* গুণ/ভাগ করতে চাইলে Multiplicand কে রাখতে হবে AX এ
/ Multiplied যেকোনো রেজিস্টার থাকতে পারে

CSE 357 lab
Faruk sir.
8086 Emu

রেজিস্টার: AL (L)
রেজিস্টার AH (H)

```
MOV AL, 1EH
MOV BL, 06H
DIV BL
```

Help for Emu8086 start from 95 page

Library function
looping

Interrupt

/ Number scan করতে CX এ থাকবে

```
# include emu8086.inc (CL)
call scan_num
    MOV BL, CL
    MOV AX, 0001H
FACT:
    MUL BL
    DEC BL
    LOOP FACT
CALL Print_Num
ret
Define scan_num.
Define print_num
Define print_num_uns.
```

Variable
Loop
Arithmatic

10.05.2023
CSE 357 lab
Faruk sir.

8086 Emu

* গুণ/ভাগ করতে চাইলে Multiplicant কে রাখতে হবে AX এ
* Multiplied যেকোনো জায়গায় থাকতে

ভাগফল AL (L)
ভাগশেষ AH (H)

```
MOV AL, 1EH
MOV BL, 06H
DIV BL
```

* Help for Emu8086 start from 95 page
* Library function
* looping

Interrupt

* Number Scan করতে cx এ থাকে

```
include emu8086.inc
call scan_num
MOV BL, CL
MOV AX, 0001H
```

variable
loop
Arithmatic

```
FACT:
    MUL BL
    DEC BL
    LOOP FACT
CALL Print_Num
ret
Define scan_num
Define print_num
Define print_num_uns
```

computer network CSE359

11.05.2023

- IP Address — IPv4 (32 bit) | IPv6 (128 bit)

protocol
set of rules.

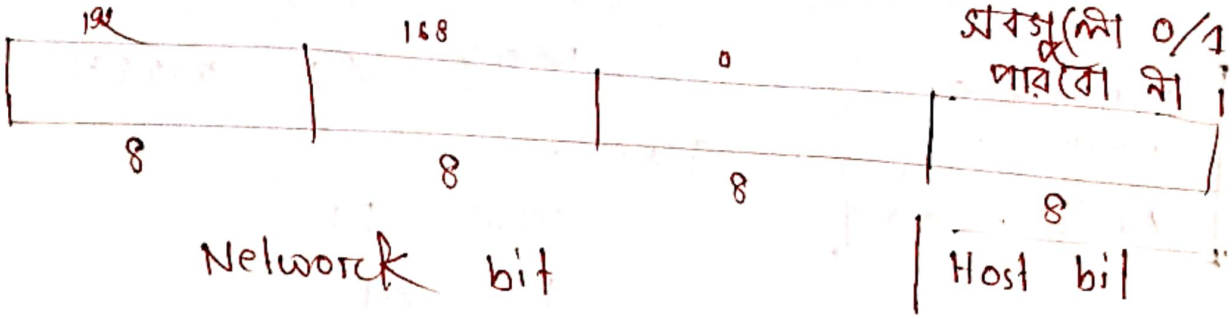
1. Public IP
2. Private IP
3. Static IP // gateway
4. Dynamic IP // Subnet mask

IP

10.	13	221	171
8	8	8	8 bit

192.168.0.0 /24

Must Math.



Host সংখ্যা $2^n - 2$

সবগুলো 0 Network

" 1 Broadcast

computer network CSE359

15.05.2023

* supernetting vs subnetting

IP Adress Class

Q. 200.200.200.0 /24 // 1 subnet

1) Subnet mask → 1st useable subnet

Q. must করতে

200.200.200.0/24

Host bit

11001000.11001000.11001000.00000000

00100000 — 1st subnet
010
011
100

1st useable subnet.

200.200.200.32/27

11111111.11111111.11111111.11100000

$2^8 = 256$

$2^5 = 32$

224

255.255.255.224 subnet mask

(ii) Find out 1st useable host for 1st useable subnet

1st subnet

11001000.11001000.11001000.00100000

→ 00001

200.200.200.33

128
62
+10
32
222

(iii) last useable host of last useable subnet.

11001000.11001000.11001000.10100000

11110

110 11110

200.200.200.190

200.200.200.222

(iv) How many IP is being lost in this subneting

(32+32+6×2) = 76

Q. 200.200.0.0/16 ~~172.~~ 234.211.0.0/16

You have been create at least 15 useable subnet

(i) What is the class of this IP

(ii) How many useable subnet you will be creat

(iii) How many useable IP in each subnet

(iv) Overall কতগুলো IP তৈরি করা যাবে।

(v) What will be the network mask of 4th subnet and IP. subnet

(vi) What will be the second useable IP of 2nd useable subnet.

(vii) X সর্বোচ্চ কতগুলো IP নিতে পারে।

(viii) 7th subnet এর IP Addrees.

```
10100111 000|00001 00000
11111111 111|00000 00000
```

1111 →

10000

$2^5 - 2 = 30$

Soln:

(i) IP Address class. C (D)

(ii) We can use at lest 15 subnet

So we would can borrow 5 host bit, as network bit.

So, useable subnet $= 2^5 - 2 = 30$

(iii) Here,

Network bit $= 16 + 5 = 21$

Host bit $= 16 - 5 = 11$

∴ useable IP address of each subnet

$= 2^{11} - 2$

(iv) overall ~~sub~~ useable subnet $2^5 - 2 = 30$

∴ So, overall useable IP $= 30 (2^{11} - 2)$

(v) 11111111 . 11111111 . 11111000 . 00000000

~~255.255.40.0~~ ✓ 255.255.248.0

~~IP. 255.255.40.1~~

239 . 11 . 00100000 . 1

IP 239.11.32.1

Software Engineering ~ Masif Ahmed Sir

17.05.2023

Process Activity

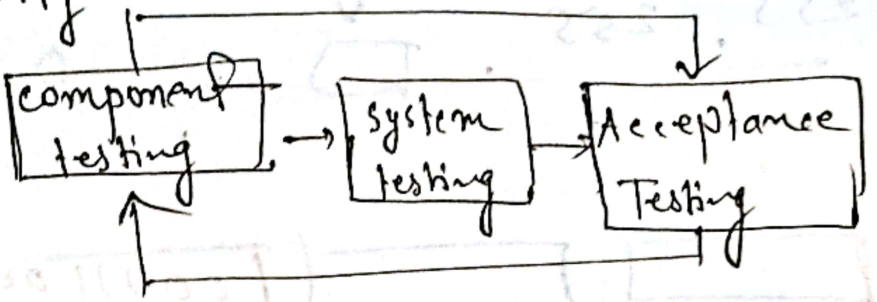
Requirement
↓
design & Implementation
↓
Testing (validation & varification)
↓
Evalution

- Requirement Engineering
- SW Design and Implementation

⇒ General Model of the design process.

- Testing Activity

Stage



- SW Evalution

Incremental delivary

Self Test

31.05.2023 Chapter. 1 SW Eng.

Requirement Discovery

(i) Requirement Discovery
(ii) System Requirement. } intro.

- Reason of Investigating the current system.
- Result of incorrect requirement
  (i) More cost (ii) late delivery
- Criteria to Define System requirement.
  (i) consistent (ii) complete (iii) Feasible (iv) Required (v) Accurate
  (vi) Traceable (vii) Verifiable.
- Process of Requirement Discovery.
  (i) Problem discovery and Analysis
  (ii) Requirement Discovery
  (iii) Documenting and analyzing requirement
  (iv) Requirements Management
- Ishikawa Diagram (P D and A) cause and effect / fishbone

Slide. 13

- Seven Fact. Finding Methods
  (i) Bg Research
  (ii) Simpling of existing doc. forms. and database.
  (iii) observation of the work environment
  (iv) Questionnaires
  (v) Interviews
  (vi) Prototyping
  (vii) Joint Requirement Planning (JRP)

57 slide

Numerical Methods
31.05.2023

- Newton Raphson
- convergence (অভিসারী ধর্ম)
- Secant Method
- Fixed Point Iteration

$f(x) = e^{-x} - x$

$E_{ti} = 0.18095\ E_{t,i}$

Modified Secant Method

Chapter. 6

Chapter. 9 (More)

System of linear Equation:

- Forword Elimination
- Back slow substitution (Lab)

Pitfalls of Elimination

(i) Divided by zero
(ii) Round. off. Error

30.05.2023
Computer Network

Rules ↑ protocol and Topology ↑ Arrangement

- Giga bit Ethernet
  - → Full Duplex Mode (switch)
  - → Half Duplex Mode (Hub)

HDLC → High-level Data Link control Protocol.

- Physical and Logical Topology
  - Broadcast
  - Multi-cast
- Network Interface card → Physical connection between PC and Network
- V.V.I IP vs MAC Address (আসবেই)

RSA Algorithm

Computer Network
04.06.2023

(P, q) random prime.

$n = p * q$: $\phi = (p-1)(q-1)$

chose fector $d = \square$: $de \% \phi = 1$
prime

Encryption $c = p^e \% n$

Dreryption $= c^d \% n$

Example (Network)

let, $p = 3$, $q = 11$ {$d = 7$ ∴ $e = 3$

∴ $n = 33$; $\phi = 20$

(N = 14)

E. $c = 14^3 \% 33 = 5$

D $5^7 \% 33 = 14$

(E = 5)

E $c = 5^3 \% 33 = 26$

D $26^7 \% 33 = 5$

computer graphics
04.06.2023

Tutorialspoint

- line algorithm
  - (i) DDA
  - (ii) Bresenham line Genarcation
  - (iv) Mid point Algorithm.
- Circle Genarcation Algorithm
  - (i) B.C. Algorithm
  - (ii) Mid point Algo
- Polygon Filling Algo.
  - (1) Scan line Algo
  - (ii)

Elips
Hyparbola
parcabola

clipping Algo

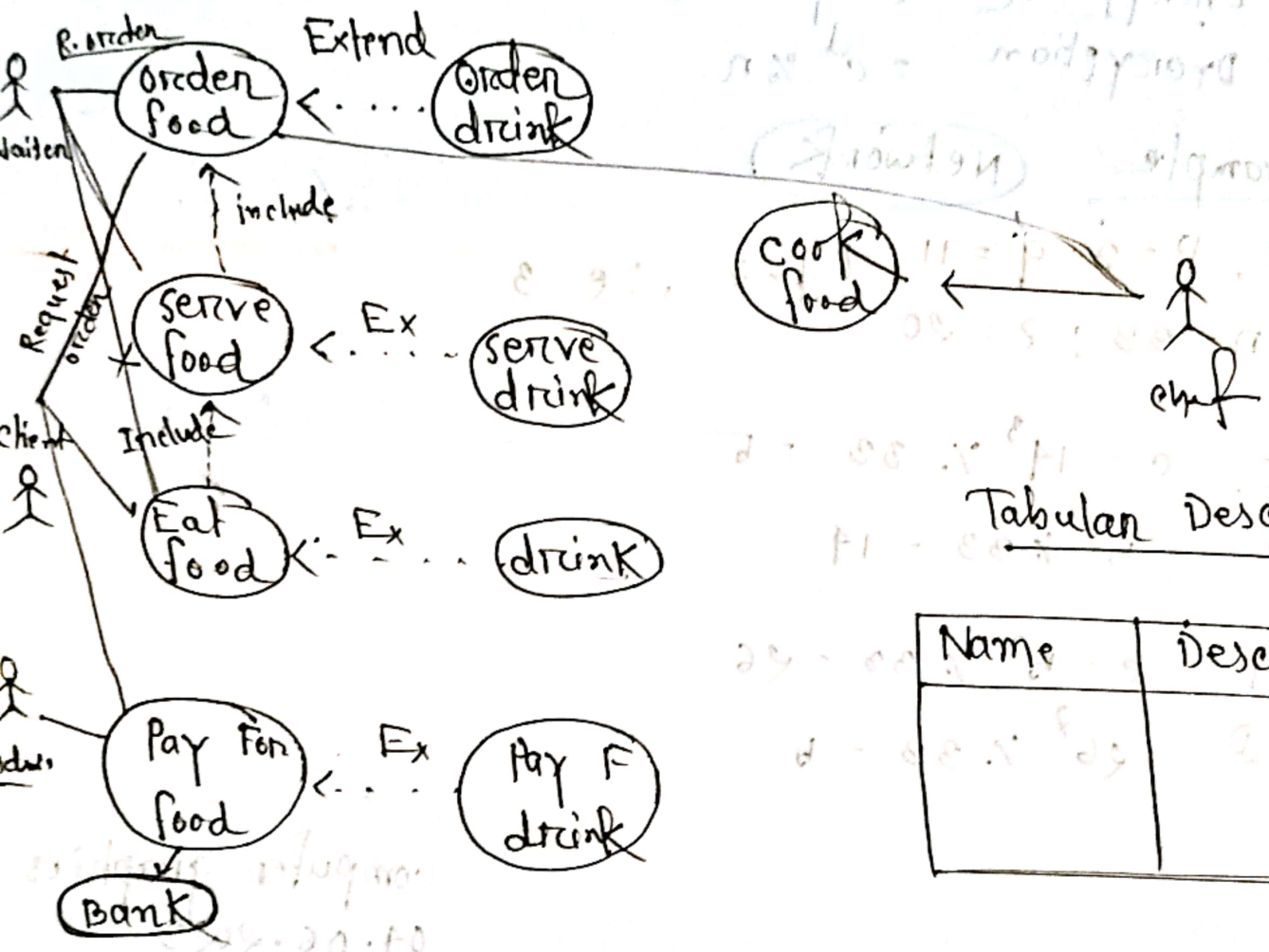
Rotation
2D
3D

System Modeling 05.06.2023
SW Engineering

// Net week lab Assignment

Use case Diagram of project (previous class use case)

Restaurant Model



Tabular Description

Name	Description

Sequence Diagram (interaction Model)

// Representing ✕ object

objectname : classname

: patient — Anonymous object

smith : — object of unknown class

Activation

// lifetime of object

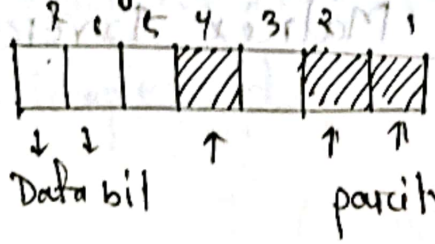
// Alternatives, options and loop

Frame :

computer Network

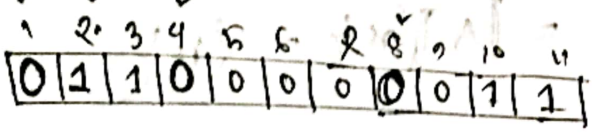
05.06.2023

// Hamming Distance



1 2 4 8 16

- 7 bit Hamming code



A = 1000011

B = 1010101

C = 1000101

D = 1010100

1 → 3 5 7 9 11 (1001)

2 → 3 6 7 10 11 (1011)

4 → 5, 6, 7 (000)

8 → 9, 10, 11 (011)

3 → 1, 2

5 → 4, 1

6 → 2, 4

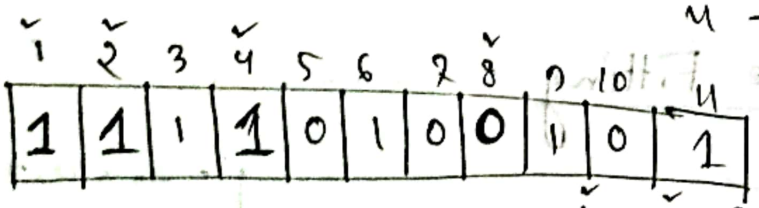
7 → 1, 2, 4

9 → 1, 8

10 → 2, 8

11 → 1, 2, 8

B



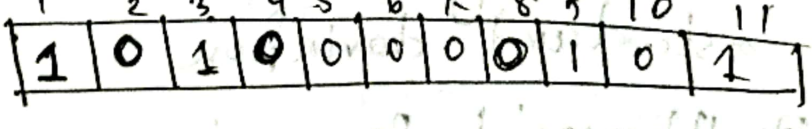
1 → 1001

2 → 11001

4 → 010

8 → 101

C

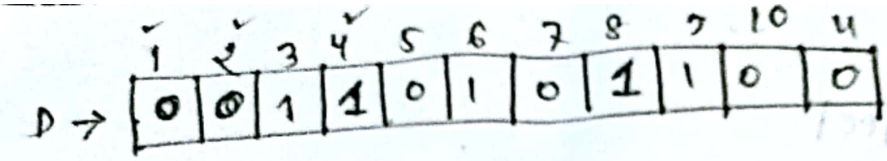


1 → 10011

2 → 10001

4 → 000

8 → 101



1 - 10010
2 - 11000
4 - 010
8 - 100

Numerical Method
05.06.2023

Chapter 10

LU Decomposition and Matrix Inversion

$$[A]\{x\} - \{B\} = 0$$

$$[U]\{x\} - \{D\} = 0$$

$$[L]\{[U]\{x\} - \{D\}\} = [A]\{x\} - \{B\}$$

$$[A] = [L][U]$$

Example

Chapter 11

Gauss-seidel

Example

Chapter 17 Curve Fitting

- linear Regression
  - standard daviation
- Polynomial Regression
  - Example
- Multiple linear Regression

$$y = a_0 + a_1 x + e$$

Chapter 18
Interpolation

08.06.2023
Numerical Methods

- Newton's Divided-difference Interpolating polynomials.

$$f(x_1) = f(x_0) + \frac{f(x_1) - f(x_0)}{x_1 - x_0}(x_1 - x_0)$$

- lagrance Interpolating polynomials.

Chapter 21

- Newtons cost Integration Formulas

✓ Trapezoidal Rule

$$I = (b-a)\frac{f(a) - f(b)}{2}$$

$h = \frac{b-a}{n}$

- Simpson's 1/3 Rule

even number of segment → work

$$I = \frac{h}{3}\left[f(x_0) + 4f(x_1) + f(x_2)\right]$$

- Simpson's $\frac{3}{8}$ Rule

work → odd number of segment

combinedly 1/3 . 3/8 Rule

closed This course

Fahim mostafa

Farouk Sir
08.06.2023

Microcontroller

// Small and low cost of micro computer

// Types of M.controller — Tutorials point

{ Microprocessor Based system.
  CPU. External RAM, ROM, I/O

// A smaller computer on a CHIP

On CHIP - RAM, ROM, I/O ports, Timer Serial contr

// Microprocessor vs Microcontroller

// uC based Embedded system

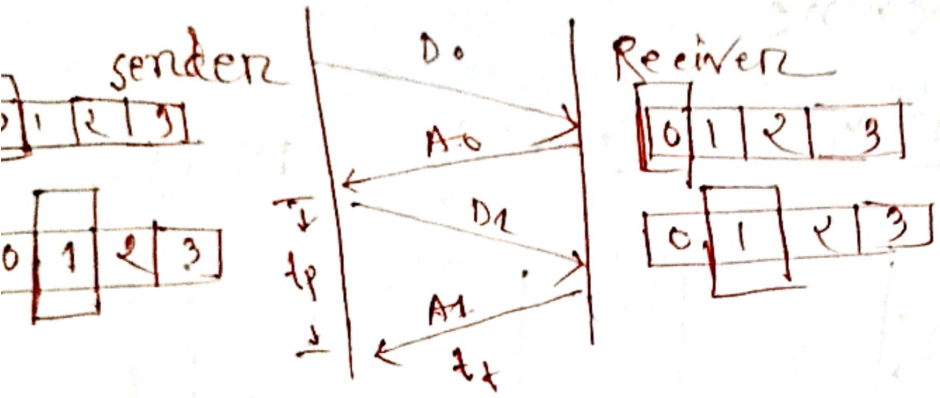
8051 uC

① Pin Diagram
(ii) Block Diagram } 8 bit

13.06.2023
Computer Network

condition control

① Stop and Wait ARQ protocol



Acknowledgement

positive
Negative
Cumulality.

Timeout = 2 Tp

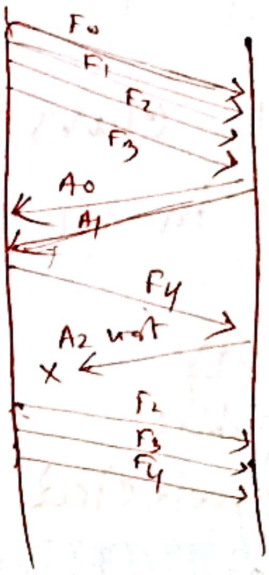
$$\eta = \frac{1}{1+2\alpha} \; ; \; \alpha = \frac{t_p}{t_t}$$

Theory

⑪ Go back NRQ protocol

$$N = 2^m - 1$$

sender Reciver

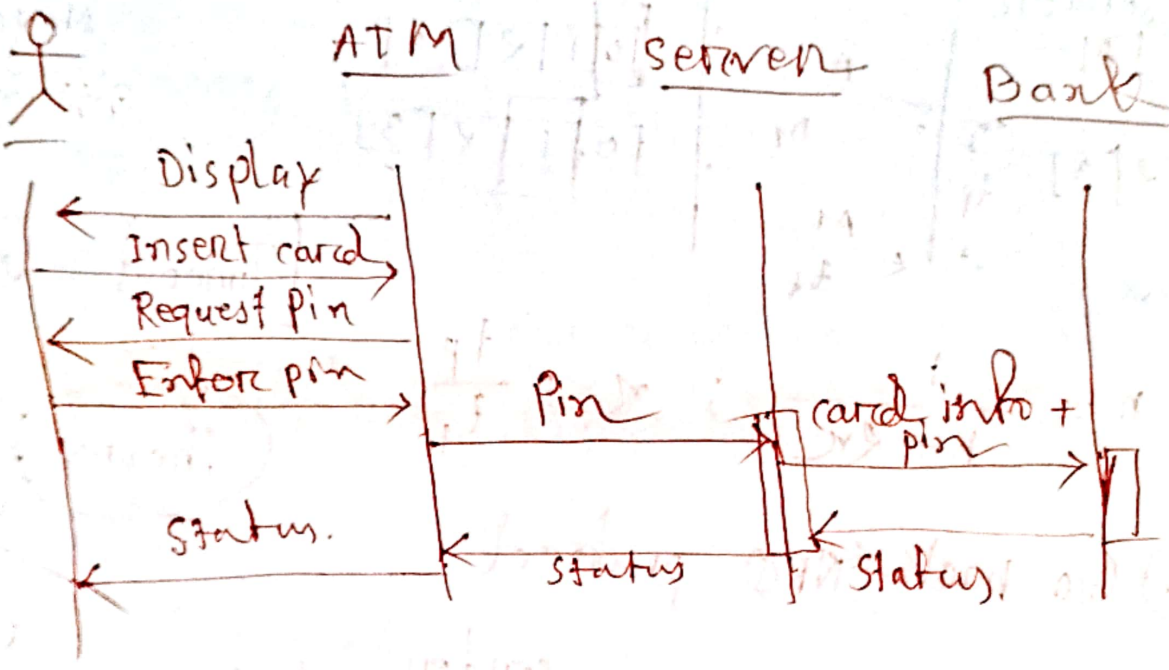


13.06.2023
Software Engineering

UML class Diagram:

Example (Sequence Diagram)

ATM Machine



UML class Diagram : is a picture of the classes in an OO system, their field and Method

Visibility

+ public
# protected
- private
~ package (default)
/ derived

Relationship between class

(i) Generalization
(ii) Association Relations

Drawing → Anup G.

Exam → Must

computer graphics
14.06.2023

Bazier curve :

- Implicity curve
- Parametric curve $x = x_0 + at \; ; \; y = y_0 + bt$

⊞ Bazier curve :

// $B_i^n(t) = \binom{n}{i} (1-t)^{n-i} t^i$

Assignment

→ Bazier curve control point — (4)

⊞ Computer Graphics. Surface

// Polygon Table

// ① Polygon Mash + Techeering + Randering + Physics Engine.

//

Name	Description
1.	
2.	
3.	
4.	

Assignment on SW.

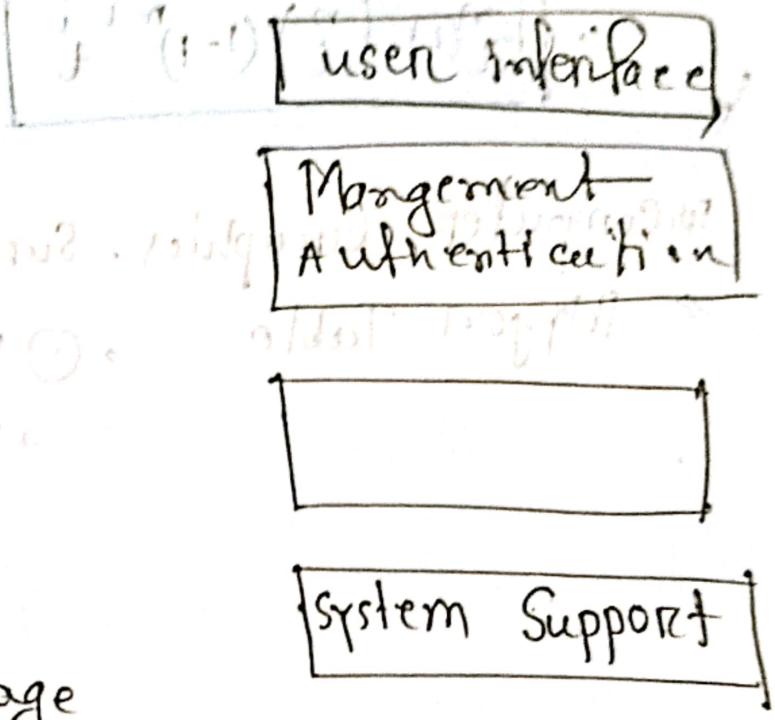
→ USE case Diagram ppt slide

1. Project
2. Module - Des.
3. 3 Module's USE case Diagram
4. USE case Description

14.06.2023
Chapter 6

// Architectural Design
// Packing robot control system
// Architectural pattern
(1) Model-view-controller (MVC) সবচেয়ে বেশি useable.
↓
// organization

⊞ layered Architecture:



Mvc Architecture HTML Page return করতে। তাই ওয়েবসাইট-
Mobile Phone এ খুব ভালো কাজ করে না.

Architecture — Software Engineering

- MVC
- layered
- client-server

MVC vs client-Server | 15-06-2023

A client server Architecture for a film library.

Important

3 TYPE * Design Pattern

Instance

- Singleton Pattern

OOP তে ব্যবহার করে Single Instance থাকা নিশ্চিত।

public synchronize static

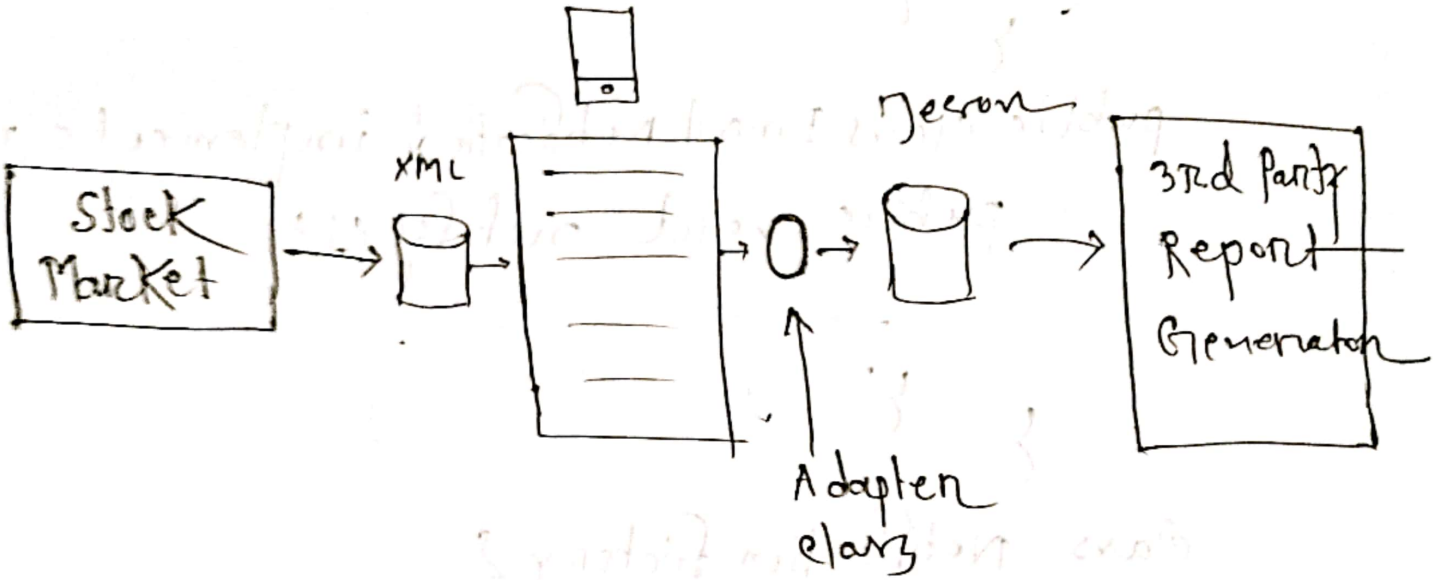
```
public class config {
    //variable
    private static config instance = NUL
    private config(....){
    }
    public static config getinstance()
        return new config();
    {  if (instance == null)
            instance = new config();
        return instance;
    }
```

- Factory Pattern:

```
public interface Notification {
    public void Notify();
}
public class SMS Notification implement notification{
    public void notify() {
        . . . . .
        . . . . .
    }
}
public class Email Notification implements noti... {
    public void notify() {
        . . . . .
        . . . . .
    }
}
class Notification factory {
    public static notification create
        notification (type)
    {
    if (type == "SMS")
    return new SMS Notification
    else if (type == "Email")
    return new Email Notification
    return null;
}
{
```

```
Notification n = NotificationFactory.createNotification("SMS");
n.notifyUser();
Notification n1 = NotificationFactory.createNotification("Email");
n.notifyUser();
```

Adapter Pattern:



Observer Pattern

Eid
Chufi

- class Diagram
- ER Diagram

// Project Implementation

19.06.2023
Software Engineering

Software Testing chapter 8

- Program Testing

Testing process Goal

(i) validation Goal (ii) Defect Testing

- I/O model of program Testing
- Varification vs validation

A model of the software testing process

- Stage of testing

(i) White box Testing
(ii) Black box Testing

19.06.2023
computer Network
lab