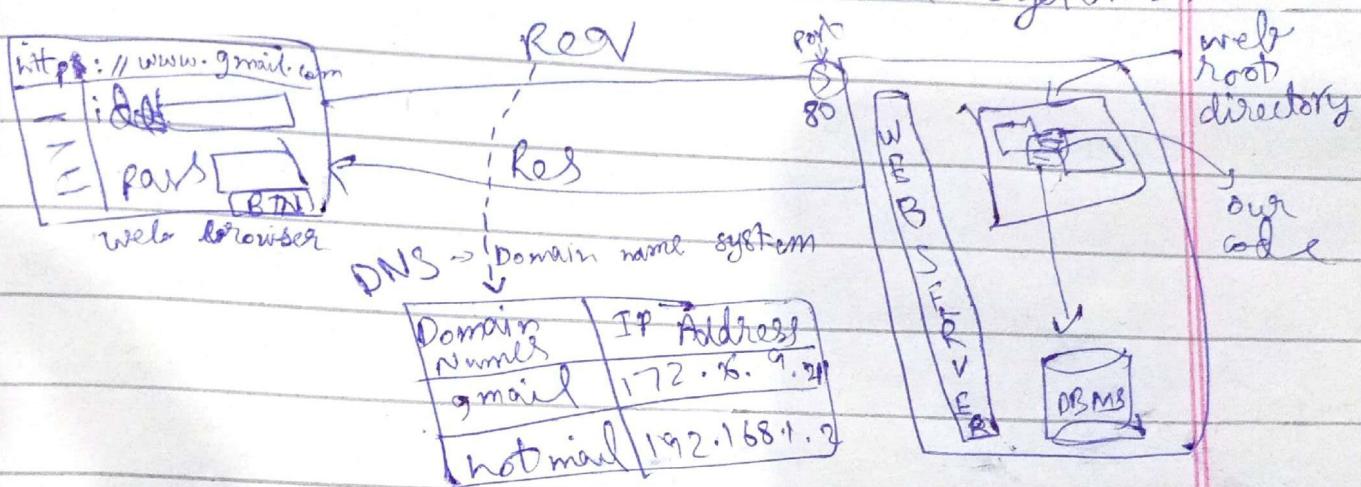


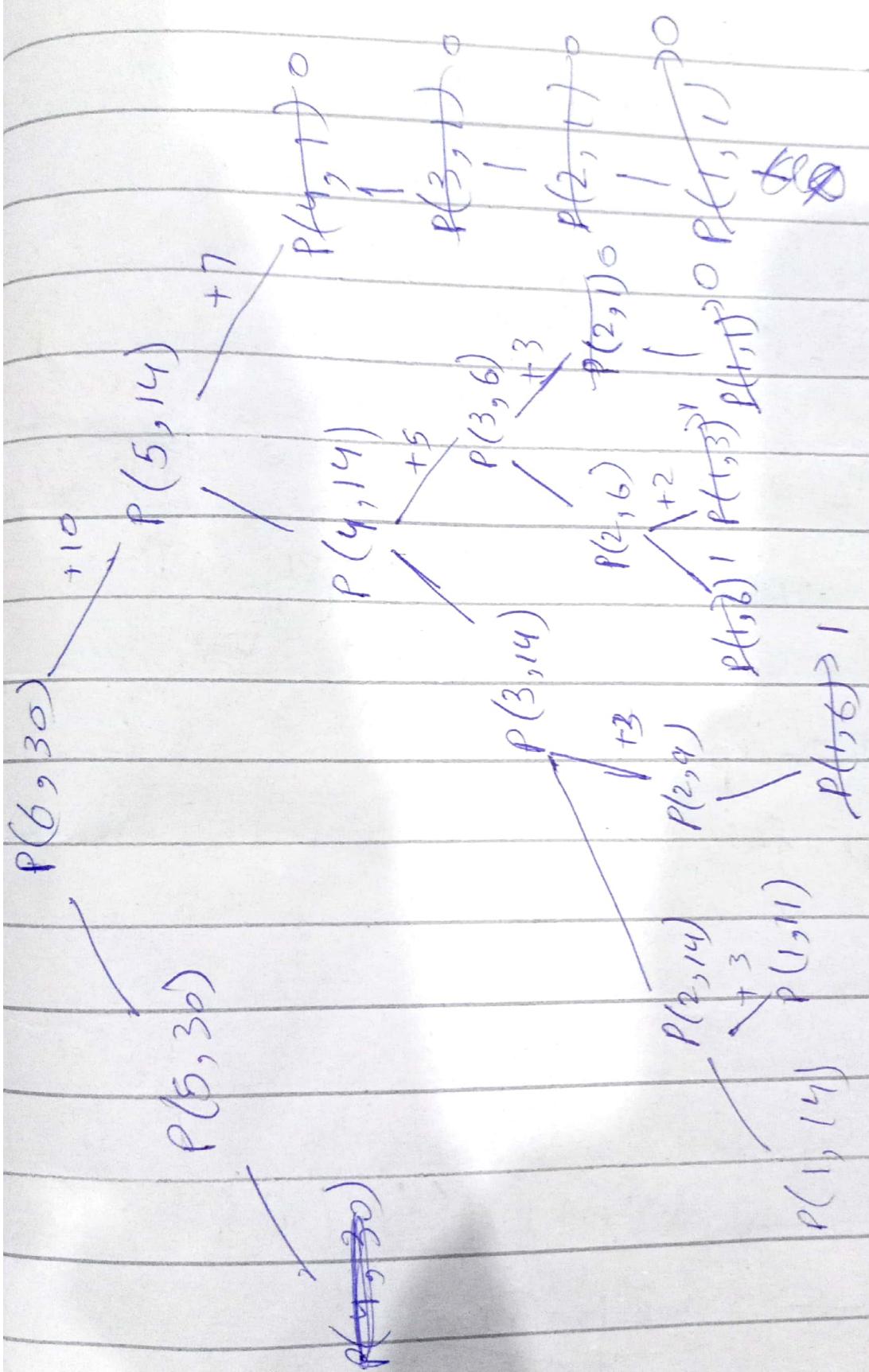
## Web eng:

### Architecture of web-based systems:



- Two tier arch.: client and server
- Tier → physical separation
- Layer → logical separation
- Web server
  - listen req
  - examine type of req
  - invoke desired service
  - return response
- In server side technology the code will be compiled and executed on server
  - match and output of that code will be sent back to your client as response

- In client-side technology all code will be sent back to your client as response and your browser is responsible to execute that code



# ~~Web Engineering~~

~~CAT~~

Web eng.

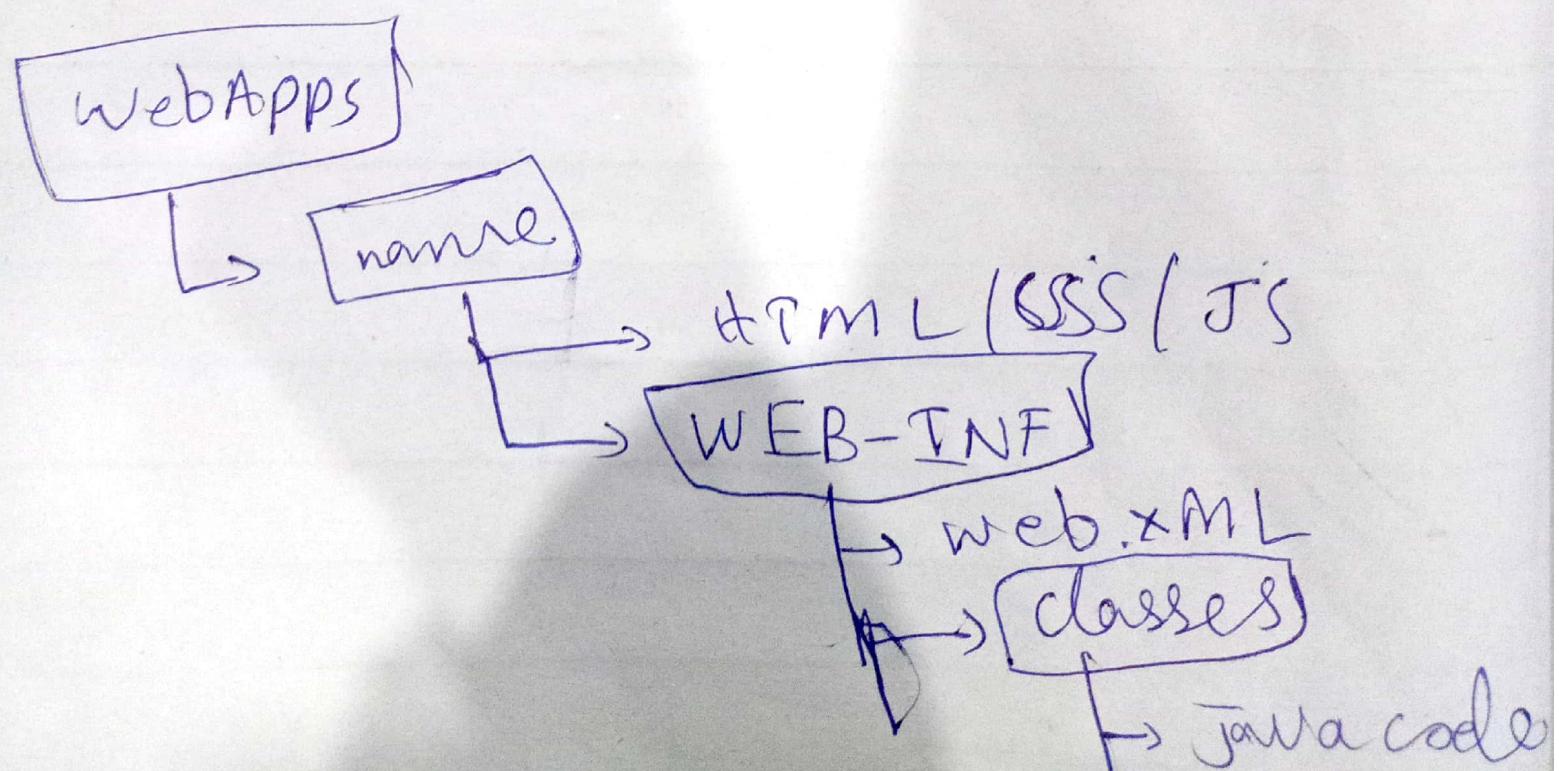
set Environment variables:

JAVA\_HOME = root directory of ~~java~~ till bin

CATALINA\_HOME = root directory of tomcat till bin

~~serv~~ servlet-api.jar

jsp-api.jar



- XML document contains user defined tags used to share data b/w incompatible servers.
- At XML invoke desired service.
  - Servlet is java code runs on server side to process http client request.
- Servlet interface and GenericServlet class~~are~~ are protocol independent. We have to create our own http protocol.
  - only executed once in its life cycle
    - init() → initialization
    - service() → req, res } servlet interface
    - destroy() → destruction

# Web Engineering

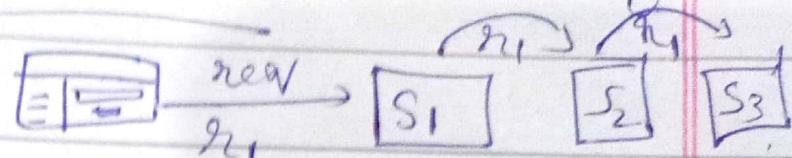
- (HW) • getAttributeNames()  
↓ return type ?
- getInitParameterNames()  
↓ return type ?
- req. getParameterName()  
↓ return type ?
- req. getParameterValues  
return []
- res. sendRedirect("welcome")  
↓ ↓ : url changed.  
: new req obj will be created  
To transfer flow to  
~~the~~ desired page.
- res. sendError(int, msg)  
string  
code

# Request Dispatching / Servlet Chaining

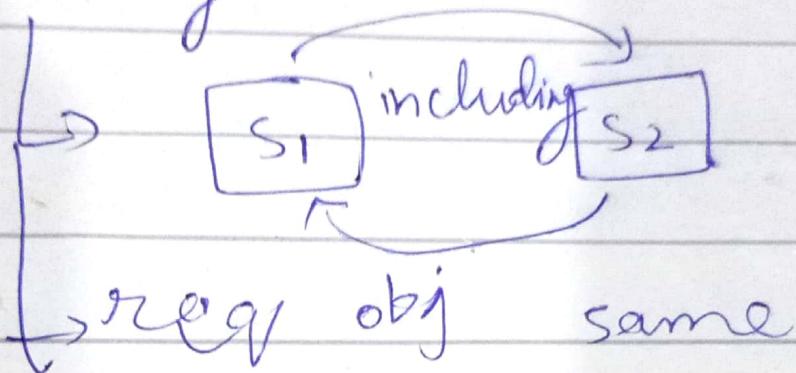
→ Forwarding

url does not  
change

req obj is same or validate  
on every calc print  
servlet



→ Including



$$T(n) = T\left(\frac{n}{2}\right) + n^2$$

$\downarrow$

$$\frac{n^2}{4}$$

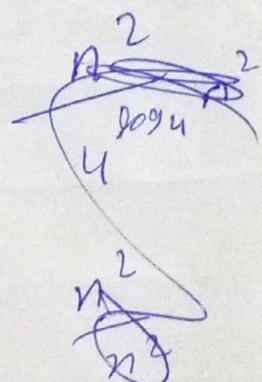
|

$$\frac{n^2}{16}$$

|

$$\frac{n^2}{64}$$

$$\frac{n^2}{4^k}$$



$$\frac{n^2}{4^k} = 1$$

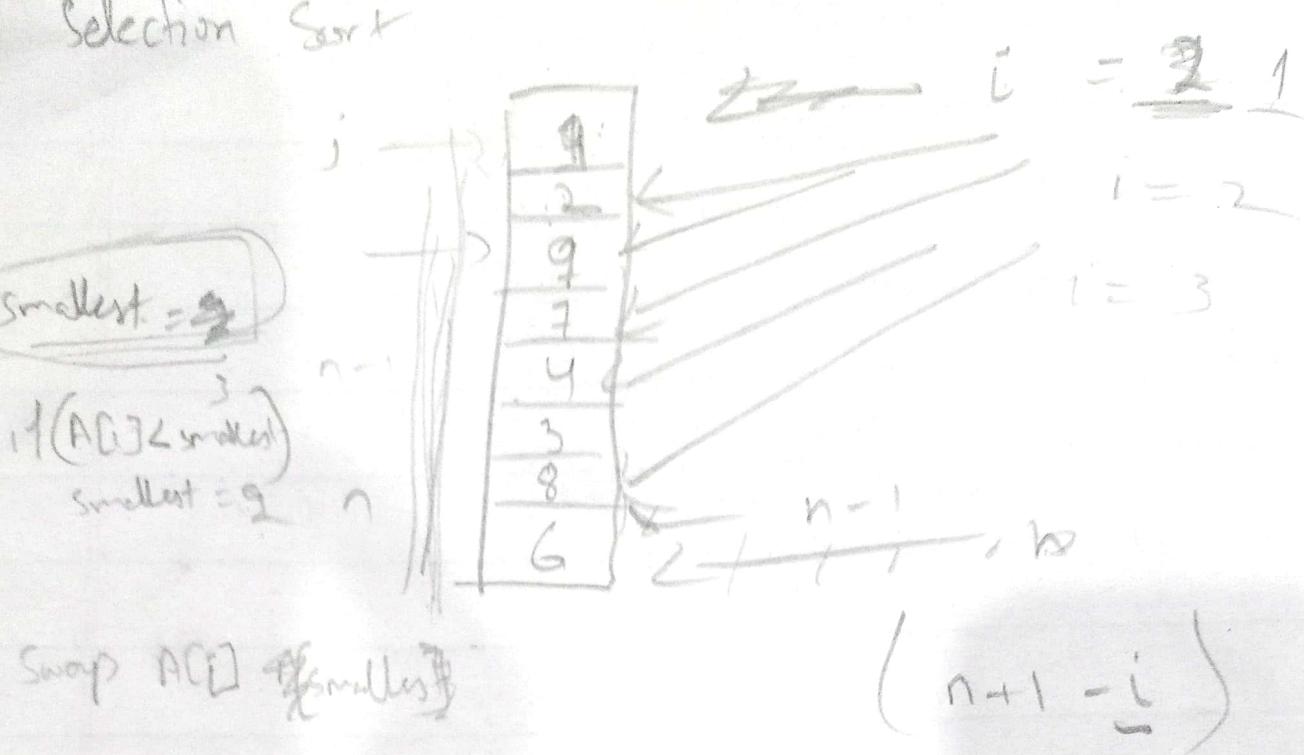
$$\sum_{n=0}^{\infty} \frac{n^2}{4^k}$$

$$n^2 \leq 4^k$$

$$\log_4 n^2 = k$$

$$n^2 \cdot \frac{1 - \frac{1}{4^k}}{1 - \frac{1}{4}}$$

# Selection Sort



$$O(n^2)$$

$$F = \sum_{i=1}^{n-1} n-i$$

$$\sum_{i=1}^{n-1} \sum_{j=1}^{n-i} = n-i$$

$$\sum_{i=1}^{n-1} (n+1-i)$$

$$\dots \sum_{i=1}^{n-1} 0 + \sum_{i=1}^{n-1} 1 - \sum_{i=1}^{n-1} i$$

$\{ \text{SS}(A, n)$

$$\frac{n(n-1)}{2}$$

smallest =  $A[n]$

$$\frac{(n-1)(n-1-1)}{2}$$

$\{ \text{for } (i=1 \text{ to } n-1)$

$\{ \text{for } (j=i \text{ to } n)$

$$\frac{(n-i)(n-2)}{2}$$

$\{ \text{if } (A[j] < \text{smallest})$

If ( $A[j] < \text{smallest}$ )

smallest =  $A[j]$

$\{ \text{swap}(A[i], \text{smallest})$

$$\frac{n(n-1)}{2}$$

$$\frac{n(n-1)}{2}$$

$$= O(n^2)$$

$$\frac{(n-1)(n-1-1)}{2}$$

$$\frac{(n-1)(n-2)}{2}$$

$$(n-1)(n-1).$$

$$\frac{n(n-1) + (n-1)}{2} - \frac{(n-1)(n-2)}{2}$$

$$\underline{2n(n+1) + (n+1)} - (n-1)(n-2)$$

$$-2(n^2 - 1) = n$$

A	3	1	10	8	2	0	5
B	3	1	10	8	2	5	↓ smallest

For  $i \rightarrow 0$  to  $n-1$

~~smallest = small(A)~~

if (~~A[i]~~ < A[i+1])

smallest = A[i]

else

smallest = A[i+1]

~~for i → 0 to n-2~~

if (B[i] < B[i+1])

small2 = B[i]

else

small2 = B[i+1]

$$n(n-1) - \frac{n(n-1)}{(n-1)(n-2)}$$

1	2	3	4	5	6
10	4	11	a	10	11

Forward  $\rightarrow$   $10 \leq 1$   $\leftarrow$  backward

A  $(x, y)$ : if  $x < 0$  then throw exception

is a period if  $\frac{x}{y}$  throw new exception ("L")

}

is that

period

say sub mani ( )

try

A();

catal

S

C PP  
(Pointers)  
References

Java  
references

Int a = 20;

String a;

\* b = & a;

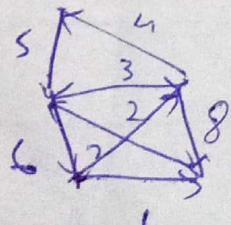
Int & b = a;

a, b



Int a;

value type



SS

SAS

