TC 1

```
(base) C:\Users\Taufik\Desktop\seleksi-lab\IRK\SudokuSolver\src>python main.py
masukkan pilihan input (1: text file, 2: image): 1
masukkan nama file input ('<name>.txt'): tc1
board awal:
[-1, 2, -1, -1, -1, -1, -1, -1, -1]
[-1, -1, -1, 6, -1, -1, -1, -1, 3]
[-1, 7, 4, -1, 8, -1, -1, -1, -1]
[-1, -1, -1, -1, -1, 3, -1, -1, 2]
[-1, 8, -1, -1, 4, -1, -1, 1, -1]
[6, -1, -1, 5, -1, -1, -1, -1, -1]
[-1, -1, -1, -1, 1, -1, 7, 8, -1]
[5, -1, -1, -1, -1, 9, -1, -1, -1]
[-1, -1, -1, -1, -1, -1, -1, 4, -1]

solved in 0.9013931751251221 secs
1 2 6 | 4 3 7 | 9 5 8
8 9 5 | 6 2 1 | 4 7 3
3 7 4 | 9 8 5 | 1 2 6
- - - - - - - - - - -
4 5 7 | 1 9 3 | 8 6 2
9 8 3 | 2 4 6 | 5 1 7
6 1 2 | 5 7 8 | 3 9 4
- - - - - - - - - - -
2 6 9 | 3 1 4 | 7 8 5
5 4 8 | 7 6 9 | 2 3 1
7 3 1 | 8 5 2 | 6 4 9

Letak angka 5:
( 1 , 8 )
( 2 , 3 )
( 3 , 6 )
( 4 , 2 )
( 5 , 7 )
( 6 , 4 )
( 7 , 9 )
( 8 , 1 )
( 9 , 5 )
```

TC 2

```
(base) C:\Users\Taufik\Desktop\seleksi-lab\IRK\SudokuSolver\src>python main.py
masukkan pilihan input (1: text file, 2: image): 1
masukkan nama file input ('<name>.txt'): tc2
board awal:
[2, -1, -1, 3, -1, -1, -1, -1, -1]
[8, -1, 4, -1, 6, 2, -1, -1, 3]
[-1, 1, 3, 8, -1, -1, 2, -1, -1]
[-1, -1, -1, -1, 2, -1, 3, 9, -1]
[5, -1, 7, -1, -1, -1, 6, 2, 1]
[-1, 3, 2, -1, -1, 6, -1, -1, -1]
[-1, 2, -1, -1, -1, 9, 1, 4, -1]
[6, -1, 1, 2, 5, -1, 8, -1, 9]
[-1, -1, -1, -1, -1, 1, -1, -1, 2]

solved in 0.044003963470458984 secs
2 7 6 | 3 1 4 | 9 5 8
8 5 4 | 9 6 2 | 7 1 3
9 1 3 | 8 7 5 | 2 6 4
- - - - - - - - - - -
4 6 8 | 1 2 7 | 3 9 5
5 9 7 | 4 3 8 | 6 2 1
1 3 2 | 5 9 6 | 4 8 7
- - - - - - - - - - -
3 2 5 | 7 8 9 | 1 4 6
6 4 1 | 2 5 3 | 8 7 9
7 8 9 | 6 4 1 | 5 3 2

Letak angka 5:
( 1 , 8 )
( 2 , 2 )
( 3 , 6 )
( 4 , 9 )
( 5 , 1 )
( 6 , 4 )
( 7 , 3 )
( 8 , 5 )
( 9 , 7 )
```

TC 3

```
(base) C:\Users\Taufik\Desktop\seleksi-lab\IRK\SudokuSolver\src>python main.py
masukkan pilihan input (1: text file, 2: image): 1
masukkan nama file input ('<name>.txt'): tc3
board awal:
[-1, -1, -1, 2, 6, -1, 7, -1, 1]
[6, 8, -1, -1, 7, -1, -1, 9, -1]
[1, 9, -1, -1, -1, 4, 5, -1, -1]
[8, 2, -1, 1, -1, -1, -1, 4, -1]
[-1, -1, 4, 6, -1, 2, 9, -1, -1]
[-1, 5, -1, -1, -1, 3, -1, 2, 8]
[-1, -1, 9, 3, -1, -1, -1, 7, 4]
[-1, 4, -1, -1, 5, -1, -1, 3, 6]
[7, -1, 3, -1, 1, 8, -1, -1, -1]

solved in 0.0 secs
4 3 5 | 2 6 9 | 7 8 1
6 8 2 | 5 7 1 | 4 9 3
1 9 7 | 8 3 4 | 5 6 2
- - - - - - - - - - -
8 2 6 | 1 9 5 | 3 4 7
3 7 4 | 6 8 2 | 9 1 5
9 5 1 | 7 4 3 | 6 2 8
- - - - - - - - - - -
5 1 9 | 3 2 6 | 8 7 4
2 4 8 | 9 5 7 | 1 3 6
7 6 3 | 4 1 8 | 2 5 9

Letak angka 5:
( 1 , 3 )
( 2 , 4 )
( 3 , 7 )
( 4 , 6 )
( 5 , 9 )
( 6 , 2 )
( 7 , 1 )
( 8 , 5 )
( 9 , 8 )
```

TC 4

```
(base) C:\Users\Taufik\Desktop\seleksi-lab\IRK\SudokuSolver\src>python main.py
masukkan pilihan input (1: text file, 2: image): 1
masukkan nama file input ('<name>.txt'): tc4
board awal:
[-1, -1, -1, 6, -1, -1, 4, -1, -1]
[7, -1, -1, -1, -1, 3, 6, -1, -1]
[-1, -1, -1, -1, 9, 1, -1, 8, -1]
[-1, -1, -1, -1, -1, -1, -1, -1, -1]
[-1, 5, -1, 1, 8, -1, -1, -1, 3]
[-1, -1, -1, 3, -1, 6, -1, 4, 5]
[-1, 4, -1, 2, -1, -1, -1, 6, -1]
[9, -1, 3, -1, -1, -1, -1, -1, -1]
[-1, 2, -1, -1, -1, -1, 1, -1, -1]

solved in 8.261250019073486 secs
5 8 1 | 6 7 2 | 4 3 9
7 9 2 | 8 4 3 | 6 5 1
3 6 4 | 5 9 1 | 7 8 2
- - - - - - - - - - -
4 3 8 | 9 5 7 | 2 1 6
2 5 6 | 1 8 4 | 9 7 3
1 7 9 | 3 2 6 | 8 4 5
- - - - - - - - - - -
8 4 5 | 2 1 9 | 3 6 7
9 1 3 | 7 6 8 | 5 2 4
6 2 7 | 4 3 5 | 1 9 8

Letak angka 5:
( 1 , 1 )
( 2 , 8 )
( 3 , 4 )
( 4 , 5 )
( 5 , 2 )
( 6 , 9 )
( 7 , 3 )
( 8 , 7 )
( 9 , 6 )
```

IMAGE 1

```
masukkan pilihan input (1: text file, 2: image): 2
masukkan nama file image ('<nama>.png'): image1
[['', '', '', '2', '6', '', '7', '', '1'], ['6', '8', '', '', '7', '', '', '9', ''], ['1', '9', '', '',
'', '4', '5', '', ''], ['8', '2', '', '1', '', '', '', '4', ''], ['', '', '4', '6', '', '2', '9', '', ''
], ['', '5', '', '', '', '3', '', '2', '8'], ['', '', '9', '3', '', '', '', '7', '4'], ['', '4', '', '',
'5', '', '', '3', '6'], ['7', '', '3', '', '1', '8', '', '', '']]
board awal:
[-1, -1, -1, 2, 6, -1, 7, -1, 1]
[6, 8, -1, -1, 7, -1, -1, 9, -1]
[1, 9, -1, -1, -1, 4, 5, -1, -1]
[8, 2, -1, 1, -1, -1, -1, 4, -1]
[-1, -1, 4, 6, -1, 2, 9, -1, -1]
[-1, 5, -1, -1, -1, 3, -1, 2, 8]
[-1, -1, 9, 3, -1, -1, -1, 7, 4]
[-1, 4, -1, -1, 5, -1, -1, 3, 6]
[7, -1, 3, -1, 1, 8, -1, -1, -1]


solved in 0.0 secs
4 3 5 | 2 6 9 | 7 8 1
6 8 2 | 5 7 1 | 4 9 3
1 9 7 | 8 3 4 | 5 6 2
- - - - - - - - - - -
8 2 6 | 1 9 5 | 3 4 7
3 7 4 | 6 8 2 | 9 1 5
9 5 1 | 7 4 3 | 6 2 8
- - - - - - - - - - -
5 1 9 | 3 2 6 | 8 7 4
2 4 8 | 9 5 7 | 1 3 6
7 6 3 | 4 1 8 | 2 5 9

Letak angka 5:
( 1 , 3 )
( 2 , 4 )
( 3 , 7 )
( 4 , 6 )
( 5 , 9 )
( 6 , 2 )
( 7 , 1 )
( 8 , 5 )
( 9 , 8 )
```

IMAGE 2

```
(base) C:\Users\Taufik\Desktop\seleksi-lab\IRK\SudokuSolver\src>python main.py
masukkan pilihan input (1: text file, 2: image): 2
masukkan nama file image ('<nama>.png'): image2
[['', '', '', '6', '', '', '4', '', ''], ['7', '', '', '', '', '3', '6', '', ''], ['', '', '', '', '9',
'1', '', '8', ''], ['', '', '', '', '', '', '', '', ''], ['', '5', '', '1', '8', '', '', '', '3'], ['',
'', '', '3', '', '6', '', '4', '5'], ['', '4', '', '2', '', '', '', '6', ''], ['9', '', '3', '', '', '',
'', '', ''], ['', '2', '', '', '', '', '1', '', '']]
board awal:
[-1, -1, -1, 6, -1, -1, 4, -1, -1]
[7, -1, -1, -1, -1, 3, 6, -1, -1]
[-1, -1, -1, -1, 9, 1, -1, 8, -1]
[-1, -1, -1, -1, -1, -1, -1, -1, -1]
[-1, 5, -1, 1, 8, -1, -1, -1, 3]
[-1, -1, -1, 3, -1, 6, -1, 4, 5]
[-1, 4, -1, 2, -1, -1, -1, 6, -1]
[9, -1, 3, -1, -1, -1, -1, -1, -1]
[-1, 2, -1, -1, -1, -1, 1, -1, -1]


solved in 8.341511011123657 secs
5 8 1 | 6 7 2 | 4 3 9
7 9 2 | 8 4 3 | 6 5 1
3 6 4 | 5 9 1 | 7 8 2
- - - - - - - - - -
4 3 8 | 9 5 7 | 2 1 6
2 5 6 | 1 8 4 | 9 7 3
1 7 9 | 3 2 6 | 8 4 5
- - - - - - - - - -
8 4 5 | 2 1 9 | 3 6 7
9 1 3 | 7 6 8 | 5 2 4
6 2 7 | 4 3 5 | 1 9 8

Letak angka 5:
( 1 , 1 )
( 2 , 8 )
( 3 , 4 )
( 4 , 5 )
( 5 , 2 )
( 6 , 9 )
( 7 , 3 )
( 8 , 7 )
( 9 , 6 )
```

IMAGE 3

```
(base) C:\Users\Taufik\Desktop\seleksi-lab\IRK\SudokuSolver\src>python main.py
masukkan pilihan input (1: text file, 2: image): 2
masukkan nama file image ('<nama>.png'): image3
[['2', '', '', '3', '', '', '', '', ''], ['8', '', '4', '', '6', '2', '', '', '3'], ['', '1', '3', '8',
'', '', '2', '', ''], ['', '', '', '', '2', '', '3', '9', ''], ['5', '', '7', '', '', '', '6', '2', '1']
, ['', '3', '2', '', '', '6', '', '', ''], ['', '2', '', '', '', '9', '1', '4', ''], ['6', '', '1', '2',
'5', '', '8', '', '9'], ['', '', '', '', '', '1', '', '', '2']]
board awal:
[2, -1, -1, 3, -1, -1, -1, -1, -1]
[8, -1, 4, -1, 6, 2, -1, -1, 3]
[-1, 1, 3, 8, -1, -1, 2, -1, -1]
[-1, -1, -1, -1, 2, -1, 3, 9, -1]
[5, -1, 7, -1, -1, -1, 6, 2, 1]
[-1, 3, 2, -1, -1, 6, -1, -1, -1]
[-1, 2, -1, -1, -1, 9, 1, 4, -1]
[6, -1, 1, 2, 5, -1, 8, -1, 9]
[-1, -1, -1, -1, -1, 1, -1, -1, 2]

solved in 0.03712940216064453 secs
2 7 6 | 3 1 4 | 9 5 8
8 5 4 | 9 6 2 | 7 1 3
9 1 3 | 8 7 5 | 2 6 4
- - - - - - - - - - -
4 6 8 | 1 2 7 | 3 9 5
5 9 7 | 4 3 8 | 6 2 1
1 3 2 | 5 9 6 | 4 8 7
- - - - - - - - - - -
3 2 5 | 7 8 9 | 1 4 6
6 4 1 | 2 5 3 | 8 7 9
7 8 9 | 6 4 1 | 5 3 2

Letak angka 5:
( 1 , 8 )
( 2 , 2 )
( 3 , 6 )
( 4 , 9 )
( 5 , 1 )
( 6 , 4 )
( 7 , 3 )
( 8 , 5 )
( 9 , 7 )
```

IMAGE 4

```
(base) C:\Users\Taufik\Desktop\seleksi-lab\IRK\SudokuSolver\src>python main.py
masukkan pilihan input (1: text file, 2: image): 2
masukkan nama file image ('<nama>.png'): image4
[['', '2', '', '', '', '', '', '', ''], ['', '', '', '6', '', '', '', '', '3'], ['', '7', '4', '', '8',
'', '', '', ''], ['', '', '', '', '', '3', '', '', '2'], ['', '8', '', '', '4', '', '', '1', ''], ['6',
'', '', '5', '', '', '', '', ''], ['', '', '', '', '1', '', '7', '8', ''], ['5', '', '', '', '', '9', ''
, '', ''], ['', '', '', '', '', '', '', '4', '']]
board awal:
[-1, 2, -1, -1, -1, -1, -1, -1, -1]
[-1, -1, -1, 6, -1, -1, -1, -1, 3]
[-1, 7, 4, -1, 8, -1, -1, -1, -1]
[-1, -1, -1, -1, -1, 3, -1, -1, 2]
[-1, 8, -1, -1, 4, -1, -1, 1, -1]
[6, -1, -1, 5, -1, -1, -1, -1, -1]
[-1, -1, -1, -1, 1, -1, 7, 8, -1]
[5, -1, -1, -1, -1, 9, -1, -1, -1]
[-1, -1, -1, -1, -1, -1, -1, 4, -1]

solved in 0.881096601486206 secs
1 2 6 | 4 3 7 | 9 5 8
8 9 5 | 6 2 1 | 4 7 3
3 7 4 | 9 8 5 | 1 2 6
- - - - - - - - - -
4 5 7 | 1 9 3 | 8 6 2
9 8 3 | 2 4 6 | 5 1 7
6 1 2 | 5 7 8 | 3 9 4
- - - - - - - - - -
2 6 9 | 3 1 4 | 7 8 5
5 4 8 | 7 6 9 | 2 3 1
7 3 1 | 8 5 2 | 6 4 9

Letak angka 5:
( 1 , 8 )
( 2 , 3 )
( 3 , 6 )
( 4 , 2 )
( 5 , 7 )
( 6 , 4 )
( 7 , 9 )
( 8 , 1 )
( 9 , 5 )
```