提款機

1.使用語言：Python

2.使用的技術：

(1) socket TCP 連線

server:

```
server = socket.socket(socket.AF_INET, socket.SOCK_STREAM)

host = socket.gethostname()
port = 80

server.bind((host, port))

server.listen(5)
```

建立 socket -> 取得 hostname -> 訂 port number -> bind 讓 socket 跟本機做連線 -> listen 等待 client 連線

client:

```
s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
host = socket.gethostname()
port = 80
s.connect((host, port))
```

建立 socket -> 取得 hostname -> 訂 port number -> 讓 client 跟 server 連線

(2) thread

```
class Tserver(threading.Thread):
```

繼承 threading.thread

```
def __init__(self, socket, adr):  # thread初始化條件
    threading.Thread.__init__(self)
    self.socket = socket
    self.address = adr
```

初始化, 紀錄 client 端過來的 address 以便之後使用

```
def run(self):
```

Thread 的進入點, 告訴 thread 要做的事

3.功能:

(1)輸入密碼

Server:

```
password = self.socket.recv(1024).decode()
while(password != "123"):
    self.socket.send("Wrong password".encode())
    password = self.socket.recv(1024).decode()
self.socket.send("ACK!".encode())
```

Client:

```
password = input("Please input password : ")
s.send(password.encode())
password_ACK = s.recv(1024).decode()
while(password_ACK == "Wrong password"):
    print("server send : %s " % (password_ACK))
    password = input("Please input password : ")
    s.send(password.encode())
    password_ACK = s.recv(1024).decode()
```

密碼為 123 存在 server 只有知道密碼的人能夠連接上這個 server

[1]輸入錯誤的密碼 : server 端回傳 Wrong password 在 client 端印出, 再重新輸入一次密碼

[2]輸入正確的密碼 : server 端傳送 ACK!在 client 端印出

(2)提款機要做的事

輸入: [1]人名:指令 ex.John:cb

[2] close:關閉 client 端表示已經使用完畢

當人名為第一次輸入時會在 server 端判定在提款機裡沒有這個人，傳訊息"No"給 client 端，因此 client 端會顯示"人名+has 0 dollars !!"

若已經在提款機裡建立帳號則 server 會傳"Yes"給 client 端，並根據以下指令

[1] 人名:cb:

server:

```
if command == "cb":
    self.socket.send(str(people[name]).encode())
```

client:

```python
if cont[1] == "cb":
    balance = s.recv(1024).decode()
    print(balance)
```

Server 端將這個人的餘額傳到 client 端顯示

[2] 人名:dp:
Server:

```python
elif command == "dp":
    money = self.socket.recv(1024).decode()
    people[name] += int(money)
    self.socket.send(str(people[name]).encode())
```

Client:

```python
elif cont[1] == "dp":
    money = input("How much do you want to deposit : ")
    s.send(money.encode())
    balance = s.recv(1024).decode()
    print("balance : " + balance)
```

client 端會先顯示"How much do you want to deposit : "然後輸入要存入的金額，並回傳給 server 端，server 端再把這個人在提款機裡的總額傳給 client 端並顯示

[3] 人名:wd:
Server

```python
elif command == "wd":
    self.socket.send(str(people[name]).encode())
    if(people[name] == 0):
        self.socket.send(
            "You don't have any money *A*".encode())
    else:
        money = self.socket.recv(1024).decode()
        if(int(money) <= int(people[name])):
            people[name] -= int(money)
            self.socket.send(str(people[name]).encode())
        else:
            self.socket.send(
                "You don't have enough money to withdraw".encode())
```

Client:

```
elif cont[1] == "wd":
    price = s.recv(1024).decode()
    print("balance : " + price)
    if(int(price) == 0):
        msg = s.recv(1024).decode()
        print(msg)
    else:
        money = input("How much do you want to withdraw : ")
        s.send(money.encode())
        balance = s.recv(1024).decode()
        print("balance : " + balance)
```

server 端先傳這個人的餘額給 client 端並顯示，若餘額為 0 則顯示"You don't have any money *A*"，若不為 0 則顯示"How much do you want to withdraw : "輸入金額後若餘額比要領出來的多則在 server 端計算完餘額後傳回給 client 端顯示，反之，若餘額比要領出來的少則回傳"You don't have enough monet to withdraw"

(3) time_out :
若 server 端等待太久則會 timeout 斷開連線

4.執行結果:

Server:

Client:

```
Please input password : 125
server send : Wrong password
Please input password : 123
server send : ACK!
Please input msg : john:dp
john has 0 dollars !!
Please input msg : john:cb
0
Please input msg : john:dp
How much do you want to deposit : 1000
balance : 1000
Please input msg : john:wd
balance : 1000
How much do you want to withdraw : 100
balance : 900
Please input msg : john:wd
balance : 900
How much do you want to withdraw : 900
balance : 0
Please input msg : john:wd
balance : 0
You don't have any money *A*
Please input msg : john:dp
How much do you want to deposit : 1000
balance : 1000
Please input msg : john:wd
balance : 1000
How much do you want to withdraw : 10000
balance : You don't have enough money to withdraw
Please input msg : close
```