Statistics library

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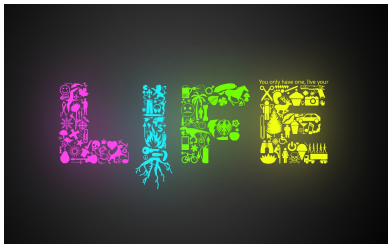


Figure 1: Game of Life

In this report I would like to show the game of life that my team created in class. The program consists of functions and all of them are related to each other. In output we can see a well-run game.

PYTHON CODE

```
#Game Of Live

import random
from graphics import *
from Tkinter import *
import tkMessageBox

#------------------------------------------------------------------------

wMain = Tk()

font = "times", 25, "bold"
lTitle = Label(wMain, text = "Conway's Game of Life", font = font)
lTitle.place(x = 120, y = 30)

font2 = "times", 20
lOption = Label(wMain, text = "Number of Starting Cells", font = font2)
lOption.place(x = 145, y = 80)

font3 = "times", 15
lOption2 = Label(wMain, text = "1/", font = font3)
lOption2.place(x = 155, y = 110)

eEntry = Entry(wMain, bd = 2)
eEntry.place(x = 175, y = 110)

#------------------------------------------------------------------------

def gameCallBack(entry):

    #wMain.destroy()

    p = []
    alives = []
    size = 15

    game = GraphWin("The Game Of Life", 400, 400)
    game.setCoords(-.2, 0, size, size + .2)

    def startUpCallBack():

        live = 1.0/int(entry) * (size**2)

        for i in range(int(live)):
            x = int(random.uniform(0, size))
            y = int(random.uniform(0, size))

            alives.append([x, y])
```

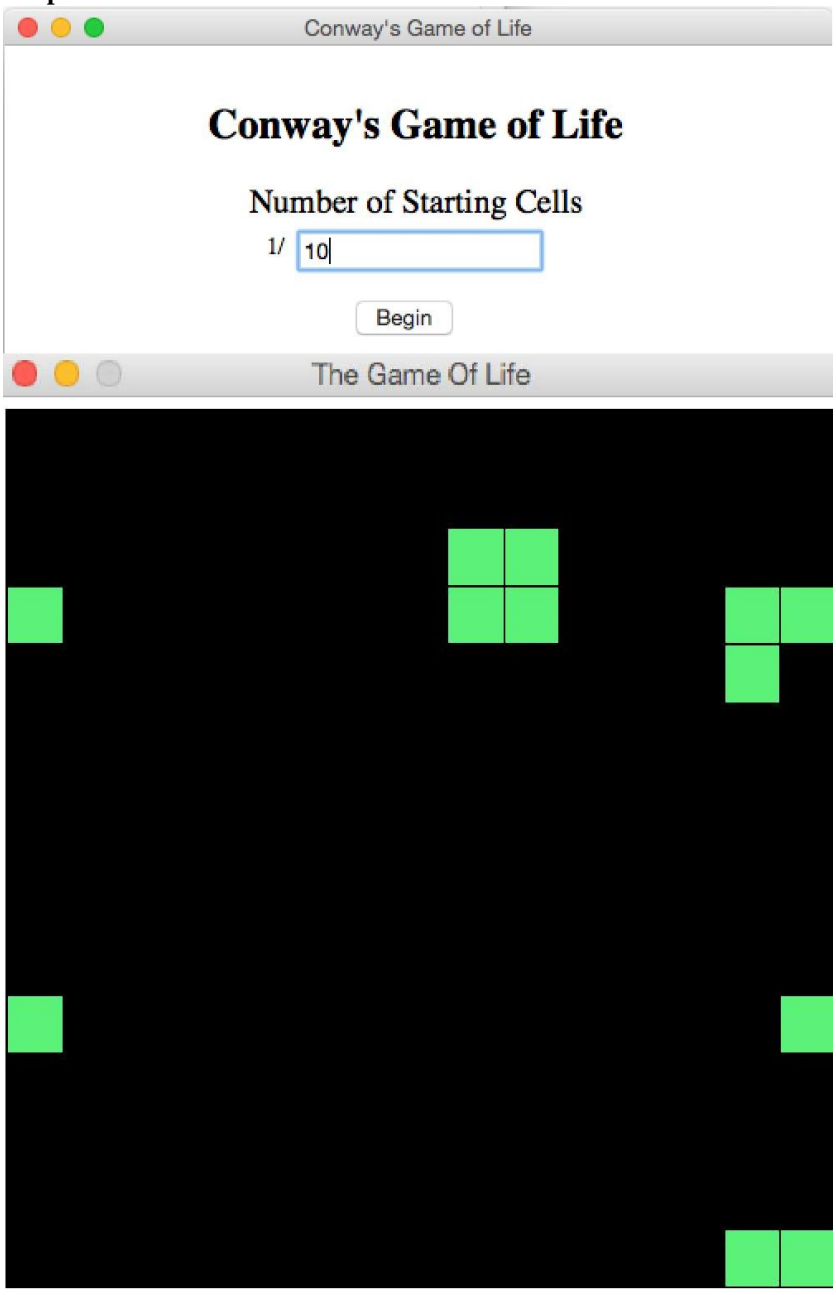
```
    return alives

def firstLoadCallBack():

    startUpCallBack()

    for i in range(size):
        a = []
        for r in range(size):
            a.append(0)
        p.append(a)


    for i in range(size):
        for r in range(size):
            for q in range(len(alives)):
                if alives[q][0] == r:
                    if alives[q][1] == i:
                        p[i][r] = 1
    return p


firstLoadCallBack()


def loaderCallBack(p):

    green = color_rgb(82, 245, 103)
    red = color_rgb(247, 34, 49)
    black = color_rgb(0, 0, 0)

    while True:

        for i in range(size):
            for r in range(size):
                point = Rectangle(Point(r, i), Point(r + 1, i + 1))
                if p[i][r] == 0:
                    point.setFill(black)
                if p[i][r] == 1:
                    point.setFill(green)
                point.draw(game)

        x = []

        for i in range(size):
            g = []
            for r in range(size):
                g.append(p[i][r])
            x.append(g)

        for i in range(size):
            for r in range(size):

                ss = 0

                if not i == (size - 1) and not i == 0:
                    if not r == (size - 1) and not r == 0:

                        ss = ss + p[i + 1][r - 1]
                        ss = ss + p[i + 1][r]
```

```
        ss = ss + p[i + 1][r + 1]
        ss = ss + p[i][r - 1]
        ss = ss + p[i][r + 1]
        ss = ss + p[i - 1][r - 1]
        ss = ss + p[i - 1][r]
        ss = ss + p[i - 1][r + 1]

if i == (size - 1):
    if not r == (size - 1) and not r == 0:
        ss = ss + p[0][r - 1]
        ss = ss + p[0][r]
        ss = ss + p[0][r + 1]
        ss = ss + p[i][r - 1]
        ss = ss + p[i][r + 1]
        ss = ss + p[i - 1][r - 1]
        ss = ss + p[i - 1][r]
        ss = ss + p[i - 1][r + 1]

if i == (size - 1):
    if r == (size - 1):
        ss = ss + p[0][r - 1]
        ss = ss + p[0][r]
        ss = ss + p[0][0]
        ss = ss + p[i][r - 1]
        ss = ss + p[i][0]
        ss = ss + p[i - 1][r - 1]
        ss = ss + p[i - 1][r]
        ss = ss + p[i - 1][0]

if i == (size - 1):
    if r == 0:
        ss = ss + p[0][size - 1]
        ss = ss + p[0][r]
        ss = ss + p[0][r + 1]
        ss = ss + p[i][size - 1]
        ss = ss + p[i][r + 1]
        ss = ss + p[i - 1][size - 1]
        ss = ss + p[i - 1][r]
        ss = ss + p[i - 1][r + 1]
if i == 0:
    if not r == (size - 1) and not r == 0:
        ss = ss + p[i][r - 1]
        ss = ss + p[i][r]
        ss = ss + p[i][r + 1]
        ss = ss + p[i][r - 1]
        ss = ss + p[i][r + 1]
        ss = ss + p[size - 1][r - 1]
        ss = ss + p[size - 1][r]
        ss = ss + p[size - 1][r + 1]

if i == 0:
    if r == (size - 1):
        ss = ss + p[i][r - 1]
        ss = ss + p[i][r]
        ss = ss + p[i][0]
        ss = ss + p[i][r - 1]
        ss = ss + p[i][0]
        ss = ss + p[size - 1][r - 1]
        ss = ss + p[size - 1][r]
        ss = ss + p[size - 1][0]
```

```
                    if i == 0:
                        if r == 0:
                            ss = ss + p[i][size - 1]
                            ss = ss + p[i][r]
                            ss = ss + p[i][r + 1]
                            ss = ss + p[i][size - 1]
                            ss = ss + p[i][r + 1]
                            ss = ss + p[size - 1][size - 1]
                            ss = ss + p[size - 1][r]
                            ss = ss + p[size - 1][r + 1]

                    if not i == (size - 1) and not i == 0:
                        if r == (size - 1):
                            ss = ss + p[i][r - 1]
                            ss = ss + p[i][r]
                            ss = ss + p[i][0]
                            ss = ss + p[i][r - 1]
                            ss = ss + p[i][0]
                            ss = ss + p[i][r - 1]
                            ss = ss + p[i][r]
                            ss = ss + p[i][0]

                    if not i == (size - 1) and not i == 0:
                        if r == 0:
                            ss = ss + p[i][size - 1]
                            ss = ss + p[i][r]
                            ss = ss + p[i][r + 1]
                            ss = ss + p[i][size - 1]
                            ss = ss + p[i][r + 1]
                            ss = ss + p[i][size - 1]
                            ss = ss + p[i][r]
                            ss = ss + p[i][r + 1]

                    if p[i][r] == 1:
                        if ss < 2:
                            x[i][r] = 0
                        if ss > 3:
                            x[i][r] = 0
                        if not ss > 3 and not ss < 2:
                            x[i][r] = 1
                    if p[i][r] == 0:
                        if ss == 3:
                            x[i][r] = 1
                        if not ss == 3:
                            x[i][r] == 0

                    #print ss

                p = []

                for i in range(size):
                    g = []
                    for r in range(size):
                        g.append(x[i][r])
                    p.append(g)

        loaderCallBack(p)

    def startCallBack():
        gameCallBack(int(eEntry.get()))
```

```
bBegin = Button(wMain, text = "Begin", command = startCallBack)
bBegin.place(x = 210, y = 150)

wMain.minsize(width = 500, height = 210)
wMain.maxsize(width = 500, height = 210)
wMain.title("Conway's Game of Life")
wMain.mainloop()
```

Output:



The window with this output appeared. As you clearly see, it is a Gauss distribution