

國立師範大學演講-2022-03-16-演講

進入業界除了數學還要培養什麼能力

自我介紹：

- 王季豪
- 中央大學數學系 → 中央大學數學系碩博士

$$ax^2 + bx + c = 0 \text{ 求 } x = ?$$



數學小王子 高斯

- 中央大學數學系 → 中央大學數學系碩博士 → 中研院資訊所博士後

賽局理論：

	小王 不出賣 小明	小王 出賣 小明
小明 不出賣 小王	小明小王都關1年	小王 不用關 小明 被關 10 年
小明 出賣 小王	小明 不用關 小王 被關 10 年	小明小王都關 5 年

case 1 : 小明 不出賣 小王

	小王 不出賣 小明	小王 出賣 小明
小明 不出賣 小王	小明小王都關1年	小王 不用關 小明 被關 10 年

case 2 : 小明 出賣 小王

	小王 不出賣 小明	小王 出賣 小明
小明 出賣 小王	小明 不用關 小王 被關 10 年	小明小王都關 5 年

-
-
- 中央大學數學系 → 中央大學數學系碩博士 → 中研院資訊所博士後 → 美商寶蘊凌科公司
資料科學家

Computing the Future of AI

We help businesses leverage AI with machine learning from cloud to edge

Vision AI Platform

Auto-Labeling Platform

Linker Networks AI-based auto-labeling technology has proved to take annotation efficiency and reliability to a whole new level.

[Learn more >>](#)

The Future of Intelligent Workplace Safety. Linker Networks has developed an AI-powered worker safety system that helps prevent workplace injury 24/7.

[Learn more >>](#)

AI Visualization

Linker's web-based visualization AI platform is purposefully made simple, user-friendly, and off-the-shelf accessible. We want customers to be able to use Linker solution and have it up and running in a day, even if they don't have data scientists on staff.

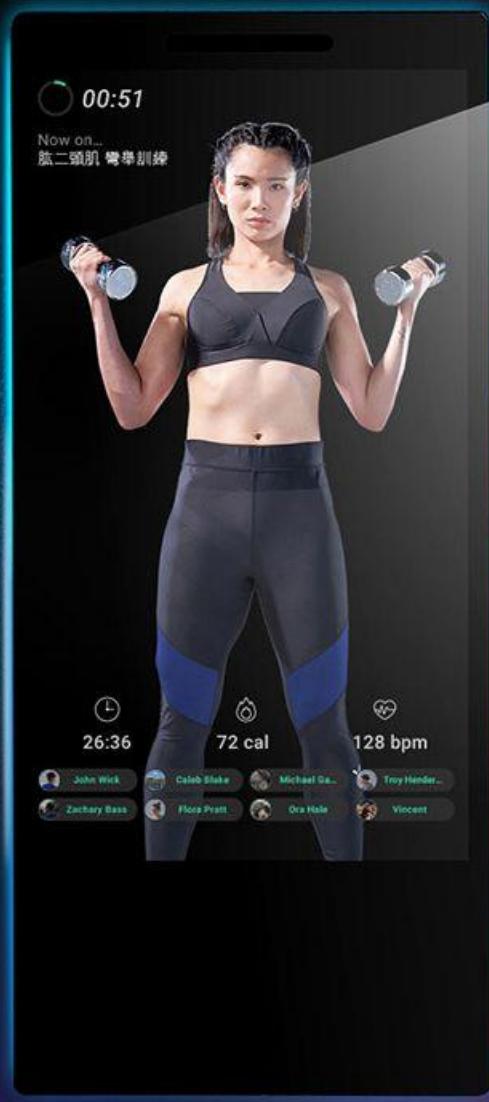
- 中央大學數學系 → 中央大學數學系碩博士 → 中研院資訊所博士後 → 美商寶蘊凌科公司資料科學家 → 喬山健康科技公司主任工程師

NEW!! 新概念 健身魔鏡

動態感知

自由隨選

即時互動



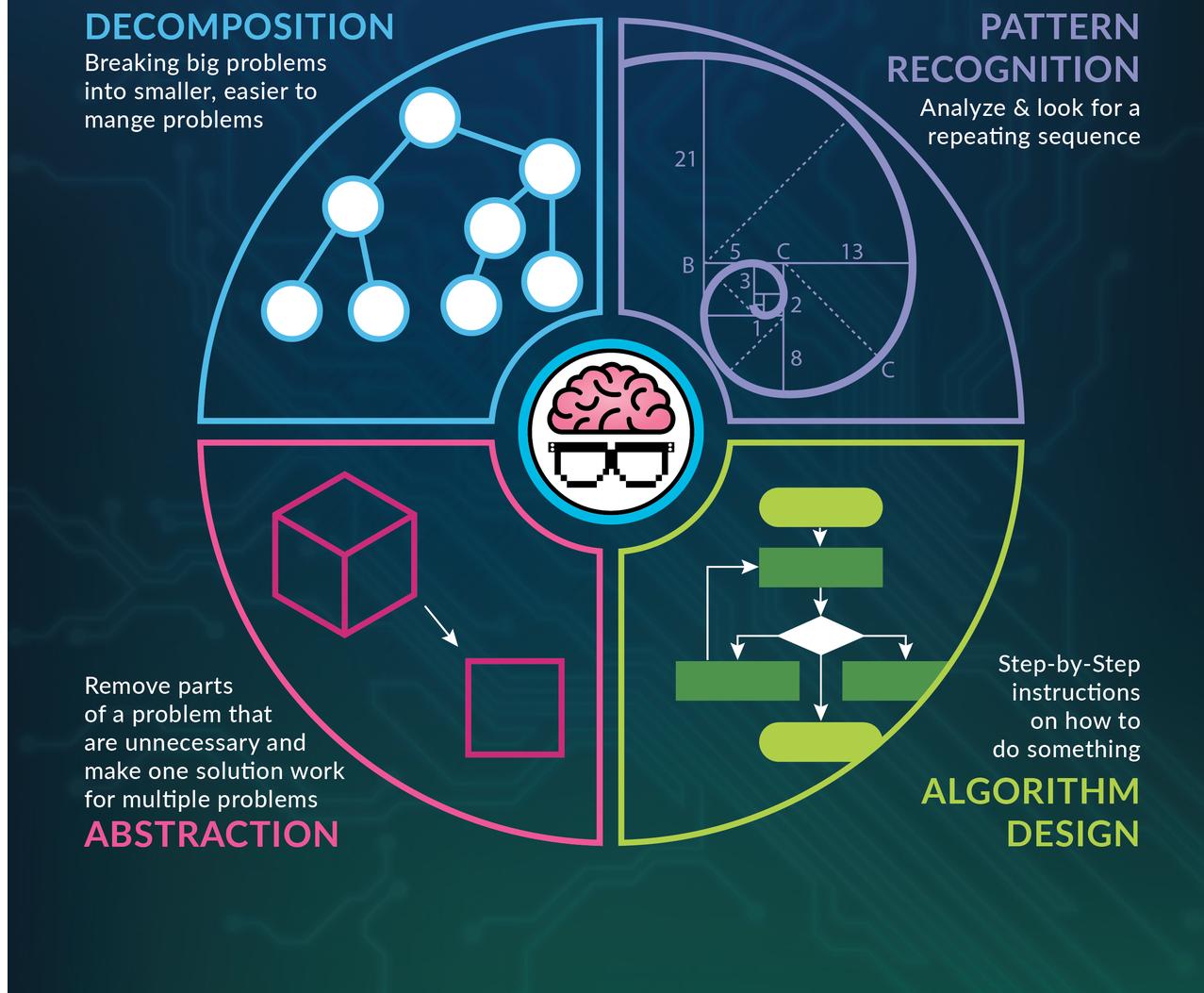
轉職需要學的技能(個人):

- * 程式力 *

程式的思維

- 解構能力 (解析能力)
- 找尋規範能力 (找尋重複程序能力)
- 抽象化能力 (化繁為簡抽絲剝繭能力)
- 流程演算法能力 (數學人通常比較缺乏這個訓練，現在各小學都已競相加入scratch的程式課程，從小就開始訓練是正確做法。)

COMPUTATIONAL THINKING



<https://www.computationalthinkers.com/product/computationalthinking/>

Scratch

學習路線建議

- scratch → R → matlab → python

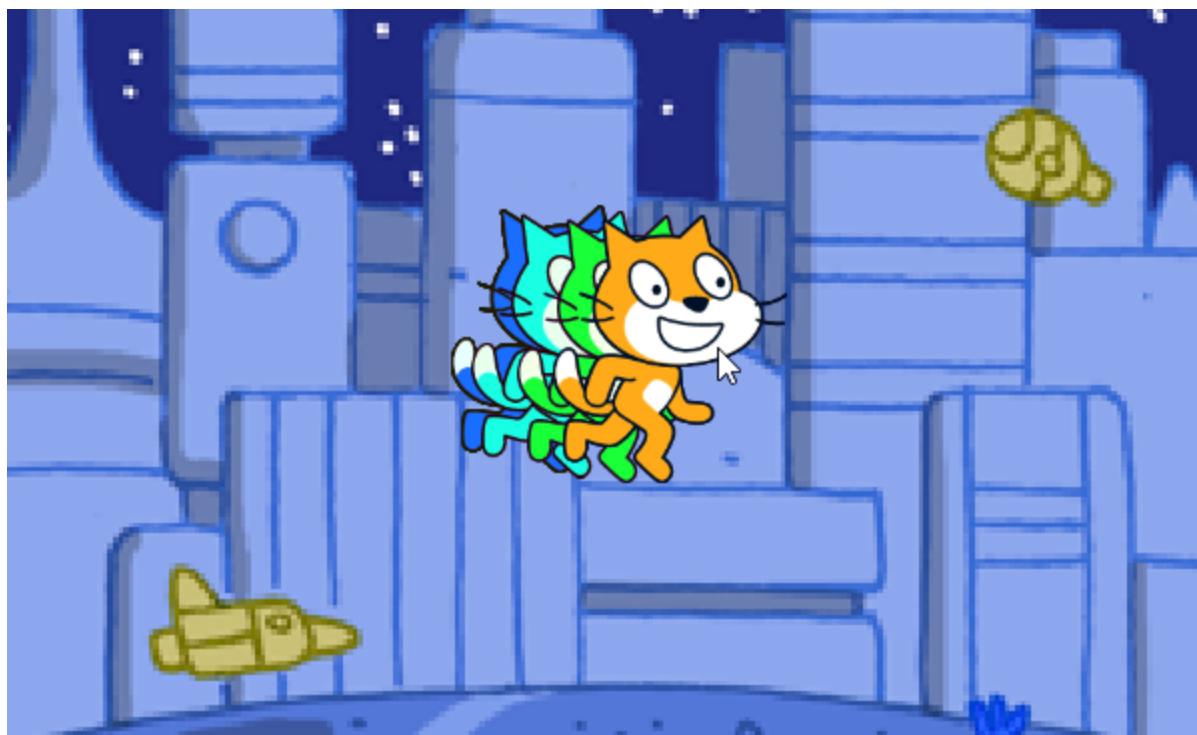
- scratch → python → c → java → go
- scratch → unity → javascript → c → go



來源: <https://rrnbc.cn/download-and-install-scratch/>

Scratch 範例

- 小貓火花



- 小貓迷宮



- 小貓學座標

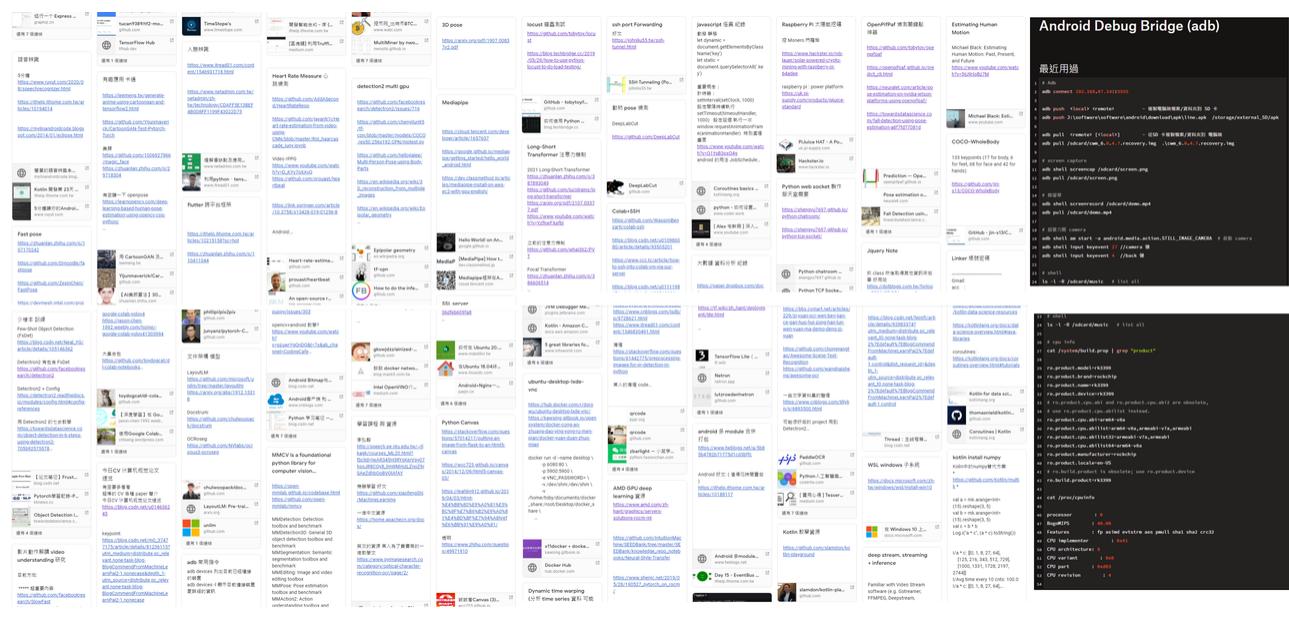


- 小貓學乘法



轉職需要學的技能(個人):

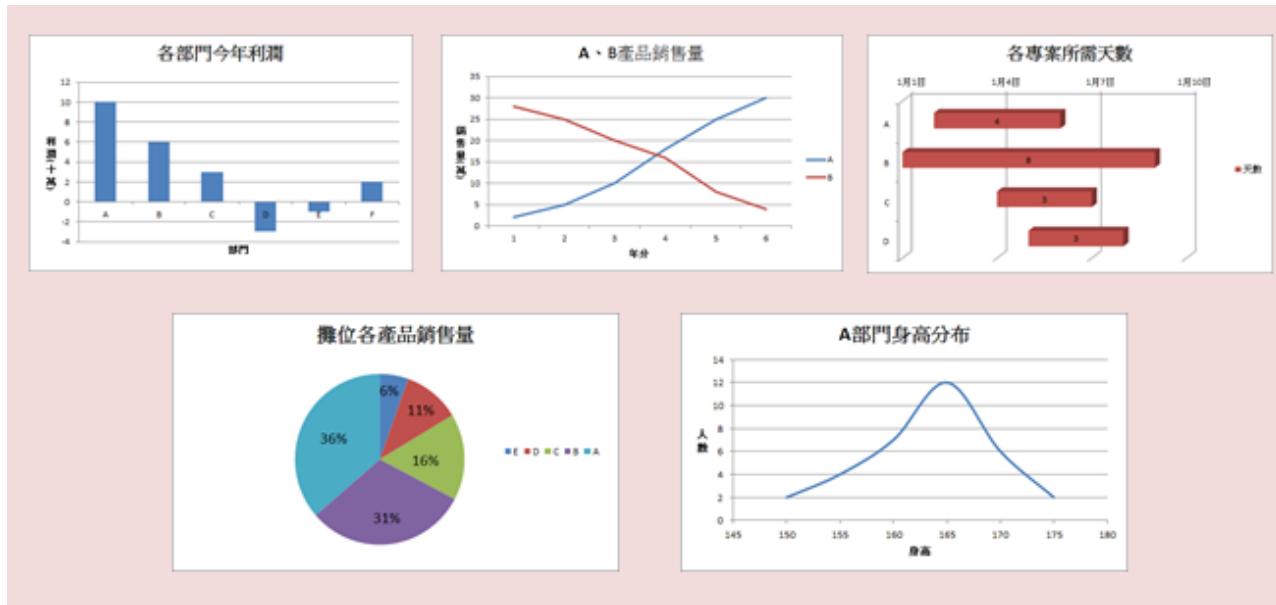
- * 搜尋力 *



做筆記與收尋功能

轉職需要學的技能(團體):

1. * 呈現力 + 總結力 *



來源: <https://www.managertoday.com.tw/articles/view/55854>

轉職需要學的技能(團體):

1. * 溝通力 + 團隊力 *

轉職需要學的技能(團體):

舉例 : 書 (來源: 三個傻瓜)

記錄，分析，總結，整理的工具。討論並解釋知識，有圖片的和沒圖片的，硬皮的，軟裝訂的，有護封，沒護封的。

有前言，簡介，目錄，索引。用於人類大腦的啟示，理解，改進，加強和教育。通過視覺實現，有時也用觸覺。

轉職需要學的技能(團體):

舉例：分析角度

假設我們要統計現場的人數，我們可以有幾種不同數法。

- 先數男生，再數女生。
- 我們可以先算老師，再數學生，再數校外人士。
- 我們也可以從年紀依序數起。

S.M.A.R.T 原則

- Specific (明確的)。
 - Measureable (可衡量的)。
 - Achievable (可達到的)。
 - Resource (所需資源)。
 - Timeframe (時刻表)。
-
-

為什麼有工作過跟沒工作過差別很大：

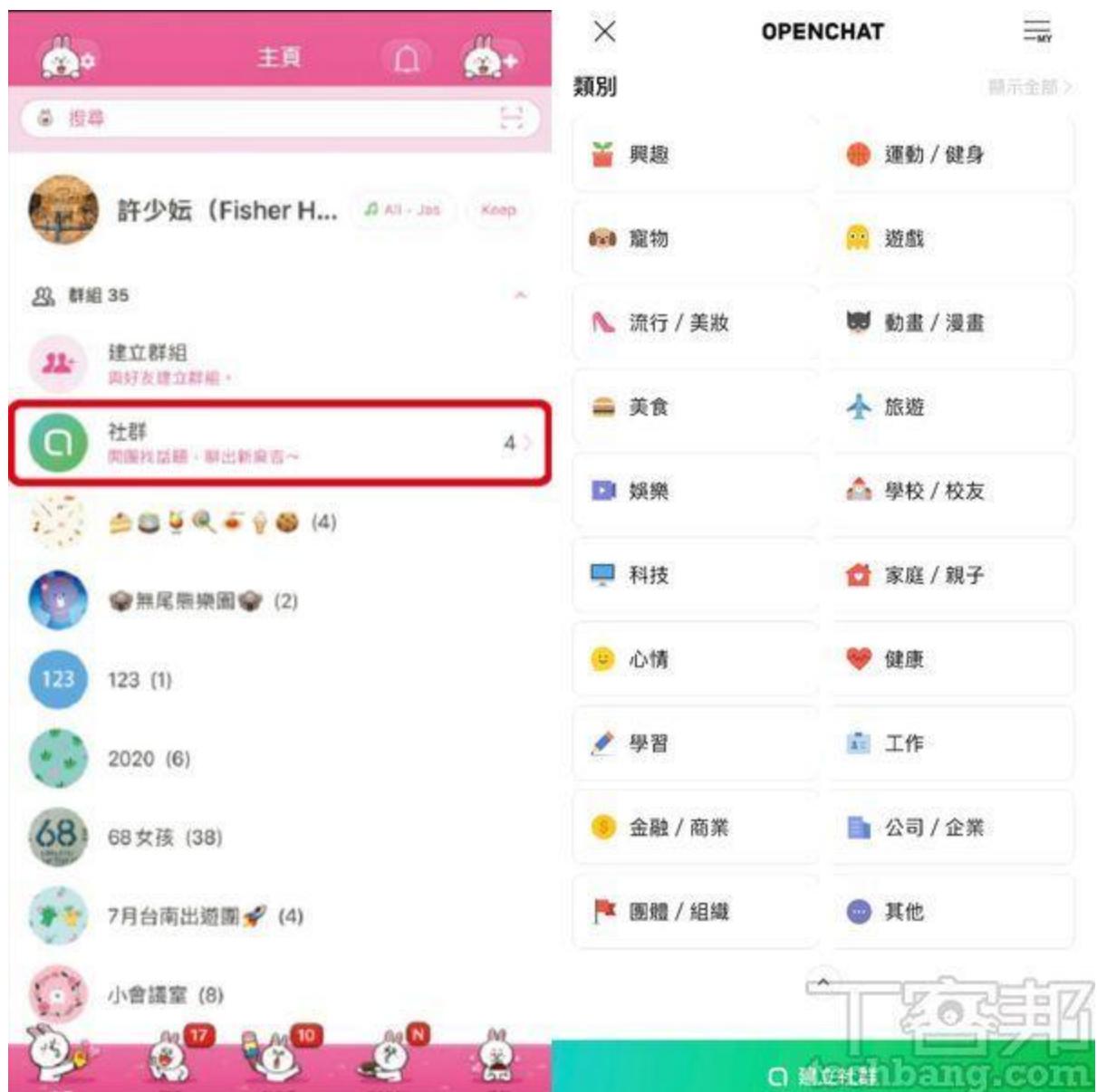
1. 觀點差距
2. 工具與流程不熟，難以展開任務。



來源：http://www.irasutoya.com/2019/10/blog-post_193.html

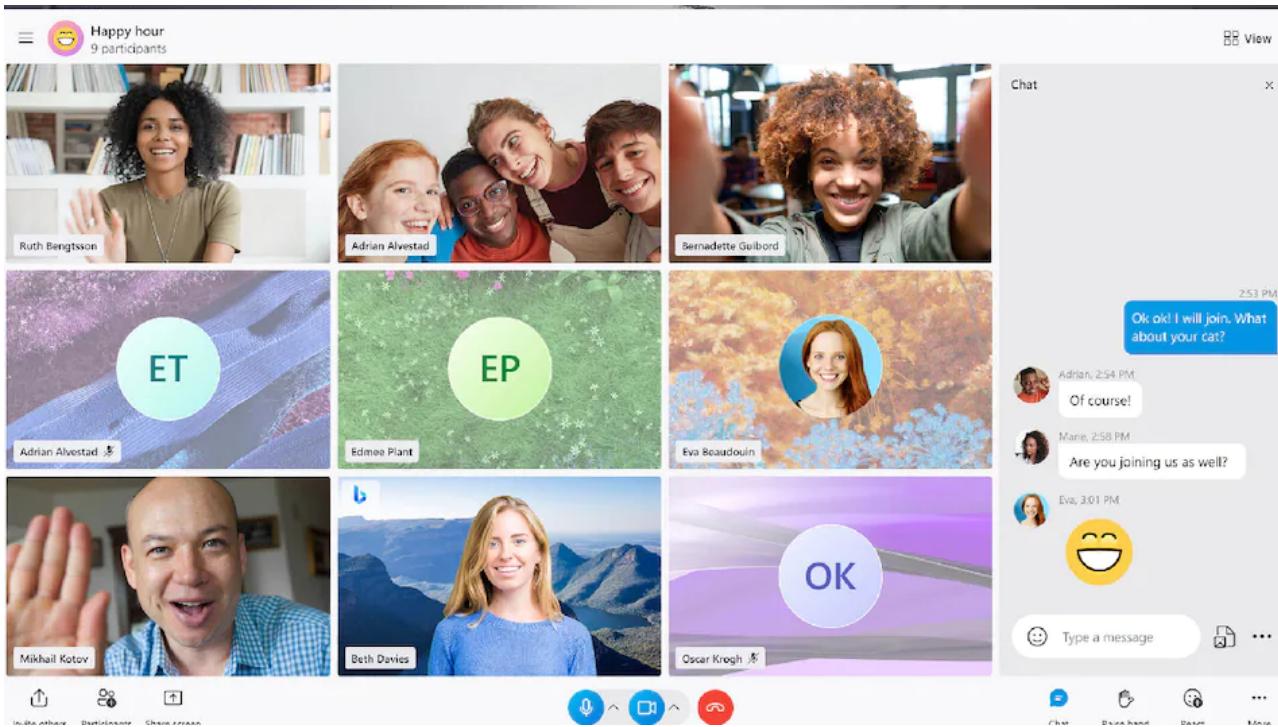
通訊工具列表

- Line



來源：<https://www.techbang.com/posts/80465-new-generation-of-internet-chat-rooms-how-to-use-the-line-community-admin-mechanism-5000-crowd-chat-cross-screen-communication-is-not-an-obstacle>

- skype



來源：<https://gadgets.ndtv.com/apps/news/skype-update-features-new-twincam-universal-translator-office-lens-meet-now-microsoft-2556638>

- slack

Acme Bicycle

Channels

- # marketing-team
- # creative-team
- # sales-team
- # general

Direct Messages

- slackbot
- Ella Bridger(you)
- Delilah George
- Remi Livingston
- Jon Ransom
- Jim Carpenter
- Evan Lee
- Stephanie Kim

Apps

marketing-team

Jim Carpenter 10:37am
Can you share any details with us now?

Ella Bridger 10:37am
Sure. Since Acme has been doing so well this year, we're revising this quarter's growth targets up by an average of 8%.

Jon Ransom 10:37am
Great! What are the new targets by region?

Ella Bridger 10:40am
North America 33%, EMEA 38%, APAC 56%.

Jim Carpenter 10:41am
Wow! Great work, Ella!

Jon Ransom 10:41am
👍

Jim Carpenter 10:42am
Can you share your notes with us please?

Ella Bridger 10:50am
Thanks guys! Yes, I'll attach the Evernote note that ex
Feel free to make comments in the note and we can

Unfollow thread
Any replies will show up in All Threads

Copy link
Mark unread
Remind me about this
Pin to this conversation ...
Edit message
Delete message

More message actions

+ Message

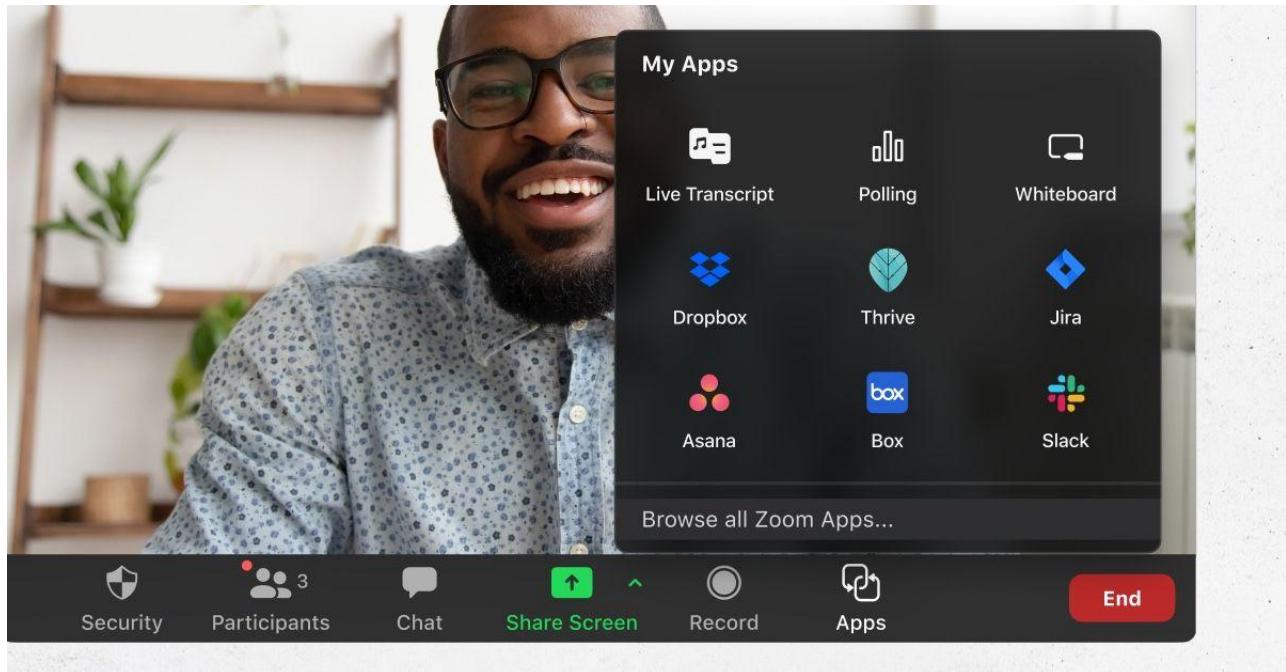
來源：<https://help.evernote.com/hc/zh-tw/articles/115013171368-%E5%A6%82%E4%BD%95%E4%BD%BF%E7%94%A8-Evernote-for-Slack>

- teams

The screenshot shows the Microsoft Teams Communities interface. On the left, there's a sidebar with various icons for Activity, Chat (17 notifications), Teams, Communities (selected), Calls, Calendar, and Apps. The main area has a search bar at the top. Below it, there's a "Communities" section with a "Home Feed" tab (selected) and an "Inbox" tab (16 notifications). A "Favorites" section lists categories like Diversity and Belonging, Contoso Life, Ask HR, Safety, Contoso All Company, Leadership Connection, and Working From Home. A "My communities" section lists Sales Best Practices, Giving Campaign, Microsoft 365 Help, North America Employee Cr..., Women of Contoso, Contoso New Employee Co..., SAP Best Practice, and a "Create a Community" option. The main content area features a "Featured Conversation" by Nestor Wilke from Oct 28, 2020, with an announcement message about leadership teams and monthly updates. Below the message is a video thumbnail of a man speaking. At the bottom of the conversation card, there are "Like", "Comment", "Share", and "You and 2 others" buttons. To the right, there's a "Contoso Electronics" community card with a logo and a quote: "Be polite. Be kind. Be respectful. Be helpful. Be curious." Below it is a "Suggested Communities" section with a "Parents of Contoso" community card (13 members) and a "Contoso Canada" community card.

來源：<https://support.microsoft.com/zh-hk/office/%E4%BD%BF%E7%94%A8%E9%81%A9%E7%94%A8%E6%96%BC-microsoft-teams-%E7%9A%84-yammer-%E7%A4%BE%E7%BE%A4%E6%87%89%E7%94%A8%E7%A8%8B%E5%BC%8F-930c86f1-e1e2-4e45-a66a-ce8faca71a21>

- zoom



來源：<https://blog.zoom.us/zh-tw/introducing-zoom-apps-bringing-best-of-breed-apps-into-zoom/>

- Lotus Notes

收件人	日期	時間	大小	主旨
禁佩如 tsaipr	2021/10/14	下午 01:23	44,636	管理公告: 10/18(一)研發部迎晨會+值日生
HR	2021/10/14	下午 02:24	32,438	[請假申請單]表單生效通知-表單編號: 162265
HR	2021/10/14	下午 03:00	11,296	[HR] 學員通知 - 學員自行報名成功通知
紀麗芳 jif	2021/10/15	上午 08:59	76,116	產銷會議記錄-2021-10-14
李富盛 richardlee	2021/10/15	上午 09:17	2,080	競品研究
林思妤 amylin	2021/10/15	上午 11:41	62,165	10/14 競爭對手產品分析的會議記錄
HR	2021/10/18	上午 09:11	24,676	[請假申請單副本抄送通知-表單編號: 162909]
林思妤 amylin	2021/10/18	下午 02:34	4,315	Monday Richard&Pendy 1:1 Meeting (@14:00/Skype Call)
林思妤 amylin	2021/10/18	下午 02:34	4,327	Friday Richard&Pendy 1:1 Meeting (@10:10/Skype Call)
JHT HR	2021/10/19	上午 09:22	19,998	[系統通知]JHTNO2110003_公佈電子表單申請批示簽核通過(主辦：人事真勤公告-朱耀鼎)
jadmin	2021/10/20	上午 05:30	1,836	2021/11 生日禮品
林杏茹 vickylin	2021/10/20	上午 11:00	11,811	【經營會議】10/20(三) 14:00-16:00將於總部B1舉行經營會議，請各位經過總部1F時降低音量，不要喧囂
禁佩如 tsaipr	2021/10/21	上午 08:53	11,171	轉寄-取消10/25 上午9:00-10:00 自費流感施打，改期至12月10日

開發模式

下面談談開發模式（這邊只提我所知道的大概情況，不同公司可能會有其他不同模式。）
在正題開始前，先統計一下大家的做事習慣，

- 先問一下大家有拖延症嗎？大家有完美主義強迫症嗎？
- 大家是先擬妥計畫再做，還是先做了再說，之後再設法優化？



衝啊!!!!

瀑布式開發 (waterfall)

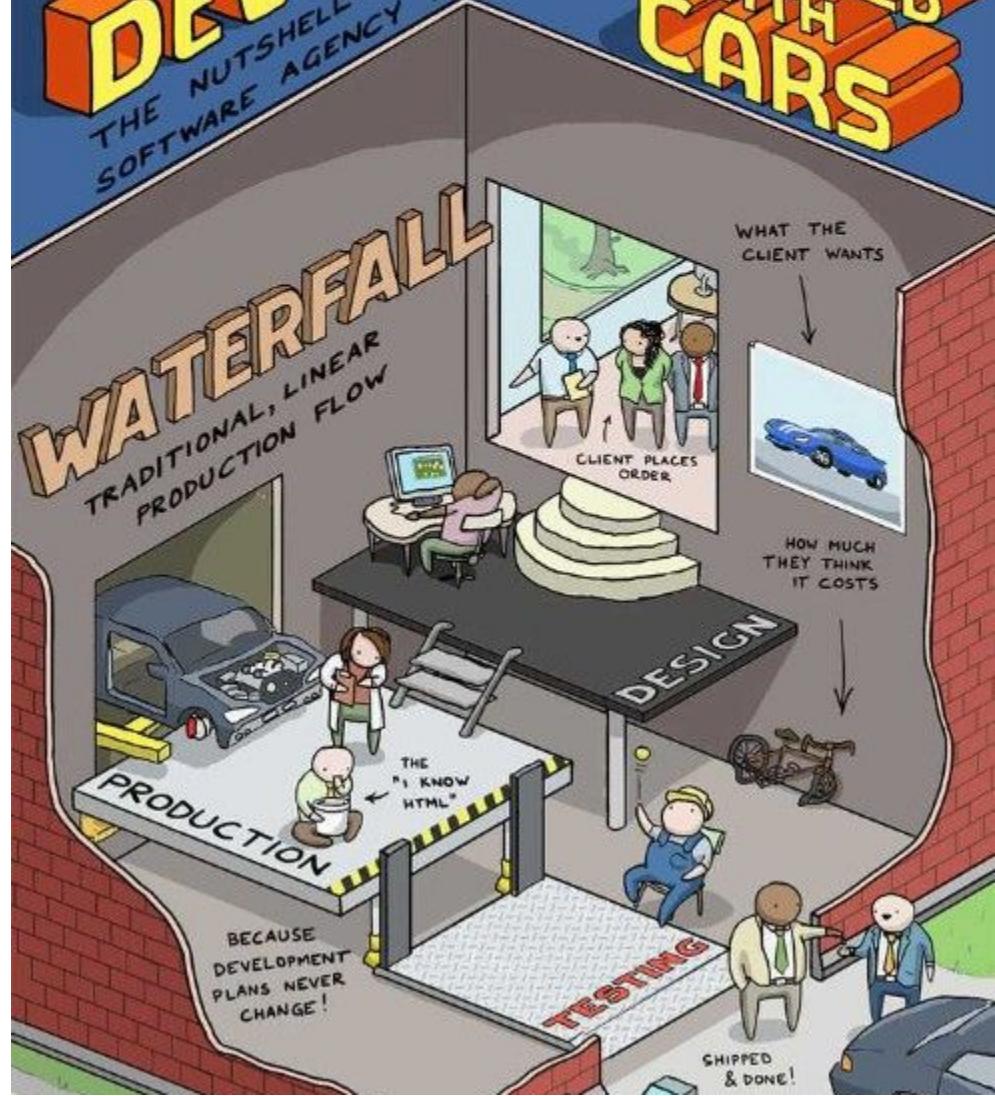
A STORY FROM



BY MART VIRKUS

SOFTWARE DEVELOPMENT EXPLAINED WITH CARS

THE NUTSHELL VIEW INTO SOFTWARE AGENCY MODELS



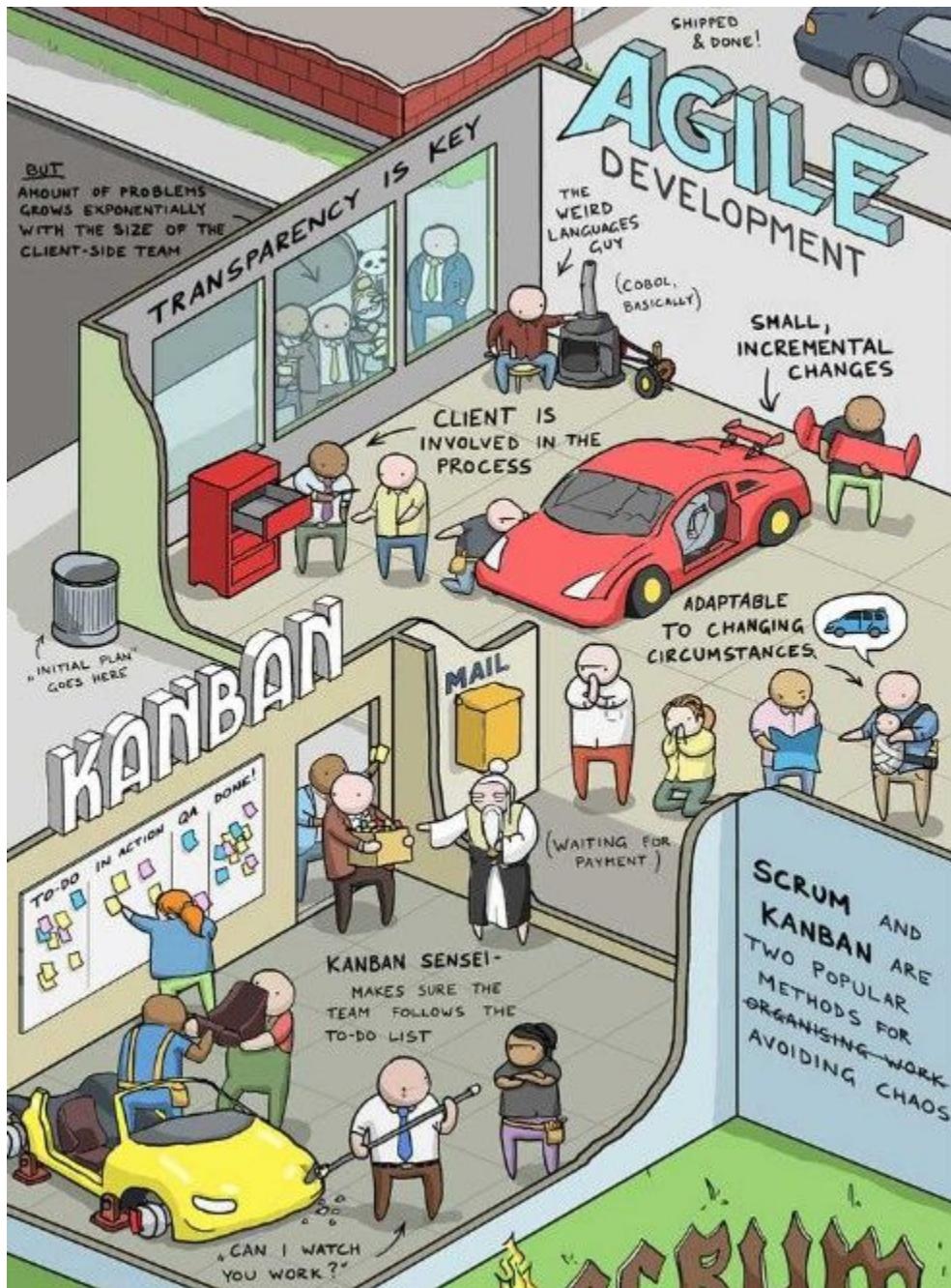
WaterFall

先想清楚，詳實規劃後再開始做。

- 核心思想

- 優點
- 缺點

敏捷式開發 (Agile Kanban + Scrum)



Agile

開始做，不斷優化，持續修正。

- 核心思想
 - 優點
 - 缺點
-
-

在公司內有時也會有最小任務 (minimum viable product) 開發測試的任務需要完成。

例如：開發在家中，無人飛機升空，做動作辨識的MVP項目。



MVP

開發的職位基本架構

- 前端 web
處理使用者端 (UI) 畫面呈現的工作
 - 前端 application (android)
處理使用者端 (UI) 畫面呈現的工作
 - 前端 application (ios)
處理使用者端 (UI) 畫面呈現的工作
 - IT (系統設備的維護 有時也包含網路架構等)
 - 後端 - 雲端服務
身分認證，資料庫管理，資料收集，微服務建立，等等
 - 後端 - DevOps 維護運行人員
強調自動化，CICD 持續整合 持續部署。
 - 後端 (資料處理)
處理資料邏輯運算方面的工作。
-
-

工具列表

- git, github, gitlab, bitbucket, gitee (版本控制)

master 3 branches 28 tags

yellowdolphin auto_augment: img_shape broken (#6259) ... a32d7d4 2 days ago 1,781 commits

.dev_scripts update fps scripts (#6145) 20 days ago
.github Fix CI out of memory & add PyTorch1.9 Python3.9 unit tests (#5862) last month
configs [Fix] Fix a lot of typos (#6190) 7 days ago
demo [Docs] Add header for files (#5900) 2 months ago
docker Bump version to v2.17.0 (#6152) 22 days ago
docs [Enhance] Add code-spell pre-commit hook and fix a typo. (#6306) 2 days ago
docs_zh-CN [Fix] Fix a lot of typos (#6190) 7 days ago
mmdet auto_augment: img_shape broken (#6259) 2 days ago
requirements [Docs]: Use PyTorch sphinx theme. (#6146) 28 days ago
resources change qq groipe qrcode (#5787) 3 months ago
tests [Fix]: Fix sampler unit test. (#6284) 5 days ago
tools [Fix] Fix a lot of typos (#6190) 7 days ago
.gitignore Optimize `Get stated` in the documentation and fix some format errors (...) 3 months ago
.pre-commit-config.yaml [Enhance] Add code-spell pre-commit hook and fix a typo. (#6306) 2 days ago
.readthedocs.yml [Feature]: support to output pdf and epub format doc (#5738) 3 months ago
CITATION.cff fix citation file (#6006) 2 months ago

About OpenMMLab Detection Toolbox and Benchmark
mmdetection.readthedocs.io
pytorch fast-rcnn ssd faster-rcnn
rpn object-detection
instance-segmentation mask-rcnn
retinanet cascade-rcnn

Readme Apache-2.0 License Cite this repository

Releases 18 MMDetection V2.17.0 Release Latest 22 days ago + 17 releases

Packages No packages published

Used by 135

github

GitLab.org SIGN IN

GitLab.org @gitlab-org Open source software to collaborate on code

Clément Moyroud opened issue #4191 at GitLab.org / GitLab ... about a minute ago Cannot use LFS using storage on an NFS share

Robert Speicher commented on merge request #79 at GitLab.... 4 minutes ago If I were writing it would be...

Drew Blessing commented on merge request #79 at GitLab.or... 6 minutes ago Reduce indentation to what? The attribute should line up....

Drew Blessing commented on merge request #79 at GitLab.or... 8 minutes ago Yes, I think that's a good idea. I'll add to help.

Robert Speicher commented on merge request #79 at GitLab.... 9 minutes ago Change `JenkinsService` to `self` or remove the receiver

Filter by name

GitLab Community Edition Version Control on your Server. See <http://gitlab.org/>

GitLab Enterprise Edition GitLab Enterprise Edition

gitlab-workhorse Handles slow HTTP requests for GitLab

GitLab Development Kit Get started with GitLab Rails development

testme This repository is sandbox. We will remove it soon si...

gitlab

The screenshot shows the Bitbucket Settings page for a repository named 'Marcus Bertrand / public repo'. The left sidebar has a 'Settings' tab selected. The main content area is titled 'Webhooks' with a sub-section 'Add new webhook'. It includes fields for 'Title' (a blue placeholder box), 'URL' (an empty text input), 'Status' (checkbox checked for 'Active'), 'SSL / TLS' (checkbox unchecked for 'Skip certificate verification'), and 'Triggers' (radio button selected for 'Repository push'). Below these are 'Save' and 'Cancel' buttons.

bitbucket

The screenshot shows the Gitee repository page for 'PaddlePaddle-Gardener'. The top navigation bar shows 'develop' with 277 branches and 51 releases. The main content is a list of pull requests (PRs) with details like PR number, author, title, commit hash, and creation date. To the right, there's a summary for 'Paddle' with a 'Gitee 指數' of 88, a radar chart showing metrics like '程式碼活躍度', '影響力', '社區活躍度', '國際健康', and '流行趨勢', and a '貢獻者' section with 561 contributors represented by colored circles. A sidebar on the right lists repository details: 'PaddlePaddle (Parallel Distributed Deep Learning 并行分布式深度学习)' is the main project, using Python (6 languages) and Apache-2.0 license.

gitee

- bash (linux 基本操作)

```

"/code/bash/helloworld.sh - Sublime Text (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
helloworld.sh *
1 #!/bin/bash
2
3 message="Hello World!"
4 # this is a comment
5 echo $message
6
7 exit $?
8 |
```

Line 8, Column 1 | Tab Size: 4 | Shell Script (Bash)

no IPv6 | 331.3 MiB | DHCP: no | VPN: no | W: down | E: no IP (1000 Mbit/s) | No battery | 0.20 | 2015-01-15 20:49:05

dave@mylinuxmachine:~/code/bash\$ cd code/bash/
dave@mylinuxmachine:~/code/bash\$ ls
hello.txt test
helloworld.sh testfile
dave@mylinuxmachine:~/code/bash\$./helloworld.sh
bash: ./helloworld.sh: Permission denied
dave@mylinuxmachine:~/code/bash\$ ls -l
total 16
-rw-rw-r-- 1 dave dave 33 Dez 10 18:34
hello.txt
-rw-rw-r-- 1 dave dave 79 Jän 15 20:48
helloworld.sh
-rwxrwxr-x 1 dave dave 28 Dez 10 18:24
test
-rw-rw-r-- 1 dave dave 137 Dez 10 18:31
testfile
dave@mylinuxmachine:~/code/bash\$

來源: https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3DU2_MvxnqlRE&sig=AOvVaw1p-eJMuHbLHcxN8fuFhsTo&ust=1634793738309000&source=images&cd=vfe&ved=0CAAsQjRxqFwoTCLiNjcOf2PMCFQAAAAAdAAAAABAD

工具列表

- python (javascript)



- json (JavaScript Object Notation) 文件格式
-
-

工具列表

- anaconda (virtualenv, pyenv)



- docker (virtualbox, vmware)





VirtualBox



vmware®

Project Bonneville



VMware

工具列表

- cloud (Azure, AWS, GCP)







Google Cloud Platform

工具列表

- api (restful, graphql) , Postman
Get, Post, Patch, Put, Delete

HTTP Methods and Their Meaning

Method	Meaning
GET	Read data
POST	Insert data
PUT or PATCH	Update data, or insert if a new id
DELETE	Delete data

lynda.com

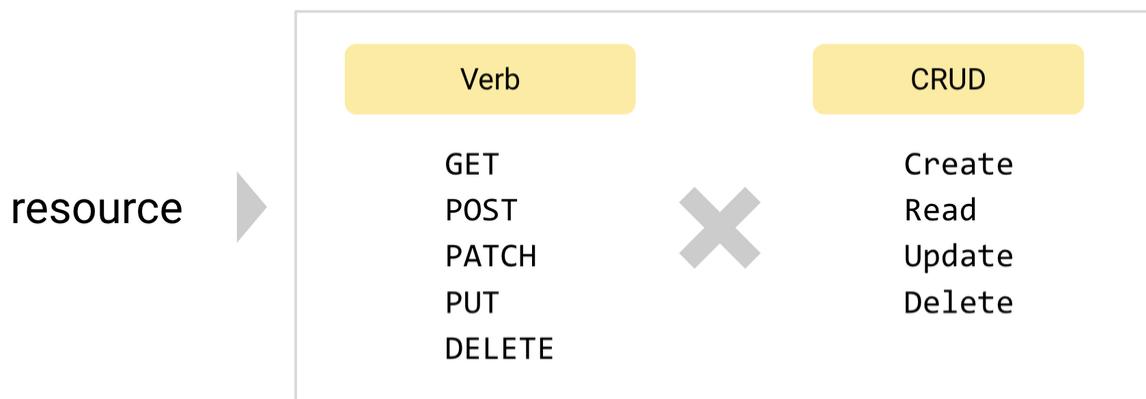
來源：<https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.rbnpa.co%2Fmethod-post-using%2F&psig=AOvVaw3M-abJms7GRGzN-ryoRx7b&ust=1634796482291000&source=images&cd=vfe&ved=0CAAsQjRxqFwoTCNjhodCp2PMCFQAAAAAdAAAAABAD>



Postman

Postman 是幫你檢查 Api 的好幫手。

- query language



Colab Demo

下面就進入到demo的環節。