# Core Java

JVM

1004

bytecode

1008

1009

A.class CLASSPATH

OS

WIndows

Code ---->compile--->package --(1-* .class)

Linux

jvm

MacOS

.jar, .war, .ear

JVM

| | |
|---|---|
| Static : | class  Duck { |
| Variable | static int duckCount=0; |
| Method | |
| block | public  Duck(){ |
| Class | duckCount++; |
| | } |

duck1                        duckCount=3

duck2

duck3

JVM Memory Layout

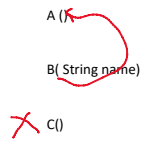|  |  |
|---|---|
| storing Objects | .class<br>methods<br>static<br>String pool<br>etc.. |
| Heap Memory | Noh Heap (metaspace) |

Transfer of Parent attributes to its child
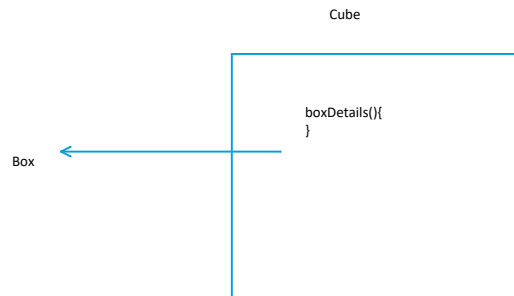
1. Code Reuse
2. Encapsulation

. Single Inheritance Child can inherit only one parent
. Can be multilevel but not multiple

in java we  call:
Base class --> Superclass
Child class --> subclass

use 'extends' keyword

A (
B( String name)
C()

Create a Class Cube , inheriting Box and Override boxDetails

Cube

Box

boxDetails(){
}

Animal
        Dog

Vehicle
        Truck

Fruit
        Mango

Bird
        Parrot

Figure
        Triangle
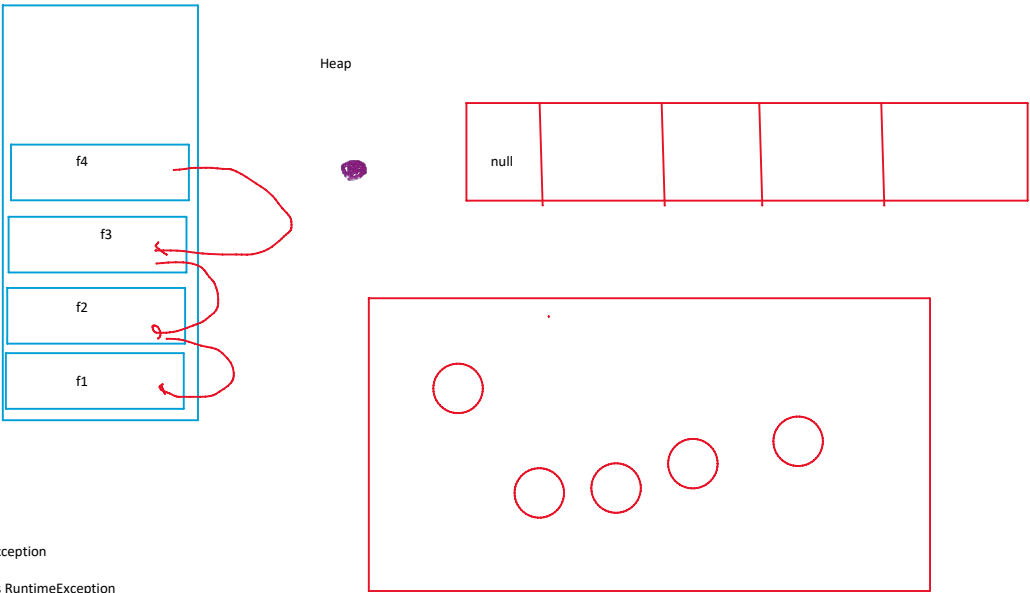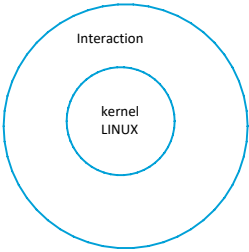
Dog, Truck, Mango ...

Bull Dog and Greatden
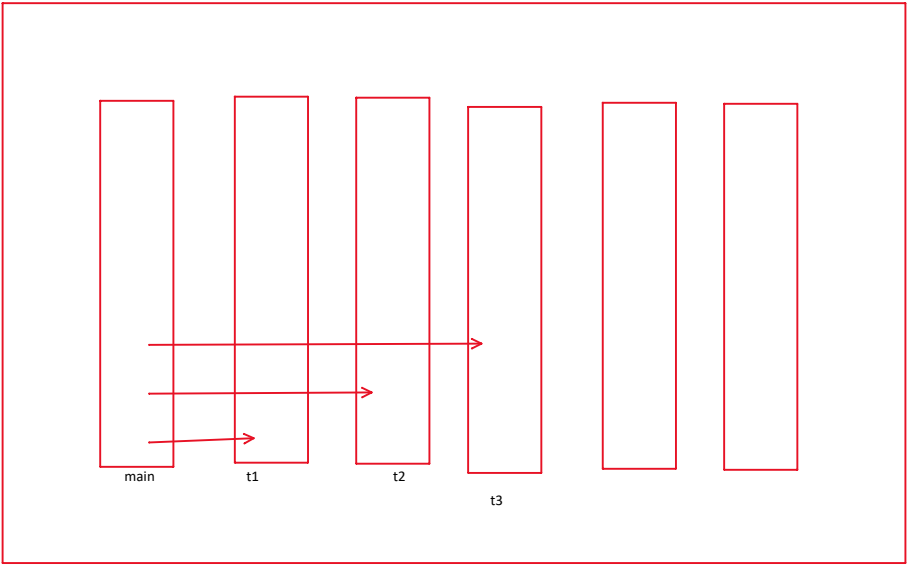
Cycle c= new Cycle();

BiCycle
TriCycle
MonoCycle

Cycle c1=Factory.getCycle(1);

Windows, MacOS, Linux, Solaris, AIX Z-OS BSD  ChromOS/Android (Trimmed version of Linux)          USER

HP, Oracle

Interaction

kernel
LINUX

Heap

null

f4

f3

f2

f1

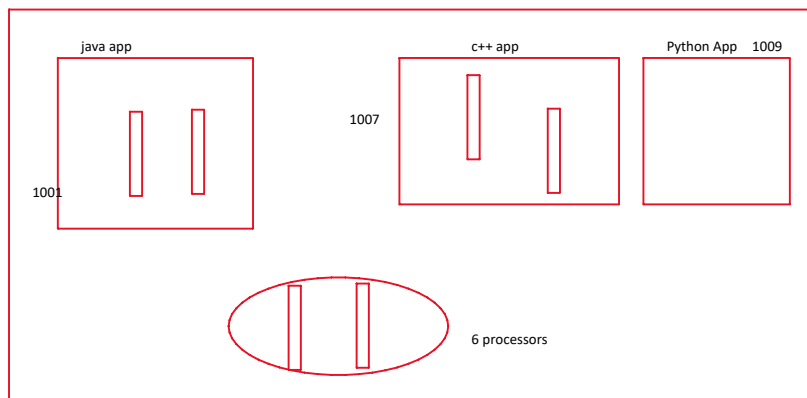checked : myExp extends Exception

Unchecked : myExp extends RuntimeException

main     t1          t2

t3

process id

Thread Scheduler

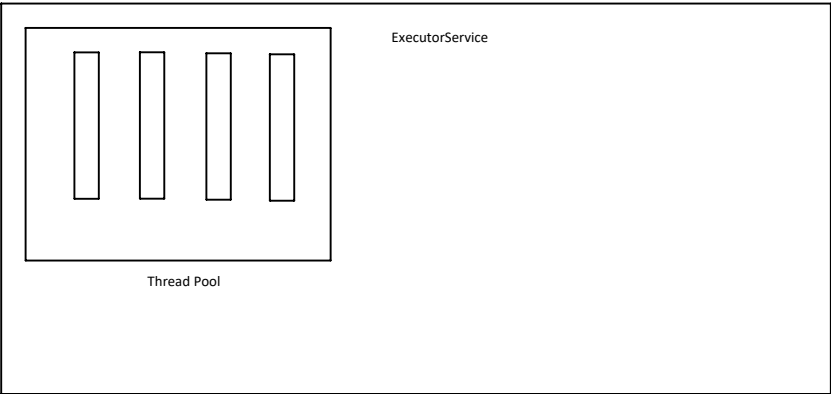java app

c++ app

Python App    1009

1007

1001

6 processors

Synchronization:

synchronized

notify/notifyAll

monitor

Thread

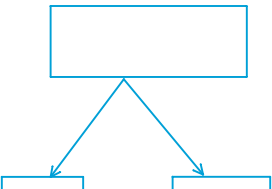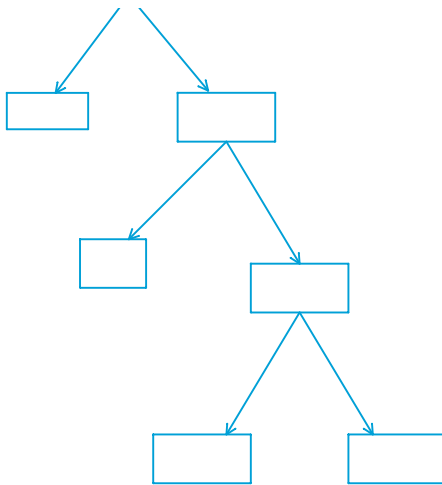ExecutorService

Thread Pool

aaaa
bbb
cccc

.
XML File

app.java
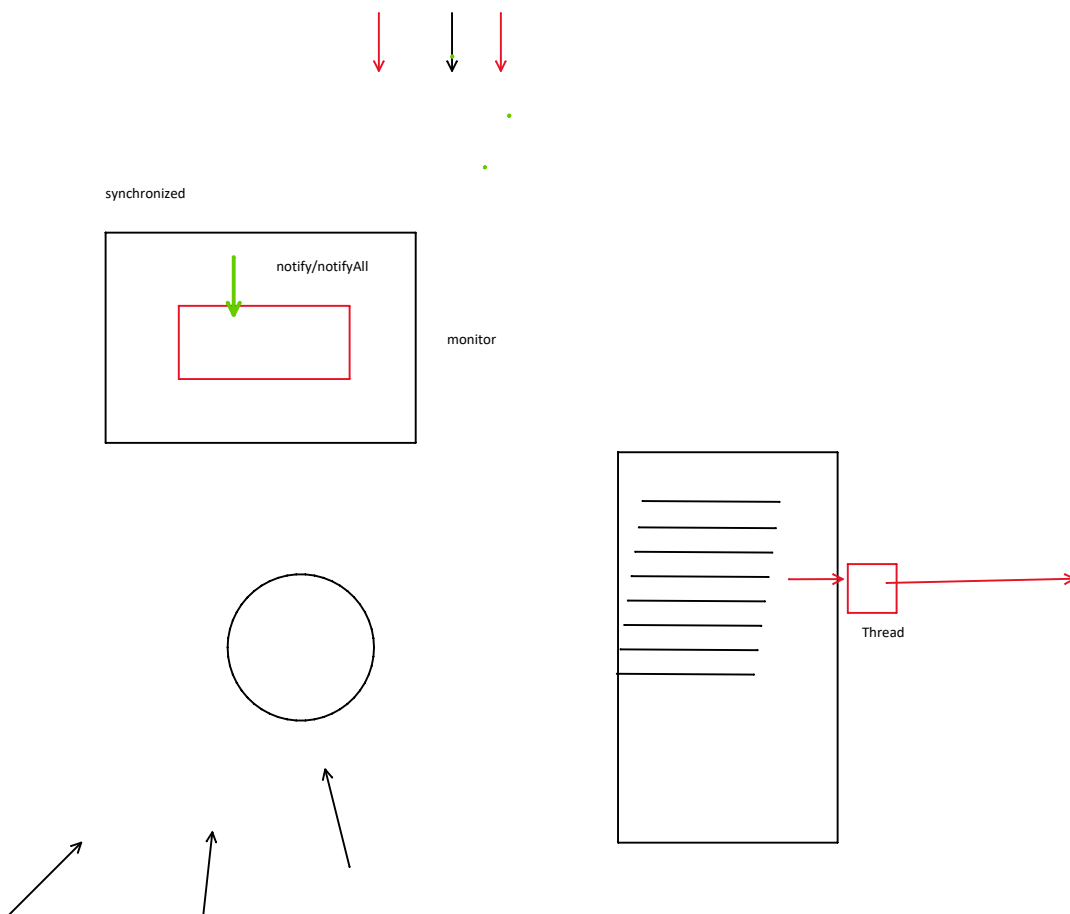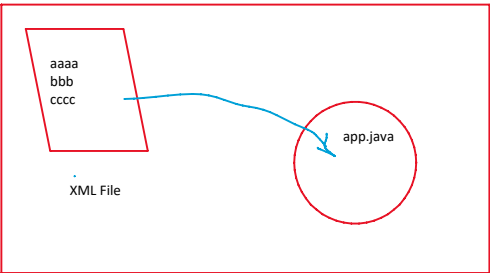
1. program which reads/parses XML is called XMl Parser

1
2 =>1=2
3=>2+3=5
4=>5+4
5
6
7
8

www ?

Web Browser

Google search lion

web application

DNS

site1

Web Server

199.126.44.10:80

Client

http://site1:80/A/s

A

s, t

B

x,y
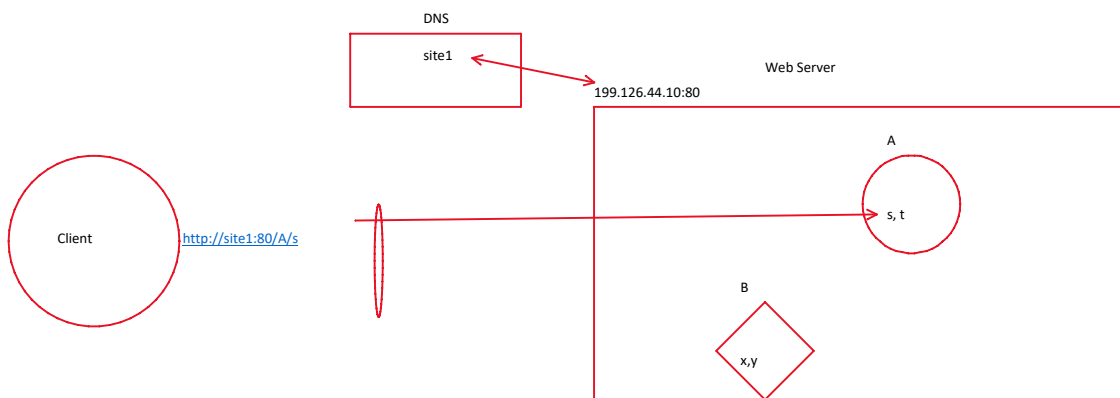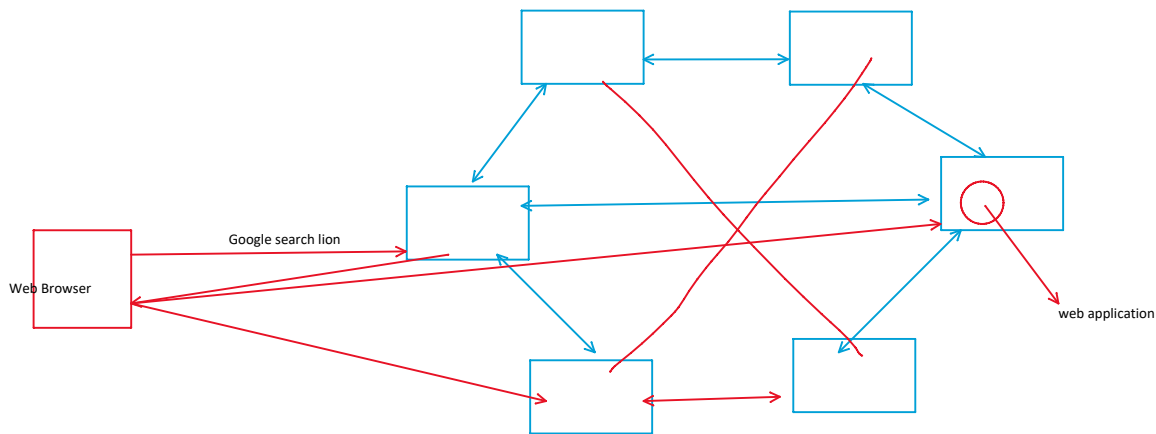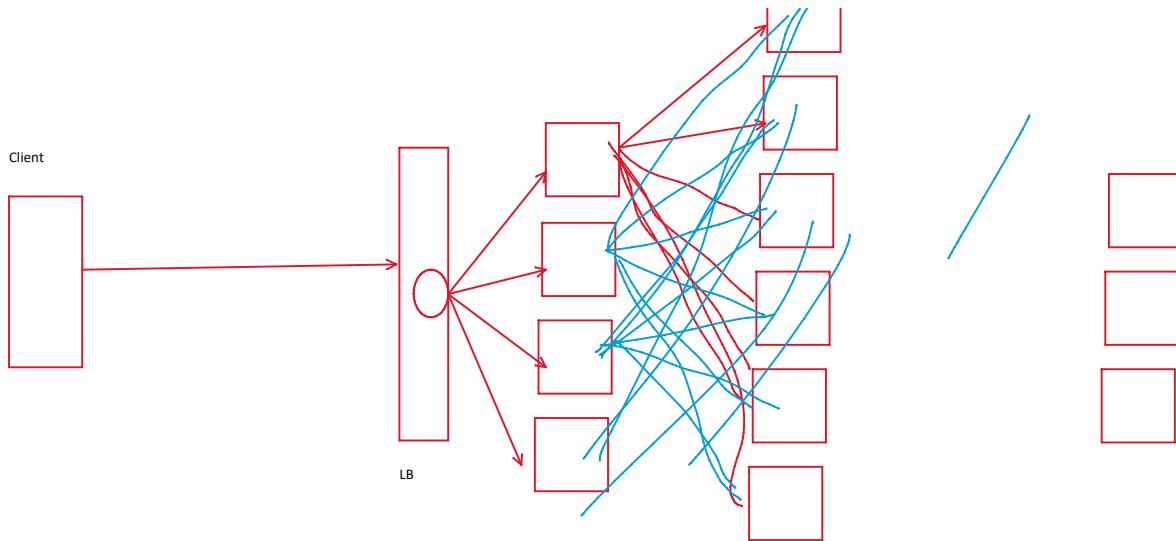
1. http Protocol
2. Http Response codes
3. Web Server Types
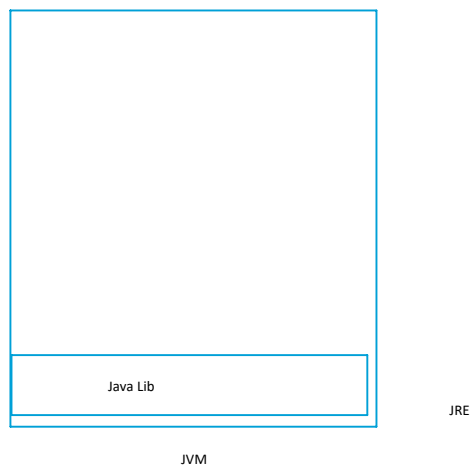4. Web Application Architecture in Java

Client

LB

In Java We have concept of Container's

Java Applications (main) ---> Application Container

Servlets/JSP (Web Component) --Web Container

| Applet (In Browser) | Applet Container |
|---|---|
| Enterprise Java Beans | EJB Container |

Java Lib

JVM

JRE

Java Softwares are distributed as

.jar (lib or EJB)
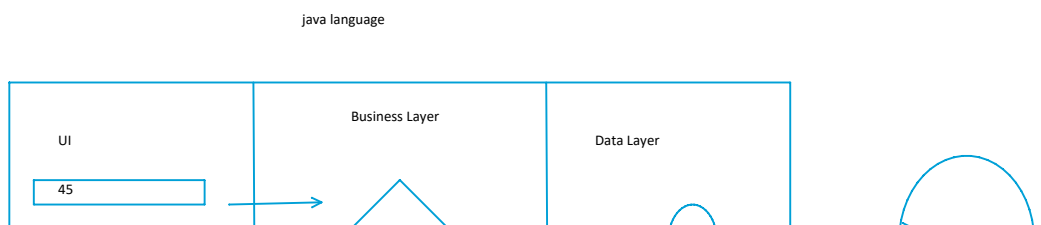.war (Web Applications)
.ear (Enterprise Archive)

Apache Tomcat

Web-Application
        |
        subfolders
        |
        x.html  and Other files(1-*)
        |
        WEB-INF
            |
            lib
            |
            classes
            |
            web.xml (deployment descriptor)

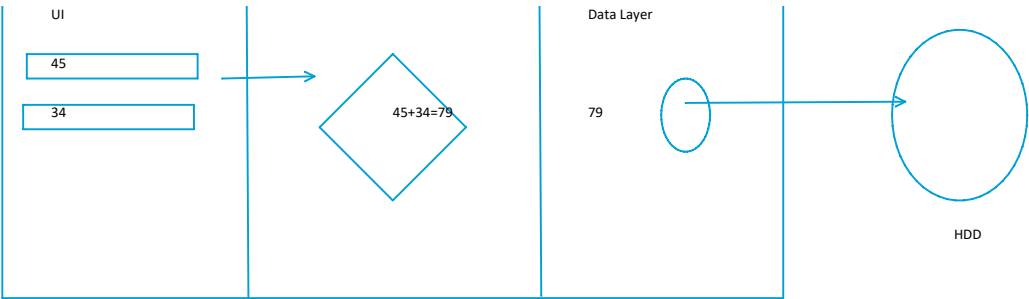1. code development
2. Test/Unit Testing
3. Build
4. Deploy

App
    |
    META-INF
    |
    package
        |
        .class(es)

java language

Layers and Tiers

UI

Business Layer

Data Layer

45

Layers and Tiers

UI

| 45 |

| 34 |

45+34=79

Data Layer

79

HDD

Single Tier/Monolithic architecture

Mariadb Server

UI

mysql client

BL

DAO

UI

M1

BL

M2

Data Layer

M3

n-Tier

Deployment Premises (DMZ)

Linux/Windows

Apache Web Server (httpd)

port 80

Apache Tomcat

web Container

1

3

2

4
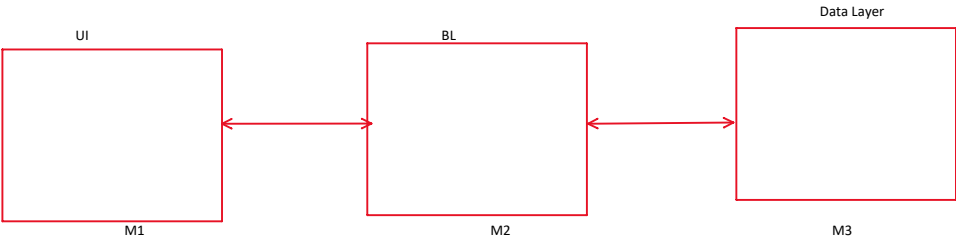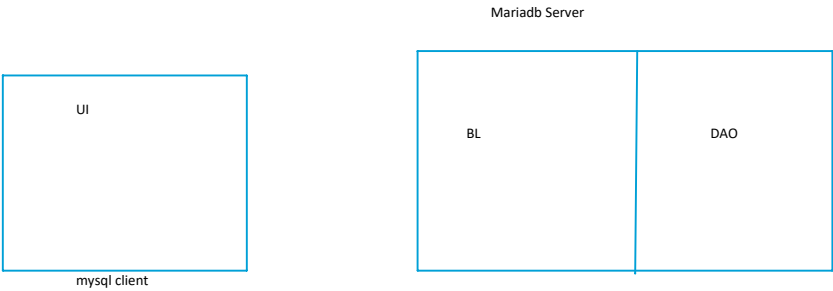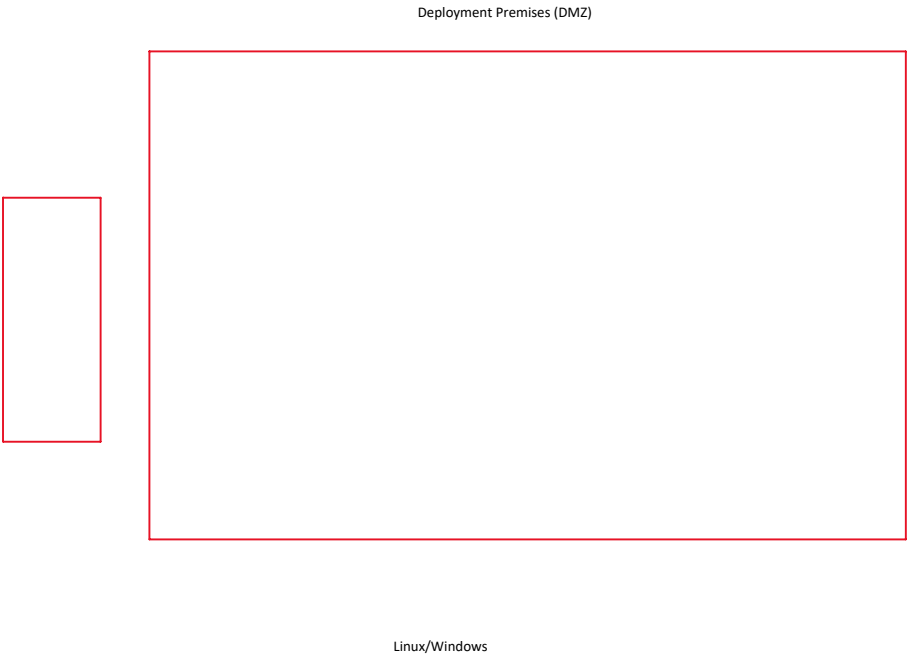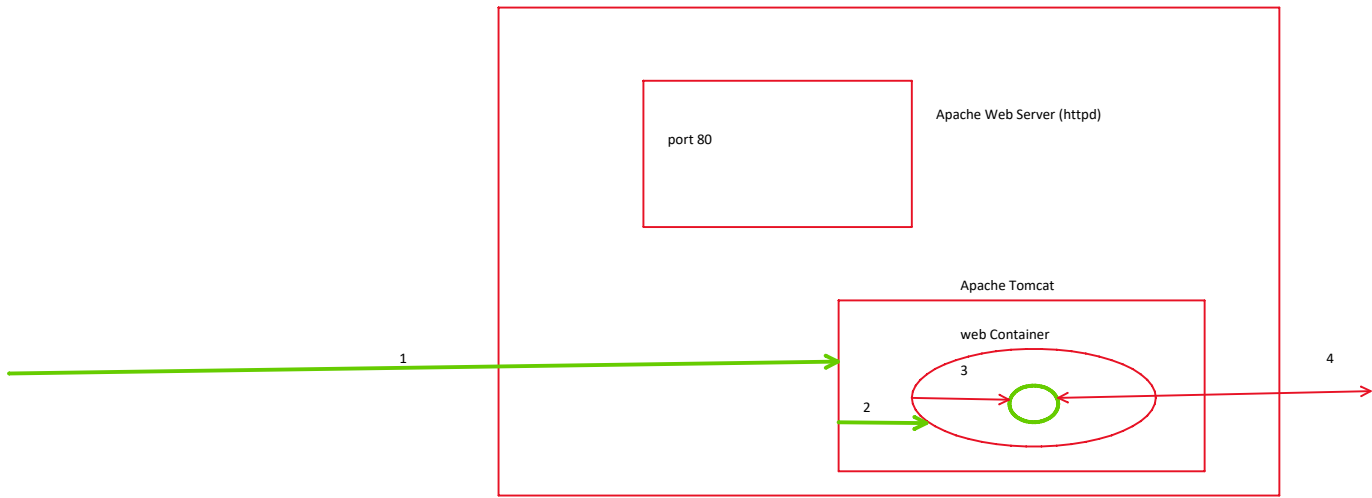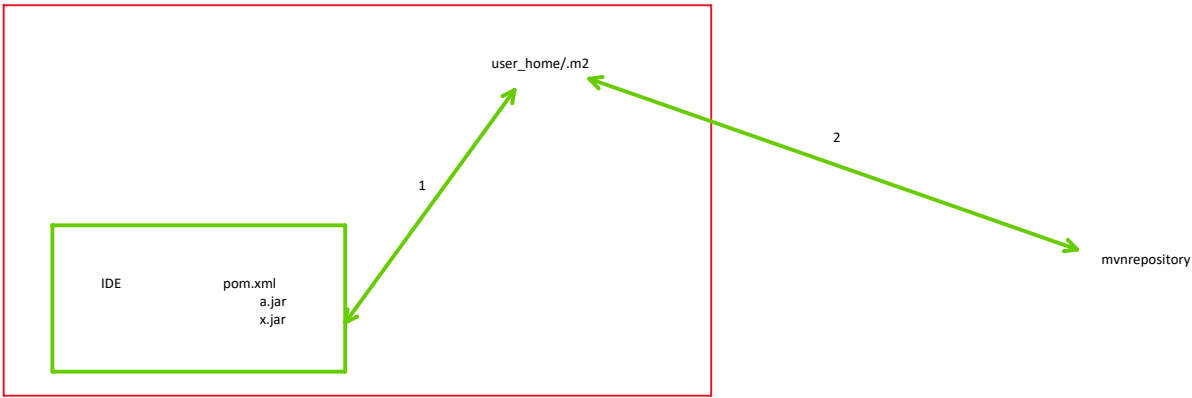
Building an Application

You coded 200 classes in 20 different packages, How would you distribute it?

Maven build and project management tool

user_home/.m2

2

1

mvnrepository

IDE        pom.xml
                a.jar
                x.jar

groupId: the organization domain (e.g com.ibm)
artifactId: project name
version: release version
scope: when this jar will be used (compiling, runtime, test etc)

Spring Framework:

Specification

App.war(API)        Tomcat (SPI)
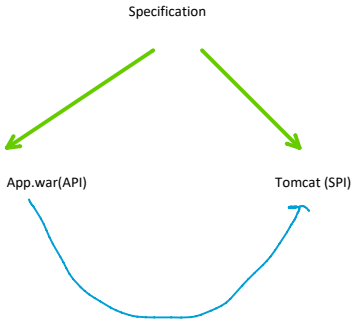
Application Server
  Weblogic
  Websphere
  Jboss
  Glassfish
  Pramati
  .......

Application

ApplicationContext ctx=

Spring Framework Environment (Spring DI Container/ ApplicationCOntext)

Message

Greeter

Spring Core

Java Virtual Machine

UI (Using main method)

HrApp(Service)

EmpDao (interface)

String save(Emp e)

ctx.getBean("hr")

@Autowired

@Repository

EMpDaoImpl