

中港高瞻物聯網IoT(2)

VPhysics探究與實作

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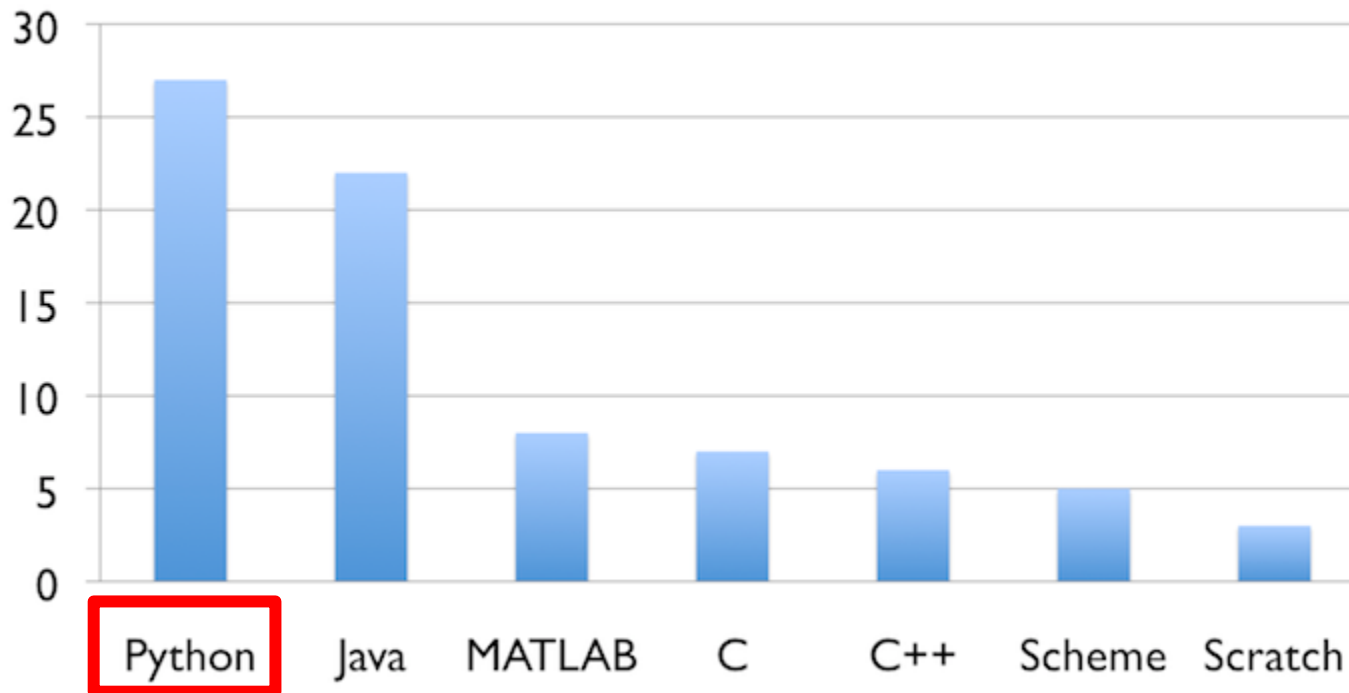
大綱

- 安裝 VPython=>VPhysics
- 改參數
- 試教
- 如何開發探究與實作課程?
- Future work

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什麼是Python?

Number of top 39 U.S. computer science departments that use each language to teach introductory courses



Analysis done by Philip Guo (www.pgbovine.net) in July 2014, last updated 2014-07-29

為什麼是Python?

目前美國頂尖大學最常用的入門程式語言

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為什麼是Python?

為什麼是Python?

理由1.功能強大的自由軟體

理由2.因為自由，已有很多

Example

理由3.好上手 (從example改
參數)

網路上的參考資料:
google "Python 教學"



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如何學好Python?

網路爬文

多練習

加入物聯網社群分享

一個人，走的快；

一群人，走的遠

圖片來源: "partner"



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下載Python

Python Software Foundation [US] | <https://www.python.org/downloads/windows/>

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Python Releases for Windows

- Latest Python 2 Release - Python 2.7.12
- Latest Python 3 Release - Python 3.5.2

YouTube TW

python 教學

Python 教學指導

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Python 超級新手教學 1: 安裝
TJ Wei

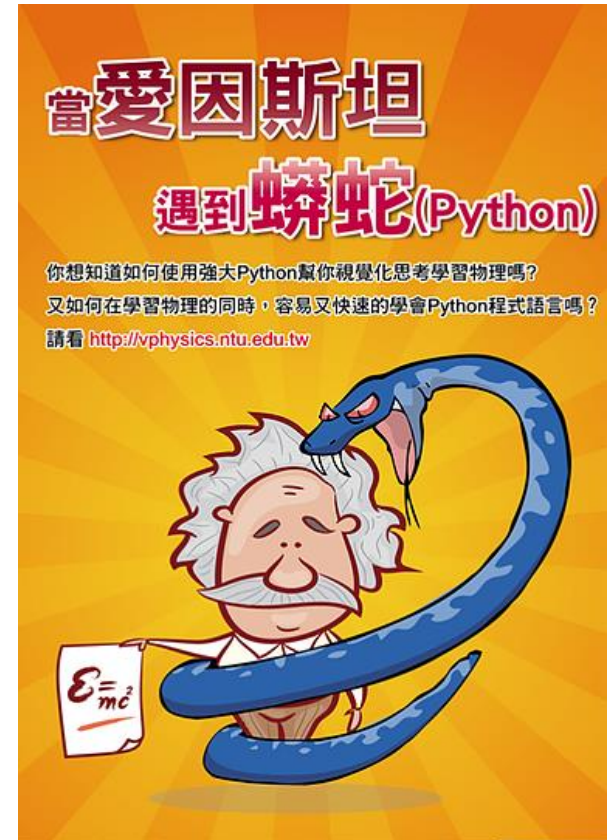
[10310QF100200] 在windows 安裝 python 3.4
Tzu-Wei Huang

免費的Python課程

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安裝 *VPhysics*

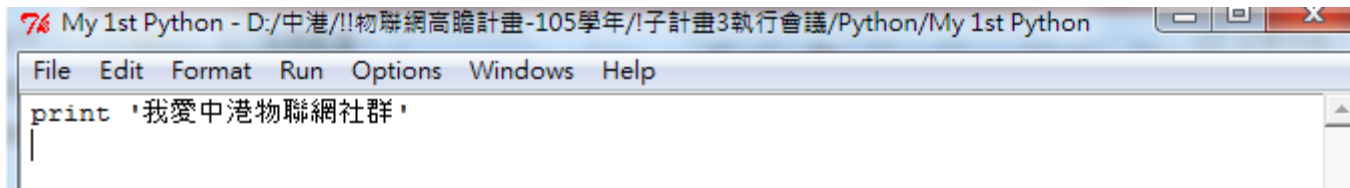
[http://tcjd71.wixsite.com/
vpython](http://tcjd71.wixsite.com/vpython)



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改參數(1)

請在螢幕上列印出“我愛中港物聯網社群”



A screenshot of a Python IDE window. The title bar reads "7% My 1st Python - D:/中港/!!物聯網高瞻計畫-105學年/!子計畫3執行會議/Python/My 1st Python". The menu bar includes "File", "Edit", "Format", "Run", "Options", "Windows", and "Help". The code editor contains the following Python code:

```
print '我愛中港物聯網社群'
```

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改參數(2)

請在螢幕上畫出綠球

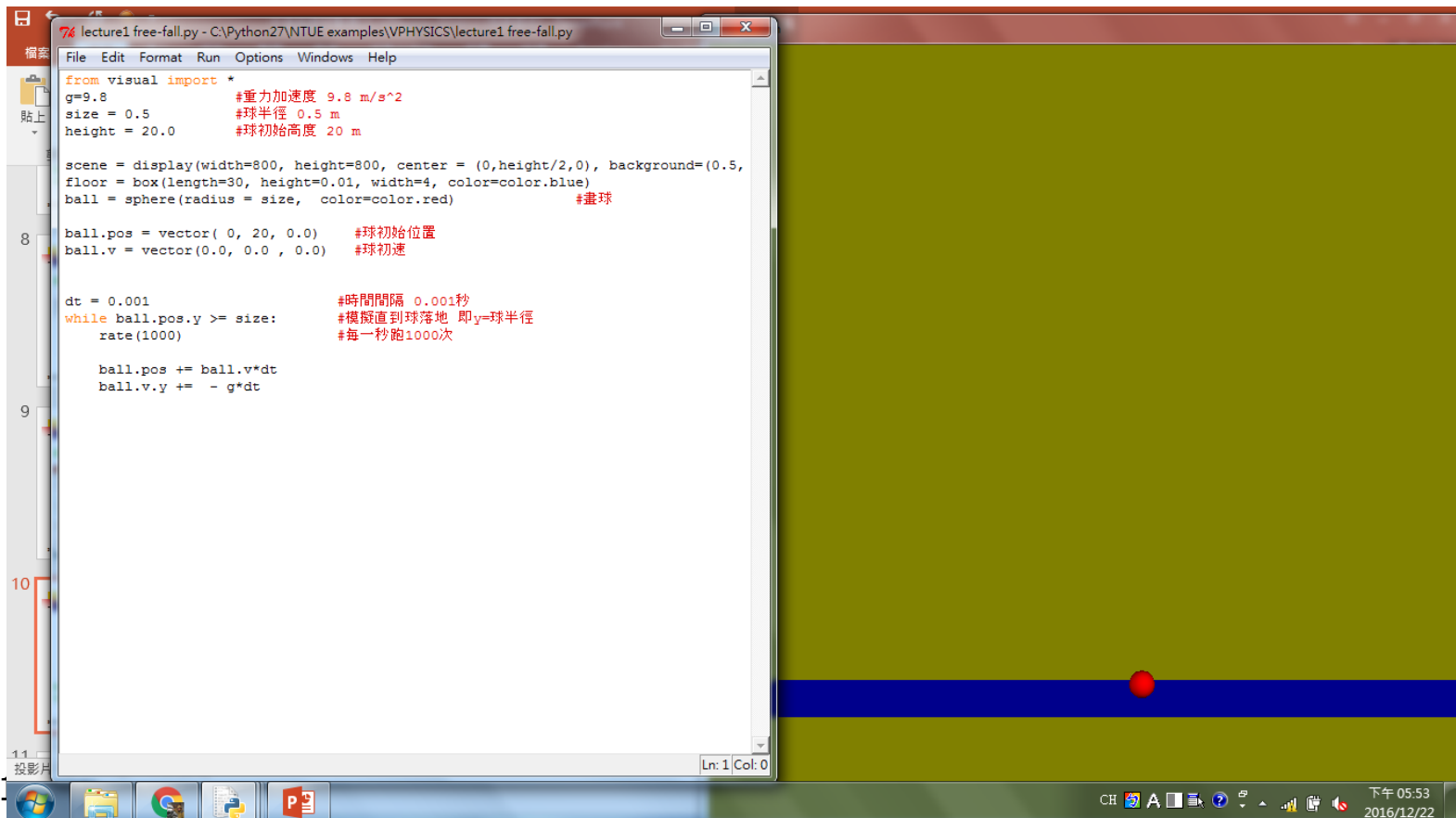
The screenshot shows a Windows desktop environment. In the foreground, a Notepad window titled "My 2nd Python" contains the following Python code:

```
from visual import *  
sphere(radius = .15, color = color.green, pos = vector(1,0,0))
```

To the right, a VPython window is open, displaying a 3D visualization of a green sphere on a black background. The sphere is positioned at the coordinates (1, 0, 0) with a radius of 0.15. The background of the VPython window is a PowerPoint slide with the text "Internet of Thing" and "Lsin Wang (PhD) CGSH".

恭喜你，最後一個作業

靜止落體，將他改成你要的程式...



The screenshot shows a Python IDE window titled "lecture1 free-fall.py" with the following code:

```
from visual import *
g=9.8          #重力加速度 9.8 m/s^2
size = 0.5     #球半徑 0.5 m
height = 20.0  #球初始高度 20 m

scene = display(width=800, height=800, center = (0,height/2,0), background=(0.5,
floor = box(length=30, height=0.01, width=4, color=color.blue)
ball = sphere(radius = size, color=color.red) #畫球

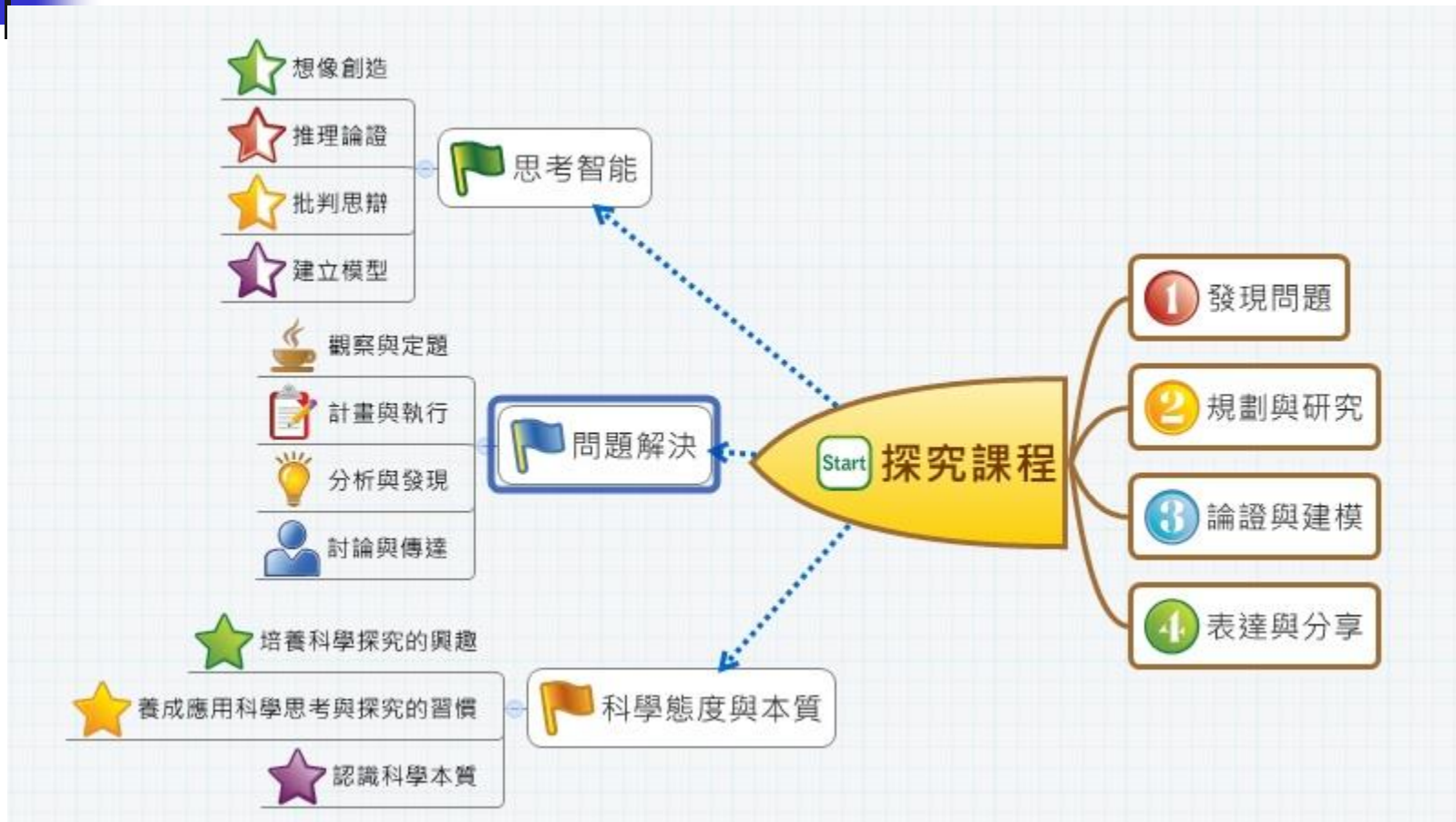
ball.pos = vector( 0, 20, 0.0) #球初始位置
ball.v = vector(0.0, 0.0, 0.0) #球初速

dt = 0.001     #時間間隔 0.001秒
while ball.pos.y >= size: #模擬直到球落地 即y=球半徑
    rate(1000) #每一秒跑1000次

    ball.pos += ball.v*dt
    ball.v.y += -g*dt
```

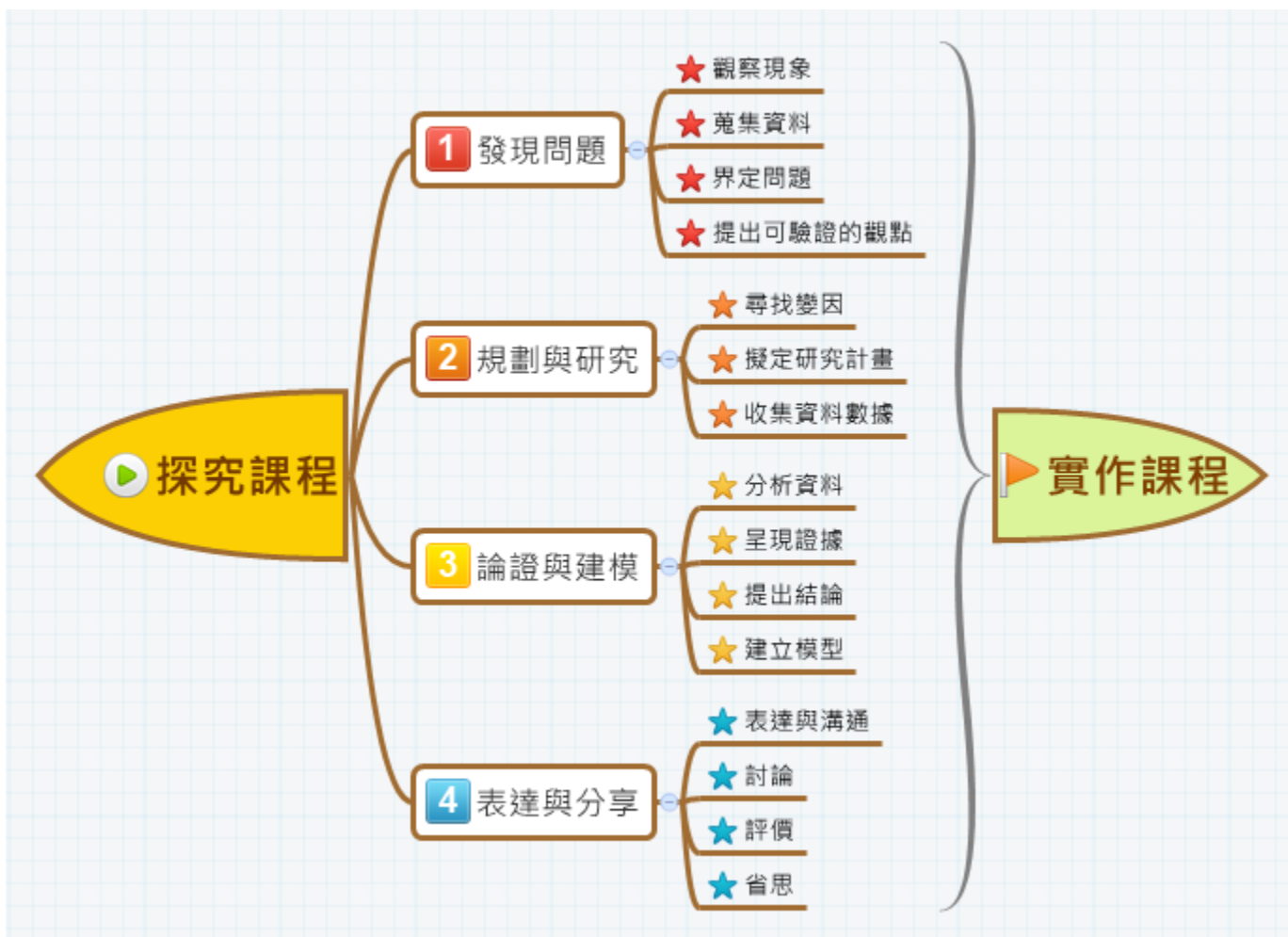
The graphical output on the right shows a 3D scene with a green background, a blue floor, and a red sphere representing the ball. The ball is currently positioned just above the floor, indicating it is about to land.

探究與實作



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探究與實作

研究目標: VPhysics對物理探究能力是否有所提升?

研究單元:運動學、等加速度=>變加速度

研究教案:

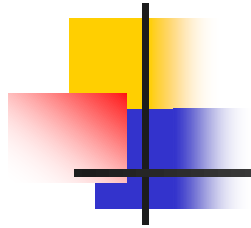
0-5:00 單元介紹、回顧、引起動機

5:00-25:00 理論介紹

25:00-45:00 VPhysics實作

45:00-50:00 結論、交代評量作業

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Thank you for your attention!