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pacman & sqlite 資料庫指令

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Arch Linux：套件管理工具 pacman

- 1. 在以git shell操作之前，要以系統管理員身份進入git bash
  (git bash 右鍵點選”以系統管理員身份”執行)
- 2. 以最新的 webui-dist來操作
  git clone https://github.com/wade-fs/webui-dist
- 3. 進入根目錄
  cd/
- 4. 對pacman.tgz，進行解壓縮 (tar –xf [解壓縮檔名])
  tar xf ~/desktop/webui-dist/pacman.tgz
- 5. 確認pacman 能執行
  pacman --version

Pacman 功能種類

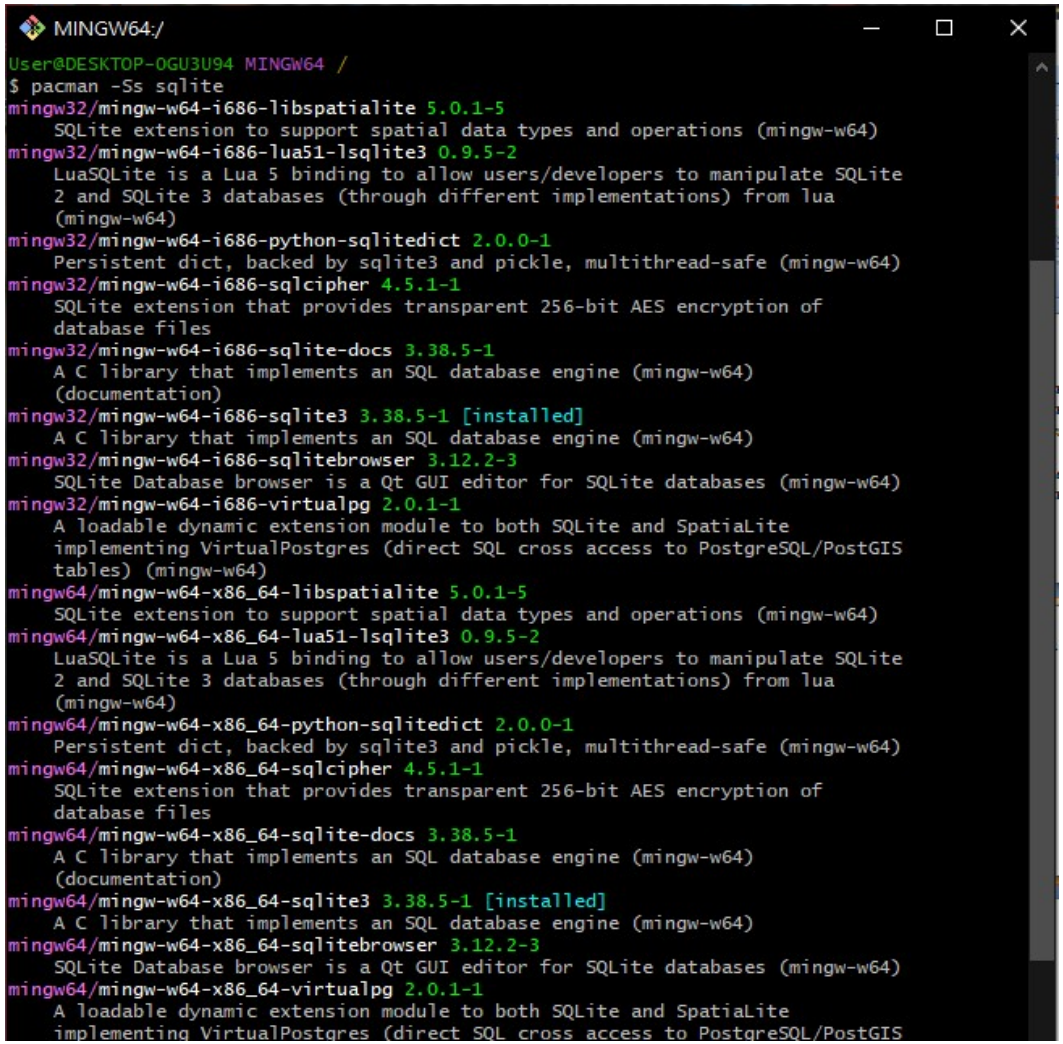
- 1. Search for packages with ***pacman***
- 2. Search for packages with ***pacman***
- 3. List installed packages with ***pacman***
- 4. Install packages with ***pacman***
- 5. Updating and Upgrading with ***pacman***
- 6. Removing packages with ***pacman***

-以下將以SQLite來當作搜尋、安裝、移除的範例

Pacman – Search

pacman -Ss <package-name>

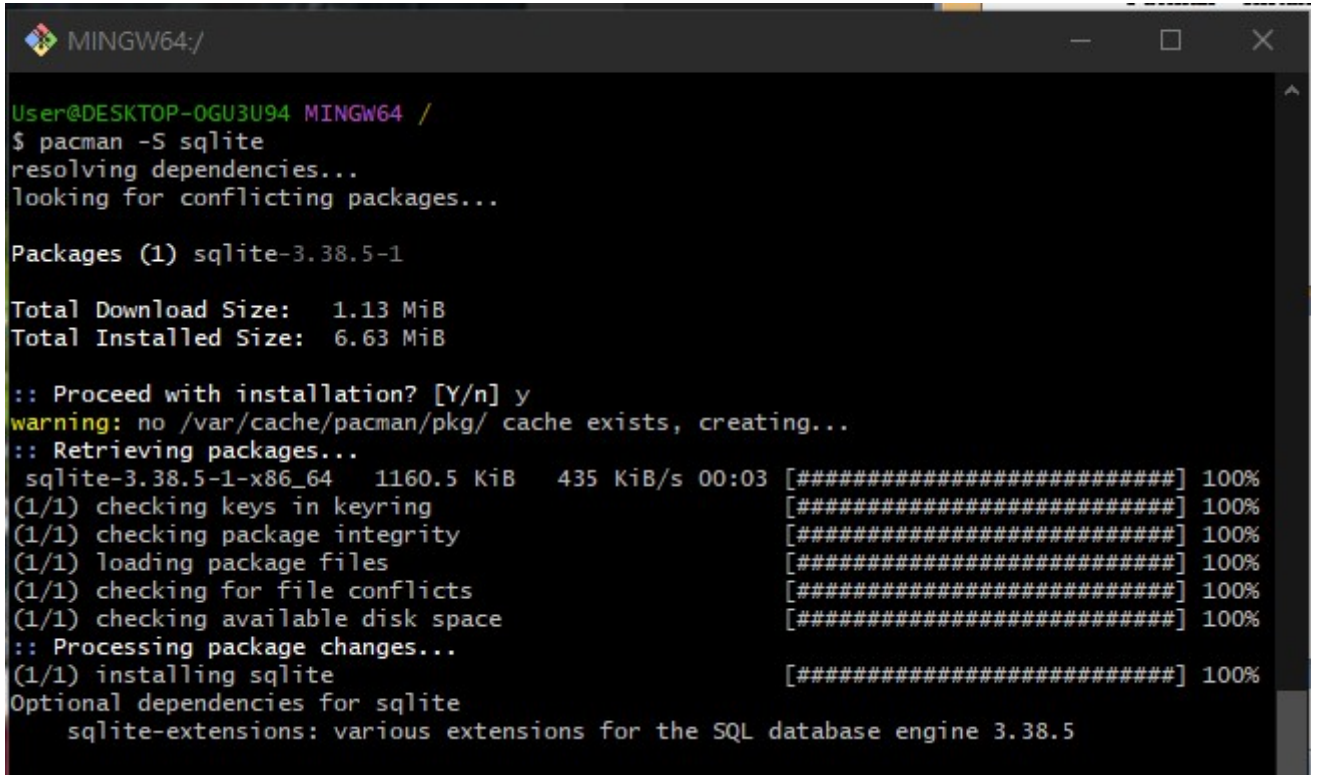
pacman –Ss sqlite



Pacman – Install

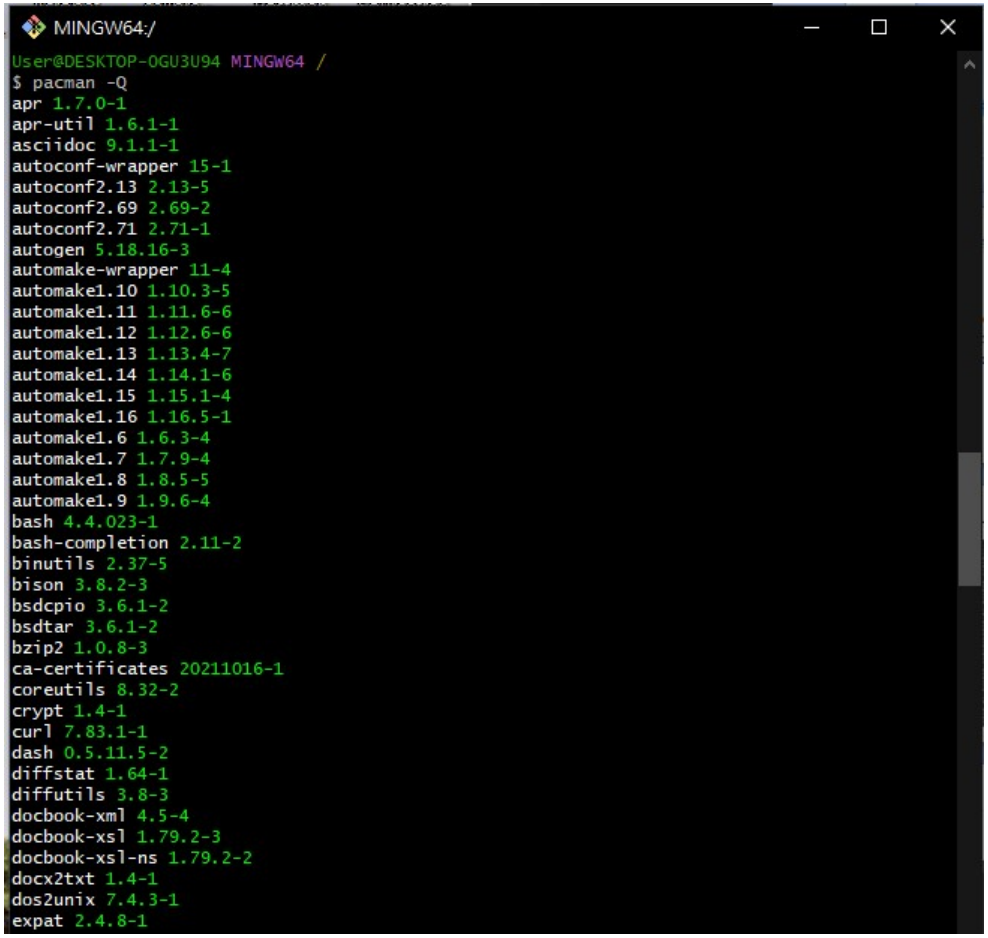
pacman -S <package-name>

pacman –S sqlite



Pacman – List installed packages

pacman -Q



Pacman – Update & Upgrade

pacman –Syy

(Update)

```
User@DESKTOP-OGU3U94 MINGW64 /
$ pacman -Syy
:: Synchronizing package databases...
 git-for-windows            46.8 KiB  47.4 KiB/s 00:01 [############################] 100%
 git-for-windows-mingw32    16.5 KiB  19.8 KiB/s 00:01 [############################] 100%
 mingw32                  1614.0 KiB   212 KiB/s 00:08 [############################] 100%
 mingw64                  1623.2 KiB   338 KiB/s 00:05 [############################] 100%
 ucrt64                   1681.1 KiB   731 KiB/s 00:02 [############################] 100%
 clang32                  1580.7 KiB   644 KiB/s 00:02 [############################] 100%
 clang64                  1612.5 KiB   290 KiB/s 00:06 [############################] 100%
 msys                      394.3 KiB   144 KiB/s 00:03 [############################] 100%
```

pacman –Syu

(Upgrade)

```
User@DESKTOP-OGU3U94 MINGW64 /
$ pacman -Syu
:: Synchronizing package databases...
 git-for-windows is up to date
 git-for-windows-mingw32 is up to date
 mingw32 is up to date
 mingw64 is up to date
 ucrt64 is up to date
 clang32 is up to date
 clang64 is up to date
 msys is up to date
:: Starting core system upgrade...
warning: bash: ignoring package upgrade (4.4.023-1 => 4.4.023-2)
 there is nothing to do
:: Starting full system upgrade...
resolving dependencies...
looking for conflicting packages...

Packages (11) mingw-w64-i686-boost-1.79.0-4  mingw-w64-i686-brotli-1.0.9-5
              mingw-w64-i686-gdb-12.1-2  mingw-w64-i686-libxml2-2.9.14-4
              mingw-w64-i686-python-3.10.5-1  mingw-w64-x86_64-brotli-1.0.9-5
              mingw-w64-x86_64-gdb-12.1-2  mingw-w64-x86_64-git-2.37.0.rc1.windows.1-1
              mingw-w64-x86_64-git-doc-html-2.37.0.rc1.windows.1-1
              mingw-w64-x86_64-libxml2-2.9.14-4  mingw-w64-x86_64-python-3.10.5-1

Total Download Size:    69.81 MiB
Total Installed Size:  518.44 MiB
Net Upgrade Size:        5.47 MiB

:: Proceed with installation? [Y/n] n
```

Pacman – Remove

- pacman -Rcns <package-name>
- pacman -Rcns sqlite

```
User@DESKTOP-OGU3U94 MINGW64 /
$ pacman -Rcns sqlite
checking dependencies...

Packages (1) sqlite-3.38.5-1

Total Removed Size:  6.63 MiB

:: Do you want to remove these packages? [Y/n] y
:: Processing package changes...
(1/1) removing sqlite                                  [############################] 100%
```

git shell 中管理 q8s.db

1. 進入webui-dist 資料夾

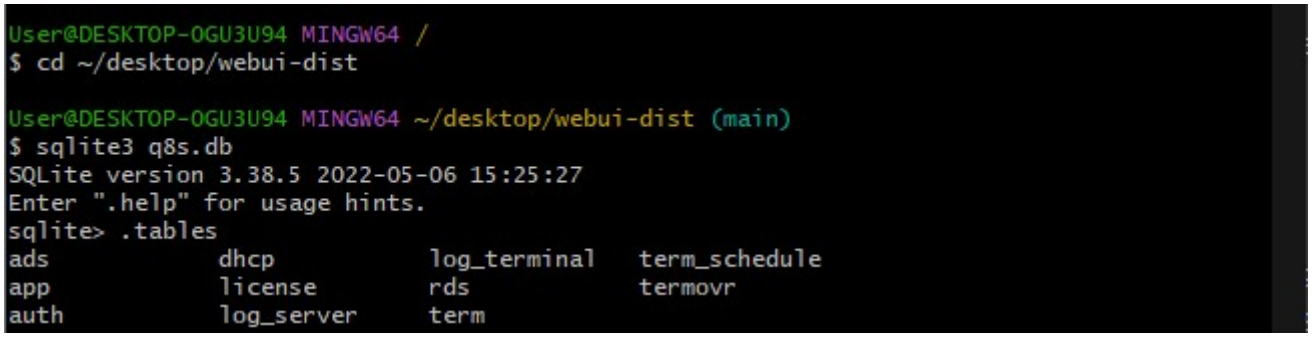
   cd ~/desktop/webui-dist

2. 以sqlite3 打開q8s.db

   sqlite3 q8s.db

3. 查看q8s.db 中的tables

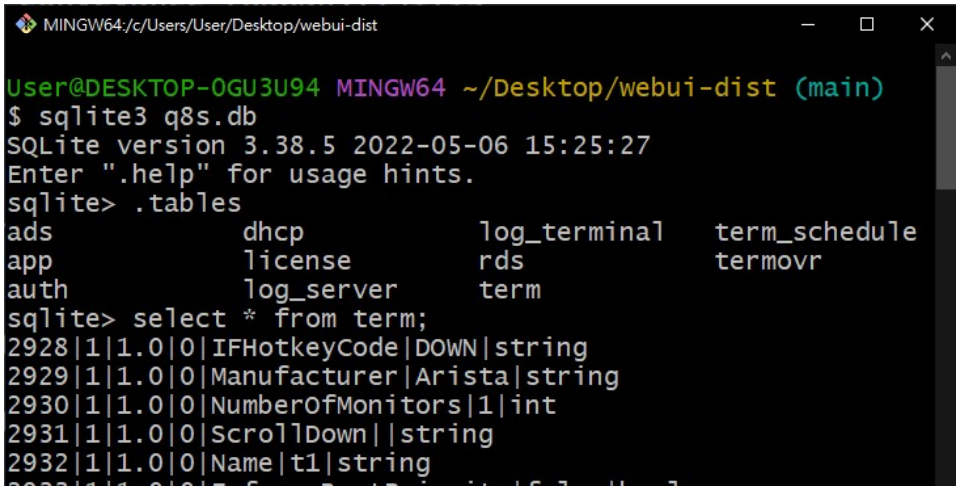
   .tables



git shell 中管理 q8s.db

4. 要查看各種不同tables裡面的資料

   select * from [table 名稱]; (*查看全部資料)



git shell 中管理 q8s.db

5. 但只出現資料卻不知這些資料代表什麼意義，就要用.schema來看資料的定義

   .schema [table 名稱]

```
sqlite> .schema term
CREATE TABLE term ( Id INTEGER PRIMARY KEY AUTOINCREMENT, ObjId INTEGER DEFAULT 1, Major TEXT DEFAULT '1.0', Minor TEXT DEF
 '0', Attr TEXT DEFAULT 'UNKNOWN', Val TEXT DEFAULT 'UNKNOWN', Typ TEXT DEFAULT 'UNKNOWN', UNIQUE(ObjId,Attr));
^Clite> ^C
User@DESKTOP-OGU3U94 MINGW64 ~/Desktop/webui-dist (main)
$
```

所以其實q8s.db中 term tables的一部分，用表格看起來是長得像右邊這樣。

Id	ObjId	Major	Minor	Attr	Val	Typ
2928	1	1.0	0	IFHotkeyCodel	Down	string
2929	1	1.0	0	Manufacturer	Arista	string

6. 退出sqlite

   .exit

auto test api

1. 請閱讀 docs/test-api.md
2. 配合上面的 sqlite3 了解資料庫

auto test api

- 目前藉由sqlite 中.tables 指令
  可得知在q8s.db中的所有table (如下右圖)
  與docs/test-api.md中描述的吻合(如下左圖)

```
3  ## 表格
4
5  - API: /test/ids/:tb
6  - 常用的表格有 term, rds, app,
7  - log 相關: log_terminal, log_server
8  - 其它: license, termovr, term_schedule, dhcp, auth, ads
```

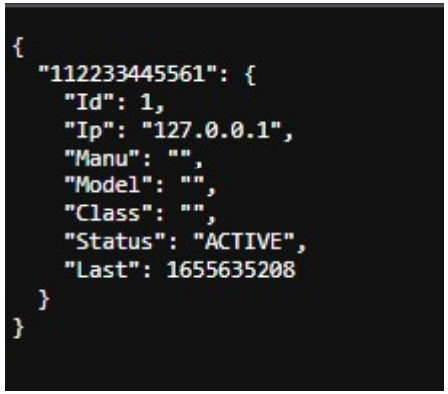
```
User@DESKTOP-OGU3U94 MINGW64 ~/Desktop/webui-dist (main)
$ sqlite3 q8s.db
SQLite version 3.38.5 2022-05-06 15:25:27
Enter ".help" for usage hints.
sqlite> .tables
ads             dhcp            log_terminal    term_schedule
app             license         rds             termovr
auth            log_server      term
```

那在瀏覽器的url也能夠輸入/test 的相關指令來看到資料庫中的table資料

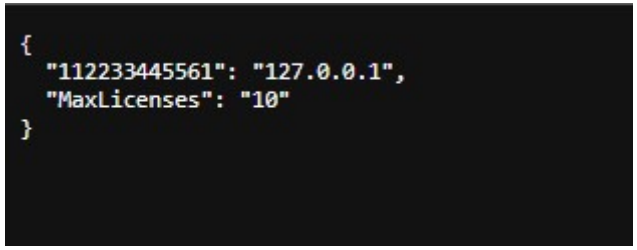
1. Table 中的資料有幾個id API: /test/ids/[table 名稱]
   (例如：http://localhost:8088/test/ids/term) → [1, 2] 因為目前terminal只有 t1 與 t2
2. Table 中的所有item API: /test/items/[table 名稱] → 等於取得table 中所有細節資料
3. 只顯示table 中特定id 的item API: /test/item/[table 名稱] /[id代號]
   (例如： http://localhost:8088/test/item/term/1) → 就只會顯示term中 id = 1的 item

auto test api

4. 取得terminal的status (通常是指目前有哪些terminal 正在運作，要先用
./terminal.sh -s -M 112233445561 -S ACTIVE 來控制使termianl 的狀態變成active
然後API: /test/status/
http://localhost:8088/test/status/



5.取得 status 中占 license 的 terminal 及 max license
API: /test/licensed/
http://localhost:8088/test/licensed/



[問題1] 以表格term來說，像tid=1，照文件操作時，如果是t1，在資料庫中要如何查這筆資料？

答案：select * from term where objId = 1

[問題2.1] 為什麼表格是這樣設計(vertical table)

答案：在webui 中會有很多新增terminal 與 app ...等等不固定的新增資料，若使用水平式，那在新增新一列資料時，UI的顯示可能需要跟著做調整，此時使用垂直式設計，資料藉由id以邏輯形式連繫在一起，就不用做UI上的更動。

[問題2.2] 這樣設計有什麼優點與缺點？

答案：vertical table 的優點在於，靈活性好、顯示數據分類便利、速度比horizon table快，缺點在於，數據規範化難維護、易讀性差、操作sql 語法較複雜，但可用一個函式同時對所有表格實行相同操作。

[問題3] 請編輯terminal中的display，使下面變數進行資料取出，並報告不同變數與原始的差異

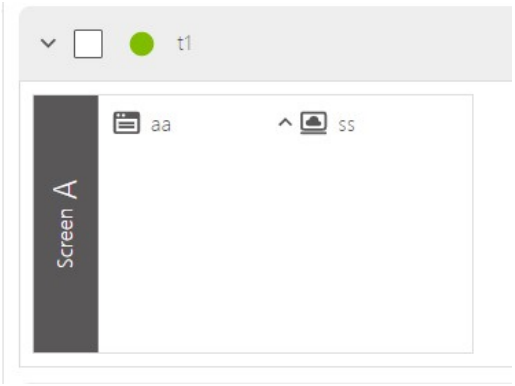
(1) app數從1到2 (ps: 要先建共3個app)

(2) monitor數由1到2，screen個數維持1個，擺放2個app

(3)screen數由1到2，保持monitor數為2，每個screen擺一個app

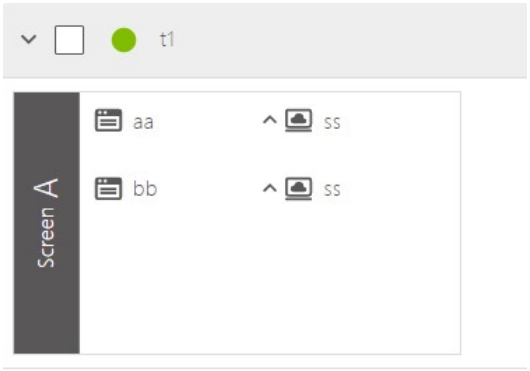
(4)第2個screen放2個app

原始狀況



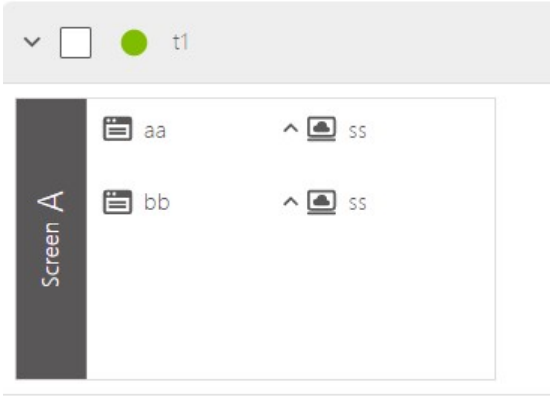

```
"MAC": "112233445561",
"MainMenu": "NONE",
"MainMenuHotkeyCode": "F1",
"MainMenuHotkeyState": "CTRL",
"MainMonitor": 1,
"Manufacturer": "Arista",
"Model": "BoxPC-138-G01",
"ModifiedTS": 1654916655,
"Monitor1_ScreenId": 1,
"Monitor1_Video": "1024x768,16M,60Hz",
"Monitor1_XPosition": 0,
"Monitor1_YPosition": 0,
"Monitor2_ScreenId": 2,
"Monitor2_Video": "1024x768,16M,60Hz",
"Monitor2_XPosition": 1024,
"Monitor2_YPosition": 0,
"Monitor3_ScreenId": 2,
"Monitor3_Video": "1024x768,16M,60Hz",
"Monitor3_XPosition": 2048,
"Monitor3_YPosition": 0,
"Name": "t1",
"NeedToRestart": false,
"NumberOfMonitors": 1,
"NumberOfScreens": 1,
"ParentId": 0,
"Password": "",
"RebootDependentTerminals": false,
"Replaceable": true,
"RightMouseButton": "",
"Schedules": "",
"Screen1_Applications": "1",
"Screen1_EnableTiling": true,
"Screen1_Height": 768,
"Screen1_TileOnStartup": true,
"Screen1_Width": 1024,
"Screen1_XPosition": 0,
"Screen1_YPosition": 0,
"Screen2_Applications": "2,3",
"Screen2_EnableTiling": true,
"Screen2_Height": 768,
"Screen2_TileOnStartup": true,
"Screen2_Width": 2048,
"Screen2_XPosition": 1024,
"Screen2_YPosition": 0,
"ScreenOfAppIds": "1",
"ScrollDown": "",
"ScrollUp": "",
"ShadowMode": "YES",
"ShowDeviceStatusBar": false,
"Status": "OFF",
```

(1) app數從1到2




```
"Monitor1_XPosition": 0,
"Monitor1_YPosition": 0,
"Monitor2_ScreenId": 2,
"Monitor2_Video": "1024x768,16M,60Hz",
"Monitor2_XPosition": 1024,
"Monitor2_YPosition": 0,
"Monitor3_ScreenId": 2,
"Monitor3_Video": "1024x768,16M,60Hz",
"Monitor3_XPosition": 2048,
"Monitor3_YPosition": 0,
"Name": "t1",
"NeedToRestart": false,
"NumberOfMonitors": 1,
"NumberOfScreens": 1,
"ParentId": 0,
"Password": "",
"RebootDependentTerminals": false,
"Replaceable": true,
"RightMouseButton": "",
"Schedules": "",
"Screen1_Applications": "1,2",
"Screen1_EnableTiling": true,
"Screen1_Height": 768,
"Screen1_TileOnStartup": true,
"Screen1_Width": 1024,
"Screen1_XPosition": 0,
"Screen1_YPosition": 0,
"Screen2_Applications": "3",
"Screen2_EnableTiling": true,
"Screen2_Height": 768,
"Screen2_TileOnStartup": true,
"Screen2_Width": 2048,
"Screen2_XPosition": 1024,
"Screen2_YPosition": 0,
"ScreenOfAppIds": "1,2",
"ScrollDown": "",
"ScrollUp": "",
"ShadowMode": "YES",
```

(2) monitor數由1到2，screen個數維持1個，擺放2個app

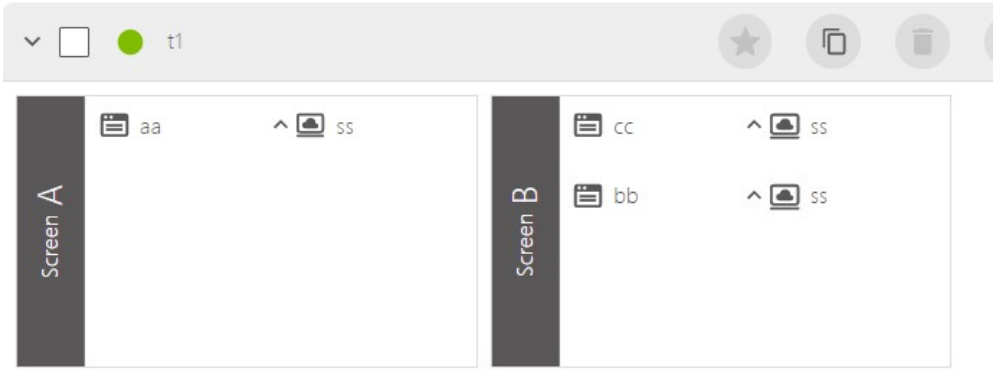



```
"LogOnRelevanceUser": "NONE",
"MAC": "112233445561",
"MainMenu": "NONE",
"MainMenuHotkeyCode": "F1",
"MainMenuHotkeyState": "CTRL",
"MainMonitor": 1,
"Manufacturer": "Arista",
"Model": "BoxPC-138-G01",
"ModifiedTS": 1654916655,
"Monitor1_ScreenId": 1,
"Monitor1_Video": "1024x768,16M,60Hz",
"Monitor1_XPosition": 0,
"Monitor1_YPosition": 0,
"Monitor2_ScreenId": 1,
"Monitor2_Video": "1024x768,16M,60Hz",
"Monitor2_XPosition": 1024,
"Monitor2_YPosition": 0,
"Monitor3_ScreenId": 2,
"Monitor3_Video": "1024x768,16M,60Hz",
"Monitor3_XPosition": 2048,
"Monitor3_YPosition": 0,
"Name": "t1",
"NeedToRestart": false,
"NumberOfMonitors": 2,
"NumberOfScreens": 1,
"ParentId": 0,
"Password": "",
"RebootDependentTerminals": false,
"Replaceable": true,
"RightMouseButton": "",
"Schedules": "",
"Screen1_Applications": "1,2",
"Screen1_EnableTiling": true,
"Screen1_Height": 768,
"Screen1_TileOnStartup": true,
"Screen1_Width": 2048,
"Screen1_XPosition": 0,
"Screen1_YPosition": 0,
"Screen2_Applications": "3",
"Screen2_EnableTiling": true,
"Screen2_Height": 768,
"Screen2_TileOnStartup": true,
"Screen2_Width": 2048,
"Screen2_XPosition": 1024,
"Screen2_YPosition": 0,
"ScreenOfAppIds": "1,2",
"ScrollDown": "",
"ScrollUp": "",
"ShadowMode": "YES",
```

(3) screen數由1到2，保持monitor數為2，每個screen擺一個app

```
"LogOnRelevanceUser": "NONE",
"MAC": "112233445561",
"MainMenu": "NONE",
"MainMenuHotkeyCode": "F1",
"MainMenuHotkeyState": "CTRL",
"MainMonitor": 1,
"Manufacturer": "Arista",
"Model": "BoxPC-138-G01",
"ModifiedTS": 1654916655,
"Monitor1_ScreenId": 1,
"Monitor1_Video": "1024x768,16M,60Hz",
"Monitor1_XPosition": 0,
"Monitor1_YPosition": 0,
"Monitor2_ScreenId": 2,
"Monitor2_Video": "1024x768,16M,60Hz",
"Monitor2_XPosition": 1024,
"Monitor2_YPosition": 0,
"Monitor3_ScreenId": 2,
"Monitor3_Video": "1024x768,16M,60Hz",
"Monitor3_XPosition": 2048,
"Monitor3_YPosition": 0,
"Name": "t1",
"NeedToRestart": false,
"NumberOfMonitors": 3,
"NumberOfScreens": 2,
"ParentId": 0,
"Password": "",
"RebootDependentTerminals": false,
"Replaceable": true,
"RightMouseButton": "",
"Schedules": "",
"Screen1_Applications": "1",
"Screen1_EnableTiling": true,
"Screen1_Height": 768,
"Screen1_TileOnStartup": true,
"Screen1_Width": 1024,
"Screen1_XPosition": 0,
"Screen1_YPosition": 0,
"Screen2_Applications": "2",
"Screen2_EnableTiling": true,
"Screen2_Height": 768,
"Screen2_TileOnStartup": true,
"Screen2_Width": 2048,
"Screen2_XPosition": 1024,
"Screen2_YPosition": 0,
"ScreenOfAppIds": "1;2",
"ScrollDown": "",
"ScrollUp": "",
"ShadowMode": "YES",
```

(4)第2個screen放2個app




```
"LogOnRelevanceUser": "NONE",
"MAC": "112233445561",
"MainMenu": "NONE",
"MainMenuHotkeyCode": "F1",
"MainMenuHotkeyState": "CTRL",
"MainMonitor": 1,
"Manufacturer": "Arista",
"Model": "BoxPC-138-G01",
"ModifiedTS": 1654916655,
"Monitor1_ScreenId": 1,
"Monitor1_Video": "1024x768,16M,60Hz",
"Monitor1_XPosition": 0,
"Monitor1_YPosition": 0,
"Monitor2_ScreenId": 2,
"Monitor2_Video": "1024x768,16M,60Hz",
"Monitor2_XPosition": 1024,
"Monitor2_YPosition": 0,
"Monitor3_ScreenId": 2,
"Monitor3_Video": "1024x768,16M,60Hz",
"Monitor3_XPosition": 2048,
"Monitor3_YPosition": 0,
"Name": "t1",
"NeedToRestart": false,
"NumberOfMonitors": 3,
"NumberOfScreens": 2,
"ParentId": 0,
"Password": "",
"RebootDependentTerminals": false,
"Replaceable": true,
"RightMouseButton": "",
"Schedules": "",
"Screen1_Applications": "1",
"Screen1_EnableTiling": true,
"Screen1_Height": 768,
"Screen1_TileOnStartup": true,
"Screen1_Width": 1024,
"Screen1_XPosition": 0,
"Screen1_YPosition": 0,
"Screen2_Applications": "2,3",
"Screen2_EnableTiling": true,
"Screen2_Height": 768,
"Screen2_TileOnStartup": true,
"Screen2_Width": 2048,
"Screen2_XPosition": 1024,
"Screen2_YPosition": 0,
"ScreenOfAppIds": "1;2,3",
"ScrollDown": "",
"ScrollUp": "",
"ShadowMode": "YES",
```