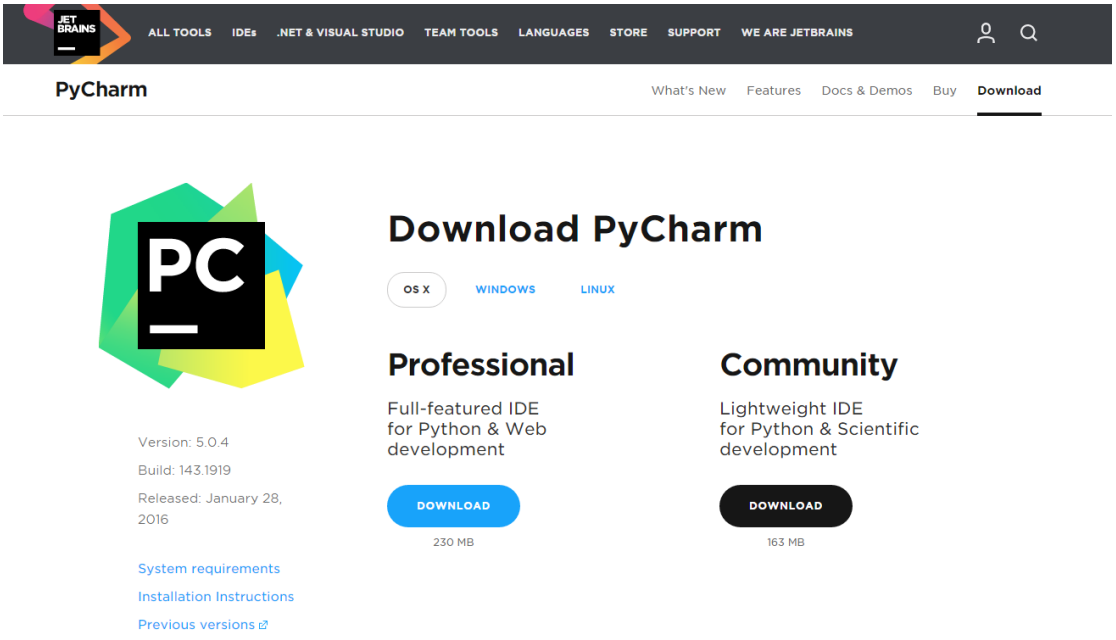
Lab 2 : Python GUI Programming

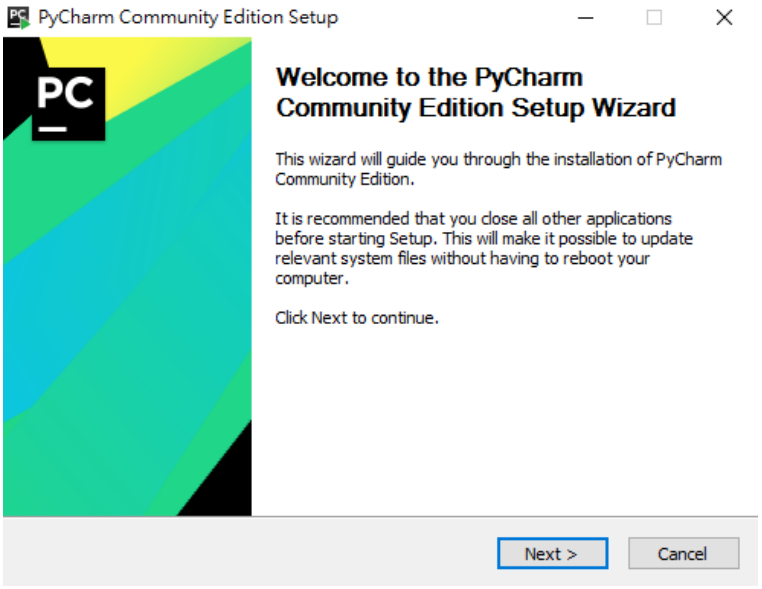
安裝步驟:

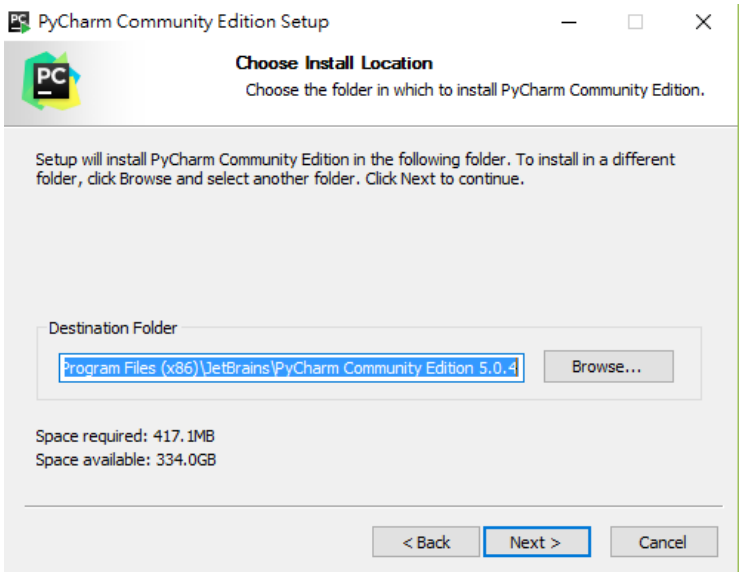
A. 下載 Python 編輯器 PyCharm
https://www.jetbrains.com/pycharm/download

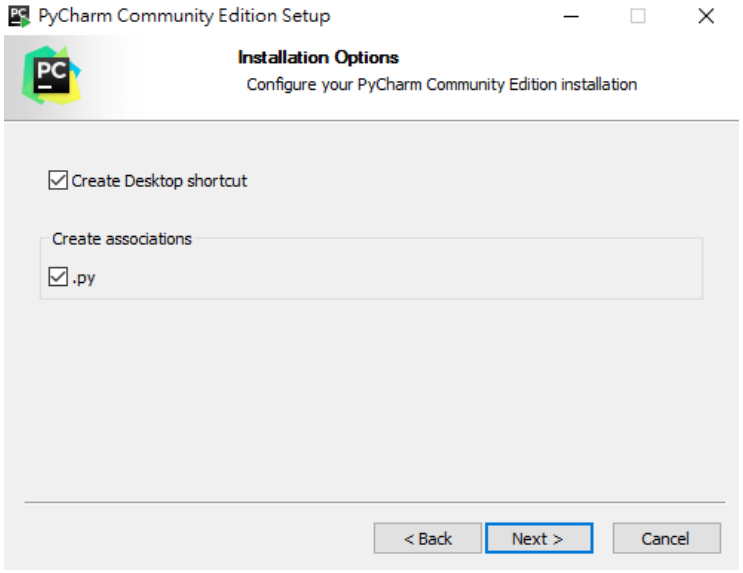
B. 選擇作業系統並下載

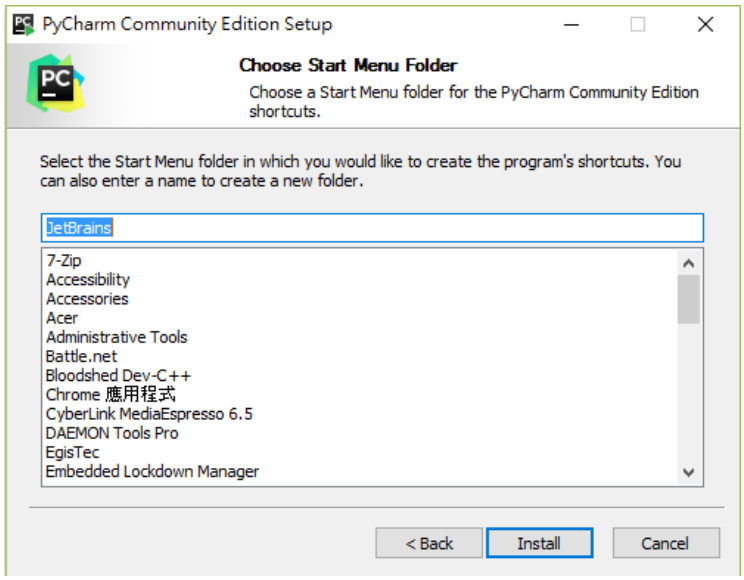


c. 安裝 PyCharm




PyCharm Community Edition Setup
Choose Install Location
Choose the folder in which to install PyCharm Community Edition.
Setup will install PyCharm Community Edition in the following folder. To install in a different folder, click Browse and select another folder. Click Next to continue.
Destination Folder
Program Files (x86)\JetBrains\PyCharm Community Edition 5.0.4
Browse...
Space required: 417.1MB
Space available: 334.0GB
< Back
Next >
Cancel


PyCharm Community Edition Setup
Installation Options
Configure your PyCharm Community Edition installation
Create Desktop shortcut
Create associations
.py
< Back
Next >
Cancel


PyCharm Community Edition Setup
Choose Start Menu Folder
Choose a Start Menu folder for the PyCharm Community Edition shortcuts.
Select the Start Menu folder in which you would like to create the program's shortcuts. You can also enter a name to create a new folder.
JetBrains
7-Zip
Accessibility
Accessories
Acer
Administrative Tools
Battle.net
Bloodshed Dev-C++
Chrome 應用程式
CyberLink MediaEspresso 6.5
DAEMON Tools Pro
EgisTec
Embedded Lockdown Manager
< Back
Install
Cancel

Python 程式入門:

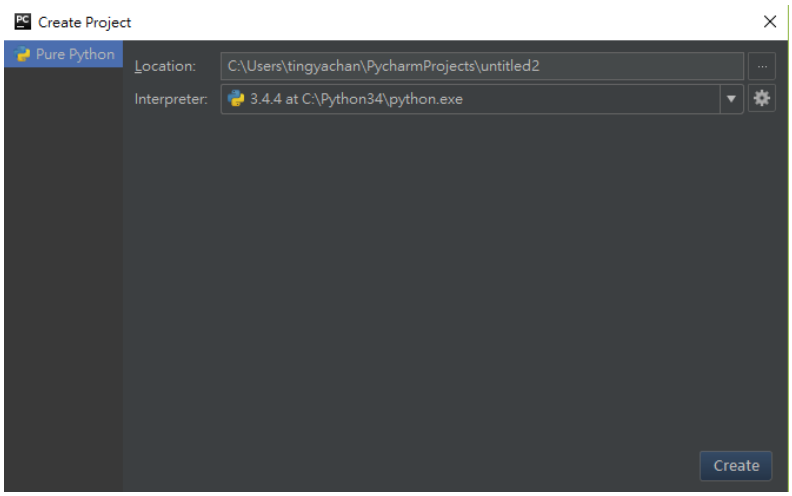
Python中輸入學號，輸出Hello+學號

Ex:

```
請輸入學號: 0560227
Hello! 0560227
```

1. 產生Project:

[File]->[New Project]



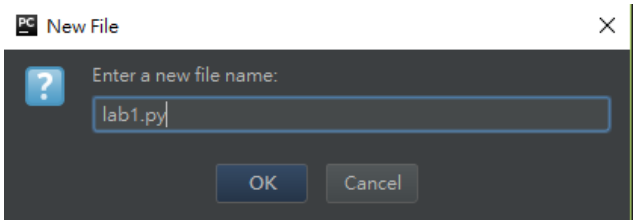
C:\Users\tingyachan\PycharmProjects\檔案名稱(此處是untitled2)

Interpreter: 不同版本的python interpreter，語法會有些許不同，可到python官網下載最新版本2.7.13。

2. 產生Python檔案:

在剛剛產生的Project檔案按下右鍵->[New]->[File]

輸入file名稱並加上附檔名(.py)



3. 輸出Hello World!

```
#_*_coding:utf-8_*_
name = str(raw_input('請輸入學號: '))
print('Hello! '+name)
```

Python GUI Programming

一、**實驗目的:** 使用 Python Tkinter GUI 程式，了解 Python 了解 Python 程式語法及 GUI 使用方法，並實作出一簡單的計算機小程式。

二、Python Tkinter GUI:

(1) Import Tkinter 的模組

Import Tkinter #import the Tkinter module

(2) 創造 Tkinter 的物件主視窗

top = Tkinter.Tk() #create the GUI application main window

在建立主視窗後即可創造其他 widget 物件，如 Button、Label 等，並將其放在主視窗上

label = Tkinter.Label(top,text = "Hello World")

label.pack()

將 widget 物件放在主視窗(或 parent 物件)上的方法有三種：

label.pack()	將 widget 直接放在 parent 物件上
label.grid()	將 widget 依陣列方式放在 parent 物件上
Label.place()	將 widget 依座標放在 parent 物件上

(3) 將 Tkinter 物件放入等待迴圈

top.mainloop() #enter the main event loop to take action against each event triggered by the user

三、 程式語法簡介

(1) Frame：

```
frame = Tkinter.Frame(top)
frame.pack()
```

(2) Label：

```
label = Tkinter.Label(frame, textvariable = var)
label.grid(row = 0, column = 1)
```

＊設定 **Lable** 文字
@無法變更文字的寫法：**text = var**
@文字隨這變數變動的寫法 **textvariable = var**

(3) StringVar：

```
var = Tkinter.StringVar()
x = var.get()                 #取得 var 字串變數的值
var.set("text")               #設定 var 字串變數的值
temp = var.get().split()      #將 var 串變數的中用空白隔開的值分別存
                              #入 temp list 物件中
```

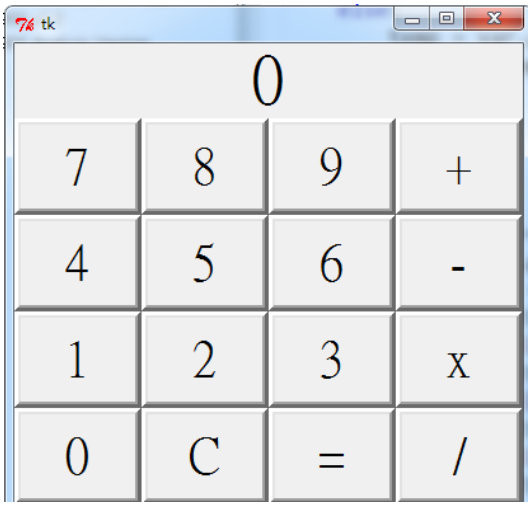
(4) Button：

```
Btn = Tkinter.Button(frame, text = "7" , borderwidth=5,width
= 4, command = lambda: Click("7"))
Btn.grid(row = 1, column = 0)
```

command 即使用者觸發 **Widget** 物件後動作**(Listener)**
command = Clear 不傳值直接使用 **function Clear**
command = lambda: Click("7") 傳值**"7"**給 **function Click**

實驗內容:

1. 將 GUI 物件排列如下

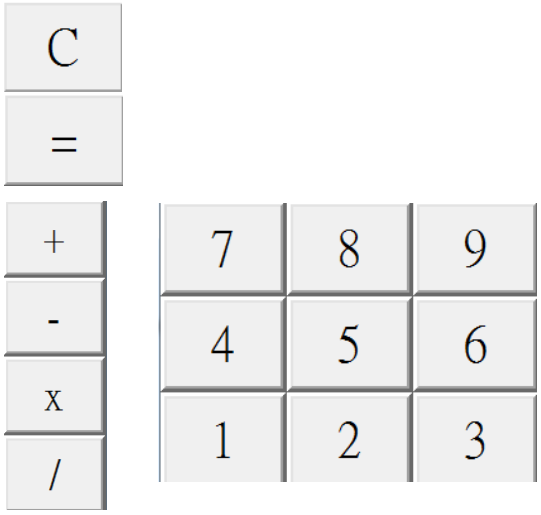


2. 撰寫 Button 的 Listener function

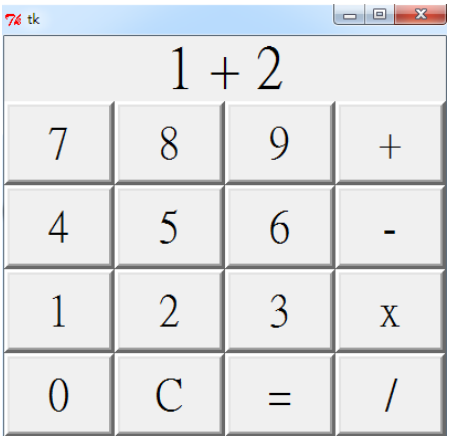
def Clear()

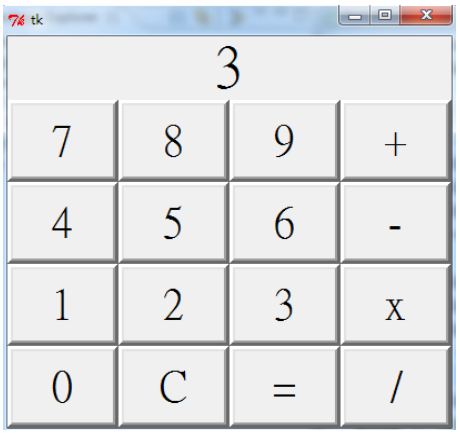
def Calculate()

def Click(x)



3. 實現兩個數字的加減乘除運算

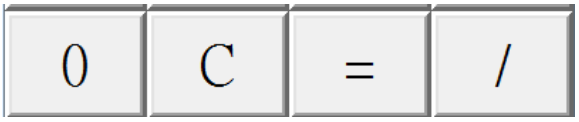




範例程式:

```
import Tkinter
import tkFont
top = Tkinter.Tk()
f1 = Tkinter.Frame(top)
f2 = Tkinter.Frame(top)
ft = tkFont.Font(size = 30)                    ## 設定字型
var = Tkinter.StringVar()
var.set("0")                                   ## var 的值即是  Label Screen 的文字內容
def SetValue():                                ## 設定 Label 的值
    Screen = Tkinter.Label(f1, textvariable = var, font = ft).grid(row = 0,
column = 1)
def Click(x):                                  ##  設定按了數字或運算符號後  var 的值
        . . . . . .
def Clear():
        . . . . . .
def Calculate():
        . . . . . .
SetValue()

## Button 的排列:請設定 row 和 column(給定的 CODE 為第四行)
## 請將？？？填完並在完成第一、二、三行
Btn0 = Tkinter.Button(f2, text = "0" , borderwidth=5, width = 4, font = ft, command
= lambda: Click("0")).grid(row = 3, column = 0)
BtnClear = Tkinter.Button(f2, text = "C" , borderwidth=5, width = 4, font = ft,
command = Clear).grid(row = ？？？, column = ？？？)
BtnEqual = Tkinter.Button(f2, text = "=" , borderwidth=5, width = 4, font = ft,
command = Calculate).grid(row = ？？？, column = ？？？)
BtnDiv = Tkinter.Button(f2, text = "/" , borderwidth=5, width = 4, font = ft,
command = lambda: Click(" / ")).grid(row = ？？？, column = ？？？)
```




```
f1.pack()
f2.pack()
top.mainloop()
```

加分題

防呆:

1. 第一次計算完的結果能繼續做運算
2. 負數計算(EX:-2*3=-6)
3. 除 0(LABEL 顯示 ERROR)
4. 多個數字的計算(EX:6-3+2)