

Task 1

In [123]: ▶ `%run array1`
`%run matrix`

In [124]: ▶ `a=Matrix(2,2)`
`b=Matrix(2,2)`

`setitem(a)`
`setitem(b)`

Enter value 0, 0=1
Enter value 0, 1=2

Enter value 1, 0=3
Enter value 1, 1=4

Enter value 0, 0=5
Enter value 0, 1=4

Enter value 1, 0=3
Enter value 1, 1=2

In [125]: ▶ `display(a)`
`print()`
`display(b)`

1 2
3 4

5 4
3 2

In [126]: ► display(a.inverse())

```
2.0 -1.0  
-1.5 0.5
```

In [127]: ► display(a.transpose())
print()
display(b.transpose())

```
1 3  
2 4
```

```
5 3  
4 2
```

In [128]: ► display(a+b)
print()
display(a-b)
print()
display(a*b)

```
6 6  
6 6
```

```
-4 -2  
0 2
```

```
11 8  
27 20
```

```
In [129]: ▶ a.scaleBy(2)  
display(a)
```

```
2 4  
6 8
```

Task 2

```
In [122]: ▶ %run life
```

```
In [130]: ► initial_config = [(1, 2), (2, 1), (2, 2), (2, 3)]

GRID_WIDTH = int(input('Enter Grid Width: '))

GRID_HEIGHT = int(input('Enter Grid Height: '))

NUM_GENS = int(input('Enter Number of Generations: '))

grid = Life_Grid(GRID_WIDTH, GRID_HEIGHT)

def game():

    grid = Life_Grid(GRID_WIDTH, GRID_HEIGHT)
    grid.configure(INIT_CONFIG)

    draw(grid)
    for _ in range(NUM_GENS):
        evolve(grid)
        draw(grid)

def evolve(grid):
    livecells = []
    for row in range(grid.rows):
        for col in range(grid.cols):
            neighbors = grid.numLiveNeighbors(row, col)

            if (neighbors == 2 and grid.isLiveCell(row, col)) or neighbors == 3:
                livecells.append((row, col))
    grid.configure(livecells)
    print(" ")

def draw(grid):
    for i in range(grid.numRows()):
        print('')
```

```
for j in range(grid.numCols()):  
    print(grid[i, j], end=' ')
```

```
def main():  
    game()
```

Enter Grid Width: 8

Enter Grid Height: 8

Enter Number of Generations: 3

```
. . . . . . . .  
. . @ . . . . .  
. @ @ @ . . . .  
. . . . . . . .  
. . . . . . . .  
. . . . . . . .  
. . . . . . . .  
. . . . . . . .
```

```
. . . . . . . .  
. @ @ @ . . . .  
. @ @ @ . . . .  
. . @ . . . . .  
. . . . . . . .  
. . . . . . . .  
. . . . . . . .  
. . . . . . . .
```

```
. . @ . . . . .  
. @ . @ . . . .  
. . . . . . . .  
. @ @ @ . . . .  
. . . . . . . .  
. . . . . . . .  
. . . . . . . .  
. . . . . . . .
```

```
. . @ . . . . .
```

. . @
. @ . @
. . @
. . @
.
.
.

