

# Lecture notes:

**Engineering:** application of scientific principles to design, build, and maintain structures, machines, devices, systems, and processes.

Theoretical science (bridge) practical applications

- 1) Real life problems
- 2) Innovation and progress
- 3) Economic growth
- 4) Improving quality of life

**Model systems:** (making models represents real-world systems (eg. electrical circuits))

**Analyse data:** ensuring designs are optimized and desired outcomes

**Solve problems:** provides tools to solve engineering problems

## Steps of scientific method

- 1) Ask a question
- 2) Do background research
- 3) Construct a hypothesis
- 4) Test the hypothesis
- 5) Analyse data, conclude
- 6) Communicate the results

**Engineering team:** engineer, technologist, technician, craftsman

## Engineering design process

- 1) Define the problem
- 2) Do background research
- 3) Specify requirements
- 4) Brainstorm solutions
- 5) Choose the best solution
- 6) Develop the solution
- 7) Build a prototype
- 8) Test and redesign
- 9) Communicate results

## Industrial design

- Cost reduction
- More productivity
- More precision and quality

## Research and development (R&D)

- novel
- creative
- uncertain
- systematic
- transferable and/or reproducible

Generate ideas → Refine the ideas → Basic research → Applied research → Development → Innovation → Scaling up

## Innovation

**Product innovation:** the develop of a product or the introduction of an existing product after modified or renewed

**Service innovation:** changing and differentiating the services

**Marketing innovation:** covers all functions of businesses, to follow policies that constantly monitor the pulse of the market, examine customers and anticipate changes

**Organizational innovation:** improvement processes through continuous improvement and development of new solutions, affects process and organizational structure

**Business model innovation:** (similar to service innovation, but) the main strategy is to create a business model

**Innovation motivation, steps:** economic selection, implementation

## Process steps:

- 1) Idea generation & mobilization
  - 2) (Advocacy, screening, and experimentation)
  - 3) Solution
  - 4) Commercialization and marketing
  - 5) Diffusion and implementation
- examples: robotization, artificial intelligence (AI), machine learning, cloud computing, internet of things (IoT), audaces 360 (conning)

## Steps of strategic plan:

- 1) Determine where you are
- 2) Identify your goals and objectives
- 3) Develop your plan
- 4) Execute your plan
- 5) Review and restructure as a needed

## Ethics

**fact etwe:** unsaid, unspoken rules of practice

**virtue ethics:** regards actions as right, that maintain good character traits (virtues) and regards actions as bad, that display bad character traits (vices)

## Scientific data collection and measurement methods

- Surveys and questionnaires
- Observations
- Interviews
- Experimental methods
- Archival research
- Interpretive methods

## Validity

Refers to extent to which a measurement tool or method accurately measures that what it is intended to measure. It evaluates whether the research findings are appropriate for the research question.

**internal validity:** whether the independent variable truly affects the dependent variable in experimental research

**external validity:** whether the research results can be general beyond the environment in which research was conducted

**face validity:** refers to the initial impression of whether a measurement tool seems to measure the intended concept based on its appearance.

## Reliability:

Refers to the consistency of a measurement tool. It assesses whether the tool produces the same results under the same conditions when repeated.

**test-retest reliability:** Same measurement tool provides similar results when applied at different times

**internal consistency:** evaluates how consistently all items within a measurement tool measure the same concept

**inter-rater reliability:** multiple observers reach the same conclusions when observing the same situation

## Ethical issues for scientific research:

- Conflicts of interest (possible effect on research outcomes by researchers' interest)
- Data manipulation (creating research more interesting or bias in the finding)
- Privacy violations (disclosing or misusing personal data without consent)
- Misrepresentation of research findings (incomplete or misleading manner)

## Wrong engineering practices

1. Ignoring safety standards
2. Poor material selection
3. Falsifying test results
4. Neglecting environmental impact
5. Ignoring maintenance protocols
8. Designing for cost over quality
9. Using outdated or inadequate technology
10. Disregarding ethical considerations
11. Lack of transparency
12. Lack of proper documentation
13. Inadequate risk assessment

## Ethical principles in scientific research

- Autonomy
- Informed consent
- Honesty
- Confidentiality and privacy
- Justice
- Beneficence
- Nonmaleficence (Do no harm)

## 1st presentation

IT infrastructure invisible foundation makes technology and digital services work, ensures systems are:

stable, secure and always available

→ 5G, AI, and cloud computing

• Servers: run applications • Storage: keep data safe

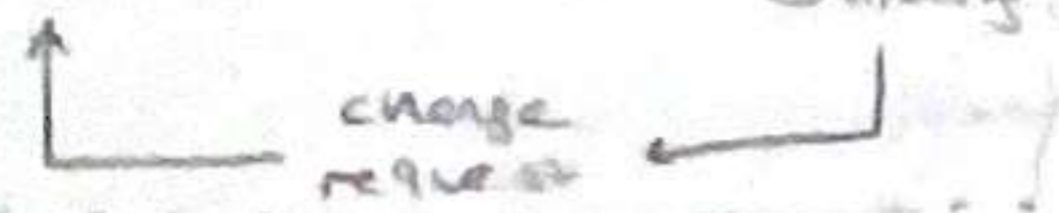
• Database: organize and manage information • Networks: connect everything together

## Project management

Planning, organizing, and managing resources to deliver a unique product, service, or result within defined constraints

quality → scope, cost, time

initiating → planning → executing → monitoring controlling → closing



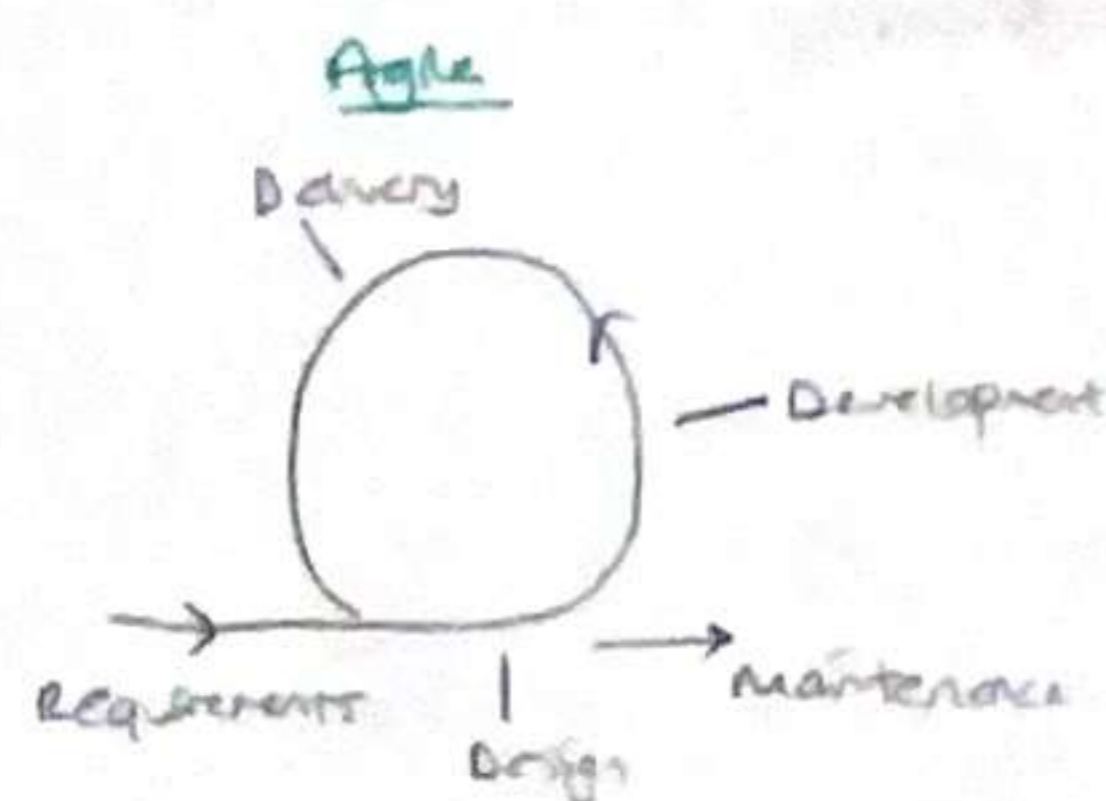
## Frameworks and methodologies

eg Agile, waterfall, lean, scrum, critical path method (CPM)

### Waterfall



(step by step structure)



(flexibility, short cycles, continuous improvement)

### + Stakeholder M.

- Understand needs
- Engage regularly
- Clear, jargon-free log

### + Risk M.

- potential risks
- analyze impact
- develop response plan

### + Communication M.

- Specify methods
- set frequency
- prevent issues

Common tools: Jira (agile boards), MS Project (scheduling), Trello (kanban tracking), Confluence/SharePoint (collab, documentation), Excel/Power BI (dashboards, KPIs)

## Business Process Management (BPM)

approach to designing, executing, monitoring and improving business processes to achieve organizational goals

- increase efficiency
  - reduce manual efforts/ errors
  - processes are measurable and improvable
- 1) Design (form)
  - 2) Model (simulate)
  - 3) Execute (action)
  - 4) Monitor (measure)
  - 5) Optimize (improve)

### BPM tools and techniques

Visualize, automate, and continuously

standardization: define a single efficient way to perform each task

continuous improvement (kaizen): make small, ongoing enhancements

automation: replace manual steps with technology

measurement: track time, cost, and performance to find bottlenecks

optimization: simplify complex workflows to reduce waste and effort

Project Management helps teams to achieve defined goals

Process Management (BPM) keeps daily operations efficient and measurable, ensuring workflow

Waterfall follows a linear and sequential structure

Agile emphasizes flexibility, iterative development and continuous improvement through short cycles

## 2nd presentation

### Software development

- Process of designing, coding, testing, deploying and maintaining software applications to solve real-world problems

### Software engineer / developer

- Writes, tests and maintains code
- Speciality in frontend, backend or full-stack development

### Frontend

- User facing part of an app (UI/UX, visuals)

### Backend

- Server-side logic, databases, and application processing

### Software architect

- Designs overall system structure, technology stack, scalability, and security of software systems

### QA engineer (Quality Assurance)

- Tests software to detect bugs and ensure quality
- Creates automated and manual test plans

### DevOps engineer

- Bridges development and operations teams
- Manages CI/CD pipelines, cloud infrastructure, and deployments

### CI/CD (Continuous integration / Continuous deployment)

- Automated processes builds, tests, and deploy software code to improve reliability and speed

### UI/UX designer

- Designs user interfaces and improves user experience
- Collaborate with developers to create intuitive applications

### Product manager

- Defines the product vision and prioritizes features
- Balance technical and business needs

### Data scientist / AI engineer

- Analyzes large datasets, builds machine learning models
- Applies AI solutions to optimize business processes

### Team lead / technical lead

- Guides developers, reviews code, ensures technical excellence
- Bridges engineering team and management

### Project manager / Scrum master

- Plans, organizes, and monitors software projects
- Uses Agile or Scrum methodologies to track progress

### CTO (Chief technology officer)

- Defines company's overall technology strategy
- Aligns engineering goals with business objectives

### API (Application programming interface)

- Enables communication between software components

### Version control (Git)

- Tracking and managing changes in code

## 3rd presentation

### Product management

- Voice of society, product development, marketing, sales, business operations, support, finance, customer success, leadership and strategy

(Product manager): A professional responsible for defining what to build, why to build it and how success will be measured, while aligning business, technology, and user needs

### Benchmarking

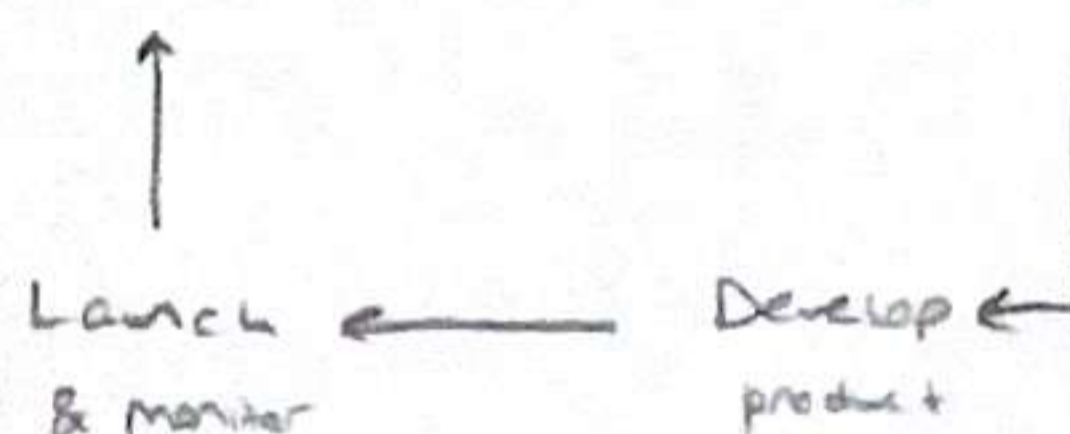
- Comparing products or processes with industry leaders to identify best practices

### Product shaping

- Process of turning insights, data, and ideas into a clear, testable product proposal

### Product life-cycle development

Define requirements → Design solution



### NPS (Net Promoter Score)

- Measures customer loyalty by asking "How likely are you to recommend us to a friend, ranges from -100 to +100?"

### Retention

- The percentage of users who continue using your product over time. Shows how well you keep them

### Churn rate

- The percentage of customer stop using your product within a given time period

### Conversion rate

- The ratio of users who take a desired action out of total

### RICE framework

- A prioritization method: Reach x Impact x Confidence ÷ Effort helps decide what to build first

### MoSCoW method

- Prioritization tool: Must have, Should have, Could have, Won't have (for now)

### Impact & Effort matrix

- A 2x2 grid used to divide priorities: focus on high impact, low effort

### OKR (Objective and Key Results)

- Goal setting framework combining what you want to achieve and how you'll measure success

### Agile

- A flexible way of working that delivers product iteratively, learning and adapting quickly

### Sprint

- A short time boxed cycle where the team builds, tests, and delivers specific tasks

## Backlog

- A prioritized list of features, bugs, and tasks waiting to be developed

## Roadmap

- A visual plan that shows what will be built and when - aligning teams on priorities and timing
- Strategic timeline that connects the product vision to execution

## North Star Metric (ALMA)

- Single metric that best captures your product's long-term value for customers

## MVP (Minimum Viable Product)

- The smallest version of a product that delivers value and helps validate an idea quickly

## A/B test

- An experiment comparing two versions (A and B) to see which performs better

## 4th presentation

### Agility

- Ability to adapt changes in the environment and objective changes

#### Strategic

- High level
- Affect long-term goals, the vision and overall direction of organization

#### Tactical

- Medium-term plans and processes supports strategic objectives

#### Operational

- Short-term changes directly affect daily op, tasks and operational workflows

## Focus

- Early and frequent delivery of business value
- Continuous improvement of the product and processes
- Flexible scope management
- An empowered team and close collaboration with the customer
- Delivering products that fully meet customer needs

### Fast sensing

### Fast decision-making

- Clear communication, early feed-back, early failure, focus, clear goals, accurate measurement, transparency, trust and alignment
- Continuous improvement

### Fast maneuvering

- Clear goals, small teams, intra-team alignment, intra-team trust, continuity, automation, modular architecture, autonomy, continuous improvement

### Continuous motivation

- Corporate belonging, sense of the importance of the work, responsibility and authority, alignment, self-empowerment, self-actualization, empowerment and support, daily enjoyable work

## Organizational perspective change

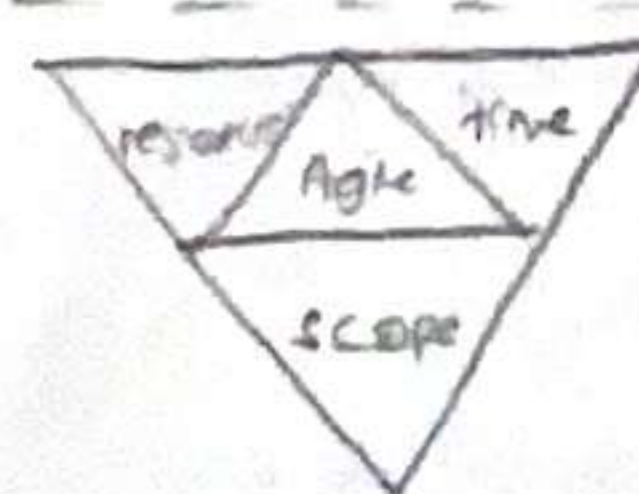
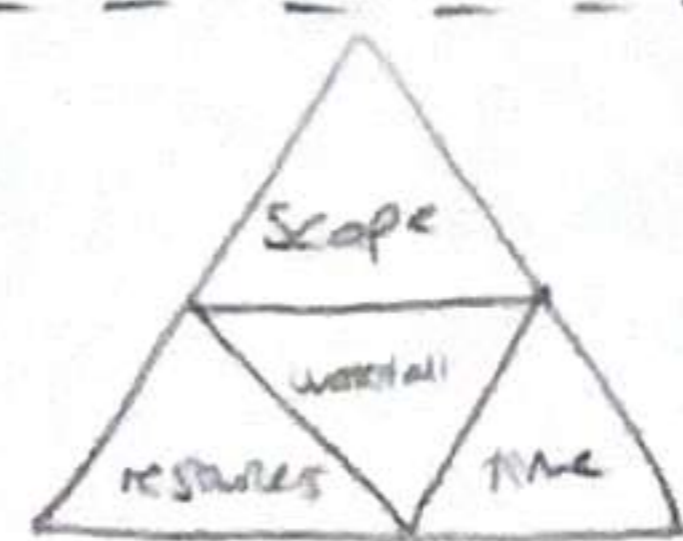
### Traditional

- Static
- Function-based
- Plan conformance
- Management
- Control
- Power and control
- Rule
- Post performance evaluation

### Lean/Agile

- Dynamic
- Mission-based
- Leadership
- Control
- Empowerment (autonomy)
- Migrate and adapt
- Principle
- Live performance improvement

## Water-fall



fixed

estimated

- Ideal for construction and engineering
- Generally proceeds with prototyping
- Requires centralized control; as complexity increases, centralized control breaks down

Requirements → Design → Implementation → Verification → Maintenance

## Kanban

- An inventory control system used in just-in-time manufacturing to track production and order new parts and materials

### Kanban team (squad)

- Kanban master, product owner, development team, acceptance testing team

Analysis	Design	Development	TEST → Support
Iteration			
Daily meeting			
Kanban master removing obstacles, coordinating with external teams			

Product owner & ATE refinement, testing, feed-back, acceptance approval

Refinement meeting

Estimation meeting

## Scrum

- It originated in software development, but it is not exclusive to software
- Iterative planning
- Iterative execution

### Core elements (3 pillars)

- Transparency
- Inspection
- Adaptation

### Values

- Courage
- Focus
- Commitment
- Respect
- Openness

### Roles

- Product owner
- Developers
- Scrum master

### Artifacts

- Product backlog
- Sprint backlog
- Increment

### Events

- Sprint planning
- Daily scrum
- Sprint review
- Sprint retrospective
- Sprint

Squad → scrum/kanban master + product owner + developers

Scrum team → scrum master + product owner + developers

### Self-managing

Meaning they internally decide who does what, when, and how

### Cross-functional

Meaning the members have all the skills necessary to create value each sprint

## Product owner

The person who defines products/services/outcomes, prioritizes by value, and provides approval before completion to reach one and team goals while best fulfilling customer needs

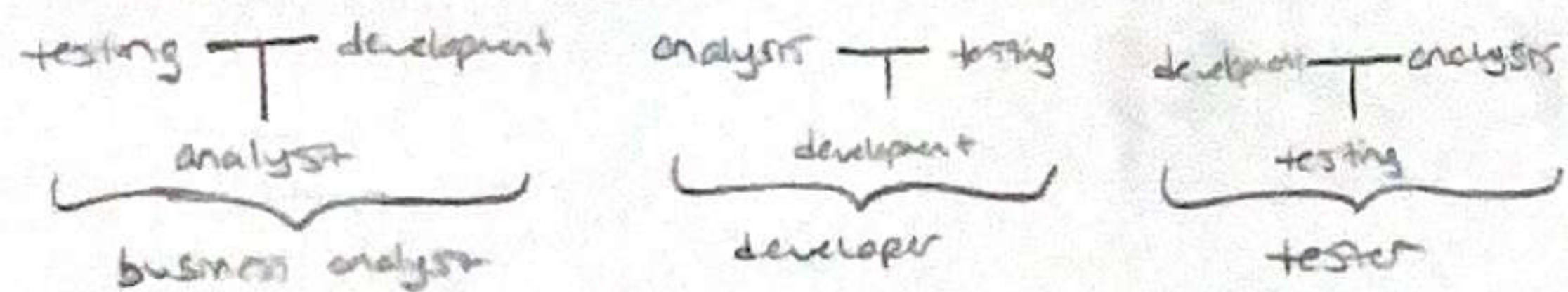
- vision and priorities
- Product management
- Publications and deliveries
- accessibility
- knowledgeable
- authoritative
- decisive
- accountable

## Scrum master

- Enhances team agility
- Facilitates events
- Demonstrate servant leadership
- Deliverables and outputs
- ✗ not manager, not impose anything, not full ownership

## Scrum team

- Cross-functional  
work on multiple tasks
- Self-organizing  
how much work to do in a sprint
- Self-managing  
determine how they will work
- Collaboration  
work together



## Product backlog

- Includes prioritized and sized user stories, technical stories, bugs, and risk response plans

## Minimum viable product (MVP)

- Reduces risks
- Prototype for subsequent products

## DOR: Definition of Ready

- A list of clear conditions that indicate a work item is "Ready" to be taken into team and started

## DOD: Definition of Done

- A list of objective and measurable criteria that must be met for a work item to be considered truly "Done"

## Scrum events

- Sprint (max 4 weeks)
- Sprint planning (1 hour)
- Daily scrum (15 min) → Yesterday? → Today? → Anything blocking?
- Sprint review (2 hours)
- Sprint retrospective (1.5 hours)

## Sprint planning

- The sprint goal is defined. PO, SM, DT
- What to do, how to do
- At the beginning of sprint

## Inputs

- Product backlog items
- Last delivered product increment
- DT's capacity and past performance

## Outputs

- Sprint goal
- Sprint backlog items

## Actions

- 1) PO: list of features expected in sprint
- 2) Samed selects items they can complete
- 3) P.O. states the order of priority
- 4) Squad states final commitment what to be done
- 5) Goal is determined by PO and team
- 6) Selected stories are broken down into tasks
- 7) Estimation is performed for tasks
- 8) Team decides how work will done
- 9) who will do what (later)
- 10) Goal revised if needed by PO and team

## Daily scrum

- Progress toward sprint goal is checked
- If there any blockers, dependencies are discussed and clarified. PO, SM, DT. Every day

## Actions

- 1) Squad members talk about yesterday, today and whether there is blocker or not
- 2) S.M facilitates meeting
- 3) Is not mandatory except DT
- 4) Problems are not solved
- 5) S.M records blockers and resolve as early as possible

## Sprint review

- Sharing outcomes with stakeholders
- PO, SM, DT, stakeholders. Once every sprint

## Input

- Previous sprint review report

## Output

- Next sprint backlog items
- Stakeholders suggestions

## Actions

- 1) Product demonstrated
- 2) Team focuses on completed work
- 3) Progress is made visible to everyone

## Sprint retrospective

- Team evaluates themselves and sprint
- Opportunity to observe themselves and create a plan for improvements in the upcoming sprint
- PO, SM, DT. Once every sprint

## Input

- Previous retrospective action items

## Output

- Improvement suggestions
- Discussion and planning of action items

## Actions

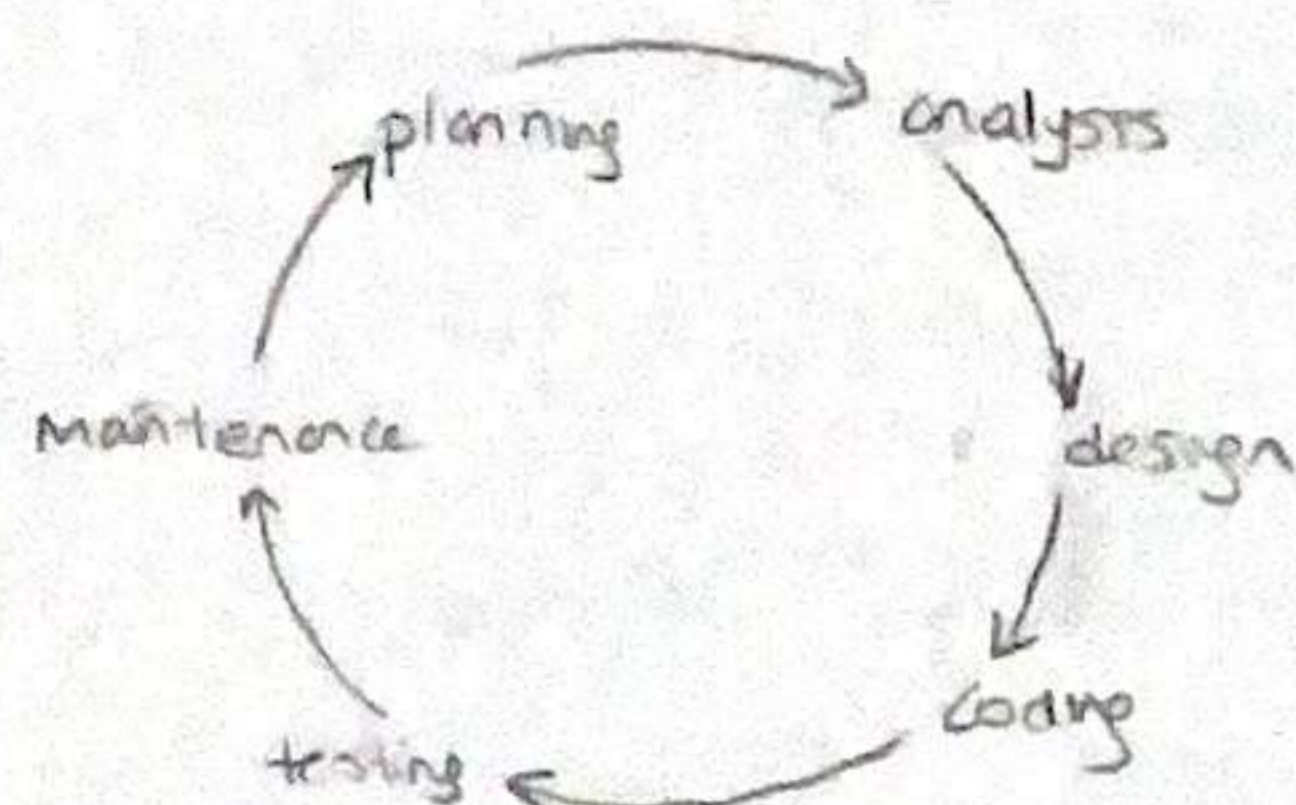
- 1) P.O, squad and agile coach discuss whether there were any issues
- 2) Action items for process improvement identified and planned
- 3) Previous action item are checked
- 4) Held after sprint review and before sprint planning
- 5) Opportunity to focus on inspiration and adaptation

## 5th presentation

### Software

- Group of machine commands that enable communication of the electronic devices

### Software development life cycle (SDLC)



#### planning

- time
- source
- requirement

#### analysis

- determining solution
- optimization
- feasibility

#### design

- system architecture
- user interface

#### Coding

- development
- configuration

#### testing

- error detection
- quality standards
- evaluation
- user decisions

#### maintenance

- continuity
- controlling

### Software testing

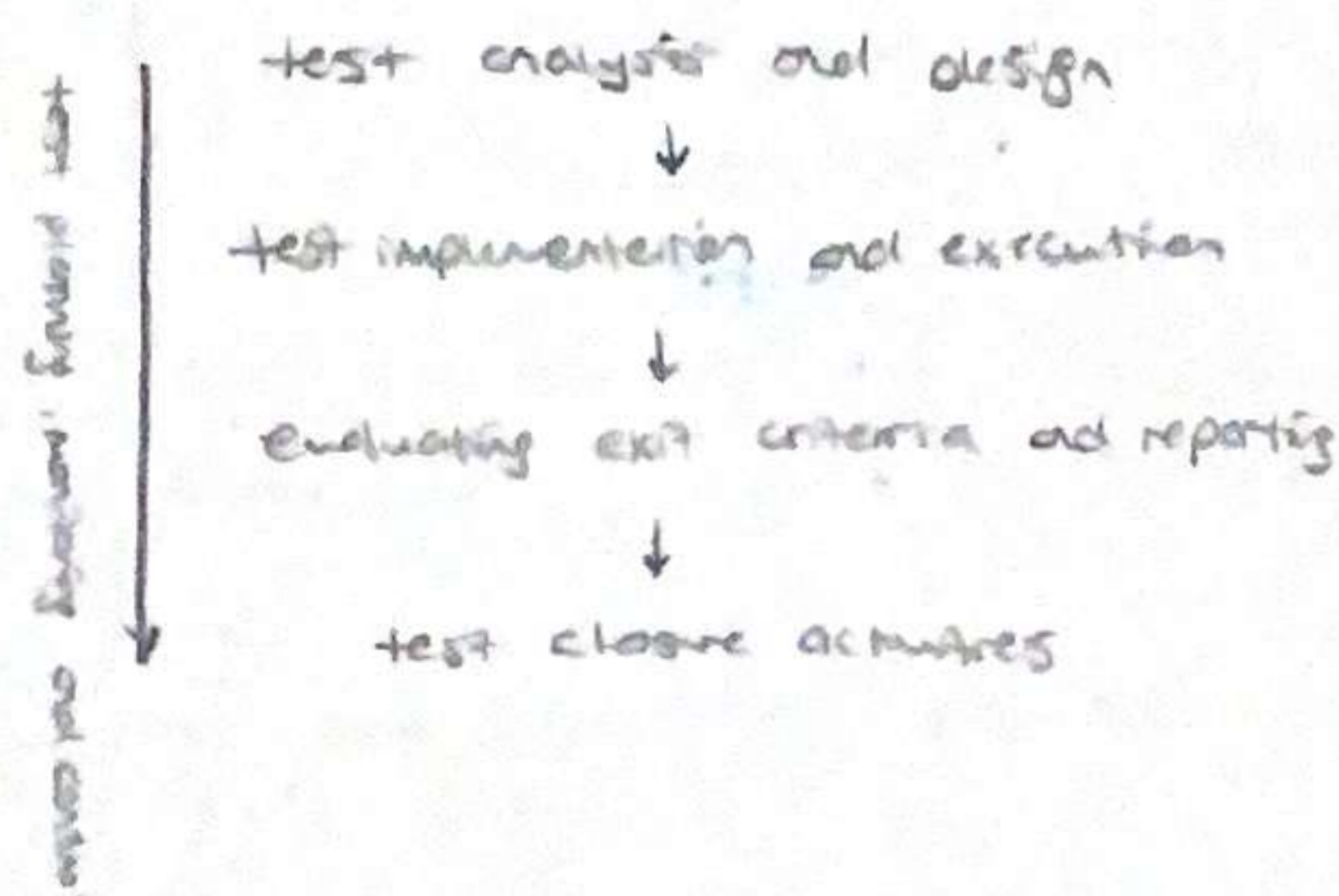
- Research process includes verifying that the requirements determined for system or product are met, determine differences and make stakeholders be aware of them

- Detecting errors
- Providing info for decision making
- Confidence about quality
- Preventing errors

### testing principles

- 1) shows the presence of defects, not their absence
- 2) exhaustive testing is impossible
- 3) early testing
- 4) defect clustering
- 5) pesticide paradox
- 6) testing is context dependent
- 7) absence of errors fallacy

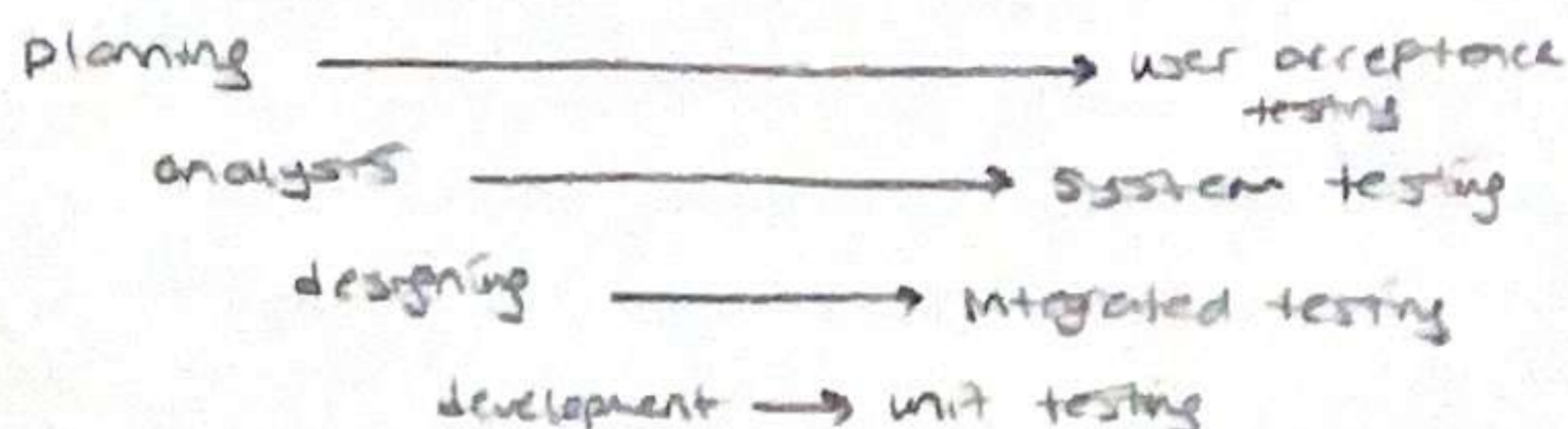
### testing process



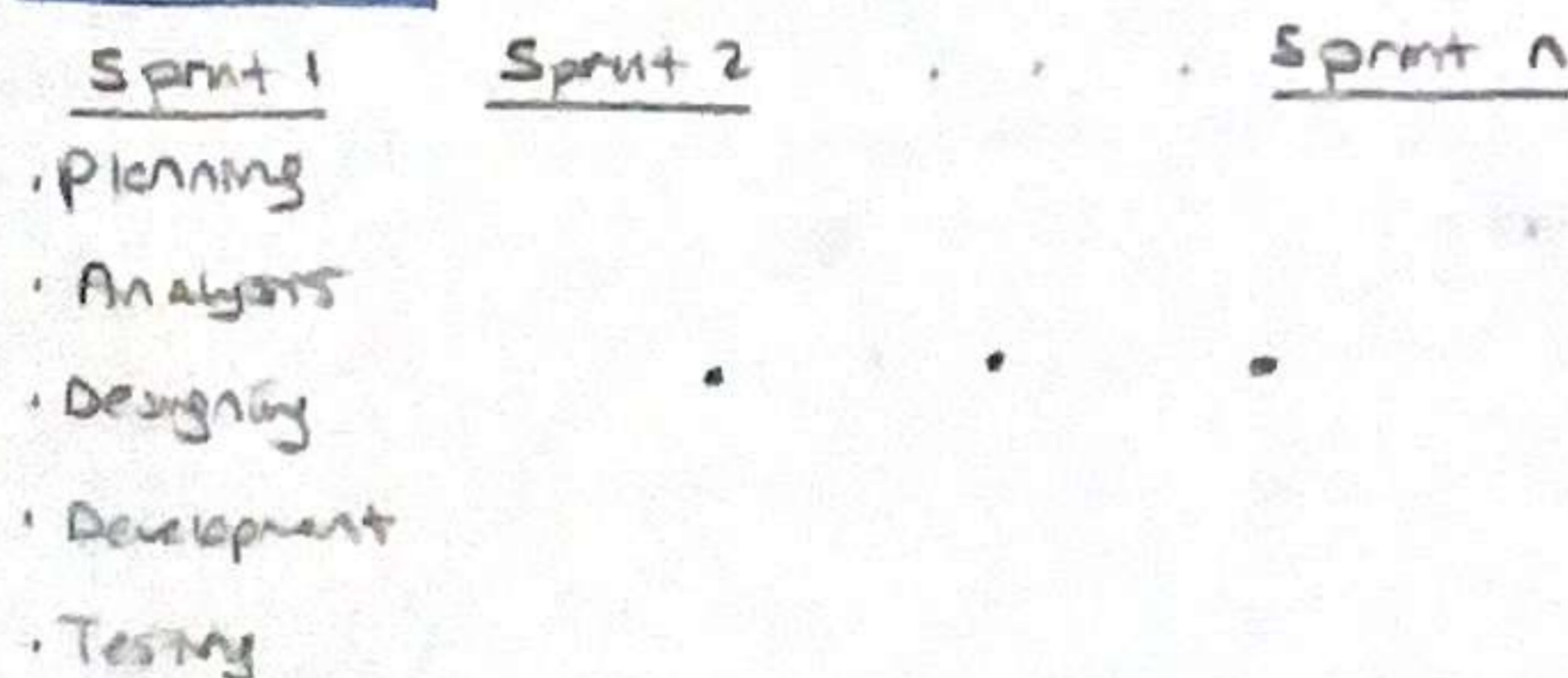
### waterfall model

planning -> analysis -> designing -> development -> testing -> maintenance

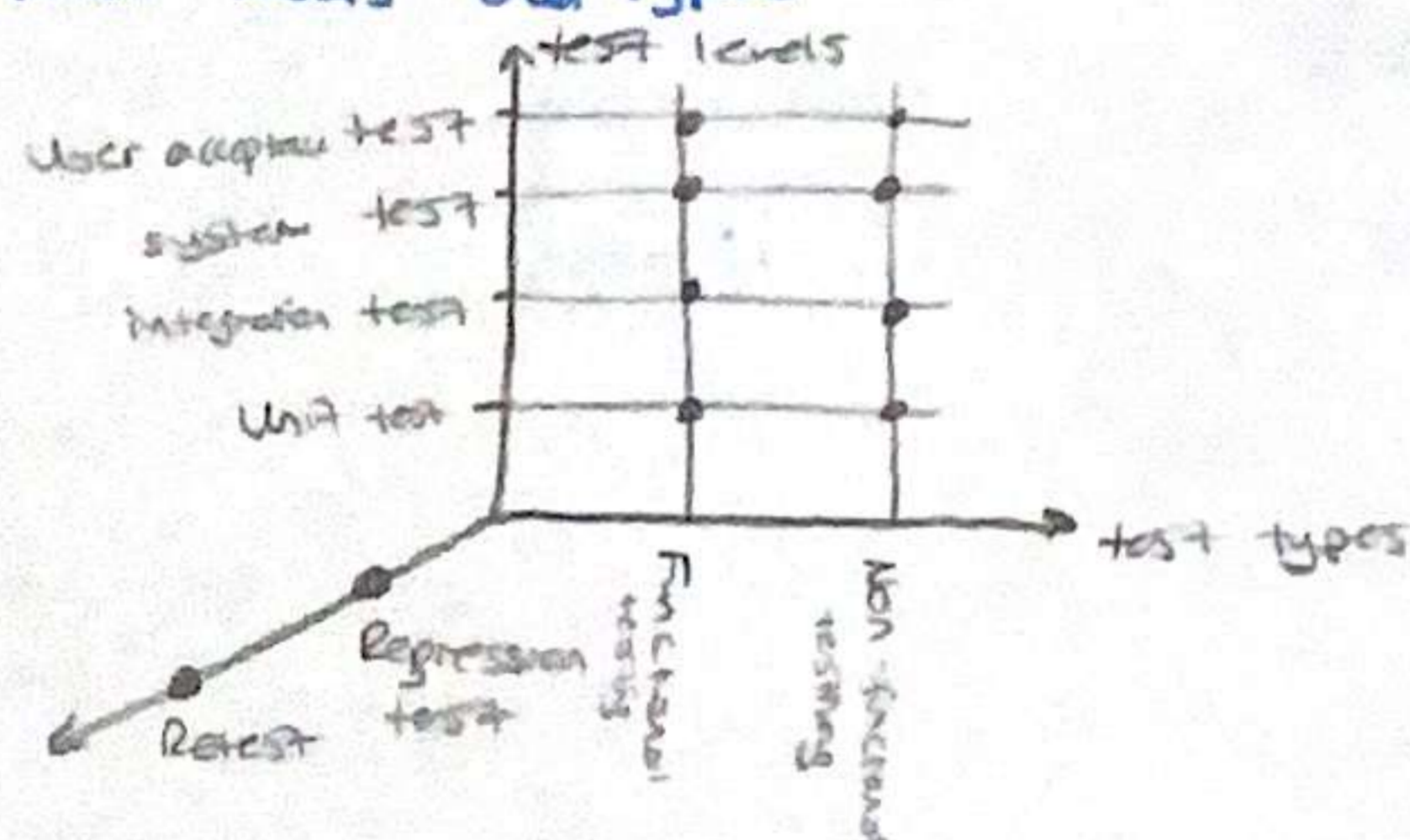
### V model



### Agile model



### Test levels and types



### Functional testing

- Evaluates whether the software perform the factors specified in the requirements. Focuses on inputs, outputs, user interactions, and system behaviour, including both should do and not do.

### Non-functional testing

- Assesses how well the software performs its functions, rather than what it does. Measures quality attributes such as performance, usability, reliability, maintainability and portability, often based on standards like ISO 9126.

### Retest

- Test performed to confirm the corrected error

### Regression test

- Performed to confirm that corrected error does not cause other effects

### Risk

- Impact and probability of situations which may cause adverse consequences if it occurs
- Risk in the software process; represents possible errors which occur when the product is taken into the live environment

### Risk identification

- Expert comments
- Risk drafts
- Checklists
- Experiences

**Risk = impact X probability**

### Impact

- Impressions that the error has left on customer, user or other stakeholders
- Loss of reputation, loss of business, loss of trust etc.

### Probability

- Probability of an error occurring
- Team conflicts etc.

### Risk types

#### Project risks

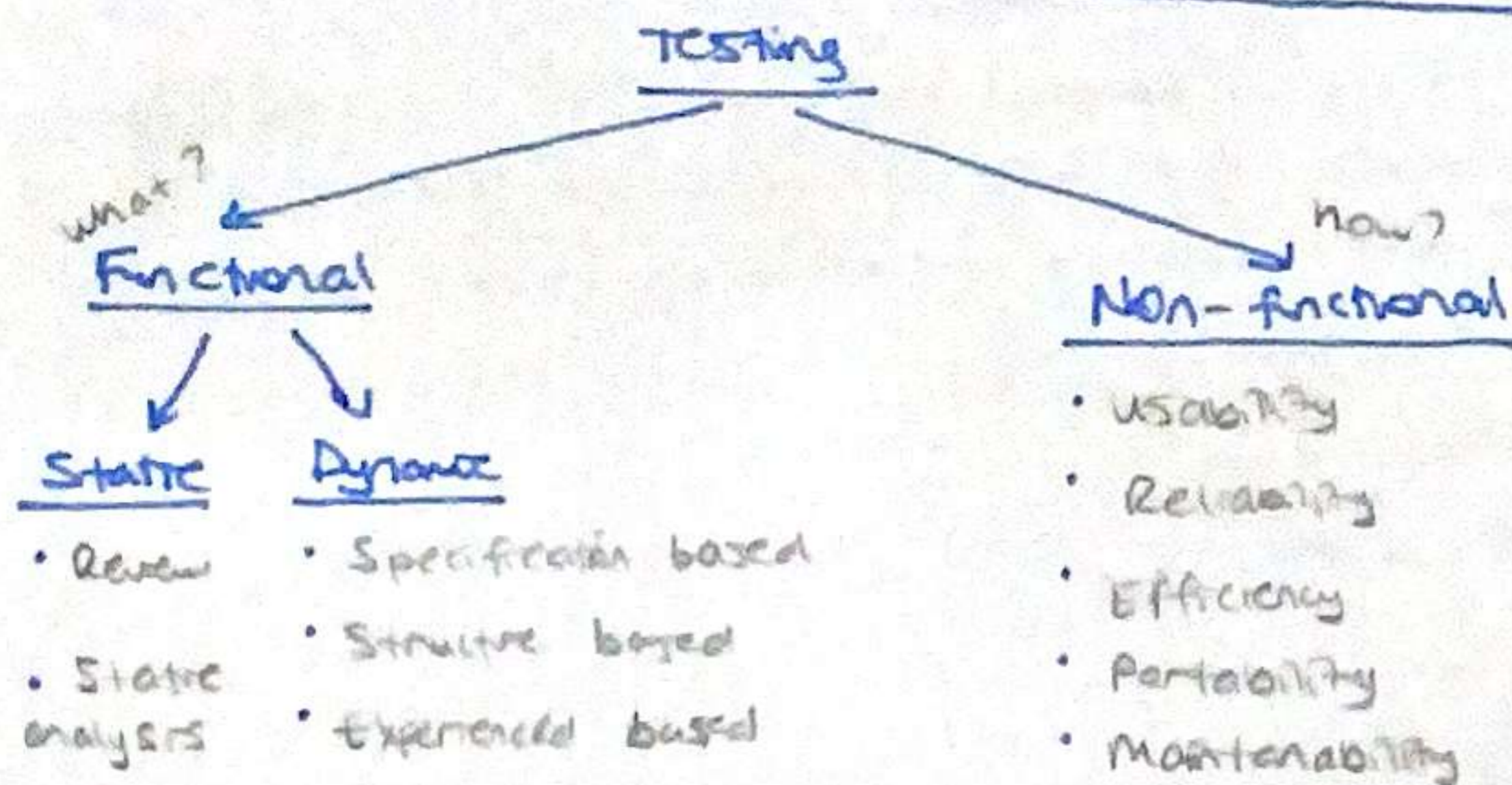
- Not related to software itself, but are problems that may occur in project where software is implemented.
- Eg. personal issue, contract issue

#### Product risks

- Problems with software itself. ISO 9126 quality characteristics are taken into account when determining these risks.
- Eg. functionality, usability, efficiency

### Defect report

- |                              |                      |
|------------------------------|----------------------|
| • Environment                | • Priority           |
| • Scenario                   | • Severity           |
| • Actual and expected result | • Assigned developer |
| • Data                       | • Tester             |
| • Detection time             |                      |



### Static testing

- Performed to check defects without executing code

#### Review

- Informal • walkthrough • Technical review • Inspection

#### State analysis

- Reviewing code to find software errors before code is run.

### Dynamic testing

- All test performed after the code is compiled and run
- Depending on type of software, it may differ

- |                       |                   |                    |
|-----------------------|-------------------|--------------------|
| • Specification based | • Structure based | • Experience based |
|-----------------------|-------------------|--------------------|

### Equivalence partitioning

- Test design technique divides input data into groups that are expected to behave similarly

### Boundary value Analysis (BVA)

- Focuses on testing edge values of input ranges, where defects are most likely to occur. It complements equivalence partitioning by validating both valid and invalid boundaries

### Decision table

- Used when system behavior depends on multiple conditions and rules

### State transition

- Verifies systems that change behavior based on current state and triggering events. Checks valid and invalid transitions between states.

### Performance testing

- Measure performance of the system under a certain load and ensure that it reaches desired performance
- Aims to solve the bottlenecks of the system under heavy load with systems such as code and database

### Load testing

- Gives info about how much load system is working with maximum performance (how much system can tolerate)

### Stress testing

- Uploading system periodically with maximum number of users
- Measure the system's response to such situations in a chaos to determine recovery level when system malfunction is resolved

### Reliability testing

#### Static code analysis

- Data flow anomalies and memory leaks are detected without running the written code
- Based on compliance with coding standards and quality metrics.

### Penetration testing

- Process of detecting security vulnerabilities with cyber attacks and interventions using methods that predict malicious attacks, simulating attempts to infiltrate the system with these vulnerabilities and reporting all these transactions

### Usability test

- Measure the learnability and satisfaction of the product for the end user

5 components:

- |                |                   |                |
|----------------|-------------------|----------------|
| • Learnability | • Memorability    | • Satisfaction |
| • Efficiency   | • Error tolerance |                |

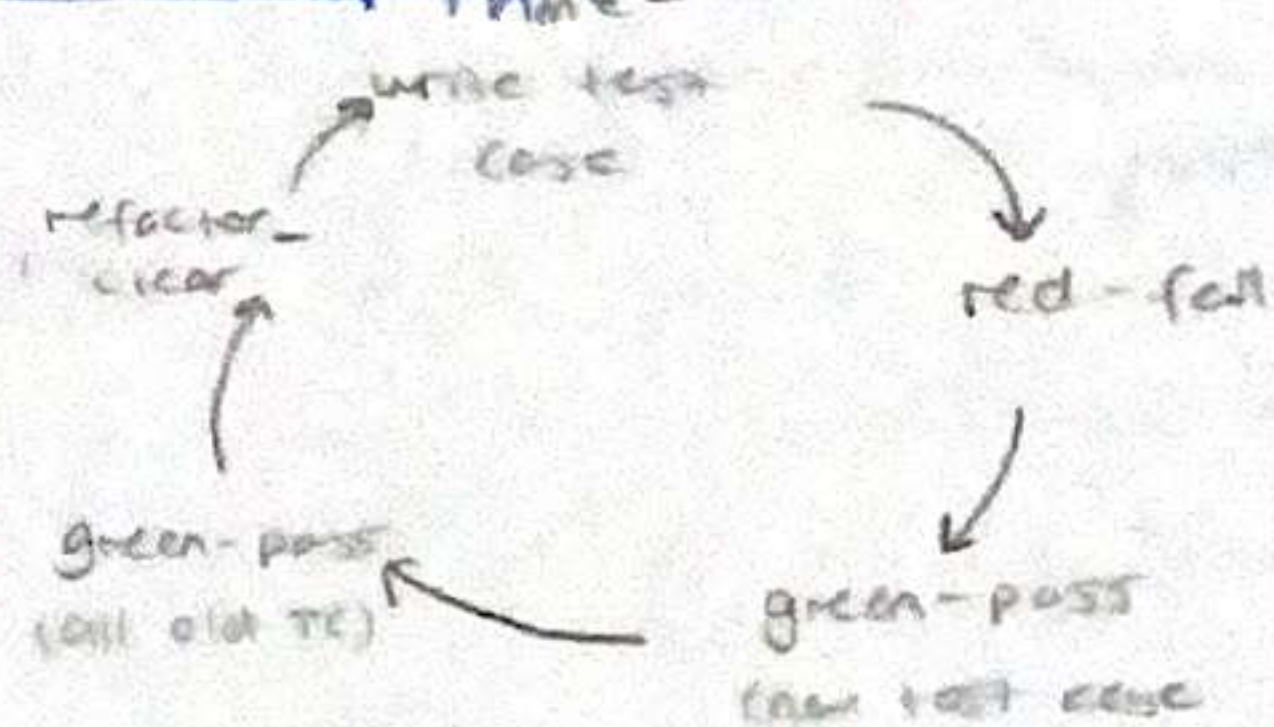
## Test data management

- Archiving • Masking • Creation • Clustering
- Process of analyzing test data requirements, designing test data structures, creating and maintaining test data
- Reliable and real data is masked and provided in a live environment, preventing errors caused by false data and saving time

## Test automation

- 1) Period?
  - 2) Maturity and maintenance?
  - 3) Infrastructure?
  - 4) Modularity?
  - 5) The difference between manual and automation
- Unit tests
  - Regression tests
  - Repetitive tests
  - Multi perform tests

## Test-driven development (TDD)



- Development approach where tests are written before code

## Behavior-driven development (BDD)

- BDD extend TDD by focusing on business behavior and use scenarios, often written in natural language, improving collaboration between developers, testers, and stakeholders

## 6th presentation

**Datum:** refers to a single, indivisible unit of information or measurement

**Data:** represents multiple pieces of information collectively used for analysis and interpretation

## Data life cycle

### 1. Data generation and collection

Data is produced from users, systems, IoT devices and digital platforms.

### 2. Data storage and retention

Data is stored in databases, data warehouses, or cloud platforms

### 3. Processing and transformation

Raw data is cleaned and transformed via ETL processes

### 4. Analysis

Analytical and AI tools extract insights, patterns and trends

### 5. Sharing and usage

Insights are distributed securely to support organizational decisions

## State of data management sector

### 1) Cloud-based

Provide scalable, flexible, cost-efficient infrastructures that support storage, processing, and analytics across distributed environments

### 2) AI and machine learning integration

Enable faster and more accurate insights, empowering businesses to be more proactive and adaptive

### 3) Data democratization and self-service analytics

Refers to making data accessible to non-technical users through self-service tools, enabling organization-wide data-driven decision-making

### 4) Real time databases

Rapid data processes. Streaming data platforms and edge computing are allowing businesses to make non-sensitive decisions with minimal latency

### Vector databases

- Store numerical embeddings of data and enable semantic similarity search using mathematical operations

## Data warehouse (Data)

- Centralized system designed for analytical processing, optimized for reporting, historical queries, and decision support rather than transactional operations
- data warehouse → data lake → lakehouse

## Large language models (LLM)

- Vector databases Store numerical embeddings that represent text in a high-dimensional space. Similarity measures such as cosine or dot product are used to quickly retrieve the most relevant documents

### Linear algebra

For matrix and tensor operations

### Probability theory

For prediction and uncertainty modeling

### Calculus

For optimization via gradient descent

## ETL (Extract, Transform, Load)

### • Extracting

Data from source systems

### • Transforming

Into a consistent, quality-controlled format

### • Loading

Into a data warehouse or analytics platform

## Presentation

Right: A legally protected interest

Law: The body of rules that regulate society and are enforced by state sanctions

State: A legal entity formed by a politically organized nation or community of nations based on territorial integrity

## The constitution

↳ Regulates competing rights in working life

- Employer's freedom to work
- Right to bodily integrity
- Prohibition of forced labour
- Employer's freedom of enterprise

Labour Law (No 485) → people defined as employers

Turkish Code of Obligations → not defined as "employee"

Labour Courts Law regulates procedural principles

Principal employer - subcontractor relationship: Exists when a principal employer assigns auxiliary or specialized work to another employer, who performs the work at the same workplace using his own employees

## Types of employment contracts

### Indefinite - Term

- End date not specified (presumed indefinite if no duration)
- Job security provisions applied

### Fixed - Term

- Duration determined, ends upon expiry
- Cannot be terminated early without just cause
- Repeated renewals may convert into indefinite
- Job security provisions do not apply generally

### Job security

- Work under an indefinite-term contract
- Be employed in a workplace with at least 30 employees
- Have at least 6 months of seniority
- Not be an employer's representative

## Accrual work time

### Full-time

- Weekly: 45 hours
- Full wages and benefits

### Part-time

- Less than two-thirds of full-time hours
- Rights apply proportionally
- Does not eliminate employee rights

## Accrual working method

### Probationary

- Max 2 months (4 max)
- Termination without notice is possible
- Wage and insurance obligations remain

### Special

### On-call work

- Min 20 hours (unless otherwise agreed)

### Temporary

- Established via licensed private employment agencies within company groups (both employer responsible for rights)
- ⇒ Actual working relationship is decisive, not title of contract

## Basic principles of labour law - obligations

### Employer

- Pay wages
- Treat equally
- Manage and instruct
- Ensure OHS
- Comply with relevant legislation

### Employee

- Perform duties diligently
- Act loyally
- Follow instructions
- Avoid unfair competition
- Maintain confidentiality
- Comply with legislation

## Fundamental changes in working conditions

- Notified in writing
- Approved in writing by employee within 6 business days

### Wages

Must be paid in money and may be determined daily, weekly, monthly or per piece

- Gross basic wage
- Gross wage including benefits
- Net basic wage
- Net wage including benefits

Turkish Human Rights Law (Law No. 6701) → equality

### Working hours

- Weekly max: 45 hours
- Daily max (including overtime): 11 hours

### Rest periods

- 15 min for up to 4 hours
- 30 min for 4-7.5 hours
- 1 hour for over 7.5 hours

### Overtime (exceeding 45 hours per week)

- Compensated by increased pay or time off (employee's choice)

### Leaves

Annual paid: granted after one year of service, may be used in parts

- 1-5 years → 14 days
- 5-15 years → 20 days
- 15+ years → 26 days
- 18+, 50+ → min 20 days

## Public holidays

- Entitled to pay if they do not work
- If they work receive double pay

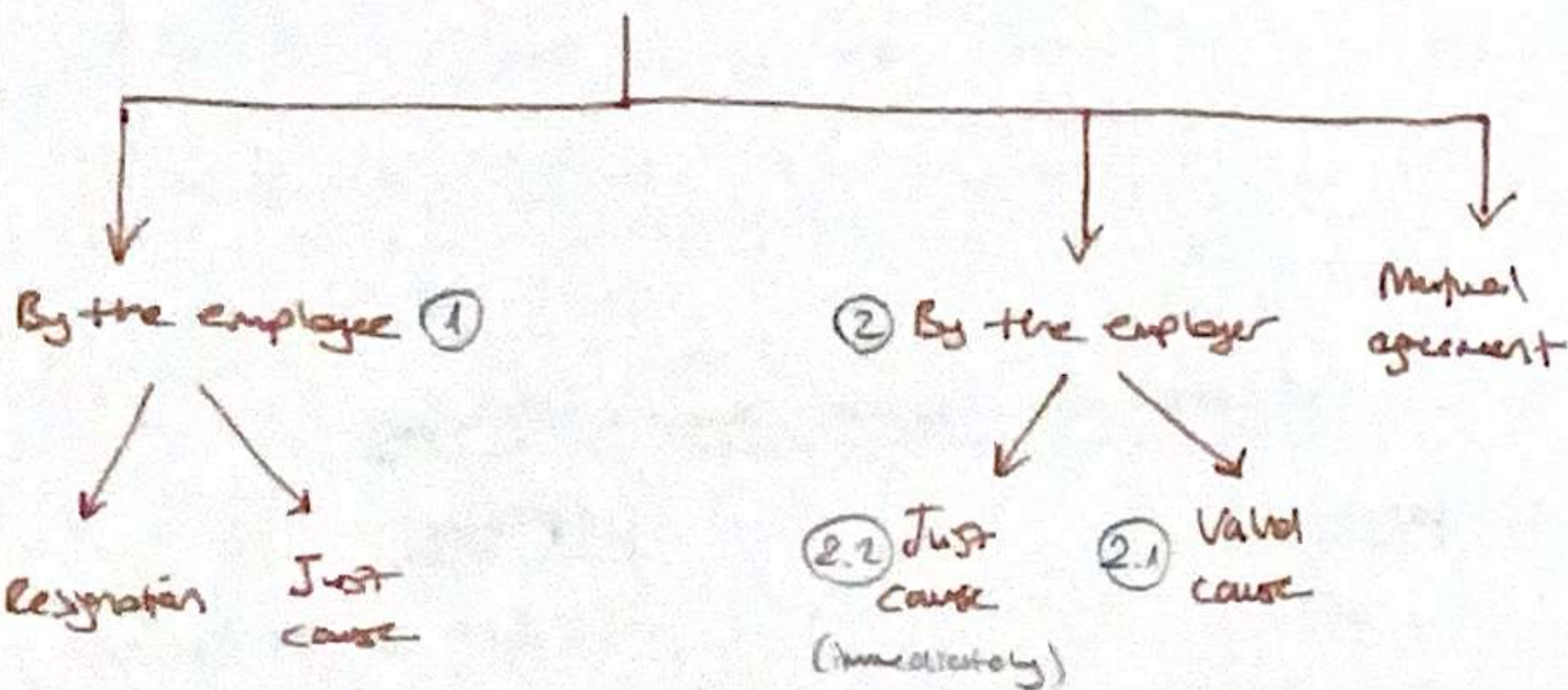
## Excuse leave

- Marriage, death of close relatives: 3 days
- Birth of spouse: 5 days

## Maternity and sick leave

- Maternity: 8 weeks before and after birth (extended for multiple pregnancies)
- Nursing: 1.5 hour daily until child turns one

## Termination of Indefinite Employment Contracts



### ① Health reasons

\* Cases that do not comply with moral and good faith rules and similar situations → 6 working days after occurred or learned

\* Force majeure → cessation of work more than one week

②.1 → Business/workplace/job requirements

→ Employee behavior

→ Employee performance

②.2 → Health reasons

→ Actions violate moral and good faith principles

→ Compelling reasons