S/W Design
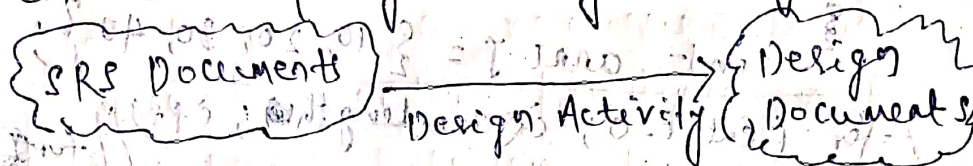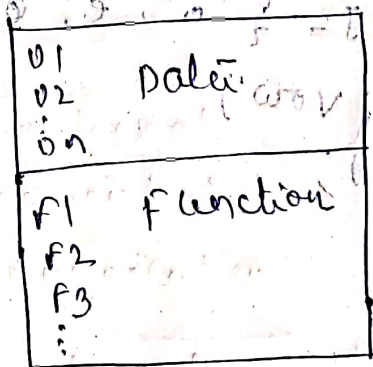
Design phase, transforms SRS documents (Prepared in Analysis phase) into a form easily implementable in some programming language.

{SRS Documents} ——— Design Activity ———> {Design Documents}

#) There are two main

#) The SRS document well converted to design document

*) The main purpose of design document is Cohesion & coupling.

*) A module consists of
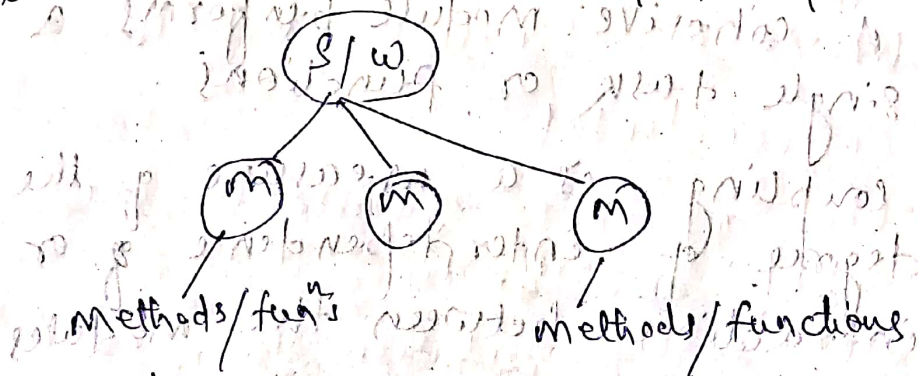 → Several functions
  → Associated Data structure

01 02 0n	Data
f1 f2 f3 ...	Function

Module

Modularity

*) It is a fundamental attributes of any good design.

*) Decomposition of a problem clearly into modules.

#) Modules are almost independent of each other.

#) Divide & conquer principles.

methods/fun^s   methods/functions

#) Dependency among the modules should be less so that if a stage does any work & the second stage wants to do some work, so it should not be that it is waiting, when the first stage will complete their work, then the next stage will start their work.

#) So we will try to Reduce the inter dependency among modules.

#) In technical terms, modules should display
    → High cohesion
    → Low coupling

cohesion :— within a module
        various fun^s, methods, Attributes

coupling :— Among
        Dependency among two or more modules.

*) Cohesion is a measure of functional strength of a module

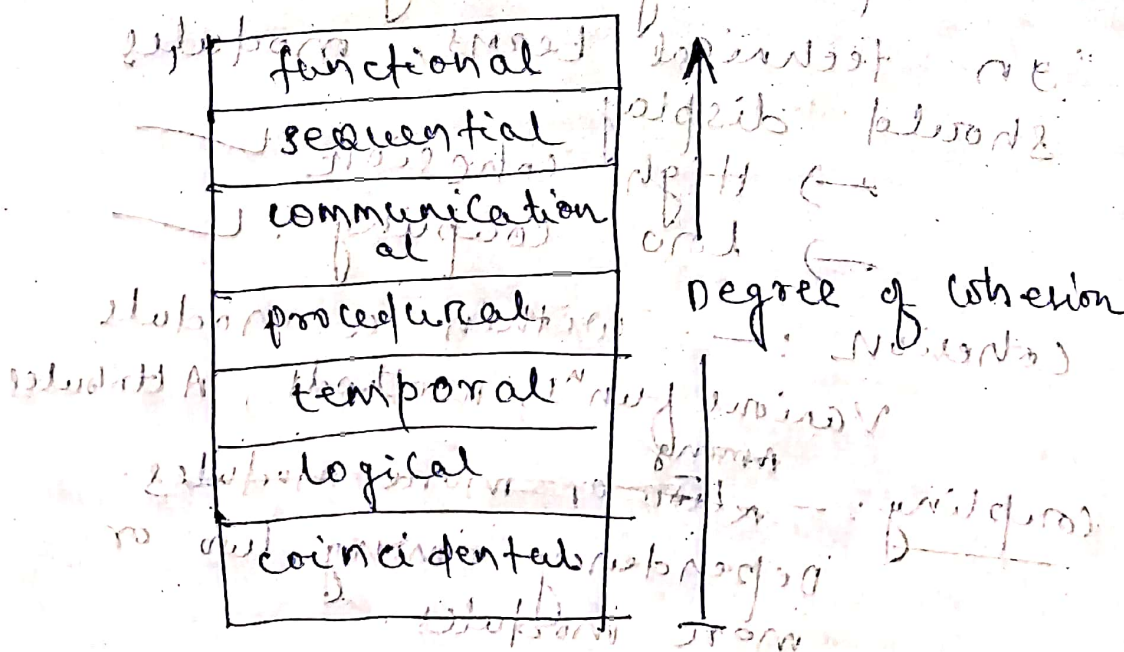*) A cohesive module performs a single task or functions.

*) Coupling is a measure of the degree of interdependence or interaction between the modules.

*) A module having high cohesion & low coupling.

*) functionally independent of other modules.

*) A functionally independent module has minimum interaction with other modules.

classification of cohesiveness.

functional
sequential
communication al
procedural
temporal
logical
coincidental

Degree of cohesion

Logical cohesion

Logically categorized elements are put together into a module.

e.g. - error handling, data input, data output.

Temporal cohesion

Here the module contains tasks that are related by the fact that all the task must be executed in the same time span.

procedural

When elements of a module are grouped together, which are executed sequentially inorder to perform a task
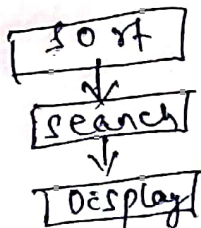
e.g. the set of functions are a part of procedure.

communicational

If all functions of the module Refer to the same data structure.

e.g. the set of functions defined on an array or a stack

sequential

If Elements of the module forms different parts of a sequence, o/p from one element of the sequence is i/p to the next.

```
[SORT]
  ↓
[search]
  ↓
[Display]
```

Functional

If the different elements of a module co-operate to ~~acheive~~ achieve a single function.

coincidental

when a part of a module are grouped arbitarily; the only relationship between the parts is that they have been grouped together.

→) types of cohesion in which all the elements of a module are together by accident. i.e; after all cohesion (logical, temporal, functional) some remaing parts of the program grouped together.