

# MultiWingSpan

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## BBC micro:bit Bit:Commander Lights Out

### Introduction

When I looked through the programs I had, thinking of which ones could do with some tidier input, the Lights Out puzzle game was one that I thought of quickly. See the other page for a brief explanation of the solution and a link to follow for more information.



### BBC Microbit

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```
from microbit import *
import random

x = 2
y = 2
tick = -1

grid = [
    [0,0,0,0,0],
    [0,0,0,0,0],
    [0,0,0,0,0],
    [0,0,0,0,0],
    [0,0,0,0,0]
]

# A 'move' in Lights Out
def Toggle(tx, ty):
    grid[tx][ty] ^= 1
    if tx>0:
        grid[tx-1][ty] ^= 1
    if tx<4:
        grid[tx+1][ty] ^= 1
    if ty>0:
        grid[tx][ty-1] ^= 1
    if ty<4:
        grid[tx][ty+1] ^= 1

def RandomGrid():
    for r in range(0,50):
        cx = random.randint(0,4)
        cy = random.randint(0,4)
        Toggle(cx, cy)

def DrawGame(t):
    img = Image('00000:*5)
    for cy in range(0,5):
        for cx in range(0,5):
            img.set_pixel(cx, cy, grid[cx][cy]*5)
    img.set_pixel(x, y, (t % 2)*9)
    return img

def CheckWin():
```

```
tot = 0
for cy in range(0,5):
    for cx in range(0,5):
        tot += grid[cx][cy]
if tot == 0:
    return True
else:
    return False

# set the board up for a game
RandomGrid()

while True:
    tick +=1
    if tick==2:
        tick = 0
    # check for movement
    dx,dy = pin1.read_analog(), pin2.read_analog()
    if dx > 850:
        x += 1
        sleep(200)
    if dx < 150:
        x -= 1
        sleep(200)
    if dy > 850:
        y -= 1
        sleep(200)
    if dy < 150:
        y += 1
        sleep(200)
    # keep on grid
    x = max(0, min(x, 4))
    y = max(0, min(y, 4))
    # check for button press
    if pin12.read_digital():
        Toggle(x, y)
        sleep(200)
    # update screen
    i = DrawGame(tick)
    display.show(i)
    if CheckWin():
        sleep(1000)
        for w in range(0,6):
            display.show(Image.HAPPY)
            sleep(500)
            display.clear()
            sleep(500)
        RandomGrid()
        x = 2
        y = 2
        i = DrawGame(tick)
    sleep(50)
```