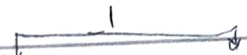
SED unit-2

① e.g.
for completing any project we should have to satisfy the need of customer.
- Functional & non-functional requirements

②
② user requirement
- The requirement of customer (statements)
system requirement
- detailed description of softwar
- How & what to implement

③ ~~user~~ (reader) of user requi.
- not usually concerned with how the system will implement
e.g. manager
reader of system requi
- need to know precisly what system will do.
e.g. developer

④ System requirent



functional
↓
what system should do
- System should react / how perform in particular situation

non-functional
↓
functions offer by system
- performance, security or availability

e.g. cab booking system

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11:

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(6) Non-functional

- Product
  - usability
  - efficiency (→ Performance, → Space)
  - dependability
  - security
- organizational
  - environmental
  - Operational
  - Development
- external
  - logistic
    - Accounting
    - Security

(5) elicitation : collecting requirement of system from user, customer, & other stakeholders

(9), (13)

(7) (8) Software requirement Specification (SRS)

(10)
- description of a software system to be developed. (documentation)
- lays out functional & non-functional requirement
- It may include set of use cases (situations) that describe user interaction that the software must provide to the user for perfect

Structure : UMS

university management system

1] Intro.

1) Purpose
2) Intended audience (Faculty, student) who use soft
3) Scope (Future scope)
4) Definition (Principal, director, administrator)
5) References

2] Overall description

1) User interfaces
- student interface (pages visible to student)
2) System interface
- Servers.

3) Constraints, assumptions & dependencies
- conditions (age, password)

4) User characte.
- diff types users

3) System features & requirement
i) Funtn requi
ii) use cases
iii) external interfaces requi
- third party
iv) logical DB requi
v) non-functional requ. → quality.

4) Delivery for approval
- ~~portable~~, ~~quality~~

(10) - user & system requirements should be clear, unambiguous, easy to understand, complete & consistent
- requirement document should not be include details of the system architecture, or design

1) Natural language sentence
- requirement are written using numbered sentences in NL

2) Structure NL
- Requirement written in std form or template

3) Design description languages
- This approach uses a language like a programming language but with more abstract features

4) Graphical notation
- Graphical models, supplemented by text annotations.

(11) as per (7), (8), (9) Practice of

(10) - Requirement elicitation is the ~~requirement~~ research & discovering the requirement of a system from users, customers & other stakeholders.

(17) - (1) Process
- SE work with customer & system end user to find out about the appln domain
- what service the system should provide
- the required performance of system

(15) (2) Requirement validation
- checking requirements means define the system that the customer really wants
- it is important because error in a requirements documents can lead to extensive rework cost when these problems are discovered during development
- The cost of fixing a requirements problm by making a system change is usually much greater than repairing design or coding errors

(2) (3) Requirements managements

(16) - requirements of large software always changes because of it is developed problems that cannot be completely defined.
- Planning is an essential 1st stage in the requirements management process
- The planning stage established the level of requirements managements detail is required.

- decides on
1) Requirements identification
- each requirement must be uniquely identified
2) A change management process
- set of activities that assess the impact & cost of changes
3) Traceability policies
- define relationships betⁿ each requirements & betⁿ the requirements & the system design that should be recorded
4) Tool support
- Requirements managements involves the processing of large amount of info about requirements.

- Process activities are:
1) Requirement discovery
- process of interacting with stakeholders of system to discover their requirements
2) Requirement classification
- Domain requirements from stakeholders & documentation are also discovered during this activity
3) Requirement prioritization
- concerned with prioritizing requirements & finding & resolving requirements
4) Requirement specification
- The requirements are documented & input into the next round of spiral.

(18) Insulin pump case study

- function :- Compute insulin dose

Description :- Compute the dose of insulin to be delivered when the current measured sugar level is in the safe zone betⁿ 3 & 7 units

input :- Current sugar reading (r_2), the previous two readings (r_0 & r_1)

Source :- Current → Sensor
other → memory

Output :- Complete dose

destination :- main ~~loop~~ control loop

Tabular specification of computation for an insulin pump

	Condition	Action
1)	Sugar level falling ($r_2 < r_1$)	CompDose = 0
2)	Sugar level stable ($r_2 = r_1$)	—11—
3)	Sugar level increasing & rate of increase decreasing ($(r_2 - r_1) < (r_1 - r_0)$)	—11—
4)	Sugar level increasing & rate of increasing stable or increasing ($(r_2 - r_1) >= (r_1 - r_0)$)	CompDose = round $((r_2 - r_1)/4)$ If rounded result = 0 then CompDose = minDose