工業物聯網

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1.透過客戶端更改值

server

```python
from opcua import Server
import time

server = Server()

url = "opc.tcp://140.116.226.85:4840"

server.set_endpoint(url)

name = "OPCUA_SERVER"

addspace = server.register_namespace(name)

node = server.get_objects_node()

param = node.add_object(addspace,"parameters")

temp = param.add_variable(addspace,"temperature",10)

print(temp)

temp.set_writable()

server.start()

while True:
   t=temp.get_value()
   print("value is {}".format(t))
   time.sleep(2)
```

client

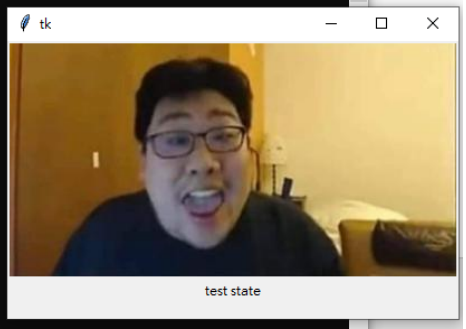
```python
from opcua import Client

url = "opc.tcp://140.116.226.85:4840"
client = Client(url)
client.connect()

var=client.get_node("ns=2;i=2")
print("Initial value:{}".format(var.get_value()))
var.set_value(0)

```

```
Listening on 140.116.226.85:4840
value is 10
value is 10
value is 10
value is 10
value is 10
value is 10
value is 10
value is 10
value is 10
value is 10
value is 0
value is 0
value is 0
value is 0
value is 0
value is 0
value is 0
value is 0
value is 0
value is 0
```

2. 透過 shell 輸入值並且使 Client GUI 隨其狀態更動

```python
from tkinter import Label,Frame,Tk,PhotoImage
from opcua import Client
tk = Tk()
mainframe=Frame(tk)
mainframe.pack()
button_state = [PhotoImage(file="off.png"),PhotoImage(file="on.png")]
button = Label(mainframe,image=button_state[0])
button.pack()
Label(mainframe,text="test state").pack()
class ButtonHandler(object):
    def datachange_notification(self,node,val,data):
        print("Newstate:"+str(val))
        if val==True:
            button.configure(image=button_state[1])
        else:
            button.configure(image=button_state[0])
client = Client("opc.tcp://140.116.226.85:4840")
client.connect()
var = client.get_node("ns=2;i=2")
handler = ButtonHandler()
sub = client.create_subscription(500,handler)
handle =sub.subscribe_data_change(var)
tk.mainloop()
sub.unsubscribe(handle)
print("disconnect")
client.disconnect()
```

```
Python 3.8.8 (default, Apr 13 2021, 15:08:03) [MSC v.1916 64 bit (AMD64)] :: Anaconda, Inc. on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> from opcua import Server
>>> import time
>>> server = Server()
>>> url = "opc.tcp://140.116.226.85:4840"
>>> server.set_endpoint(url)
>>> name = "OPCUA_SERVER"
>>> addspace = server.register_namespace(name)
>>> node = server.get_objects_node()
>>> param = node.add_object(addspace,"parameters")
>>> var=param.add_variable(addspace,"VARIABLE",False)
>>> var.set_writable()
>>> server.start()
Endpoints other than open requested but private key and certificate are not set.
Listening on 140.116.226.85:4840
>>>
```




```
(base) C:\Users\ICLab>python
Python 3.8.8 (default, Apr 13 2021, 15:08:03) [MSC v.1916 64 bit (AMD64)] :: Anaconda, Inc. on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> from opcua import Server
>>> import time
>>> server = Server()
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>>> name = "OPCUA_SERVER"
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>>> node = server.get_objects_node()
>>> param = node.add_object(addspace,"parameters")
>>> var=param.add_variable(addspace,"VARIABLE",False)
>>> var.set_writable()
>>> server.start()
Endpoints other than open requested but private key and certificate are not set.
Listening on 140.116.226.85:4840
>>> var.set_value(True)
>>>
```

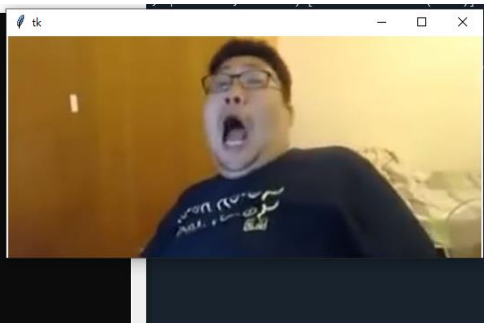

3. OPC UA 應用

OPC UA 除了廣為工業 4.0 與物聯網使用，更能完成許多製造方面的工作，像是訂單管理和處理、資料收集、規劃企業生產水準，以及商務流程管理等，若是能將訂單管理結合自動化機器人，將可以完成自動倉儲之應用，由於 OPC UA 允許交換裝置上的資訊與資料，在機器內、機器間，以及從機器到系統均可，因此對於預算不高但想投資更新式技術的較小型公司，OPC UA 可讓他們更容易運用以現有技術產生的資料。