



## Week 04 - Decision Making and Looping

≡ Memo	
≡ Week	4
≡ 課程單元	Python 基礎程式設計：決策與迴圈

### 學習目標

- Python 基礎程式設計：if else 決策 (Lesson 3)、for 迴圈 (Lesson 4)
- Snakify 範例解析：Lesson 3
- 本課程的 Python 作業樣板

### 參考資料

- Python 官方網站 (<https://www.python.org/>)
- Snakify - 線上學習網
- Thonny - Python IDE for beginners
- Zuvio - 大學師生互動平台

### 課程設計

#### Snakify 線上學習工具 Lesson 3 與 Lesson 4 原理說明

Snakify - Python 3 Interactive Course

All the programs in the first lesson were executed sequentially, line after line. No line could be skipped. Let's consider the following problem: for the given integer X determine its absolute value. If X>0 then the program should print the value X, otherwise it should print -

[https://snakify.org/en/lessons/if\\_then\\_else\\_conditions/](https://snakify.org/en/lessons/if_then_else_conditions/)

Step 19 of 31 [run](#) [step by step](#)

```

1- for i in range(3):
2-     for j in range(5):
3-         if j > i:
4-             break
5-         print(i, j)

```

← first    < back    forward >    last →

Output:

```

1 0 0
2 1 0

```

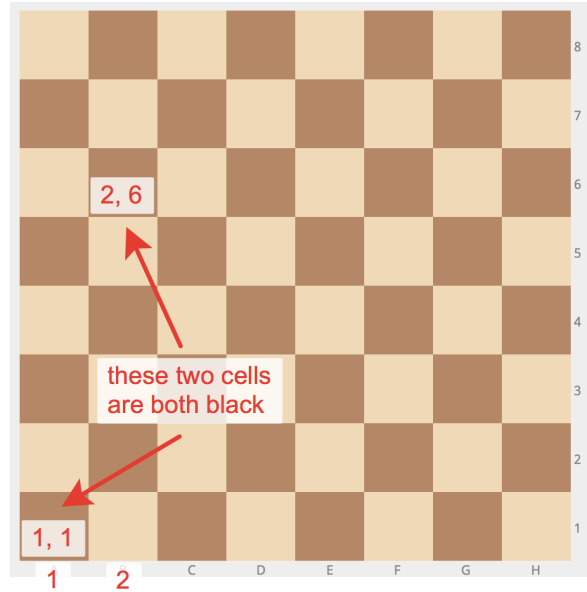
Global variables

i	2
j	2

#### Snakify 範例解析：Chess board - same color (Lesson 3)



## Statement



Source :

[https://snakify.org/en/lessons/if\\_then\\_else\\_conditions/problem:](https://snakify.org/en/lessons/if_then_else_conditions/problem:)

## Model solution

```

x1 = int(input())
y1 = int(input())
x2 = int(input())
y2 = int(input())

if (x1 + y1 + x2 + y2) % 2 == 0:
    print('YES')
else:
    print('NO')

```

```

x1 = int(input())
y1 = int(input())
x2 = int(input())
y2 = int(input())

if (x1%2==y1%2) and (x2%2==y2%2):
    print("YES")
elif (x1%2+y1%2)==1 and (x2%2+y2%2)==1:
    print("YES")
else:
    print("NO")

```

『程式』常常會有一種以上的寫法。



```

x1 = int(input())
y1 = int(input())
x2 = int(input())
y2 = int(input())

def color(x,y):
    if x%2==y%2:
        return 1
    return 0

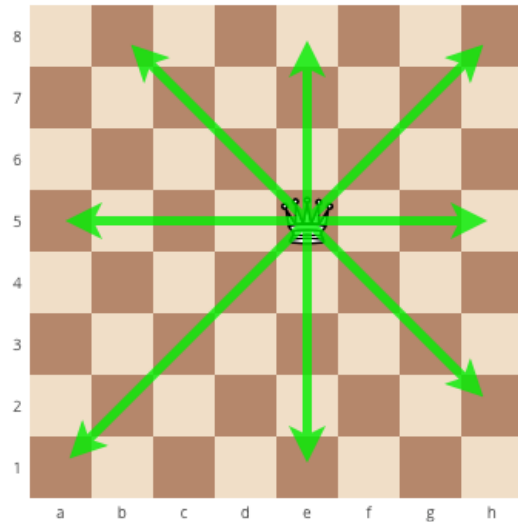
if color(x1,y1)==color(x2,y2):
    print("YES")
else:
    print("NO")

```

## Snakify 範例解析：Queen move (Lesson 3)



## Statement



Source :

[https://snakify.org/en/lessons/if\\_then\\_else\\_conditions/problem:](https://snakify.org/en/lessons/if_then_else_conditions/problem:)

```
x1 = int(input())
y1 = int(input())
x2 = int(input())
y2 = int(input())

if x1==x2 or y1==y2 or abs(x1-x2)==abs(y1-y2):
    print("YES")
else:
    print("NO")
```

### Snakify 範例解析：Chocolate bar (Lesson 3)

Source : [https://snakify.org/en/lessons/if\\_then\\_else\\_conditions/problems/chocolate/](https://snakify.org/en/lessons/if_then_else_conditions/problems/chocolate/)



Statement



```
n = int(input())
m = int(input())
k = int(input())

if n*m>k and (k%n==0 or k%m==0):
    print("YES")
```

```
else:
    print("NO")
```

## Python 基本樣板(Template)程式說明

```
#!/bin/python3

# 定義函數
def main():
    print("Hello, Python world!")

# 使用函數
main()
```

```
#!/bin/python3

# 定義『資料處理』函數
def doSomething(a,b):
    print(a+b)

# 定義『資料輸入』函數，每行『只』輸入一筆資料
def main():
    a = input()
    b = input()
    doSomething(a,b)

# 這個 Python 程式的『起始』執行點
main()
```

```
#!/bin/python3

# 定義『資料處理』函數
def doSomething(a,b):
    print(a+b)

# 定義『資料輸入』函數，每行『只』輸入一筆資料
def main():
    a = int(input())
    b = int(input())
    doSomething(a,b)

# 這個 Python 程式的起始執行點
main()
```

```
#!/bin/python3

# 定義『資料處理』函數
def doSomething(a,b):
    print(a+b)

# 定義『資料輸入』函數，在同一行輸入多筆資料
def main():
    a, b = input().split()
    doSomething(a,b)

# 這個 Python 程式的起始執行點
main()
```

```

#!/bin/python3

# 定義『資料處理』函數
def doSomething(a,b):
    print(a+b)

# 定義『資料輸入』函數，在同一行輸入多筆資料
def main():
    a, b = input().split()
    a = int(a)
    b = int(b)
    doSomething(a,b)

# 這個 Python 程式的起始執行點
main()

```

## Jupyter-Lab 筆記本 - Python 線上直譯器

### Project Jupyter

The Jupyter Notebook is a web-based interactive computing platform. The notebook combines live code, equations, narrative text, visualizations, interactive dashboards and other media.

 <https://jupyter.org/try>




## 課堂作業

Homework 01 - Snakify Python 程式問題練習。 **驗收期限：期中考前一週 (10/31)。**

- 請完成 Lesson 5 中的所有題目。
- 請務必先註冊且登入你的 Snakify 帳號。




[For teachers](#)
[Twitter](#)
[Full stack](#)

1. Input, print and numbers
2. Integer and float numbers
3. Conditions: if, then, else
4. For loop with range
5. Strings

## Lesson 5

# Strings

[Theory](#)
[Steps](#)
[Problems](#)