

# Homework 02

## Question 4

for MEG304301

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Q4 = *visualization* 請以 Q1 解法的程式為例, 取其重要部分  
(30 lines 左右), 以 "Python Tutor" (網站)  
為上機驗證:

① Python 的 list: 內部結構, 因 append 或其他  
函式產生的變動情況

② 各變數的內容重要化情況。

最終, 請截圖 (3 張或 1 min 的影片) 說明 (加上 md 文)  
如 (a) (b) 情景及心得。

## Key Part Code

```
import random

X_POS_LIMIT = 1000
Y_POS_LIMIT = 1000

deliverers_name = ["甲外送員", "乙外送員", "丙外送員"]
deliverers = list()

def genDeliveries(deliverers_name):
    for name in deliverers_name:
        deliverers.append({
            "name": name,
            "pos": {
                "x": random.randint(X_POS_LIMIT * -1, X_POS_LIMIT),
                "y": random.randint(Y_POS_LIMIT * -1, Y_POS_LIMIT)
            }
        })
```

genDeliveries(deliverers\_name)

## Results Screehsots

Python 3.6  
([known limitations](#))

```
1 import random
2
3 X_POS_LIMIT = 1000
4 Y_POS_LIMIT = 1000
5
6 deliverers_name = ["甲外送員", "乙外送員", "丙外送員"]
7 deliverers = list()
8 → def genDeliveries(deliverers_name):
9     for name in deliverers_name:
10         deliverers.append( {
11             "name": name,
12             "pos": {
13                 "x": random.randint(X_POS_LIMIT * -1, X_
14                 "y": random.randint(Y_POS_LIMIT * -1, Y_
15             }
16         } )
17 → genDeliveries(deliverers_name)
```

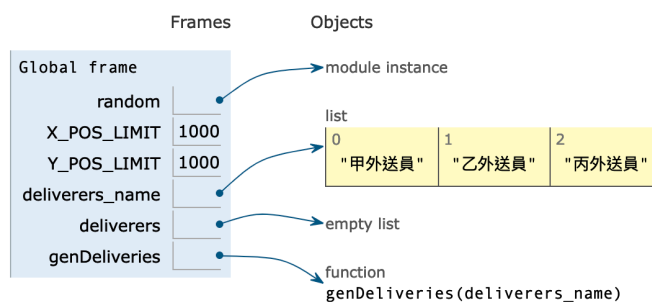
[Edit this code](#)

→ line that just executed  
→ next line to execute

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Step 7 of 25



Python 3.6  
([known limitations](#))

```
1 import random
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3 X_POS_LIMIT = 1000
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15             }
16         } )
17 genDeliveries(deliverers_name)
```

[Edit this code](#)

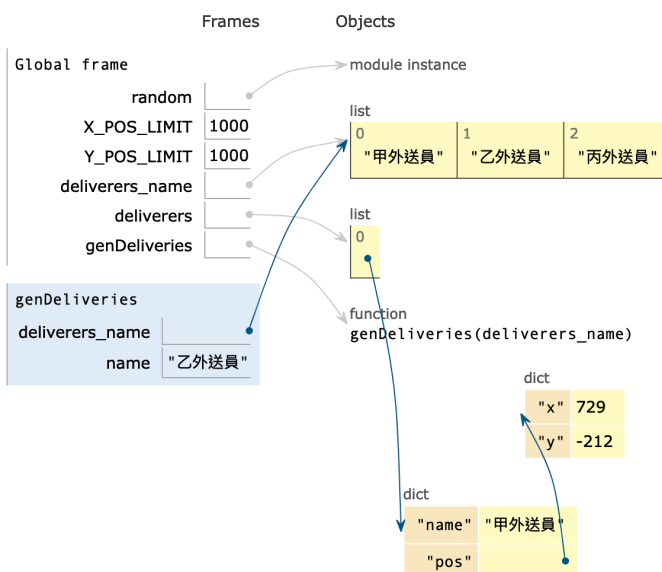
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Step 18 of 25

[Customize visualization](#)



Python 3.6  
([known limitations](#))

```

1 import random
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15             } )
16         } )
17 genDeliveries(deliverers_name)

```

[Edit this code](#)

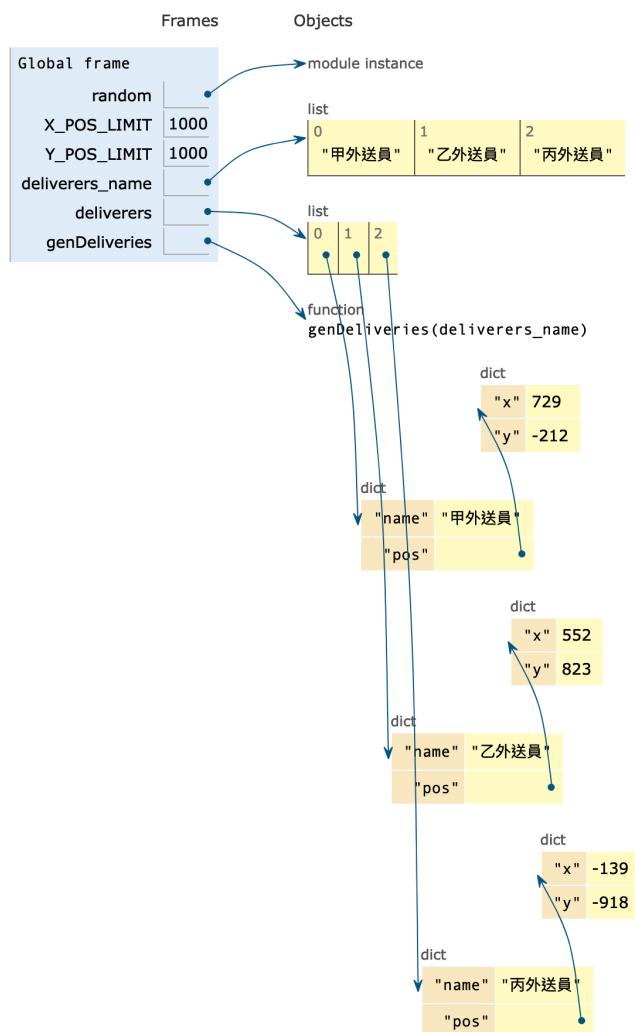
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Done running (25 steps)

[Customize visualization](#)



## 說明

可以看見，一開始先宣告`deliverers_name`陣列存放外送員名單，然後利用`genDeliveries()`函數按名單產生外送員的完整資訊，其中的`for`迴圈遍歷整個`deliverers_name`陣列，並在新的`deliverers`陣列中append完整資訊的dict，其中包括`name`及`pos`資訊

## 心得

使用Python Tutor可以很方便的將程式運行的過程具象化，並且把執行的過程逐幀拆解，可以很方便的對程式進行偵錯，也可以快速了解程式對於資料的管控及操作，是相當方便的工具。