一、下載虛擬機

https://drive.google.com/file/d/1qIHaqxywXU7OzI_VSsh7ULAFbEu01LEb/view?usp=sharing

二、下載 VMWare Player

https://my.vmware.com/en/web/vmware/free#desktop_end_user_computing/vmware_workstation_player/15_0

三、登入 ZUVIO

1.請登入此網站註冊，使用"學號最後2碼+姓名"當成帳號

https://irs.zuvio.com.tw/

==========

剪取工具

https://docs.google.com/document/d/1fn4qyiVvKJJrzAS4EDIzNh2t-wmWvwx7T-aw966_DXU/edit

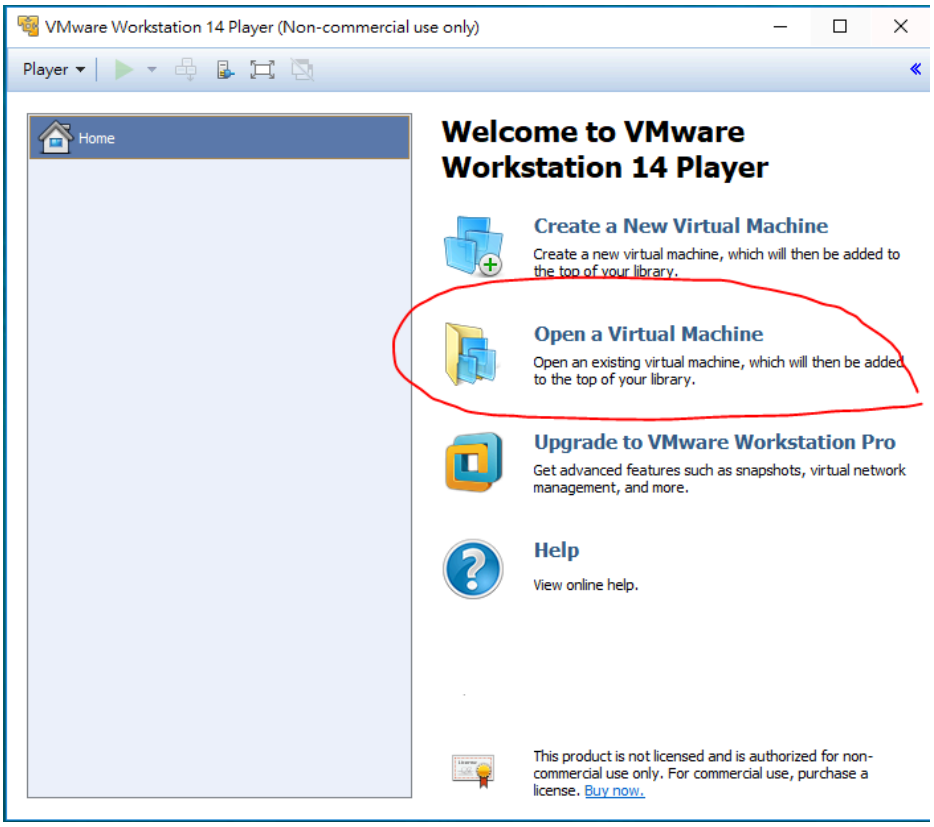
==========

四、準備執行環境

(https://myweb.ntut.edu.tw/~jykuo/train/Ubuntu14_23.pdf)

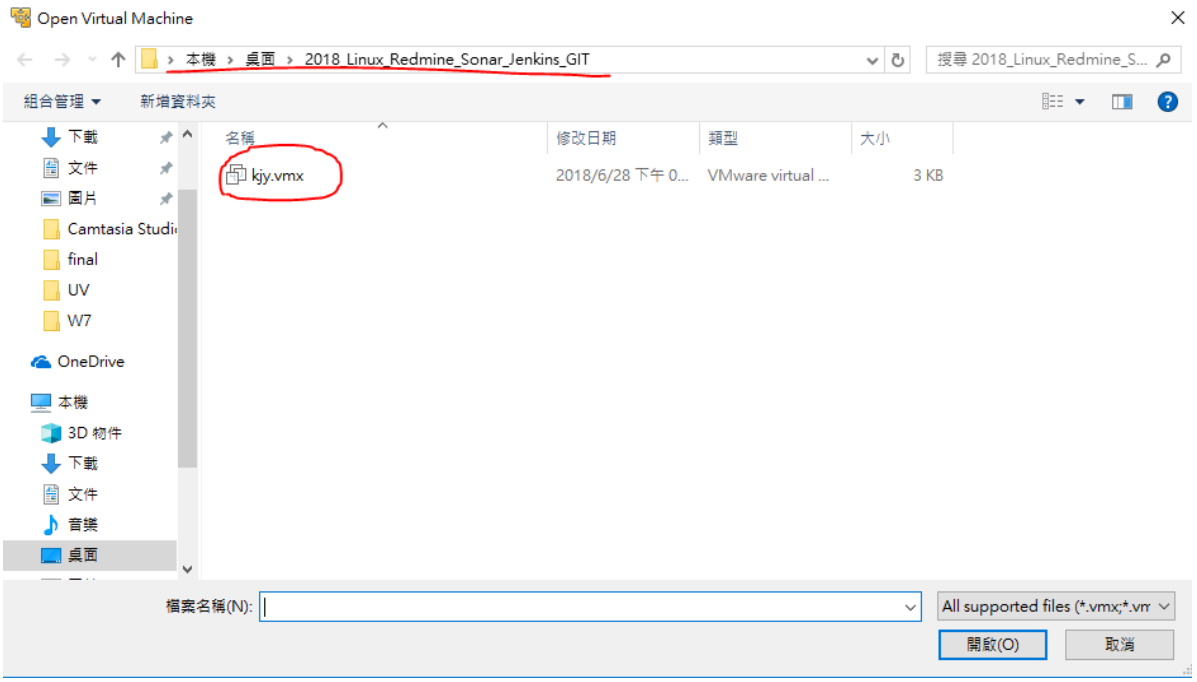
==========

1.啟動 VM PLAYER

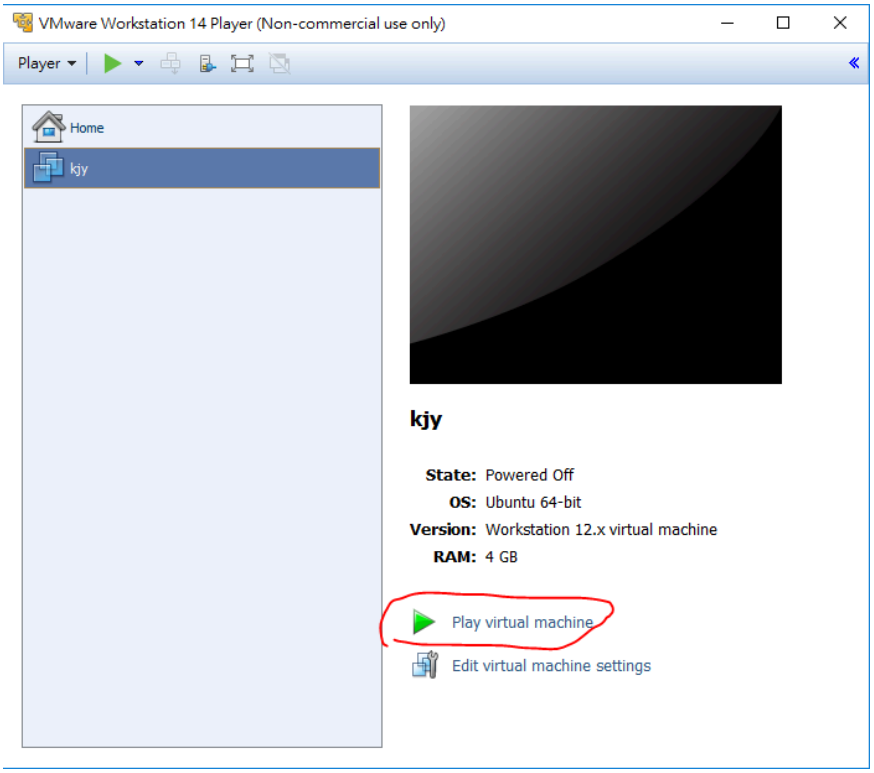


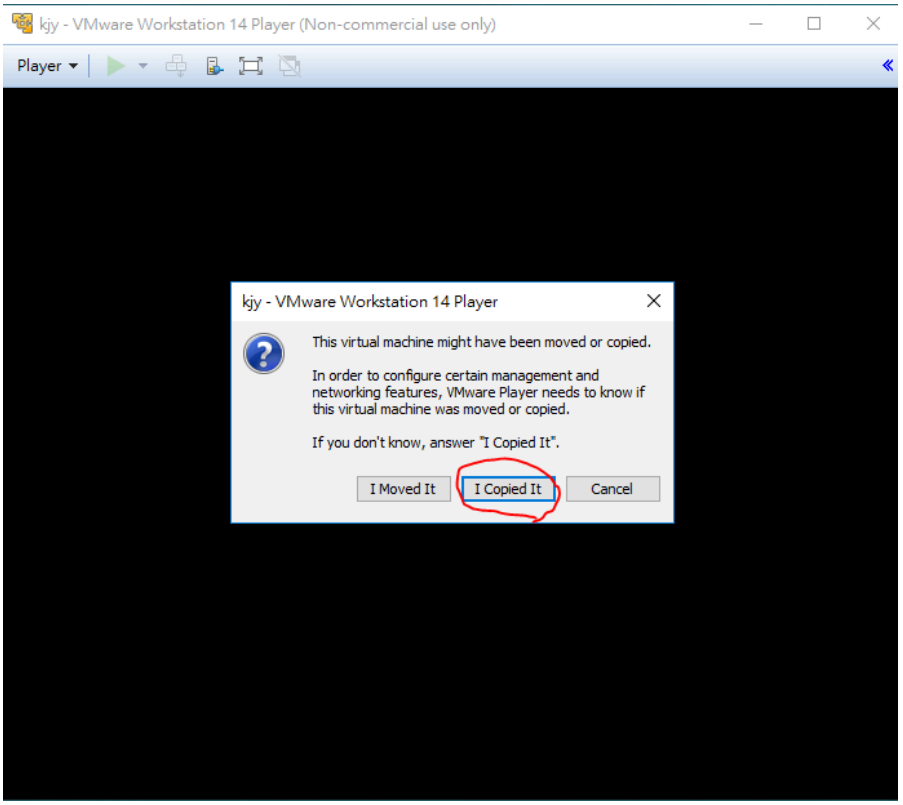
(b) 安裝虛擬機執行環境 VMWare Player 完成後，實施測試與問題排除
https://myweb.ntut.edu.tw/~jykuo/train/VMNetworkTesting.pdf

2. 開啟 **VM** 檔案

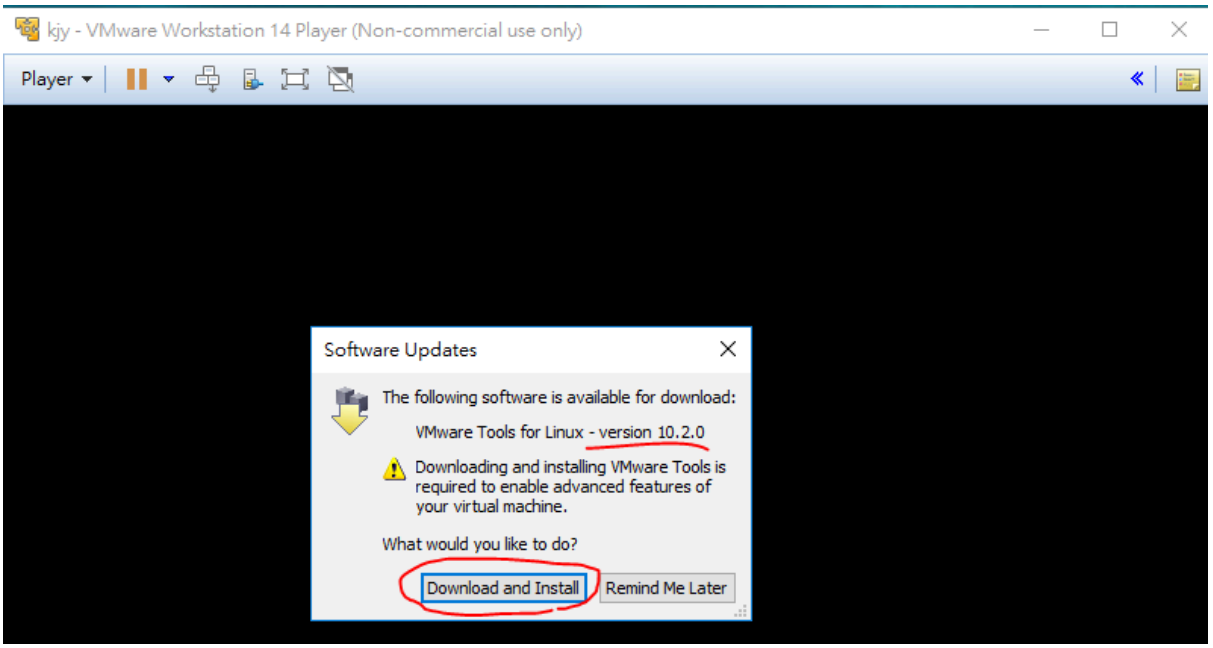


3. 播放VM 啟動 Linux,

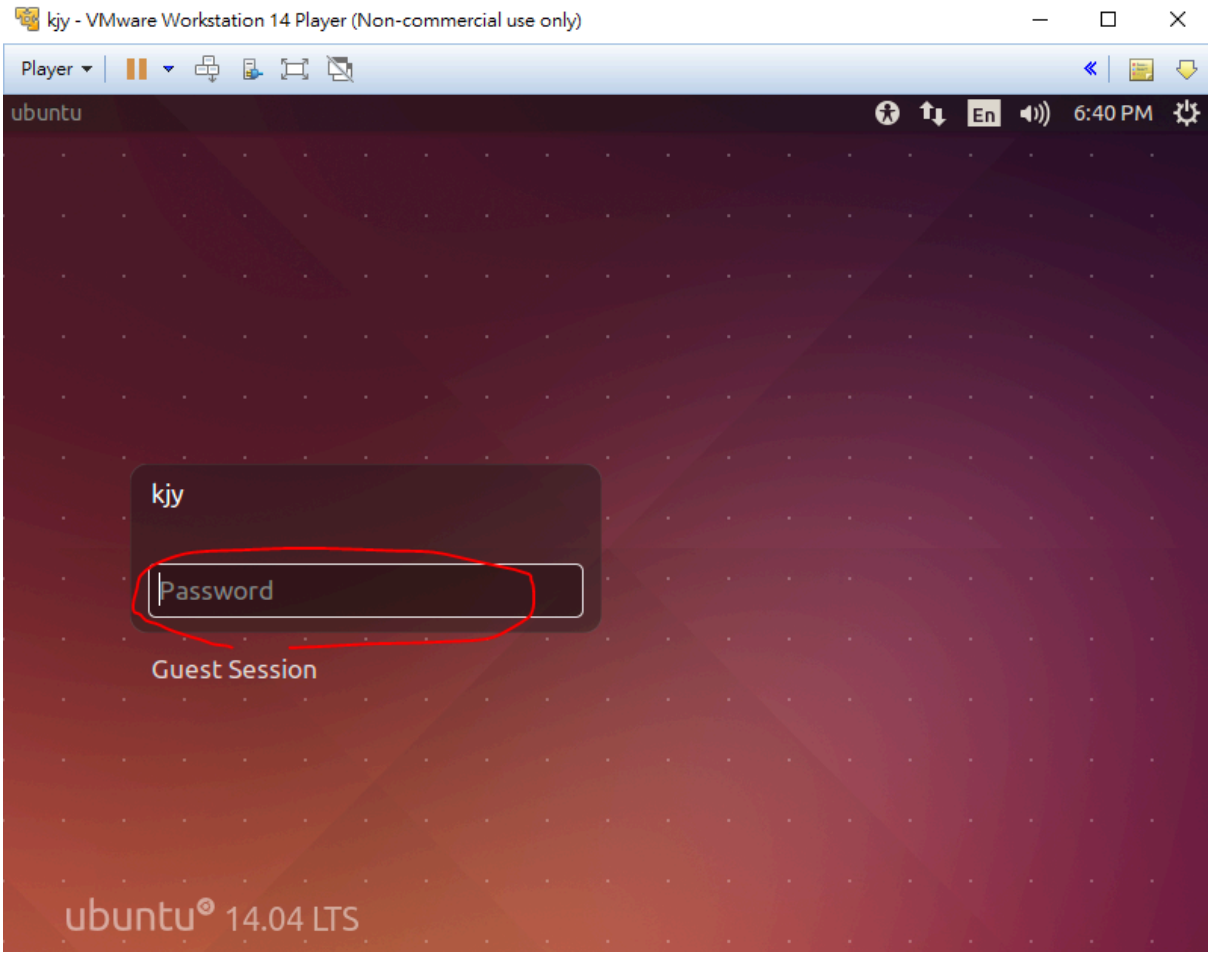




4. 更新VMWare Player 工具

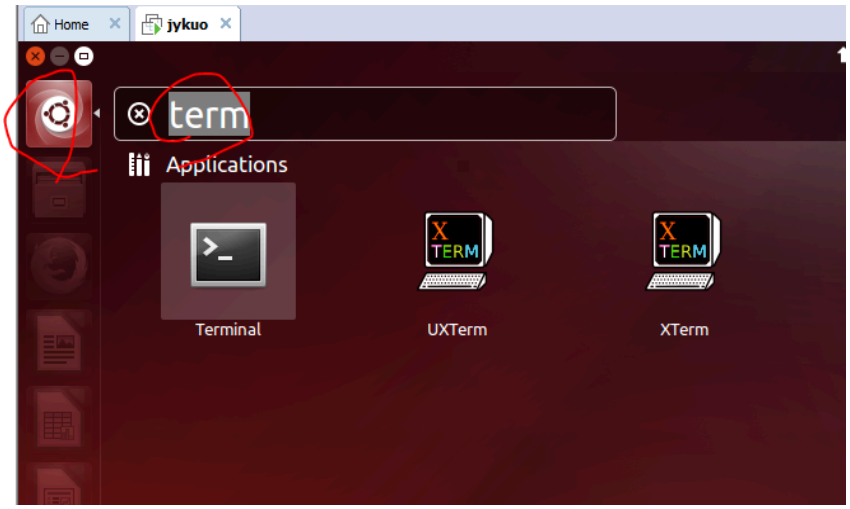


輸入帳號密碼 kjy/kjy



預設啟動 Linux 的 Jenkins Server, Git Server

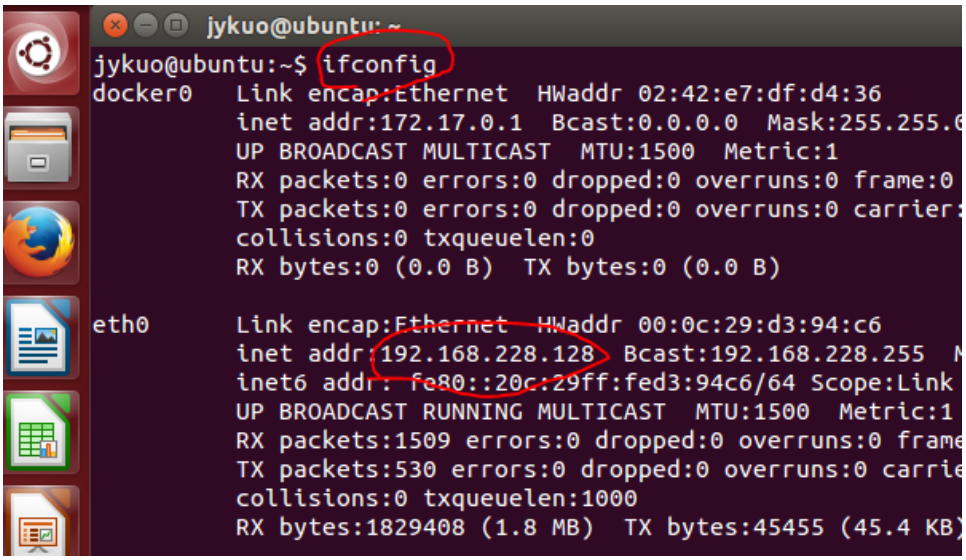
5. 啟動 **Linux Terminal**



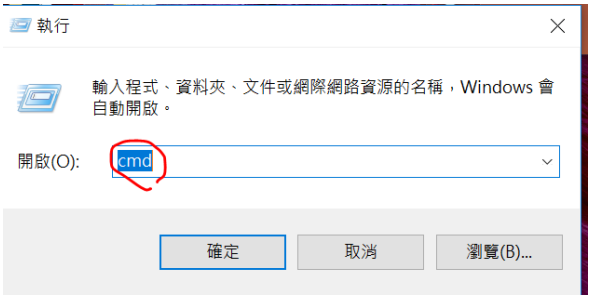
---

6. 指令 **ifconfig**,

查看虛擬機 VM Linux 的內網 IP

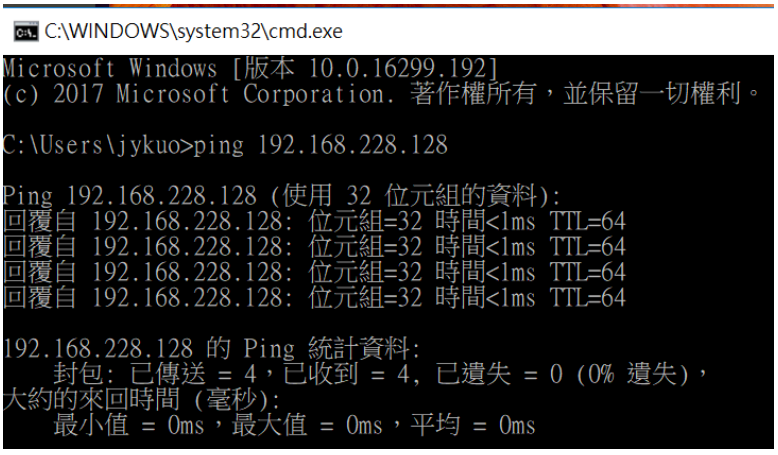


本地端執行指令提式視窗



7. 測試虛擬機連線,

ping 192.168.xx.xx



8. .使用瀏覽器啟動 jenkins,

192.168.xx.xx:8080, kjy/kjy

講義, https://myweb.ntut.edu.tw/~jykuo/train/001BuildToolLab_2017_33.pdf

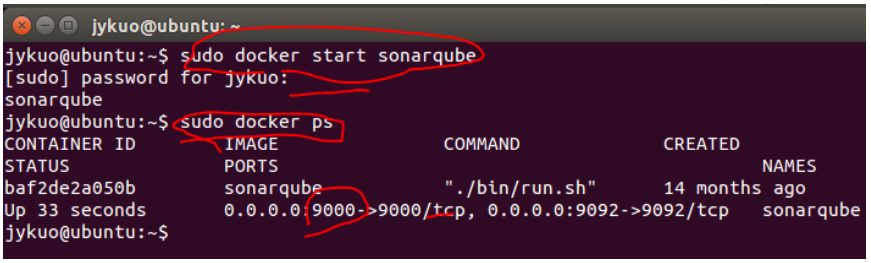
9. 啟動 redmine,

http://192.168.xx.xx/redmine , admin/admin

-

10. 啟動 sonarqube

sudo docker start sonarqube
kjy



在瀏覽器啟動sonarqube, http://192.168.xx.xx:9000, admin/admin
參考資料, https://myweb.ntut.edu.tw/~jykuo/train/Ubuntu14_23.pdf
==========

五、Jenkins練習 (project leder或資深工程師, 持續整合建置)

==========

1. 三層選單 Jenkine

-專案 (test01)-第幾次建置

2. Jenkins - 建置歷程

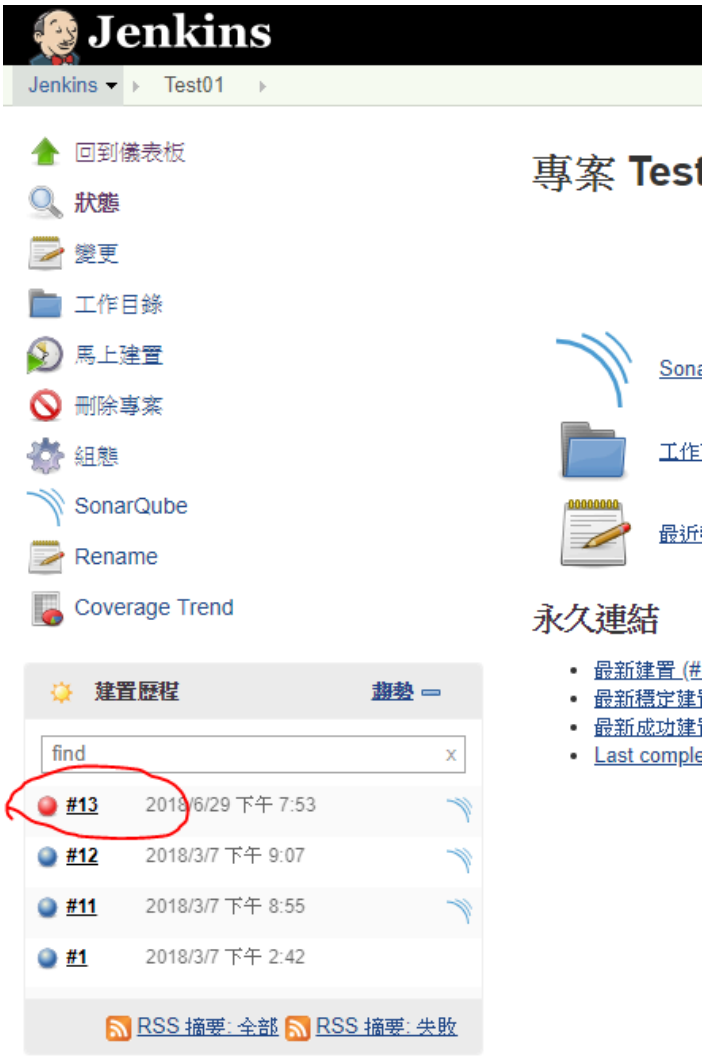
---

3. 第二層選單 Test01

- 馬上建置 - (藍色建置成功，紅色建置失敗)


Jenkins
Jenkins
Test01
回到儀表板
狀態
變更
工作區
馬上建置
刪除專案
組態
SonarQube
Rename
Coverage Trend
建置歷程
趨勢
find
#12
2018/3/7 下午 9:07
專案 Test01
SonarQube
工作區
最近變更
永久連結
最新建置 (#12), 3 月 23 天 以前
最新穩定建置 (#12), 3 月 23 天 以前
最新成功建置 (#12), 3 月 23 天 以前
Last completed build (#12), 3 月 23 天 .

4. 點選 Jenkins - Test01- #13



5. 點選第三層選單,

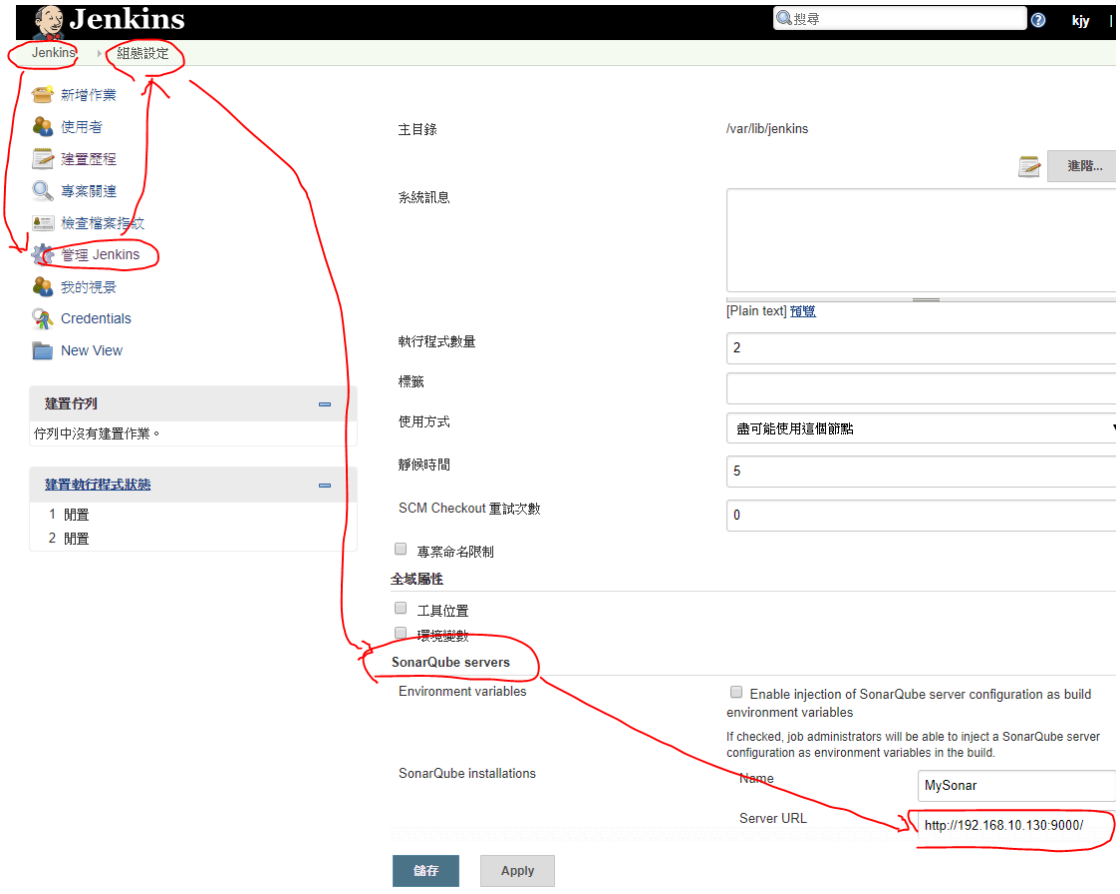
查看建置錯誤訊息


```
INFO: SonarQube Scanner 2.6.1
INFO: Java 1.8.0_171 Oracle Corporation (64-bit)
INFO: Linux 4.2.0-27-generic amd64
INFO: Error stacktraces are turned on.
INFO: User cache: /var/lib/jenkins/.sonar/cache
ERROR: SonarQube server [http://192.168.10.130:9000] can not be reached
INFO: ------------------------------------------------------------------------
INFO: EXECUTION FAILURE
INFO: ------------------------------------------------------------------------
INFO: Total time: 5.729s
INFO: Final Memory: 3M/59M
INFO: ------------------------------------------------------------------------
ERROR: Error during SonarQube Scanner execution
org.sonarsource.scanner.api.internal.ScannerException: Unable to execute SonarQube
```

6. 修正sonarqube 設定 IP 錯誤

(1) 到Jenkins 瀏覽器控制畫面，設定 sonarqube IP，(安裝sonarqube plugin)
選單，Jenkins - 管理 Jenkins - 設定系統 - sonarqube serve URL - ip

(2) 更改 sonarqube 的 ip，儲存

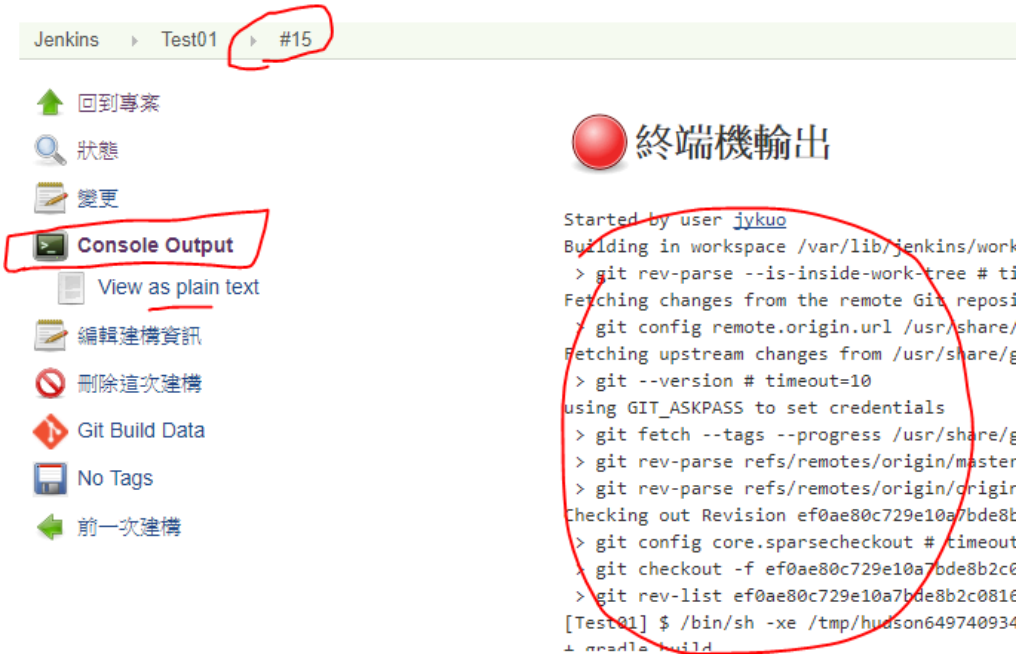


設定好，再到專案 Test01 - 馬上建置 (藍色 - 建置成功)

---

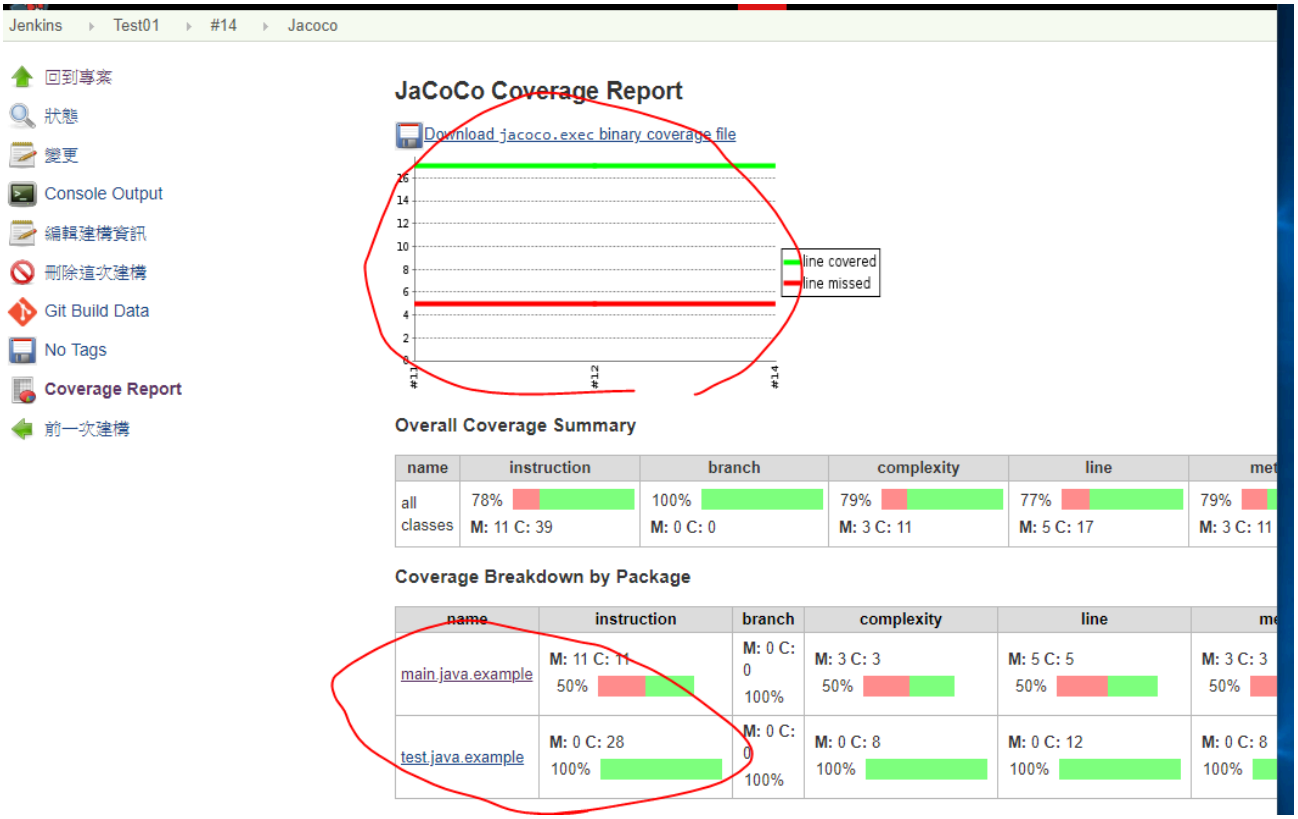
7. 觀察建置訊息

Jenkins 第三層選單，建置號碼，觀察建置訊息



8. 查看 Coverage

查看 JoCoCo 測式 Coverage 是否足夠



---

9. 改善測試 Coverage

專案 proj02 沒有充分測試，需要改善測試的 Coverage

(1) 前提是 - 必須建置成功
(2) JaCoCo - Java Code Coverage
statement code coverage - 每一行程式都有被測試 100%
(3) Gradle 建置規定
main package - 交付客戶的程式
test package - 測試程式
(4) Tiger 未被充分測試

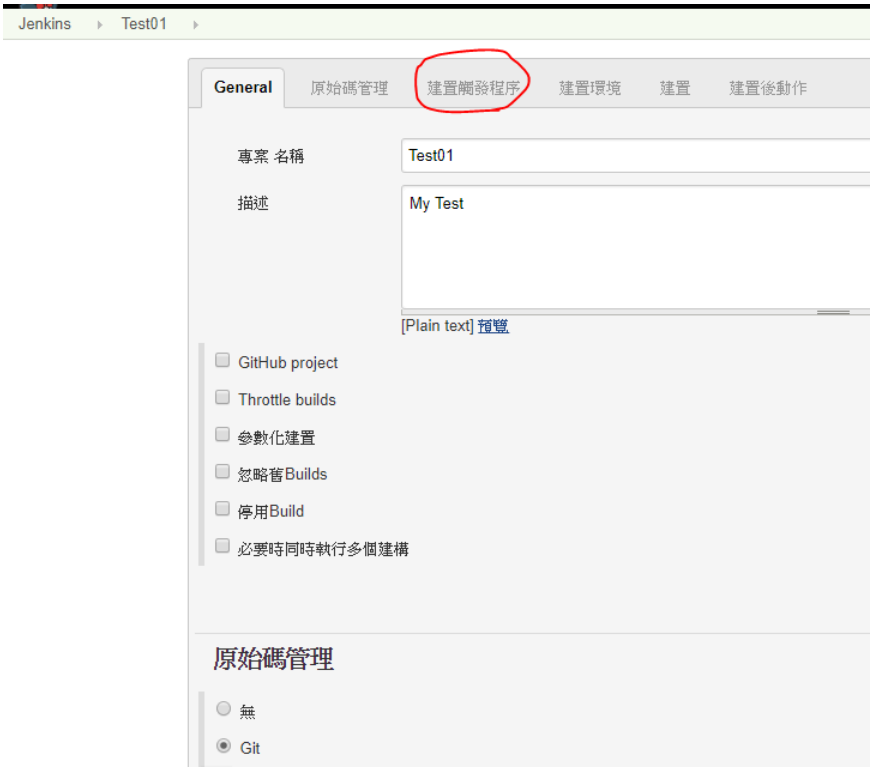
---

10. 定時建置

Daily Build 每日建置 ()
(1) 第二層選單 Test01- 組態

Software Configuration Management

(2) 設定建置觸發程序 - 定時、固定觸發規則，持續建置系統



---

(3) 各種不同建置排程

---

(4) 定期建置

---

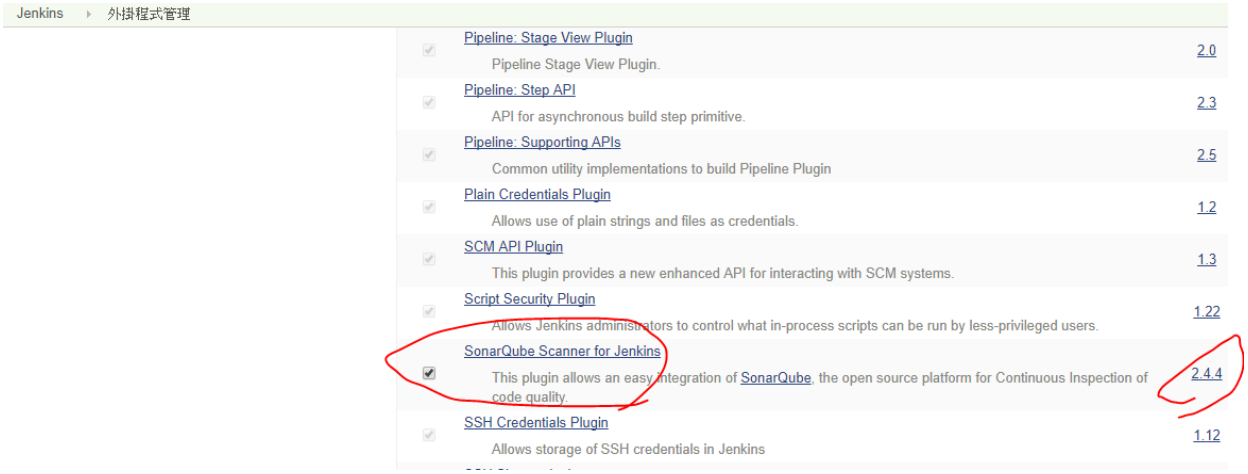
11. 外掛程式

Jenkins - 管理 Jenkins - 管理外掛程式

(1) 更新 - 可用的 - 已安裝 - 進階

(2) 搜尋可用的 plug-in

已安裝



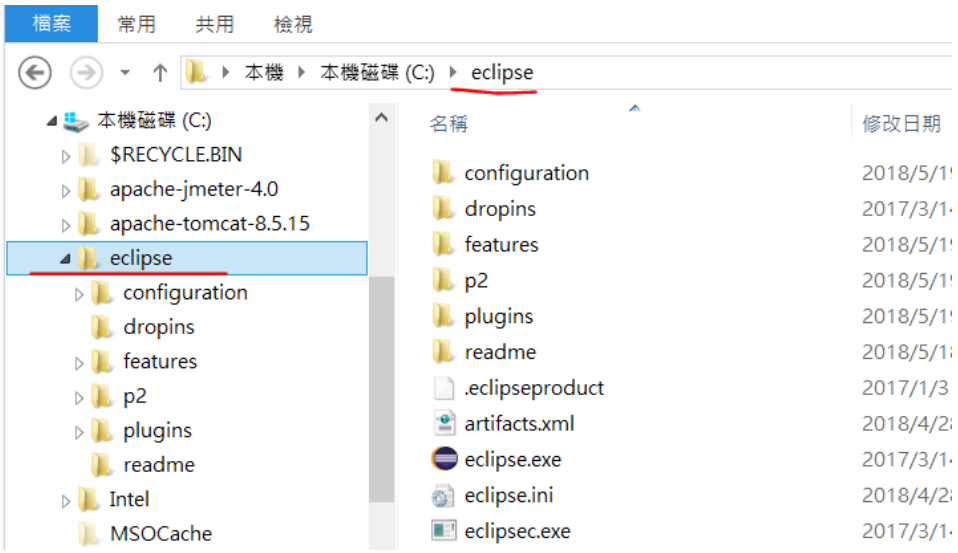
(3) 安裝相對應的 plug-in

六、CLIENT端操作

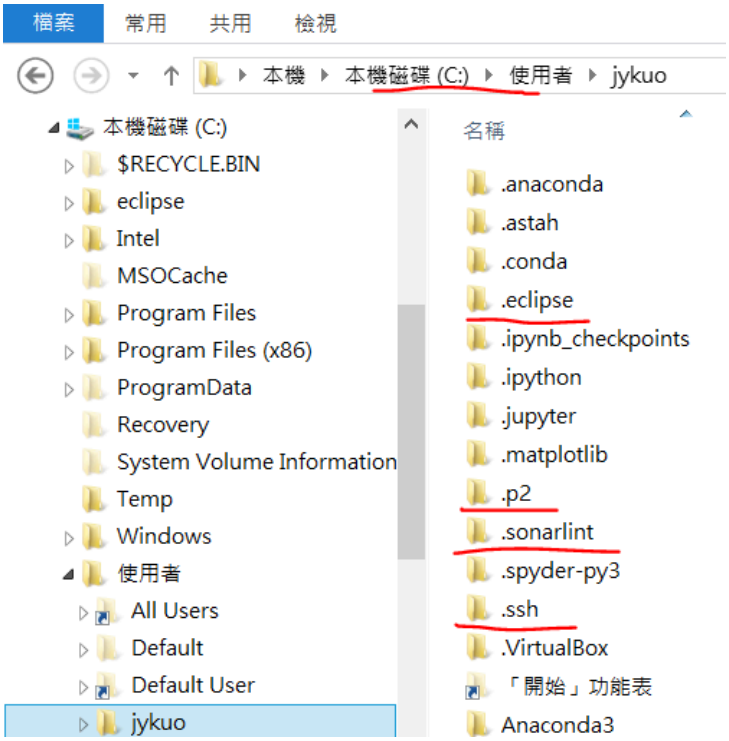
==========

1. 下載 Eclipse

下載完解壓縮到 C:\
https://www.dropbox.com/s/esec3znqovdmlo5/eclipse-jee-neon-3-win32-x86_64.zip?dl=0



2. 若有舊版本，清除相關舊檔案

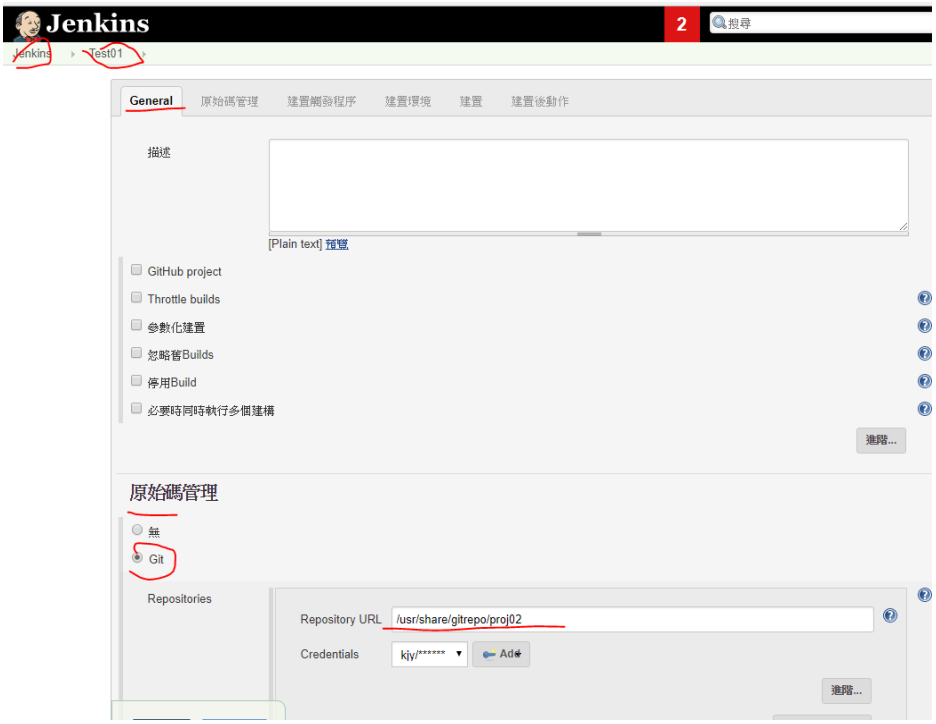


---

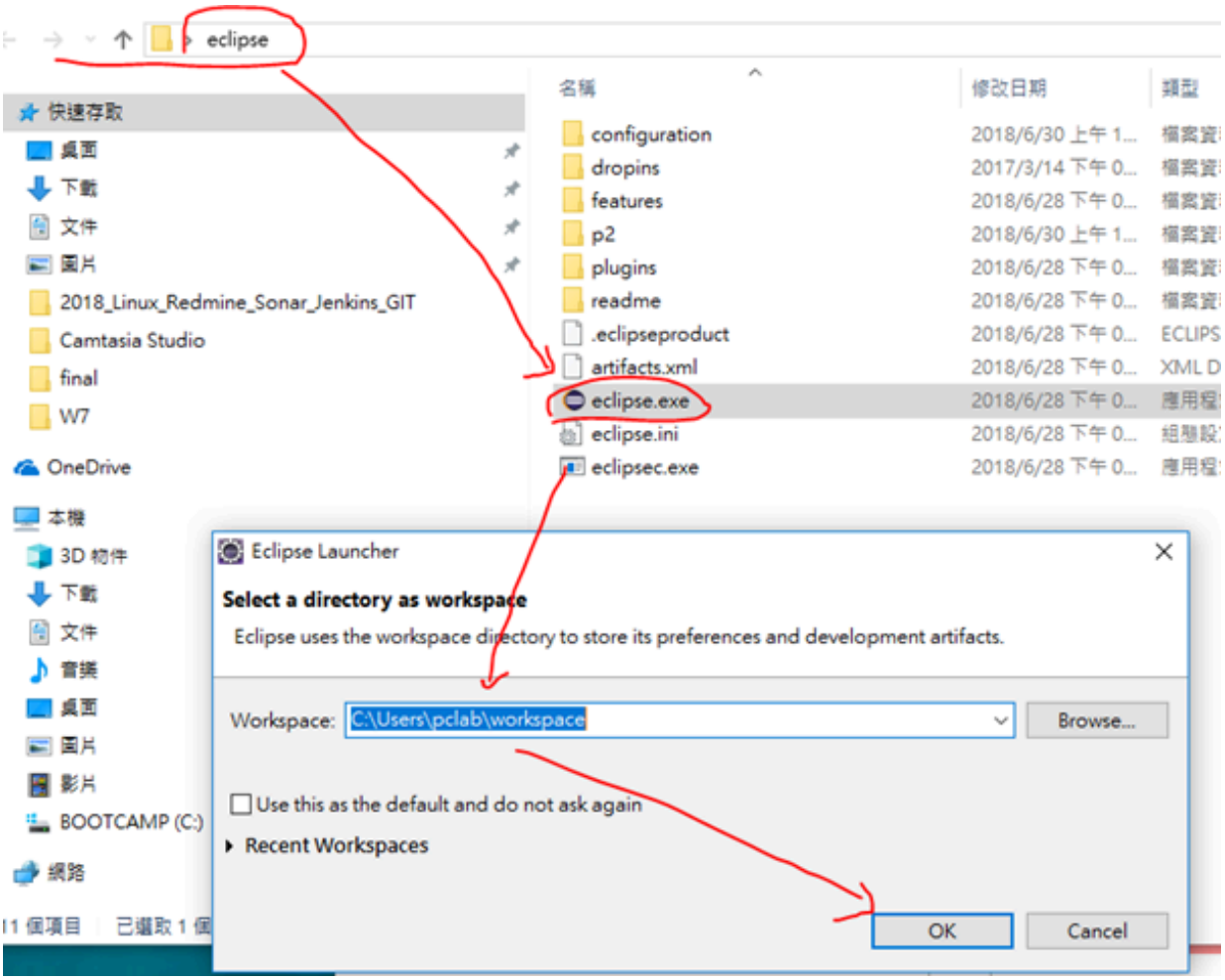
3. 從遠端 Git repository 複製 clone 專案檔案

參考講義 https://myweb.ntut.edu.tw/~jykuo/train/EGit_Ubuntu_2017.pdf

遠端 Git 路徑



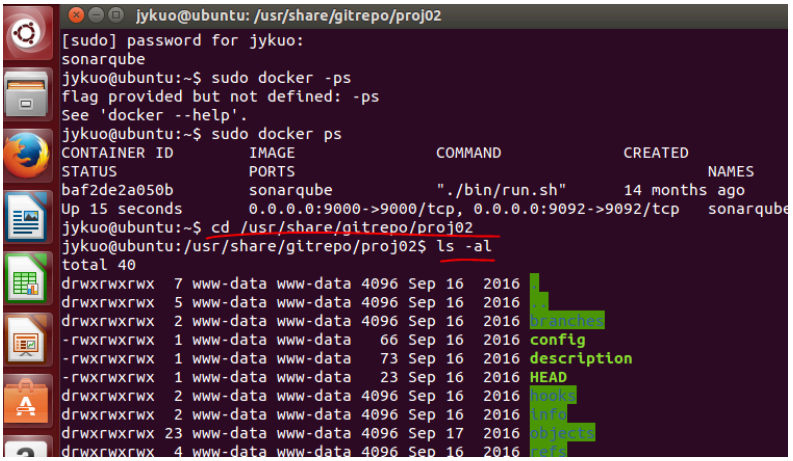
4. 啟動 **Eclipse**，設定空 **workspace**



5. 找到 Git Server 的目錄位置

(1) VM Linux Terminal (找 Git 目錄結構)

```
# chang directory
cd /usr/share/gitrepo/proj02
# list 檔案目錄詳細資料清單
ls -al
```

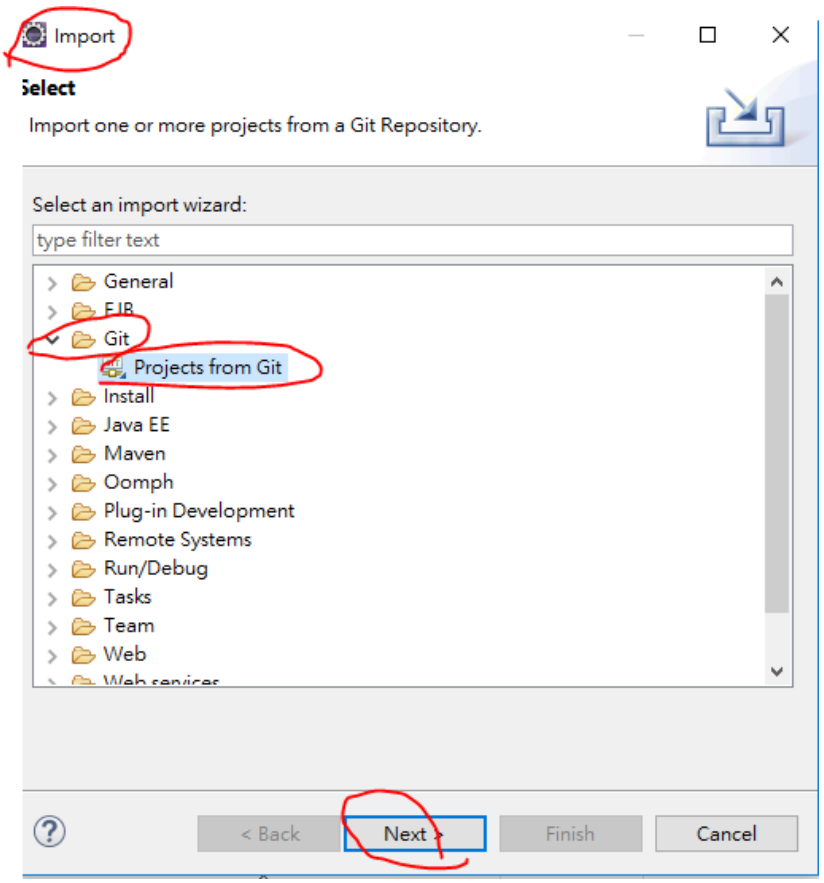


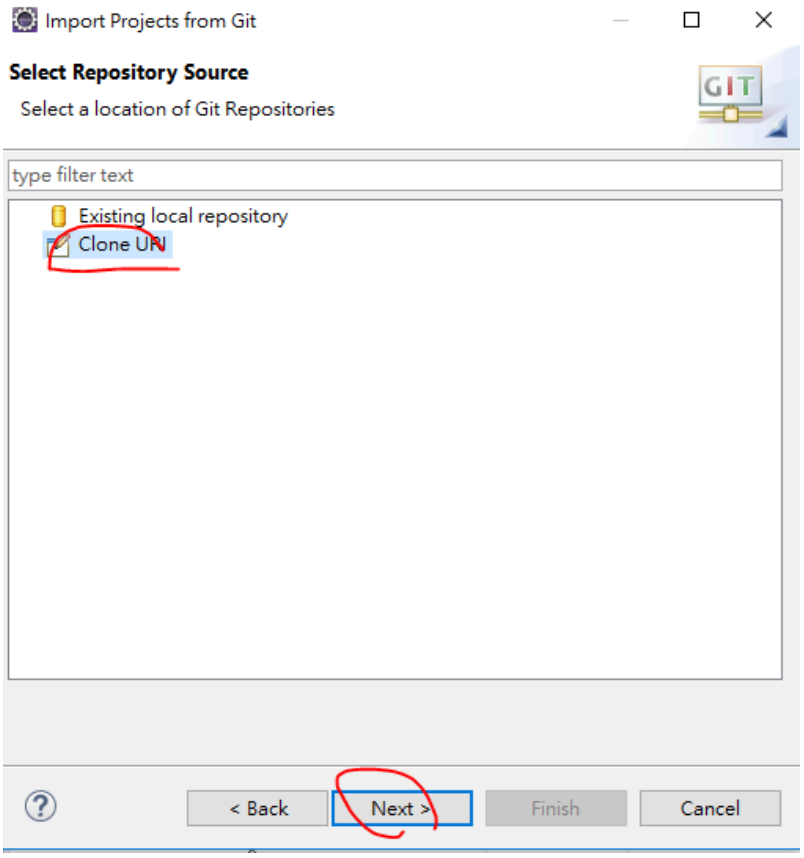
參考資料 - http://www.cc.ntut.edu.tw/~jykuo/train/Ubuntu14_23.pdf

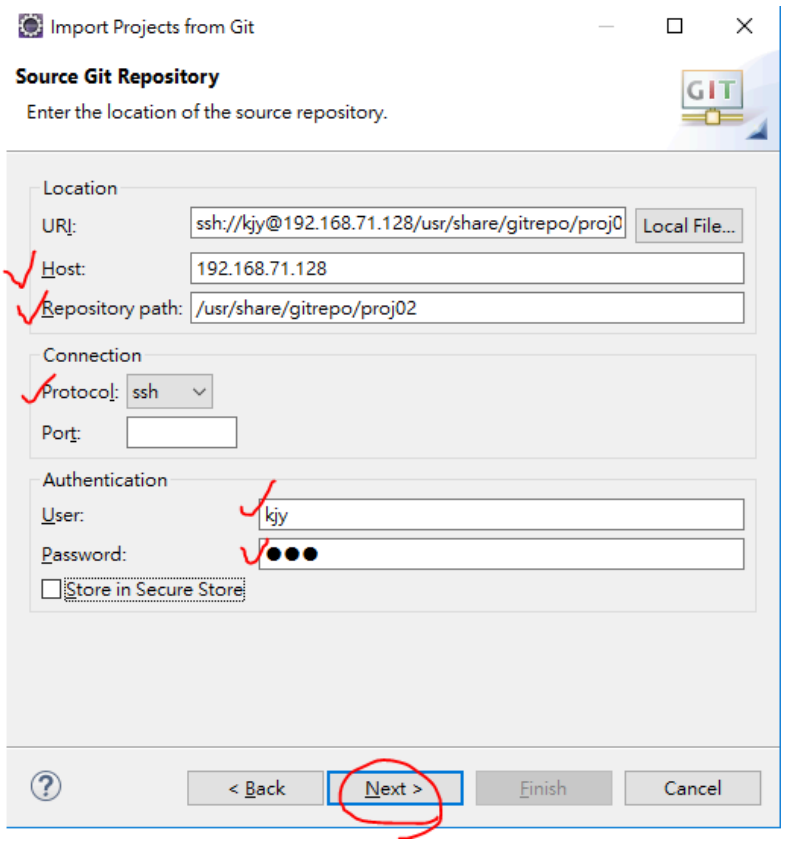
---

6. 本地端電腦 ECLIPSE，從 Git server 抓下 proj02專案檔案

EClipse - File - Import

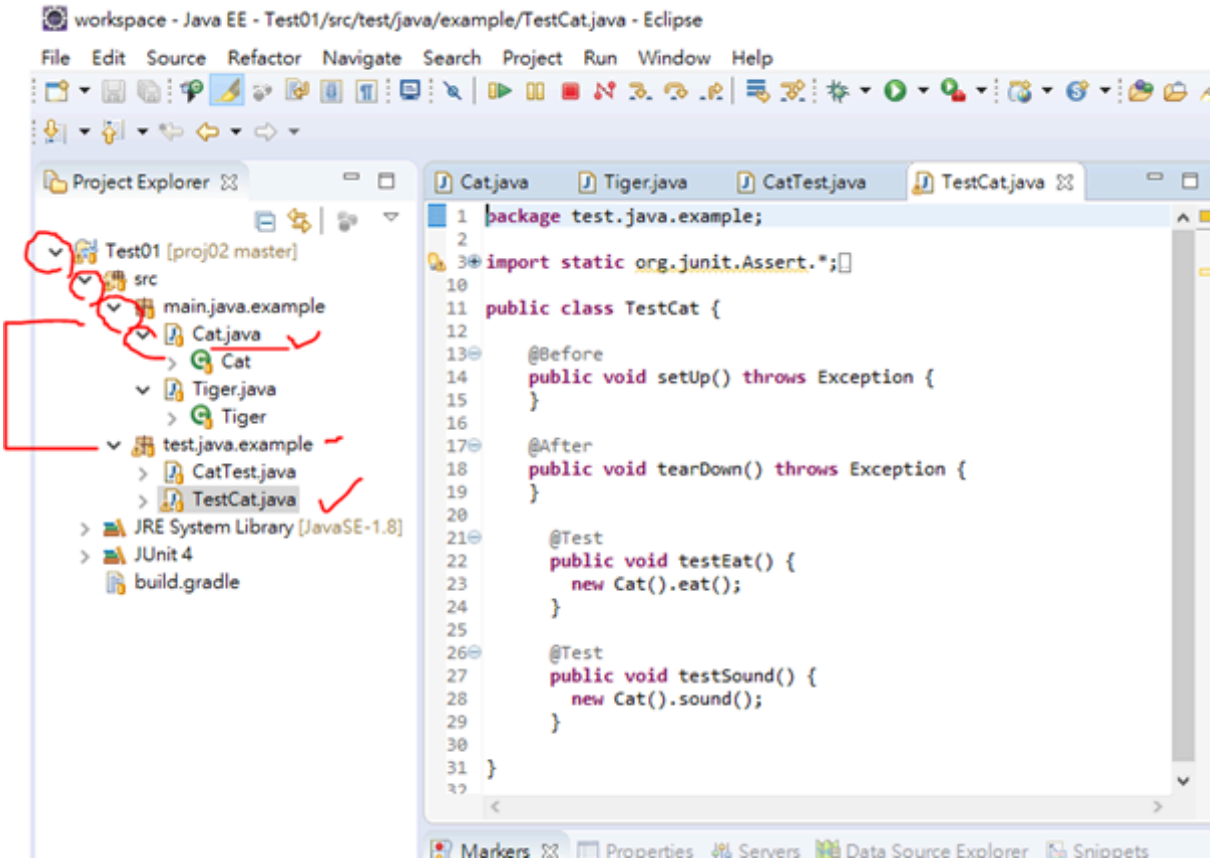

Import
Select
Import one or more projects from a Git Repository.
Select an import wizard:
type filter text
General
EJB
Git
Projects from Git
Install
Java EE
Maven
Oomph
Plug-in Development
Remote Systems
Run/Debug
Tasks
Team
Web
< Back
Next >
Finish
Cancel


Import Projects from Git
Select Repository Source
Select a location of Git Repositories
GIT
type filter text
Existing local repository
Clone URI
< Back
Next >
Finish
Cancel



Host: 192.168.xx.xx
Protocol: ssh
/usr/share/gitrepo/proj02，按 ok, yes, next finish,

7. 從 Git 抓回專案程式碼，到 EClipse 個人桌面 IDE 編輯

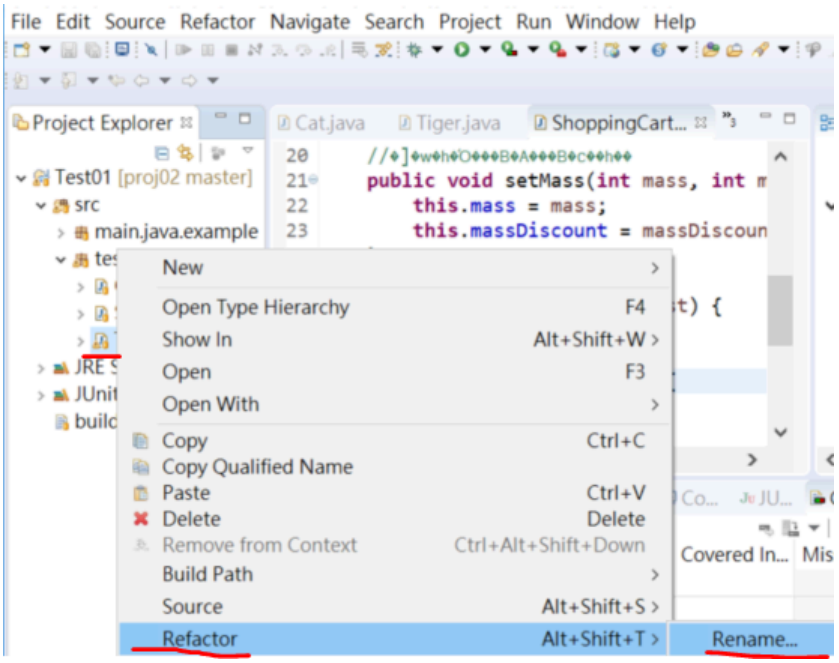


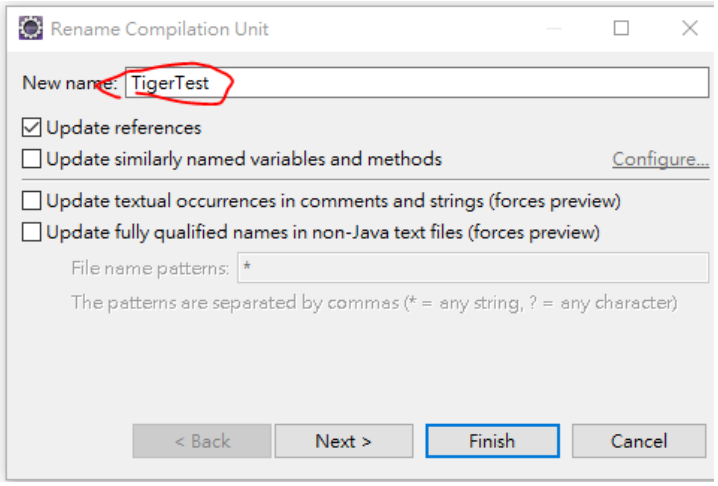
---

8. 修改測試 **Test Driver**

---

(1) File - Refactor - Rename



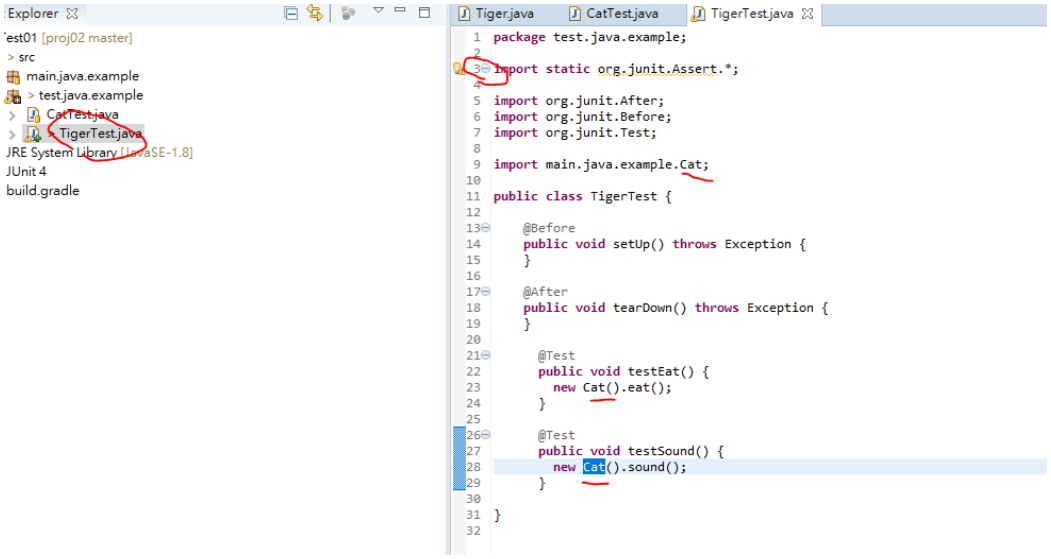


---

(2) 修改 test driver，增加測試 code coverage

(a) 將 TestCat.java，改成 TigerTest，按右鍵 refactor - name

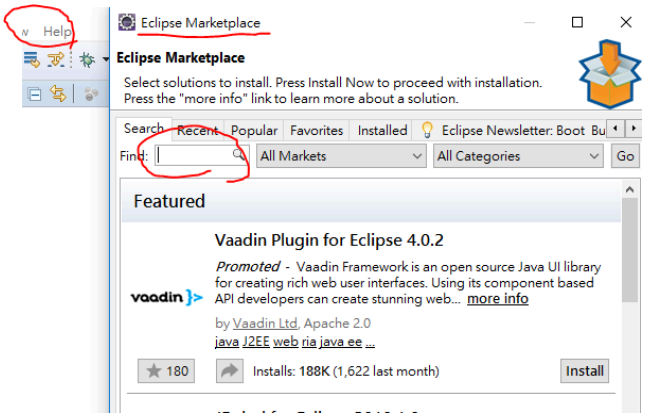
(b) 找到三隻cat，將 3 個 cat 改成 Tiger，



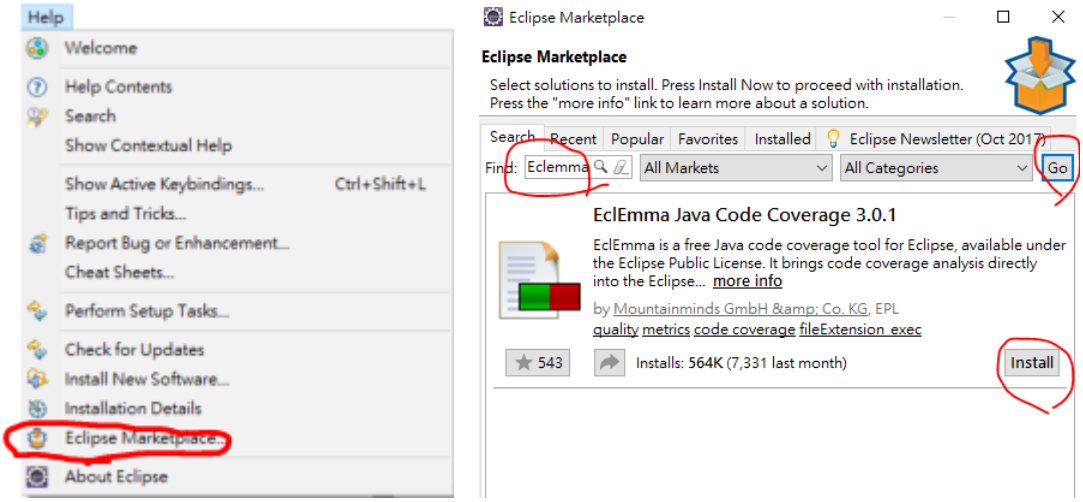
---

9. 安裝 **Eclemma**

Eclipse Help Eclipse marketplace，eclemma，install



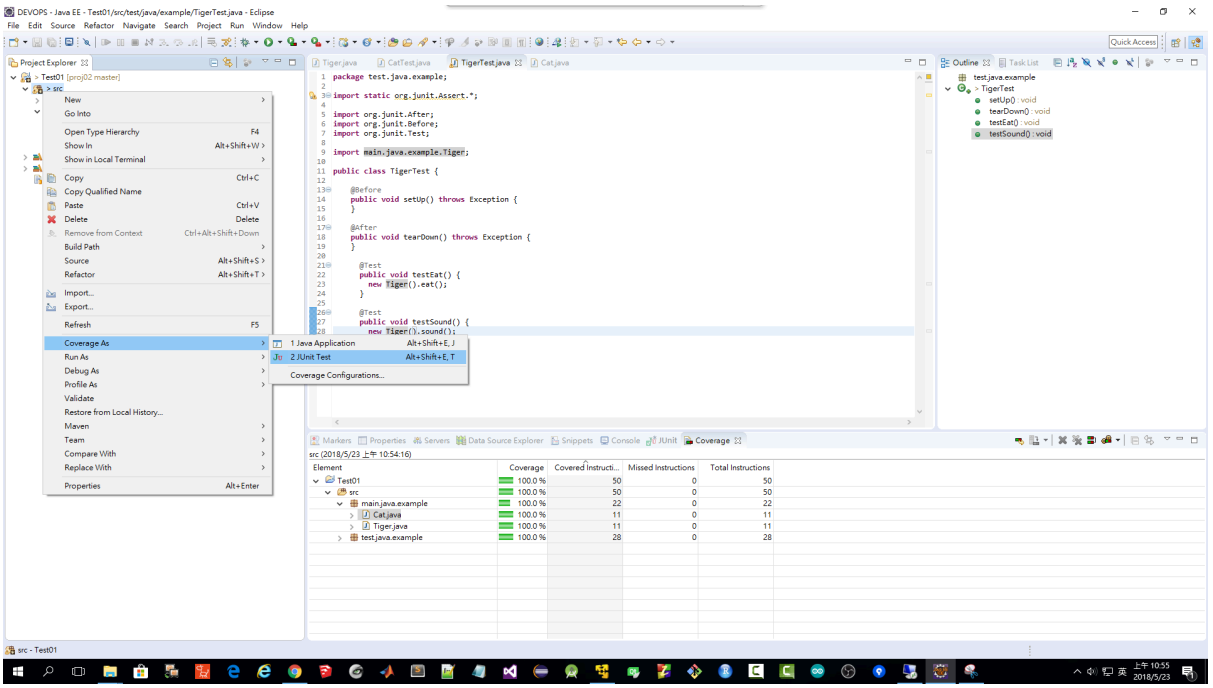
安裝完成，重新啟動



---

10. 檢驗測試 coverage

File - Coverage As



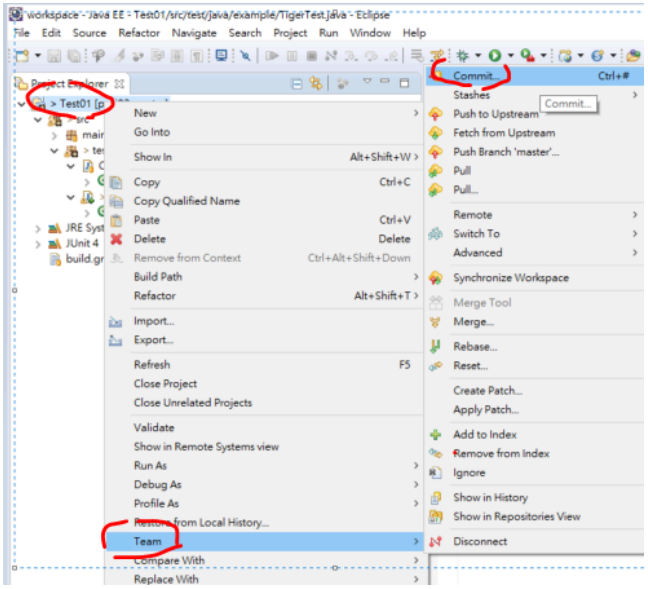
https://myweb.ntut.edu.tw/~jykuo/train/05GIT2017_77.pdf
https://myweb.ntut.edu.tw/~jykuo/train/022EGIT2017_66.pdf

---

11. 簽入 push 到遠端

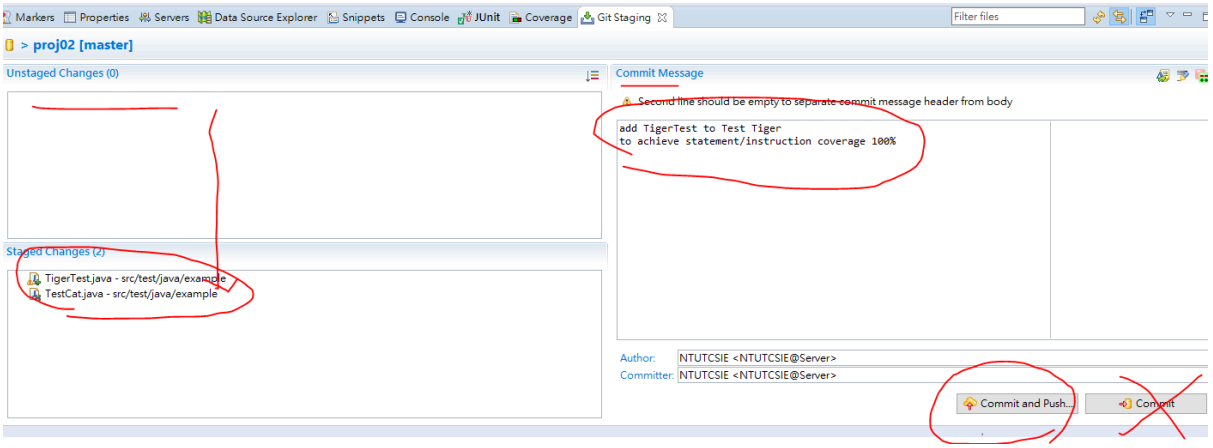
(1) 改完程式，點選TigerTest..java 按右鍵，Team - commit

Add to index (將原本工作區的檔案，移到暫存區 staged)



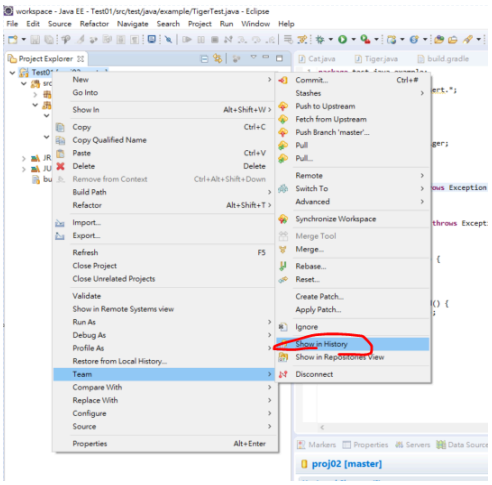
---

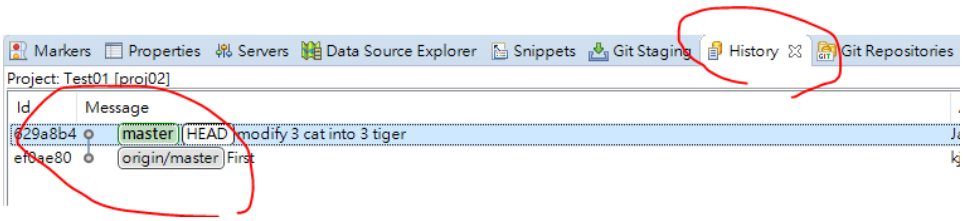
(2)輸入版本控管中這個版本的說明，commit&Push(存到本地端儲存區、遠端伺服器儲存區)



---

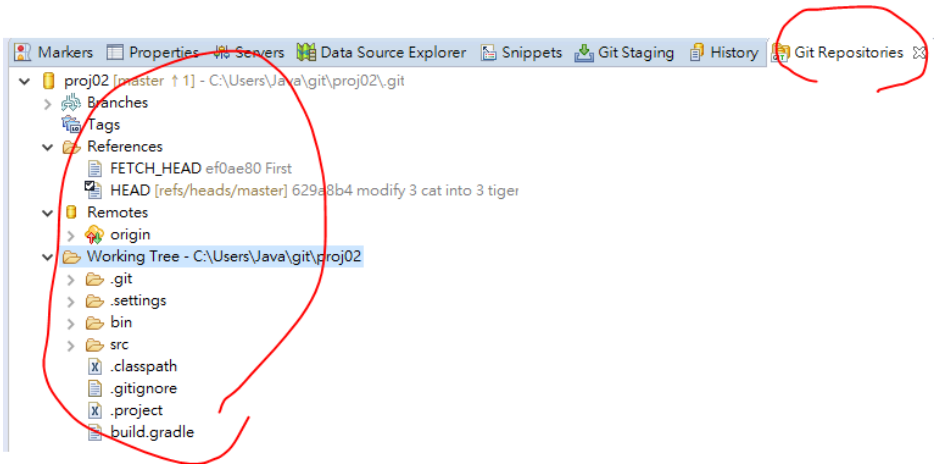
(3) 顯示 commit 歷史，右鍵 - Team - show in History





---

(4) 右鍵 - Team - show in Reposit… view



---

(5) 若剛剛只有按到 commit，則在程式任意處加空白鍵，再commit and push 到遠端

---

12. 到 Jenkins 查看工作目錄內的檔案

(1) Jenkins 第二層選單 -工作目錄

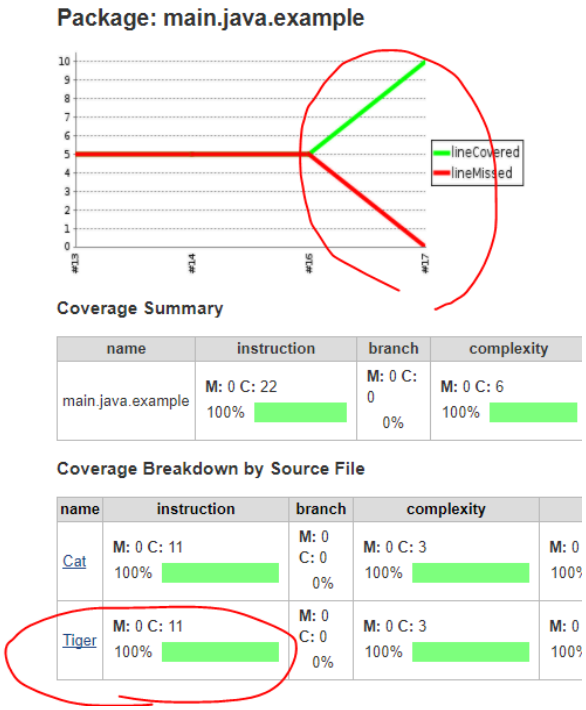
(馬上建置 -> Jenkins 會到 Git 拉下最新 push程式碼)

---

(2) 檢視 Code Coverage

Jenkins - Test01 - 馬上建置

檢視 JaCoCo Code coverage Trend，GREEN



---

13. 到 Jenkins 查看工作目錄內的檔案

Jenkins 第二層選單 -工作目錄

(馬上建置 -> Jenkins 會到 Git 拉下最新 push程式碼)

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14. 觀察編譯狀況

---

15. 到 Redmine中，觀察連結 Git Server Code


網站首頁 帳戶首頁 專案清單 網站管理 說明
Test01
概觀 活動 問題清單 建立新問題 甘特圖 日曆 新聞 文件 Wiki 檔案清單 儲存機制 設定
test01 @ master
名稱
.settings
src
.classpath
.gitignore
.project
build.gradle
最新的修訂版清單
日期 作者
eac786e0 2018-05-04 20:55 Student add tigertes
c8eb8a54 2018-03-07 20:41 jykuo PUSH REMOTE
檢視差異
檢視所有的的修訂版清單 | 檢視修訂版清單

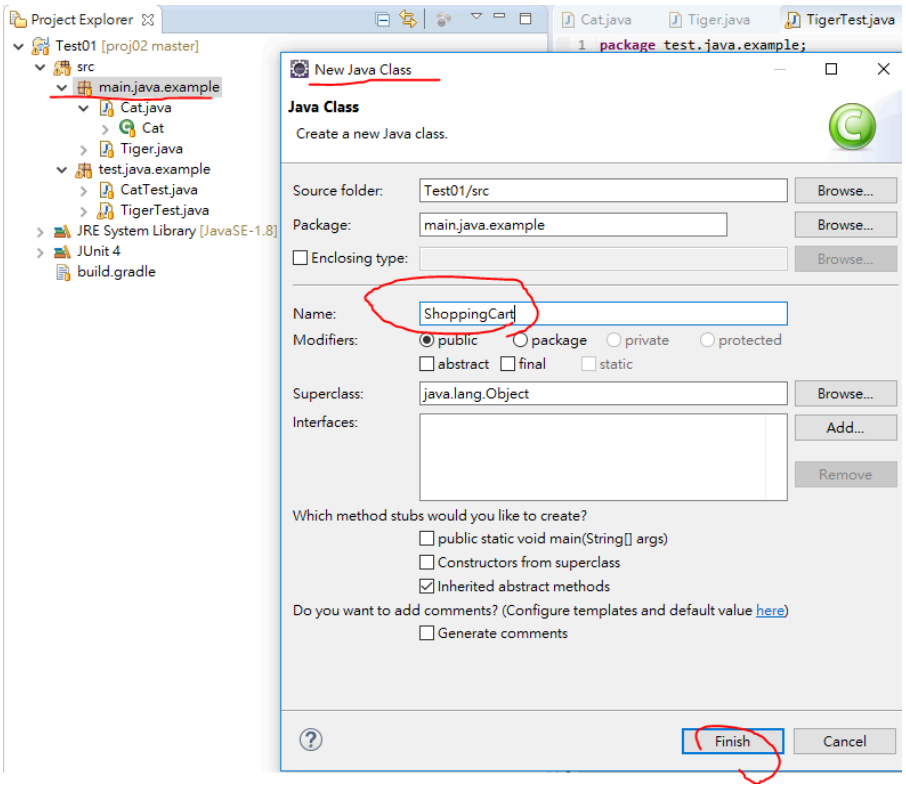

網站首頁 帳戶首頁 專案清單 網站管理 說明
購物網站
概觀 活動 問題清單 建立新問題 甘特圖 日曆 新聞 文件 Wiki 檔案清單 儲存機制 設定
proj01 / src / main / java / example / Cat.java @ master
歷史 檢視 註解 | 下載 (179 位元組 (B))
1 package example;
2
3 public class Cat {
4 public void eat() {
5 System.out.println("Cat eating.");
6 }
7
8 public void sound() {
9 System.out.println("Cat meow meow meow.");
10 }
11 }
Git

==========

七、案例練習 ---- ShoppingCart

https://myweb.ntut.edu.tw/~jykuo/train/WebShoppingSpec_V_25.pdf

==========



1. 類別需求描述

(1)資料屬性
–cost, 原始價格。
–vip=1, 會員, vipDiscount 會員折扣;vip=0, 非會員。
–滿額 mass, massDiscount 滿額折扣。
(2)方法
–設定資料屬性, 折扣0~100為0~100折。
–計算總價
會員, 總價, 打 vipDiscount 折。非會員無折扣。
滿額 mass , 總價, 再打 massDiscount 折扣。

增加程式 production code, 在main.java.example, 按右鍵new ShoppingCart 類別

#EClipse 編碼修改, 正確存檔中文註解
Windows - Preference - General - Workspace - Text file encoding - Other: UTF-8

ShoppingCart.java

```
public class ShoppingCart {
    private int vip;
    private int vipDiscount;
    private int cost;
    private int mass;
    private int massDiscount;
    private int newCost;
    public ShoppingCart() {
        vip=0;     vipDiscount=0;
        cost = 0;  newCost=0;
        mass = 0;  massDiscount=100;
    }
    //設定是否為VIP, 若是則打多少折扣
    public void setVip(int vip, int vipDiscount) {
        this.vip = vip;
        this.vipDiscount = vipDiscount;
    }
    //設定多少是滿額, 滿額後打折多少
    public void setMass(int mass, int massDiscount) {
        this.mass = mass;
        this.massDiscount = massDiscount;
    }
    //設定原始價格
```

```
    public void setCost(int cost) {
        this.cost = cost;
    }
    public void computeCost() {
        newCost = cost;
        //如果 VIP則可以打折
          if (vip==1) {
            newCost = newCost*vipDiscount;
        }
        //如果滿額則可以再打折
        if (cost>=mass) {
            newCost = newCost*massDiscount;
        }
    }
    public int getCost() {
        return newCost;
    }
}
```

==========

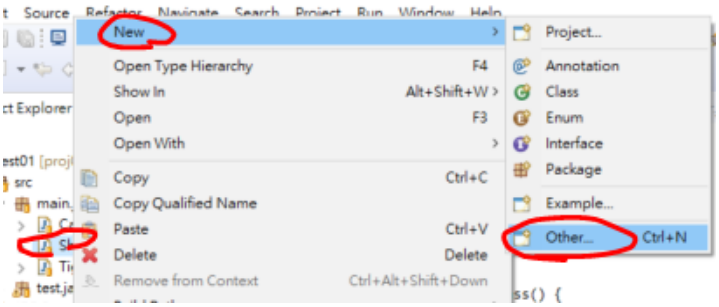
2. JUNIT 單元測試

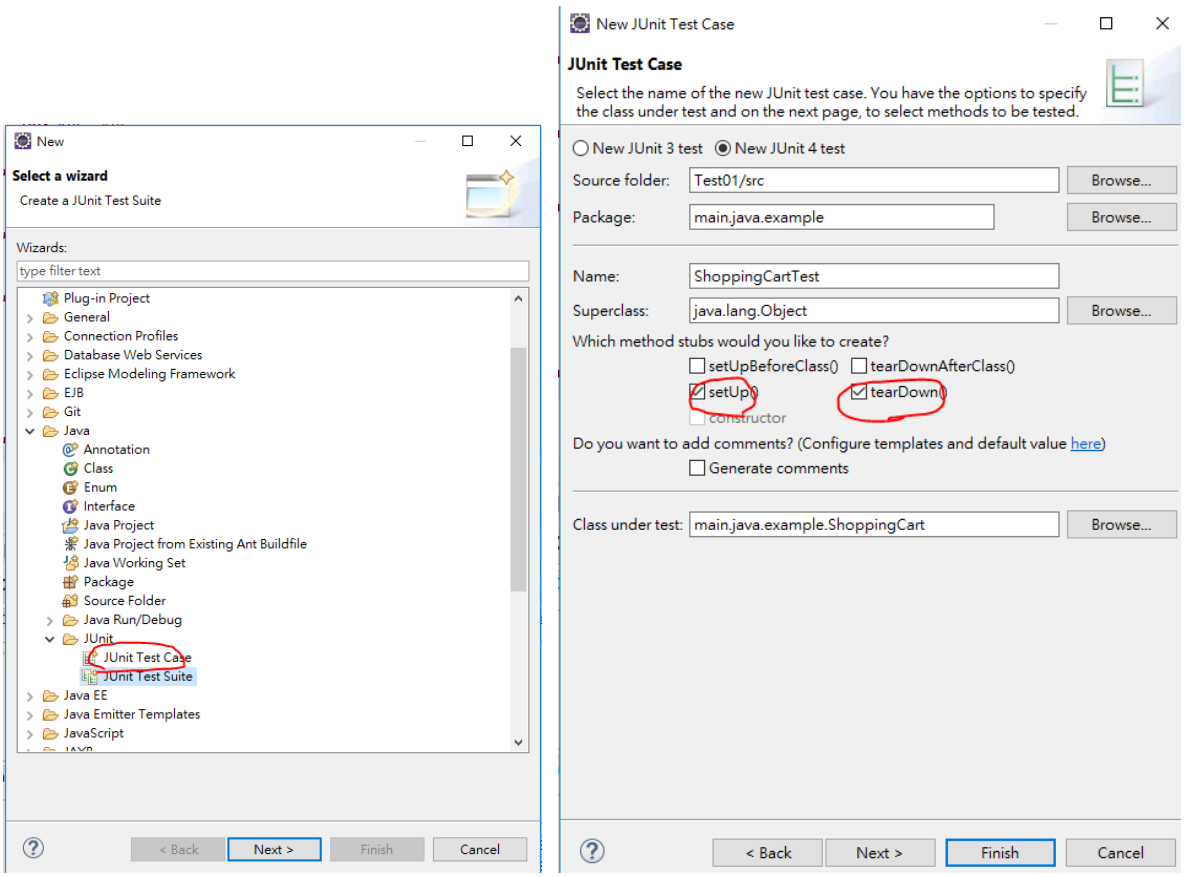
重點摘要
(1) Run as - JUnit Test 測試程式 production code是否正確
　　若程式production code不正確(紅色)，要加以修改
(2) Coverage as - JUnit Test 檢驗 Test Driver寫得是否完整 (測試程式是否完整)
　　看 production code 是否涵蓋度 100%且綠色，否則要修改(增加) Test driver。

---

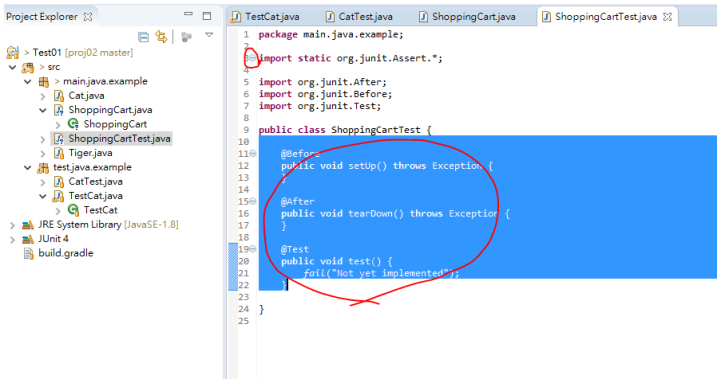
(1) 使用 JUnit 產生 test driver 框架

(a)點選 ShoppingCart.java按右鍵 (選 other)





(b) 替換程式碼




```
public class ShoppingCartTest {
    private ShoppingCart myCart;
    @Before
    public void setUp() throws Exception {
        myCart = new ShoppingCart();
    }
    @After
    public void tearDown() throws Exception {
        myCart = null;
    }
    @Test
```

```
    public void test() {
        myCart.setCost(100);
        myCart.setMass(100, 90);
        myCart.setVip(0, 100);
        myCart.computeCost();
        assertEquals(90,myCart.getCost());
    }
}
```

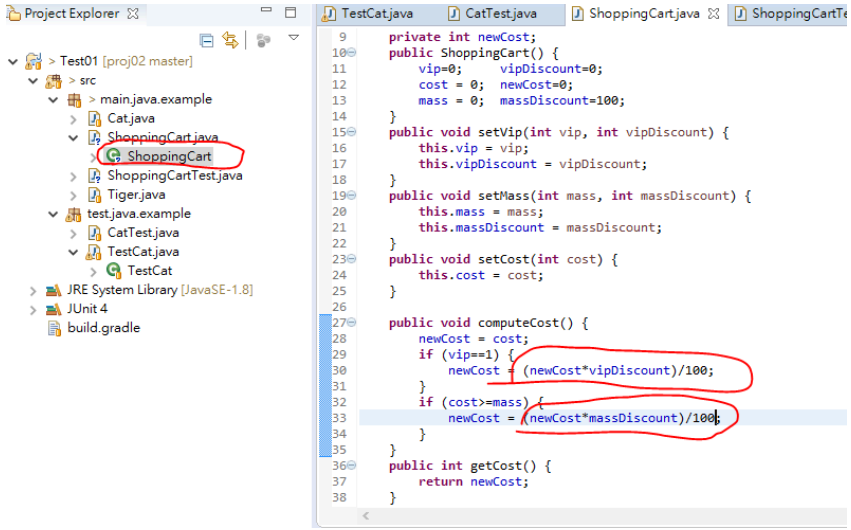
說明

---

setUp 測試初始化, 配置產生物件空間.資料連線資源
tearDown 釋放空間、資源
@test 一個獨立方法測試
assertEquals(期望的正確執行結果, 呼叫要測試的method, 比對小數精確)

(c) 執行
ShoppingCartTest.java 按右鍵, Run as - Junit Test case
紅色 - production code 有錯

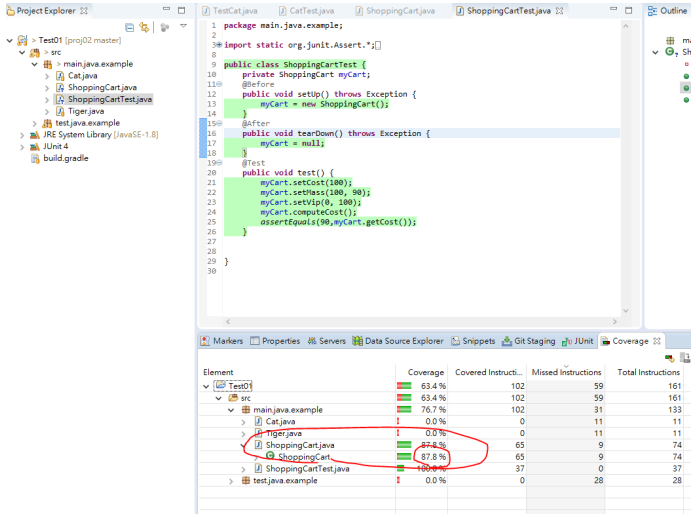
(d) 修改程式



==========

3. Test Code Coverage 練習

(1) 安裝EClipse plug-in Junit + EClemma
(2) 查詢 main package 看 code coverage
按右鍵, Coverage As - Junit Test



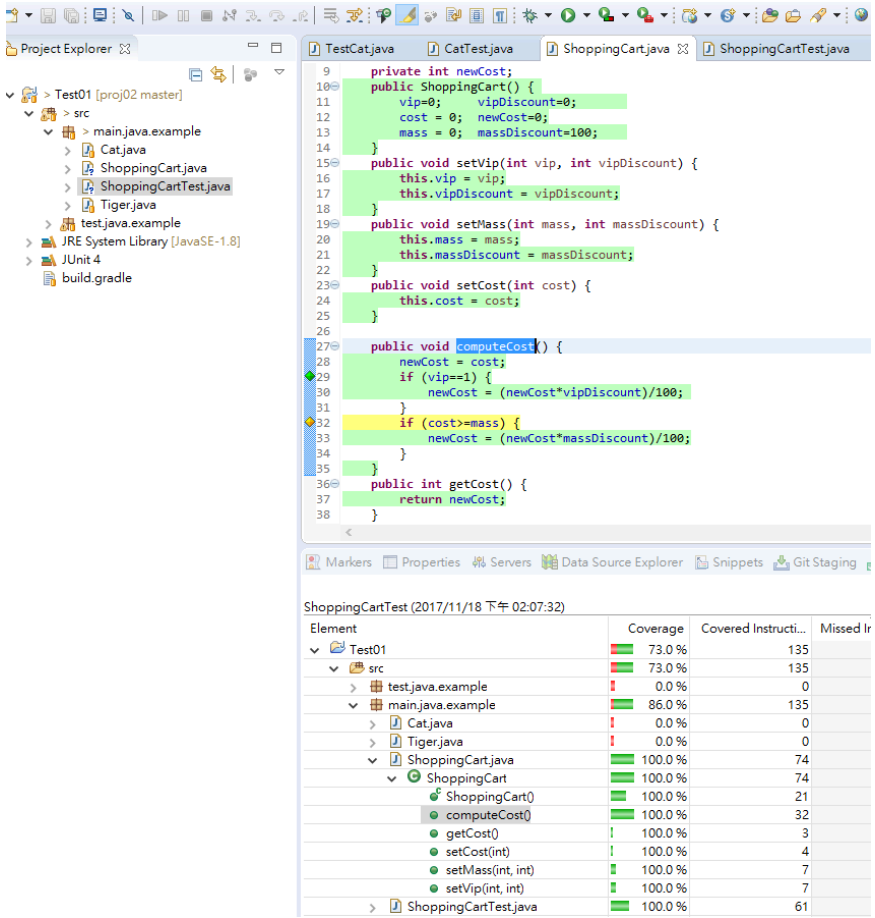
---

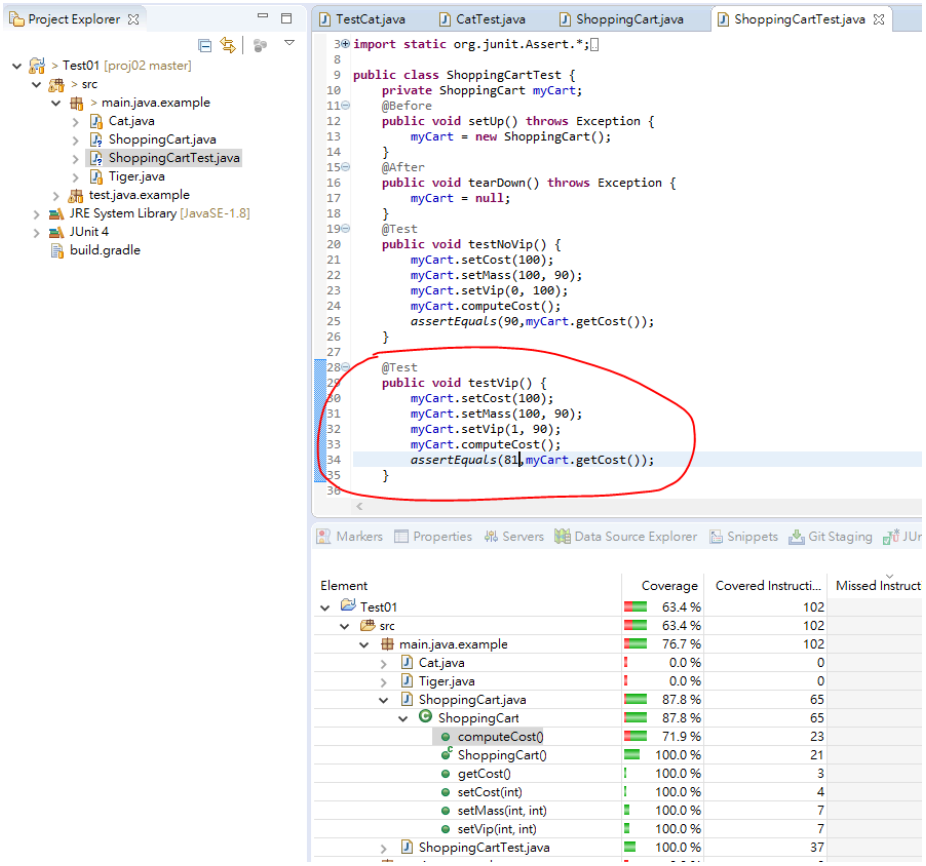
(3) 若coverage不足，增修 test package 程式，增加 test code coverage

(a)Eclipse 消除紅色

(b)Eclipse 消除黃色 (可代表 (1))

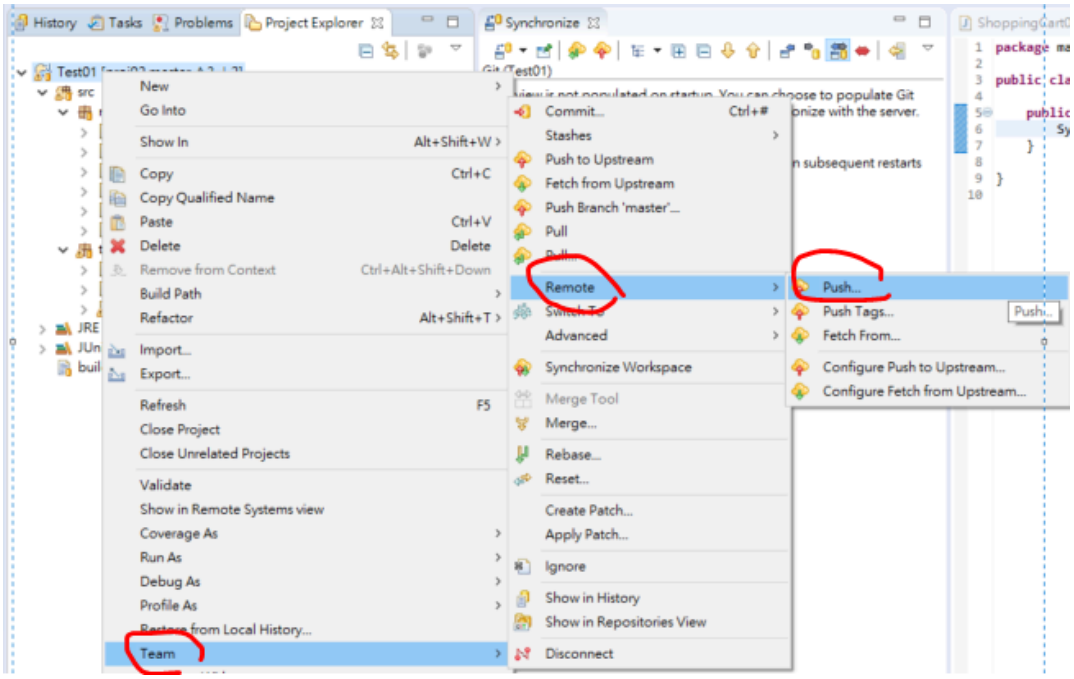
(c)查看 Jenkins JoCoCo

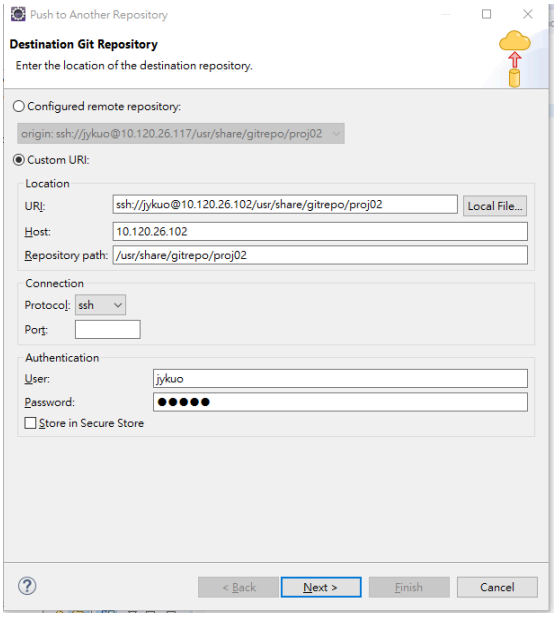


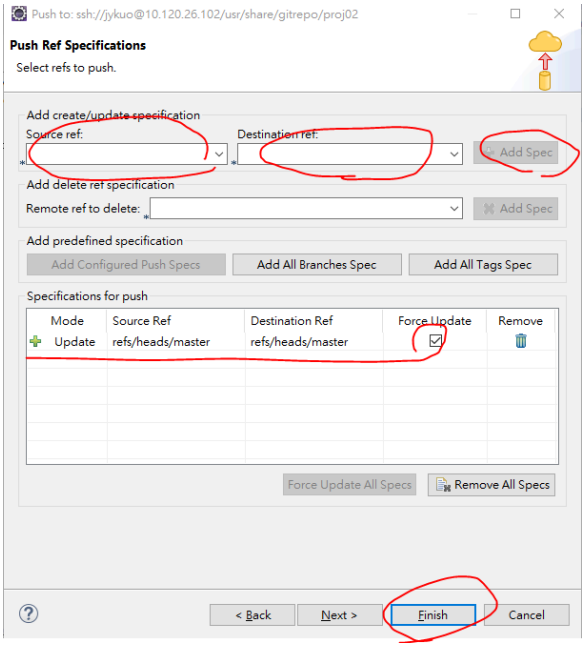


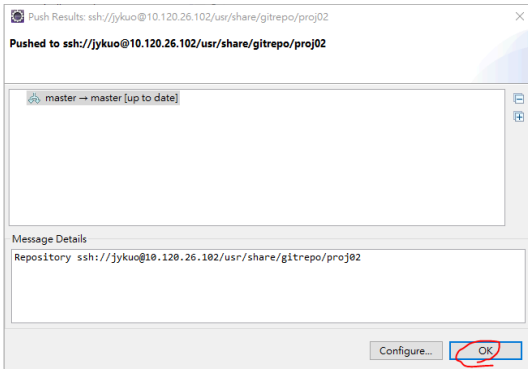
---

(4) 直接 remote push 到遠端 Git









---

(5)Git

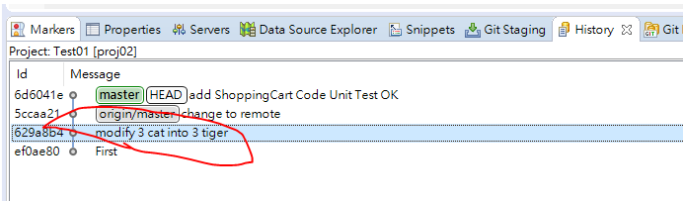
? working directory

+ 綠色 staged(add to index)

直筒黃色 (commit)本地端儲存區(個人電腦)

(push) 遠端儲存區 (中心控制，企業伺服器)

點選第二版，右鍵 create branch- Tiger



點選ShoppingCart版，右鍵 create branch - ShoppingCart

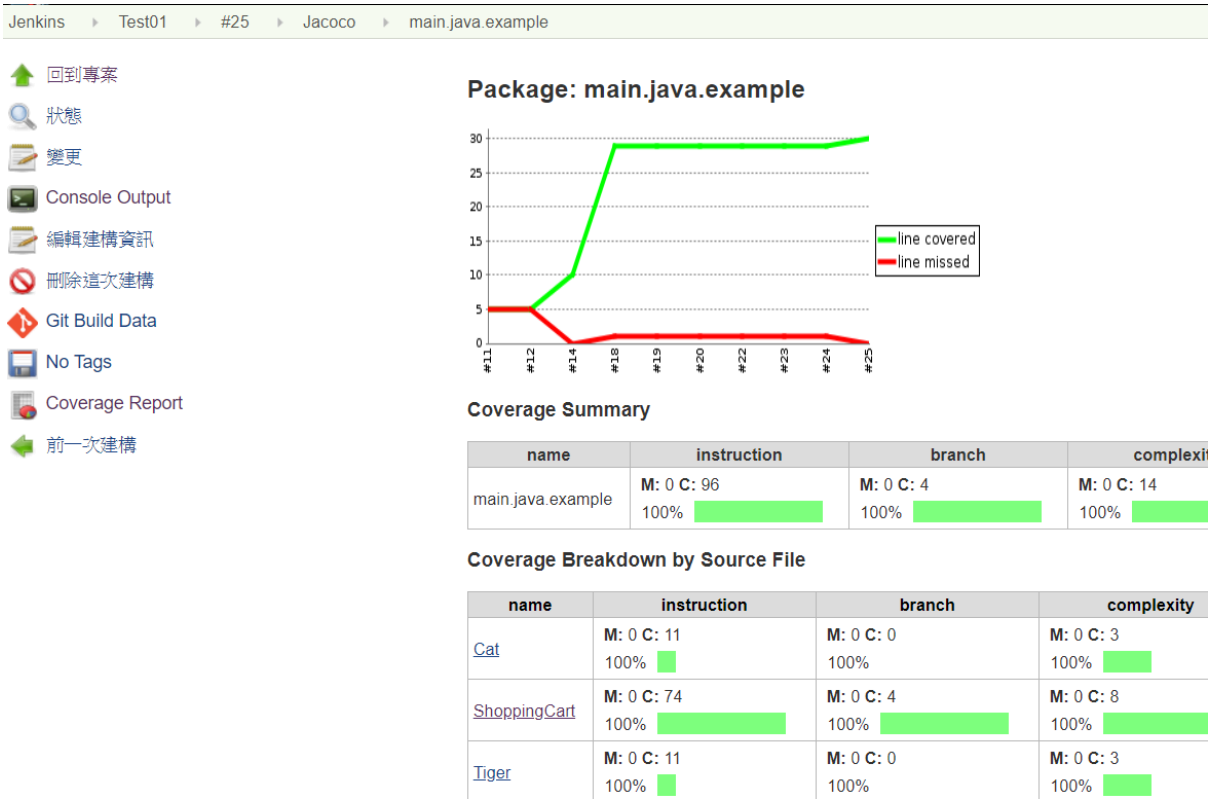
點選 BRANCH - 右鍵 - CHECKOUT

跳到那個版本

跳到最新版本 push 到 remote git

---

(6) push 到遠端，使用 Jenkins 建置，查看 Code Coverage




```
@Test
public void testNoVIPMass() {
    myCart.setCost(100);
    myCart.setMass(100, 90);
    myCart.setVip(0, 100);
    myCart.computeCost();
    assertEquals(90,myCart.getCost());
}
@Test
public void testVIPMass() {
    myCart.setCost(100);
    myCart.setMass(100, 90);
    myCart.setVip(1, 90);
    myCart.computeCost();
    assertEquals(81,myCart.getCost());
}
```

4. ShoppingCart 新增 foo method

```
public int foo(int A, int B, int X) {
   int Y = 0;
   if ((A>1) && (B==0)) {
      Y=A;
   }
   if ((A==2) || (X>1)) {
       Y=X;
   }
   return Y;
}
```

寫 test method 達到 instruction, branch 100%

---

5. 白箱與黑箱測試配合

若程式變成以下 code
vip =2 會變成 newCost=0 不用錢
單純以 black box 設計的測試案例無法發現問題
必須使用 code coverage 才能抓出程式問題

```
public void computeCost() {
        newCost = cost;
        if (vip==2) {
            newCost =0;
            return;
        }
        //如果 VIP則可以打折
          if (vip==1) {
            newCost = (newCost*vipDiscount)/100;
        }
        //如果滿額則可以再打折
        if (cost>=mass) {
            newCost = (newCost*massDiscount)/100;
        }
    }
```

---

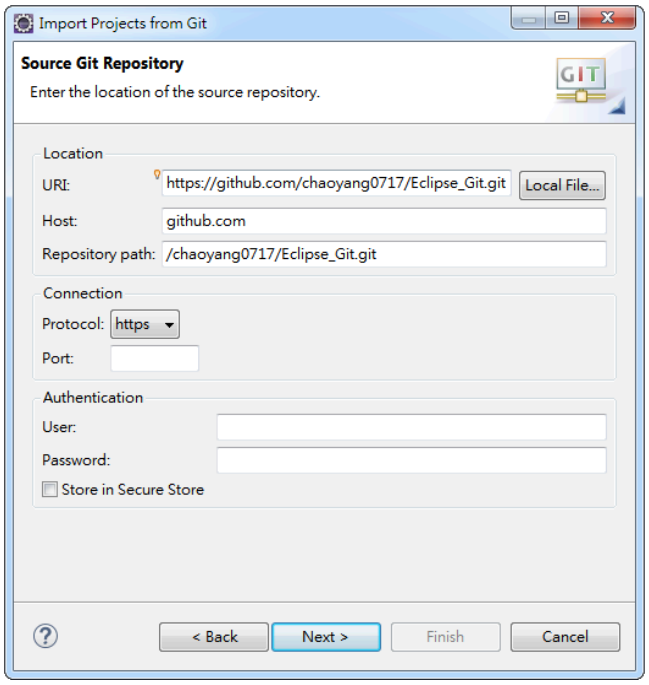
6. 遠端主機可為 各種 **Git** 儲存庫

---

(1) 遠端主機可為 Dropbox
參考資料http://www.cc.ntut.edu.tw/~jykuo/train/022EGIT2017_66.pdf, page 56

---

(2) 遠端主機可為 GitHub



摘要

1. 工程師 在自己個人電腦 eclipse 開發程式，改好CODE
   push & commit -> Jenkins (CI-get Git Newest Code)->Sonarqube
2. 品管人員、專案經理，登入 Sonarqube查看團隊的程式碼品質
   專案 - Code - 程式碼 - Issue

---

http://www.cc.ntut.edu.tw/~jykuo/train/022EGIT2017_66.pdf

mkdir Test
cd Test
git init
ls -la
cd .git
ls -al
cd ..
gedit product.java
git status
git add Product.java
git status
git commit Product.java -m ‘First version’
git status

http://www.cc.ntut.edu.tw/~jykuo/train/05GIT2017_77.pdf
git commit --amend
ctrl-O
ctrl-X

git log

sudo apt-get update
sudo apt-get upgrade

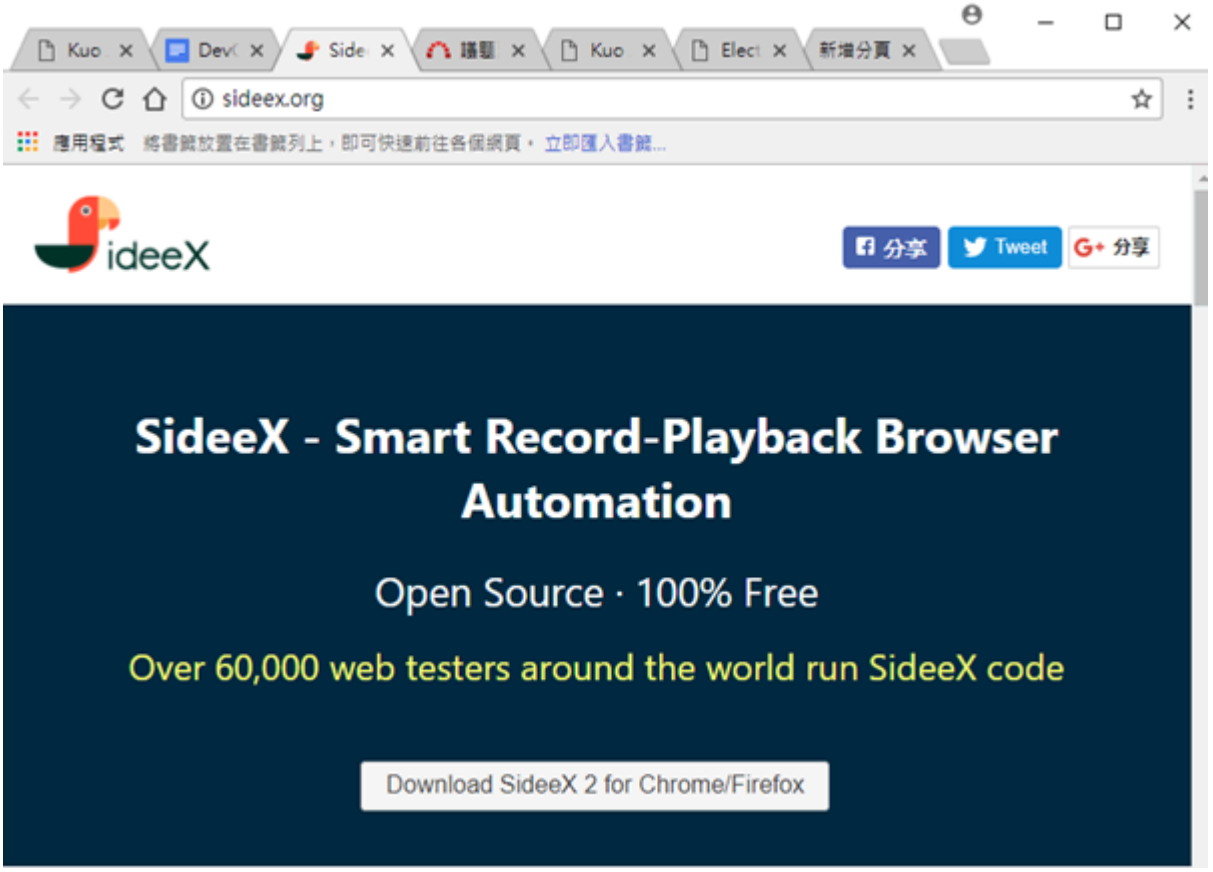
==========

七、TDD

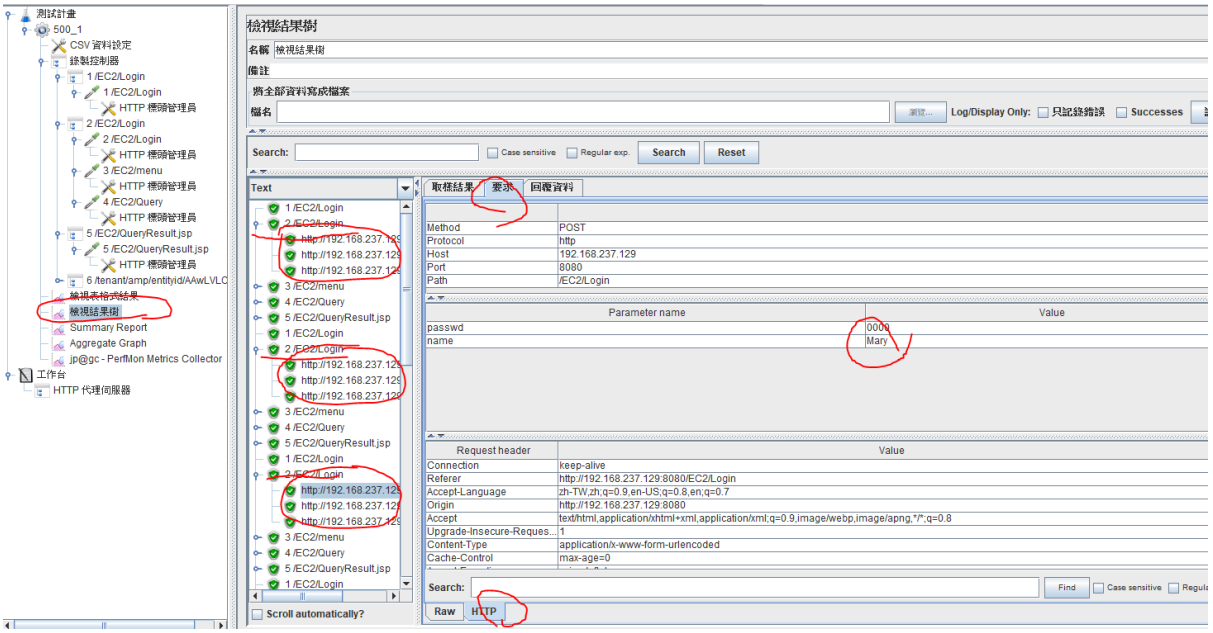
==========
參考資料
http://www.cc.ntut.edu.tw/~jykuo/train/003TDD_Bowling_2017_23.pdf
http://www.cc.ntut.edu.tw/~jykuo/train/VMwareVmdk.pdf
規格文件
http://www.cc.ntut.edu.tw/~jykuo/train/WebShoppingSpec_V_25.pdf
==========

八、Web 功能整合測試工具

http://sideex.org/
==========



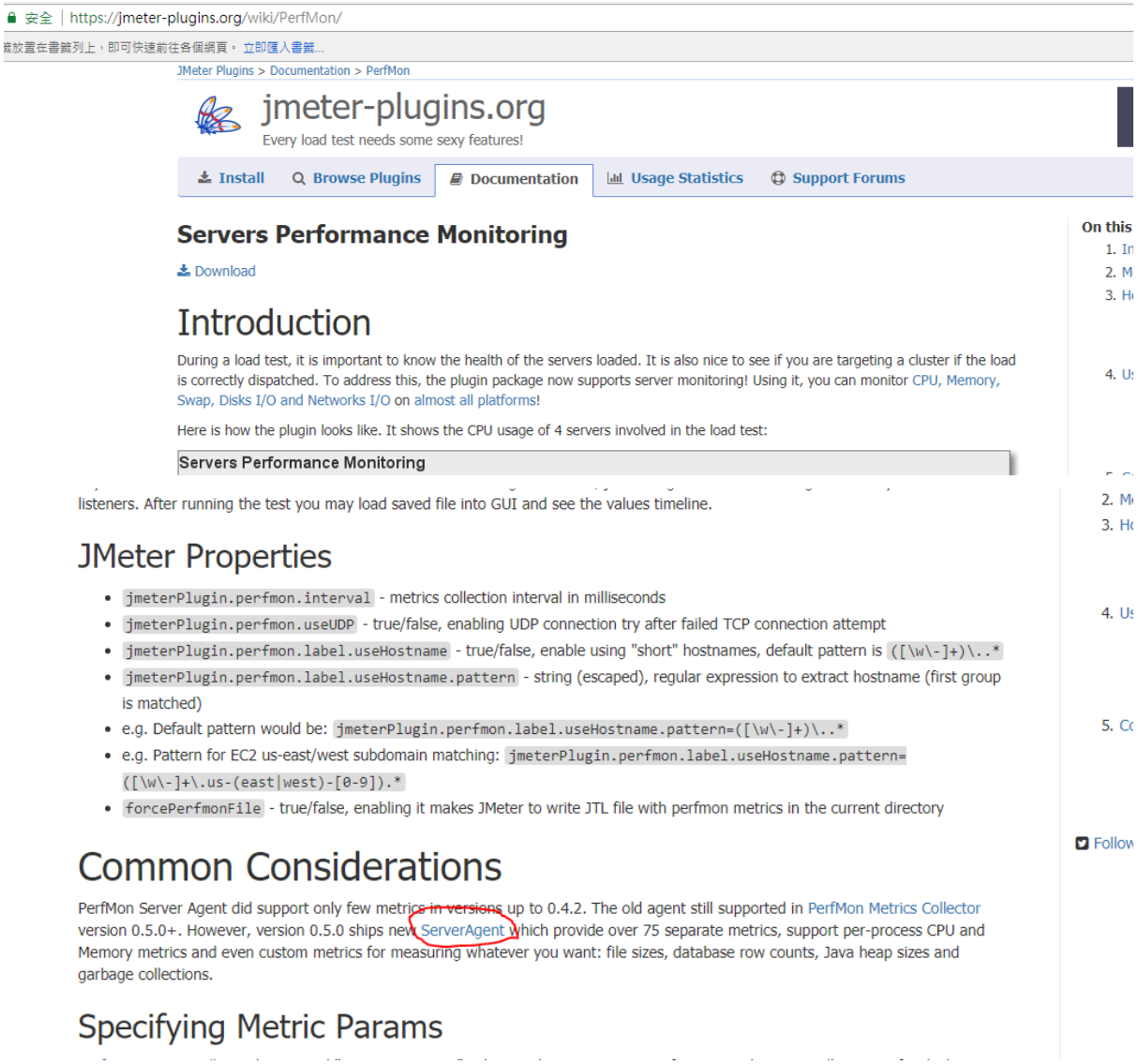
http://www.cc.ntut.edu.tw/~jykuo/train/106JMeter02_98.pdf



九、測試計畫書

==========

http://www.cc.ntut.edu.tw/~jykuo/train/performancePlan.pdf
http://www.cc.ntut.edu.tw/~jykuo/train/VMware-player-14.1.1-7528167.exe
http://www.cc.ntut.edu.tw/~jykuo/train/107Redmine_99.pdf



安全 | https://jmeter-plugins.org/wiki/PerfMon/

JMeter Plugins > Documentation > PerfMon

jmeter-plugins.org

Every load test needs some sexy features!

Install | Browse Plugins | Documentation | Usage Statistics | Support Forums

Servers Performance Monitoring

Download

Introduction

During a load test, it is important to know the health of the servers loaded. It is also nice to see if you are targeting a cluster if the load is correctly dispatched. To address this, the plugin package now supports server monitoring! Using it, you can monitor CPU, Memory, Swap, Disks I/O and Networks I/O on almost all platforms!

Here is how the plugin looks like. It shows the CPU usage of 4 servers involved in the load test:

Servers Performance Monitoring

listeners. After running the test you may load saved file into GUI and see the values timeline.

JMeter Properties

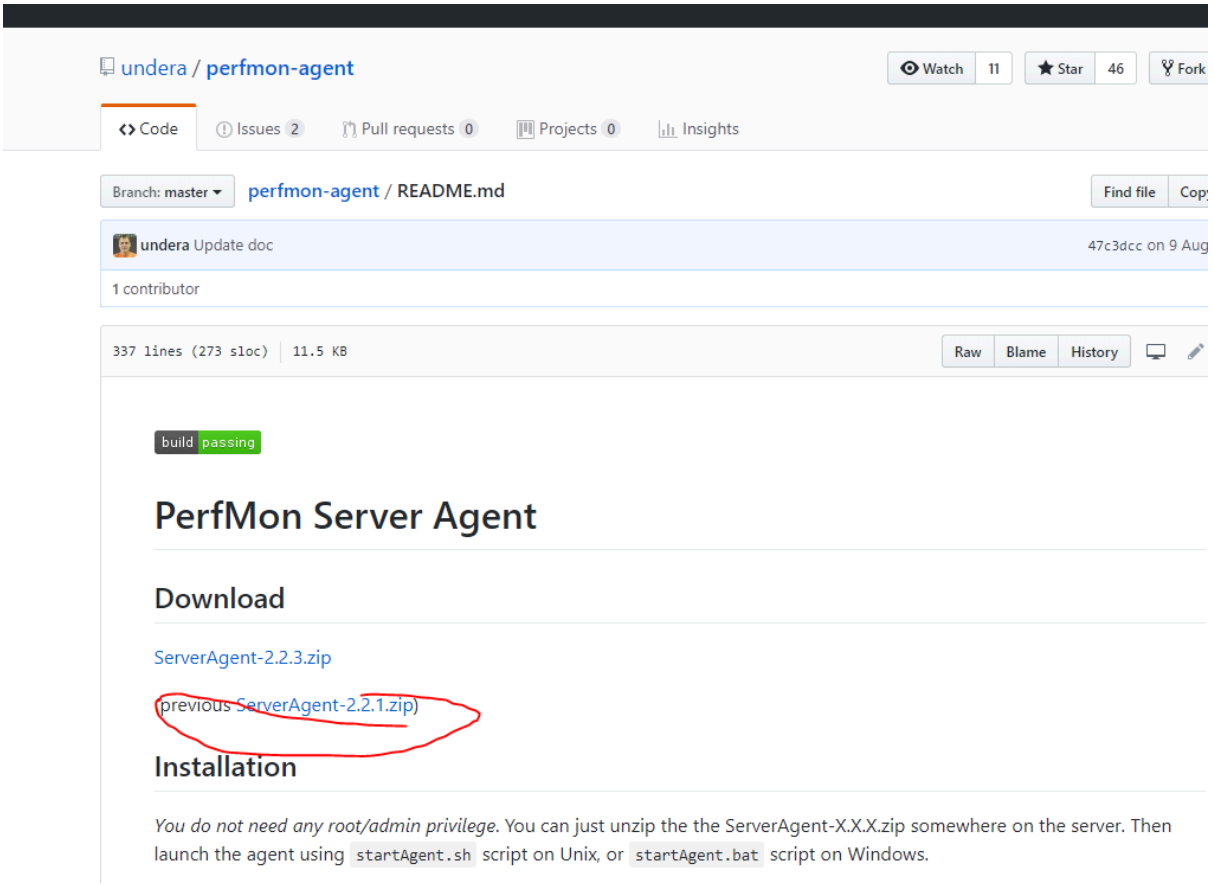
- `jmeterPlugin.perfmon.interval` - metrics collection interval in milliseconds
- `jmeterPlugin.perfmon.useUDP` - true/false, enabling UDP connection try after failed TCP connection attempt
- `jmeterPlugin.perfmon.label.useHostname` - true/false, enable using "short" hostnames, default pattern is `([\w\-]+)\..*`
- `jmeterPlugin.perfmon.label.useHostname.pattern` - string (escaped), regular expression to extract hostname (first group is matched)
- e.g. Default pattern would be: `jmeterPlugin.perfmon.label.useHostname.pattern=([\w\-]+)\..*`
- e.g. Pattern for EC2 us-east/west subdomain matching: `jmeterPlugin.perfmon.label.useHostname.pattern=([\w\-]+\.us-(east|west)-[0-9]).*`
- `forcePerfmonFile` - true/false, enabling it makes JMeter to write JTL file with perfmon metrics in the current directory

Common Considerations

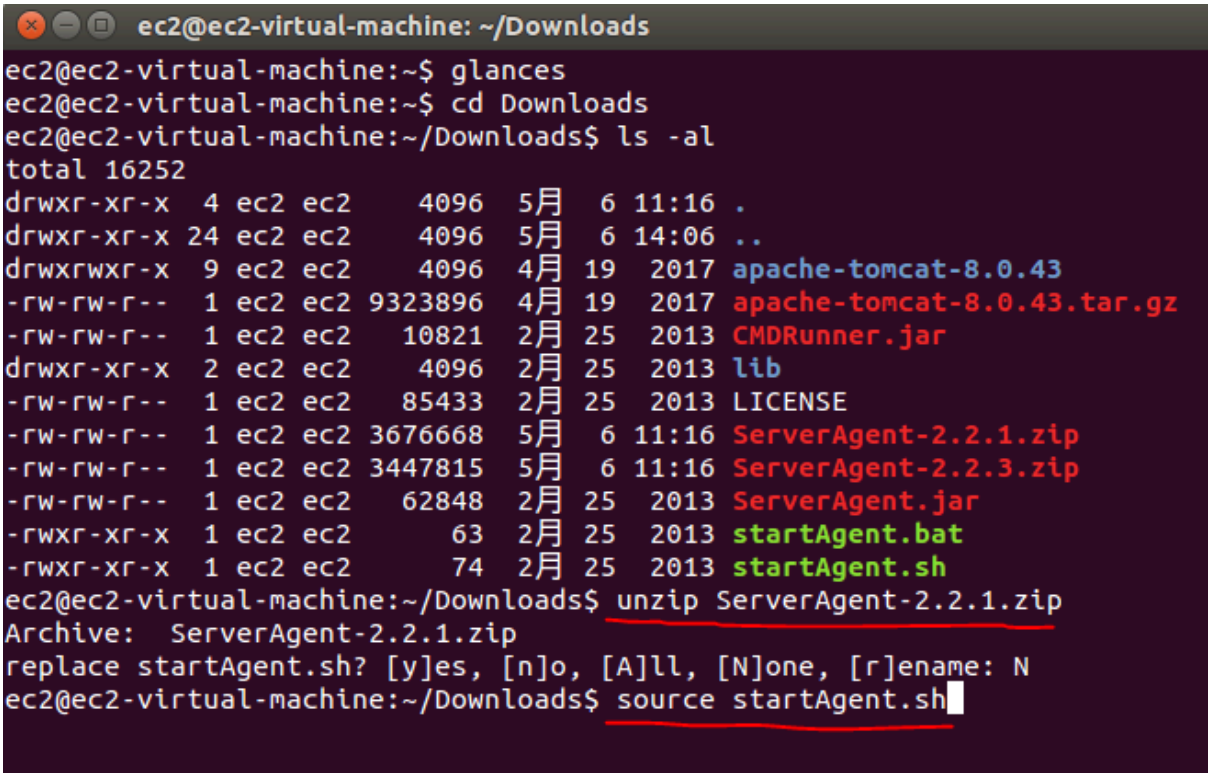
PerfMon Server Agent did support only few metrics in versions up to 0.4.2. The old agent still supported in PerfMon Metrics Collector version 0.5.0+. However, version 0.5.0 ships new ServerAgent which provide over 75 separate metrics, support per-process CPU and Memory metrics and even custom metrics for measuring whatever you want: file sizes, database row counts, Java heap sizes and garbage collections.

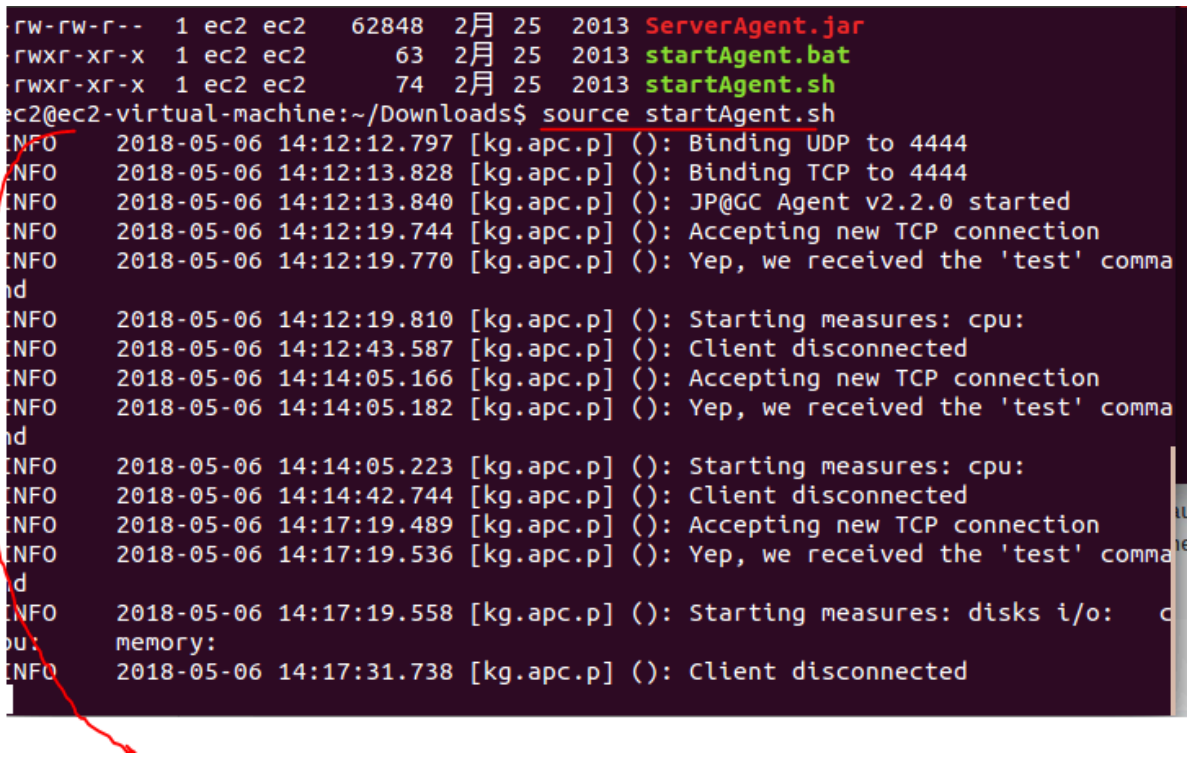
Specifying Metric Params

On this
1. In
2. M
3. H
4. Us
2. M
3. H
4. Us
5. Cc
Follow



cd Downloads
ls -al
unzip ServerAgent
source


ec2@ec2-virtual-machine: ~/Downloads
ec2@ec2-virtual-machine:~$ glances
ec2@ec2-virtual-machine:~$ cd Downloads
ec2@ec2-virtual-machine:~/Downloads$ ls -al
total 16252
drwxr-xr-x 4 ec2 ec2   4096 5月 6 11:16 .
drwxr-xr-x 24 ec2 ec2   4096 5月 6 14:06 ..
drwxrwxr-x 9 ec2 ec2   4096 4月 19 2017 apache-tomcat-8.0.43
-rw-rw-r-- 1 ec2 ec2 9323896 4月 19 2017 apache-tomcat-8.0.43.tar.gz
-rw-rw-r-- 1 ec2 ec2   10821 2月 25 2013 CMDRunner.jar
drwxr-xr-x 2 ec2 ec2   4096 2月 25 2013 lib
-rw-rw-r-- 1 ec2 ec2   85433 2月 25 2013 LICENSE
-rw-rw-r-- 1 ec2 ec2 3676668 5月 6 11:16 ServerAgent-2.2.1.zip
-rw-rw-r-- 1 ec2 ec2 3447815 5月 6 11:16 ServerAgent-2.2.3.zip
-rw-rw-r-- 1 ec2 ec2   62848 2月 25 2013 ServerAgent.jar
-rwxr-xr-x 1 ec2 ec2   63 2月 25 2013 startAgent.bat
-rwxr-xr-x 1 ec2 ec2   74 2月 25 2013 startAgent.sh
ec2@ec2-virtual-machine:~/Downloads$ unzip ServerAgent-2.2.1.zip
Archive: ServerAgent-2.2.1.zip
replace startAgent.sh? [y]es, [n]o, [A]ll, [N]one, [r]ename: N
ec2@ec2-virtual-machine:~/Downloads$ source startAgent.sh


-rw-rw-r-- 1 ec2 ec2   62848 2月 25 2013 ServerAgent.jar
-rwxr-xr-x 1 ec2 ec2   63 2月 25 2013 startAgent.bat
-rwxr-xr-x 1 ec2 ec2   74 2月 25 2013 startAgent.sh
ec2@ec2-virtual-machine:~/Downloads$ source startAgent.sh
INFO   2018-05-06 14:12:12.797 [kg.apc.p] (): Binding UDP to 4444
INFO   2018-05-06 14:12:13.828 [kg.apc.p] (): Binding TCP to 4444
INFO   2018-05-06 14:12:13.840 [kg.apc.p] (): JP@GC Agent v2.2.0 started
INFO   2018-05-06 14:12:19.744 [kg.apc.p] (): Accepting new TCP connection
INFO   2018-05-06 14:12:19.770 [kg.apc.p] (): Yep, we received the 'test' comma
nd
INFO   2018-05-06 14:12:19.810 [kg.apc.p] (): Starting measures: cpu:
INFO   2018-05-06 14:12:43.587 [kg.apc.p] (): Client disconnected
INFO   2018-05-06 14:14:05.166 [kg.apc.p] (): Accepting new TCP connection
INFO   2018-05-06 14:14:05.182 [kg.apc.p] (): Yep, we received the 'test' comma
nd
INFO   2018-05-06 14:14:05.223 [kg.apc.p] (): Starting measures: cpu:
INFO   2018-05-06 14:14:42.744 [kg.apc.p] (): Client disconnected
INFO   2018-05-06 14:17:19.489 [kg.apc.p] (): Accepting new TCP connection
INFO   2018-05-06 14:17:19.536 [kg.apc.p] (): Yep, we received the 'test' comma
nd
INFO   2018-05-06 14:17:19.558 [kg.apc.p] (): Starting measures: disks i/o:
pu:
memory:
INFO   2018-05-06 14:17:31.738 [kg.apc.p] (): Client disconnected

http://www.cc.ntut.edu.tw/~jykuo/train/106IssueSOP.pdf
http://www.cc.ntut.edu.tw/~jykuo/train/106REQM_SOP.pdf
http://www.cc.ntut.edu.tw/~jykuo/train/ansibleLab2017.txt
http://www.cc.ntut.edu.tw/~jykuo/train/05GIT2017_77.pdf

http://www.cc.ntut.edu.tw/~jykuo/train/022EGIT2017_66.pdf
https://www.dropbox.com/s/ve852bgmyouvf3l/GitHubSetup.exe?dl=0

(1)Git命令列(2)Source Tree(3)TortoiseGit