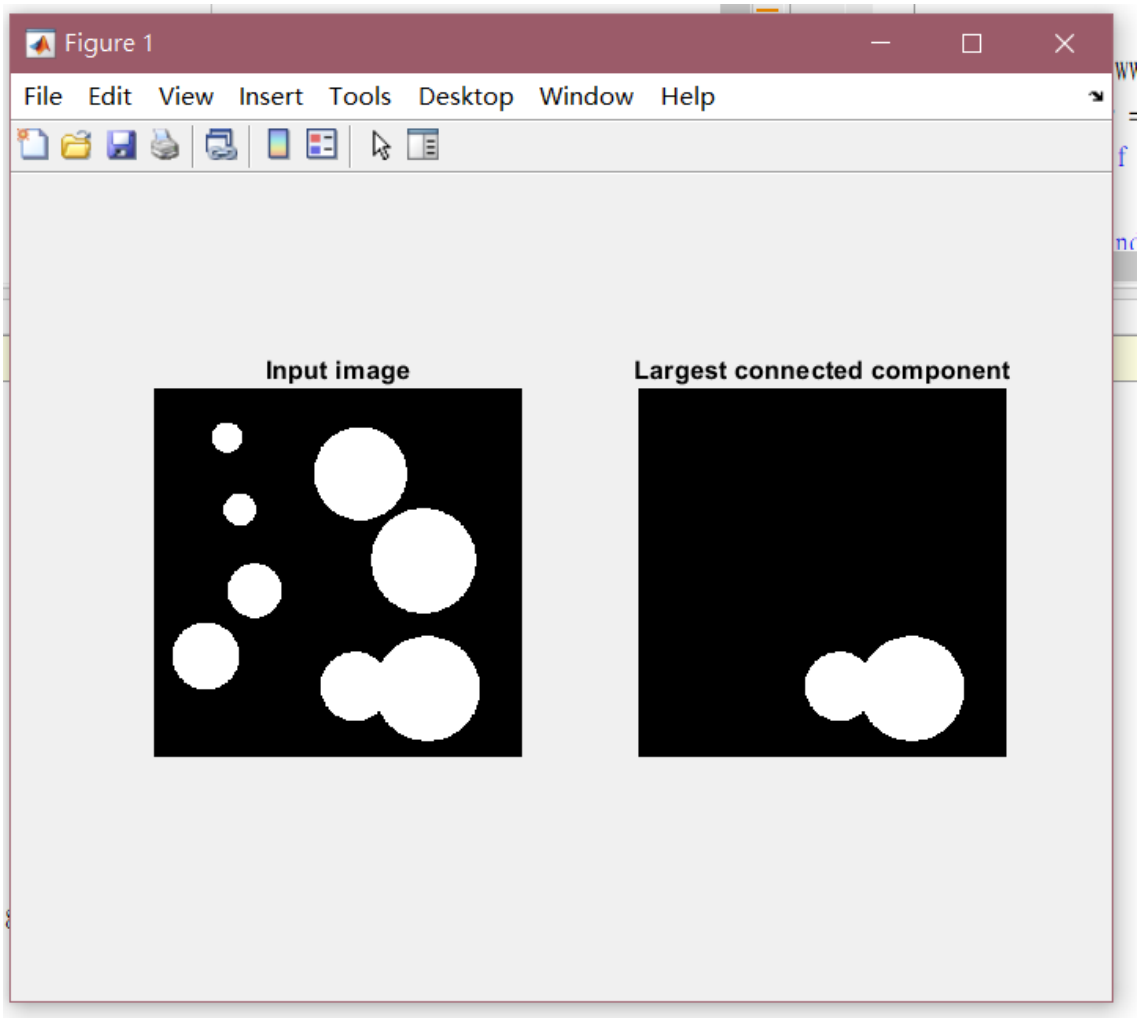
I. Programming Tasks

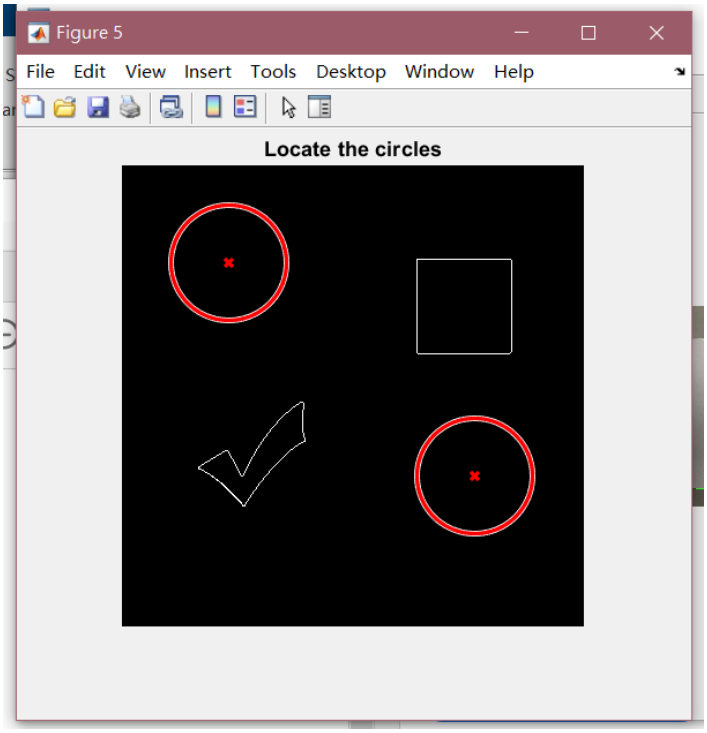
1) Connected Components

a) The Image of the largest connected component



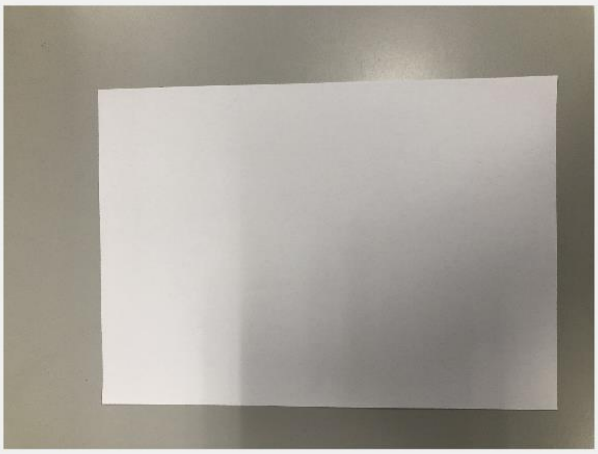
2) Hough Transform for Synthetic Circles

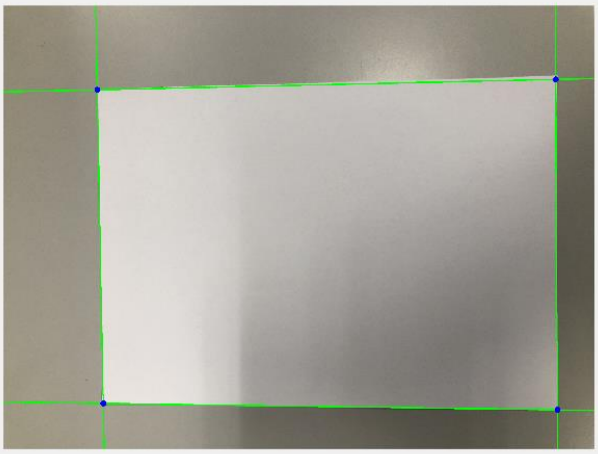
a) The scree-shot of the detected circles



3) Hough Transform for Practical Segments

a) The screen-shot of line functions and the coordinates of corner points & the result image





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The function of the line 0, is: y = 0.013964 * x + 2704
The function of the line 1, is: y = -0.022693 * x + 590
The function of the line 2, is: y = 52.0807 * x + -32811
The function of the line 3, is: y = 190.9842 * x + -719246
The Intersection points are: (682.1057, 2713.5246) (3780.4323, 2756.7882) (641.0526, 575.4525) (3768.6391, 504.4776)
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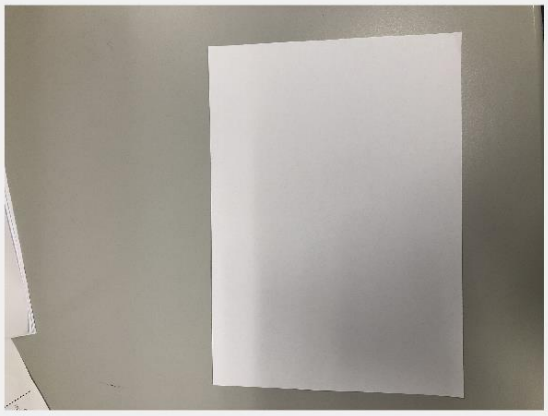
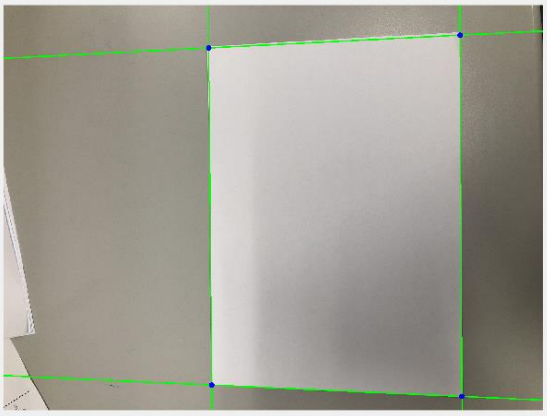
b) The screen-shot of line functions and the coordinates of corner points & the result image





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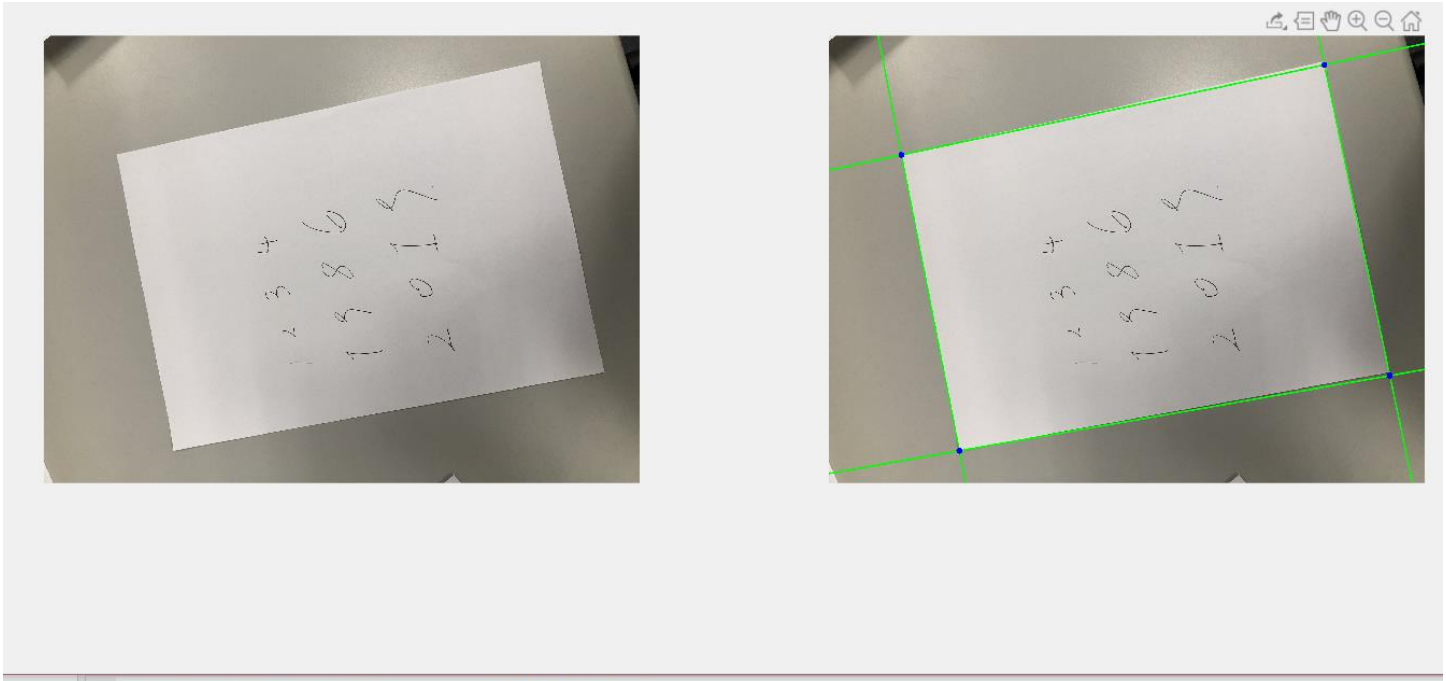
The function of the line 0, is: y = 190.9842 * x + -651638
The function of the line 1, is: y = 114.5887 * x + -175550
The function of the line 2, is: y = -0.050658 * x + 398
The function of the line 3, is: y = 0.04541 * x + 2766
The Intersection points are: (3413.1784, 225.0958) (3427.2975, 2921.6327) (1534.7964, 320.2506) (1556.7571, 2836.6919)
```

c) The screen-shot of line functions and the coordinates of corner points & the result image



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The function of the line 0, is: y = -0.17453 * x + 2961
The function of the line 1, is: y = -0.21256 * x + 911
The function of the line 2, is: y = 5.097 * x + -1697
The function of the line 3, is: y = 4.7453 * x + -15717
The Intersection points are: (883.6076, 2806.7858) (3796.4433, 2298.4146) (491.1859, 806.5952) (3353.8416, 198.119)
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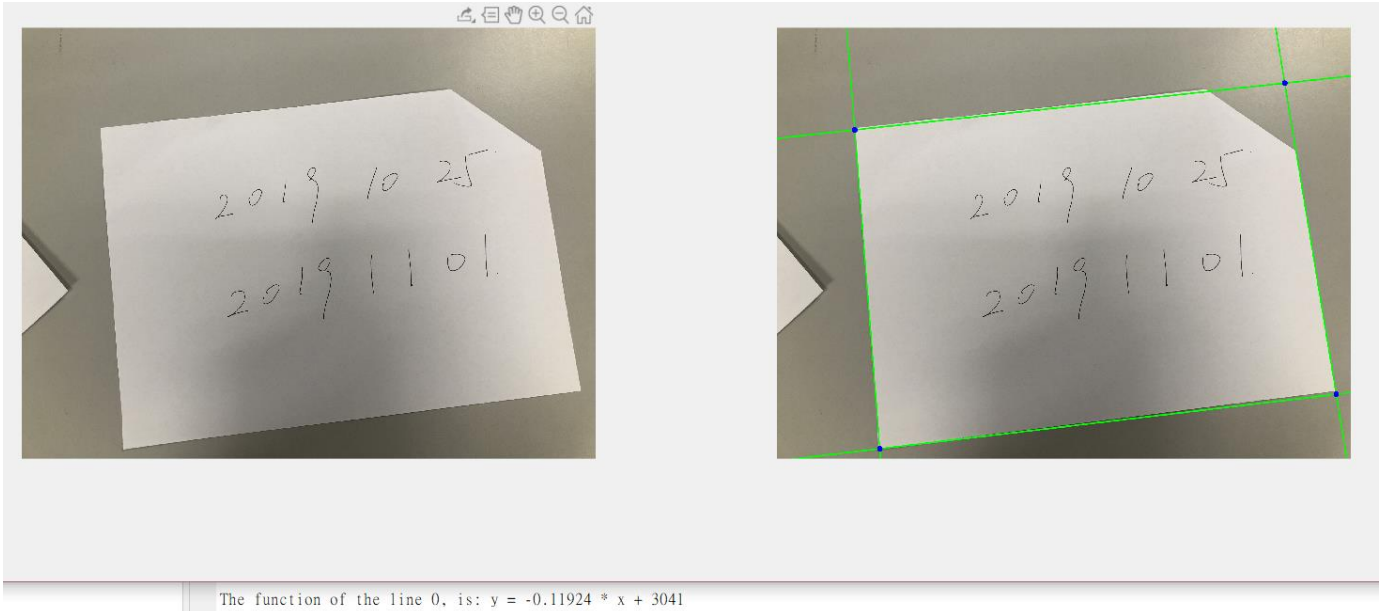
d) The screen-shot of line functions and the coordinates of corner points & the result image



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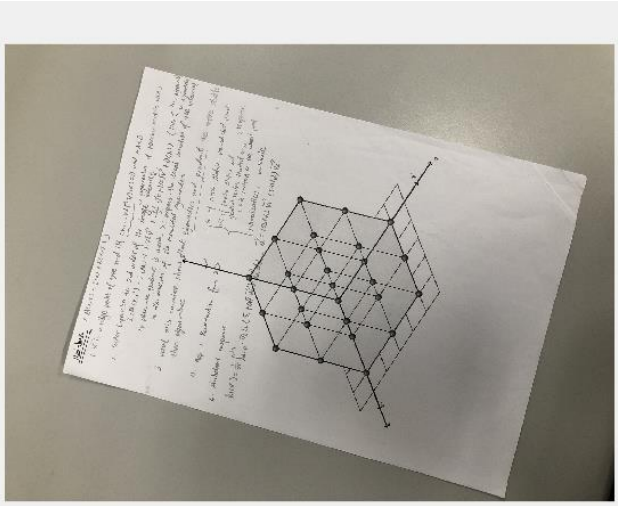
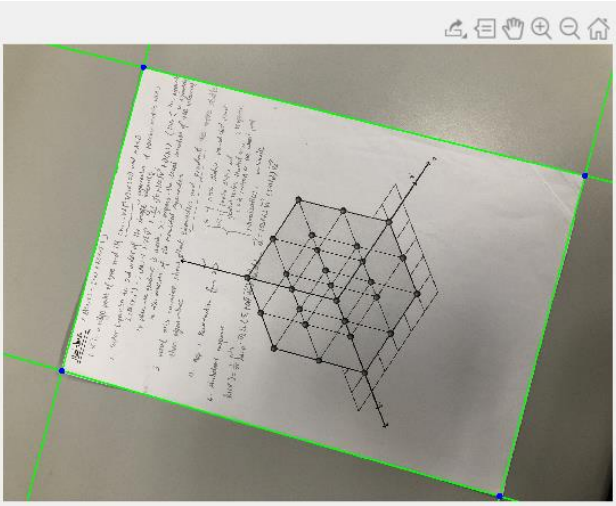
The function of the line 0, is: y = -0.11924 * x + 3041
The function of the line 1, is: y = -0.10863 * x + 777
The function of the line 2, is: y = 6.0405 * x + -21166
The function of the line 3, is: y = 12.7062 * x + -6239
The Intersection points are: (3929.8653, 2572.3919) (723.5615, 2954.7205) (3568.4635, 389.3408) (547.4903, 717.5235)
```

e) The screen-shot of line functions and the coordinates of corner points & the result image





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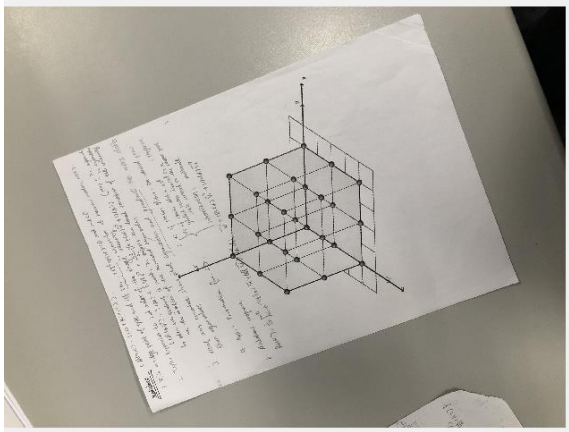
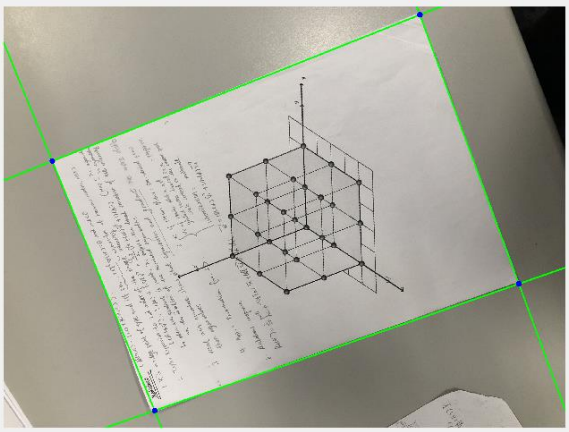
The function of the line 0, is: y = 0.28675 * x + 2049
The function of the line 1, is: y = 0.24562 * x + -75
The function of the line 2, is: y = -3.7321 * x + 3620
The function of the line 3, is: y = -3.7583 * x + 15338
The Intersection points are: (390.9131, 2161.0925) (3285.2729, 2991.0368) (928.9348, 153.1683) (3849.4969, 870.5271)
```

f) The screen-shot of line functions and the coordinates of corner points & the result image





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The function of the line 0, is: y = -0.34824 * x + 3280
The function of the line 1, is: y = -0.39795 * x + 1250
The function of the line 2, is: y = 2.7179 * x + -8061
The function of the line 3, is: y = 2.4383 * x + 258
The Intersection points are: (3698.7666, 1991.9532) (1084.519, 2902.3305) (2988.2517, 60.8302) (349.7637, 1110.8121)
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