

1. Intro to SW design:

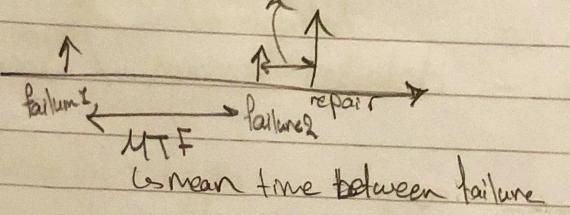
System = 1 or more function
↓
Input + procedures + outputs → programmatic

lecture

embedded = a part of bigger part.

Reliable = correct function + minimal critical faults

MTB : mean time to repair



Software development life cycle

SDLC = a way of developing software

1. Requirements: problem + solution
2. Design: how to build a solution
3. Development: building the solution
4. Testing: Try the solution
5. Maintenance:

physically

Software design: static design + dynamic design

Real-time system = correct function at correct time

↓ identifies
static design

↓ to robot
dynamic design

→ Good design

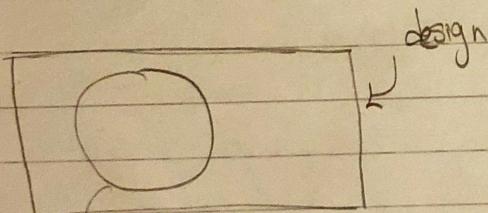
Correct = nth missing & nth wrong (by 3ml | requirements)

understandable = has a single precise meaning

Maintainable = makin a3adet teh

1st design level = architecture / high level

2nd design level = detailed design / low level



architecture
(C design)
1. lazen yf3ml bady
2. 1 ta3deel 3leh qfahli

expose	
1	B
2	D
3	A
4	C

* Sektan el medical
devices by kon
keha 2 systems *

Stedic design:

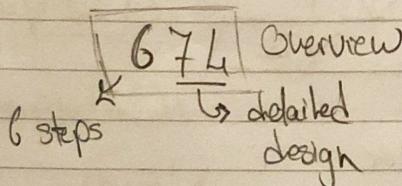
Slide 19, 20 jew

1. Kam
new modules from step 1

2. S + 2. n^K : no. of fishes

3.

1. Kam module w/ Kamosal
behaviour every → context / bd
or
→ super loop



7 steps for detailed design:

1. Steps for Module fn.:

1. initialization function
2. 1 or more update fn
3. 0 or more set fn : input
4. 0 or more get fn. : output

gawa ① fl 7

① abstract 1 module

② 1 functions 1 zahrer

③ bankets 1 module.h

④ file 1 functions feh fadya

⑤ body 1 functions 1 f b (emtak)

⑥ mukhn ukhan 3adi private interfaces

function = input + processing + output

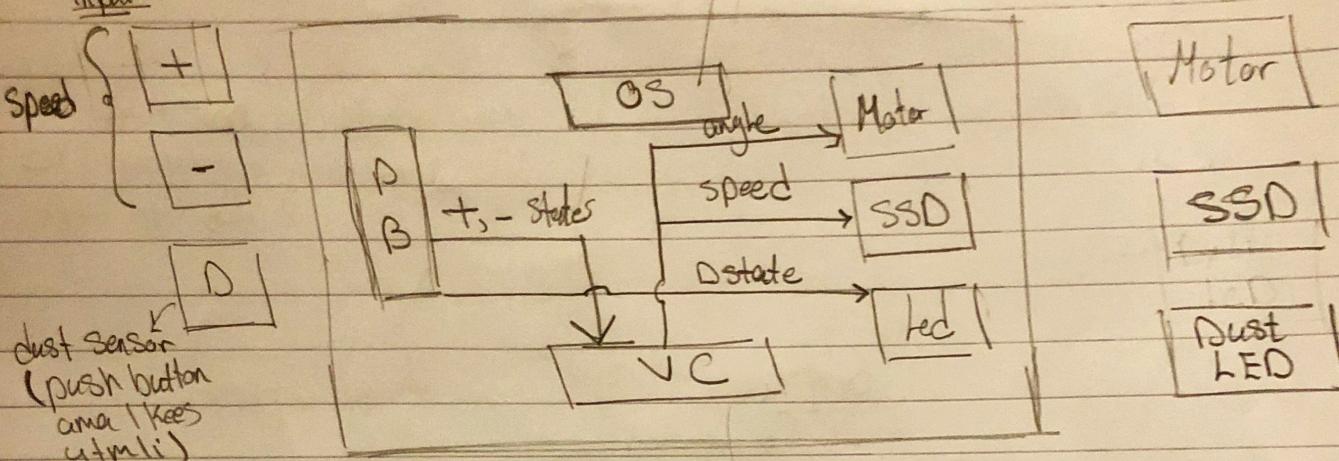
1. prototype → in.h

2. Call → in.C module

3. body (definition) → in.c

↳ call a 3adi mala
wahda 3ekhom (bob)

ex: Vacuum Cleaner



↳ Koi sahn ya setter
ya getter

↳ logic

mra data

Koi b kndo

block diagram

1. OS

2. mirror / base

gara

↳ 1 w block

et krt bahana

mara wahda

(ex: 1 pushbutton)

3.

→ Super Loop.

Void main (void){}

/ * Initialization */

While (1){

→ update function bt-handle
1 3 target dol

/ * Inputs */

/ * processing */

/ * outputs */

}

}

zegher os house white()

```
White() { //OS
    PB-update();
    VC-update();
    MMot-update();
    SSD-update();
    led-update();
}
```

3

AC ① input: remote → infrared-update();
: temp sensor → temp-update();

③ output: Compressor
SSD
Swing
Fan

② processing: airConditioning-update();

↳ mankhtleish el el I/O w en 3ndene OS
· mukn nkhtlet fe kam block fi processing -