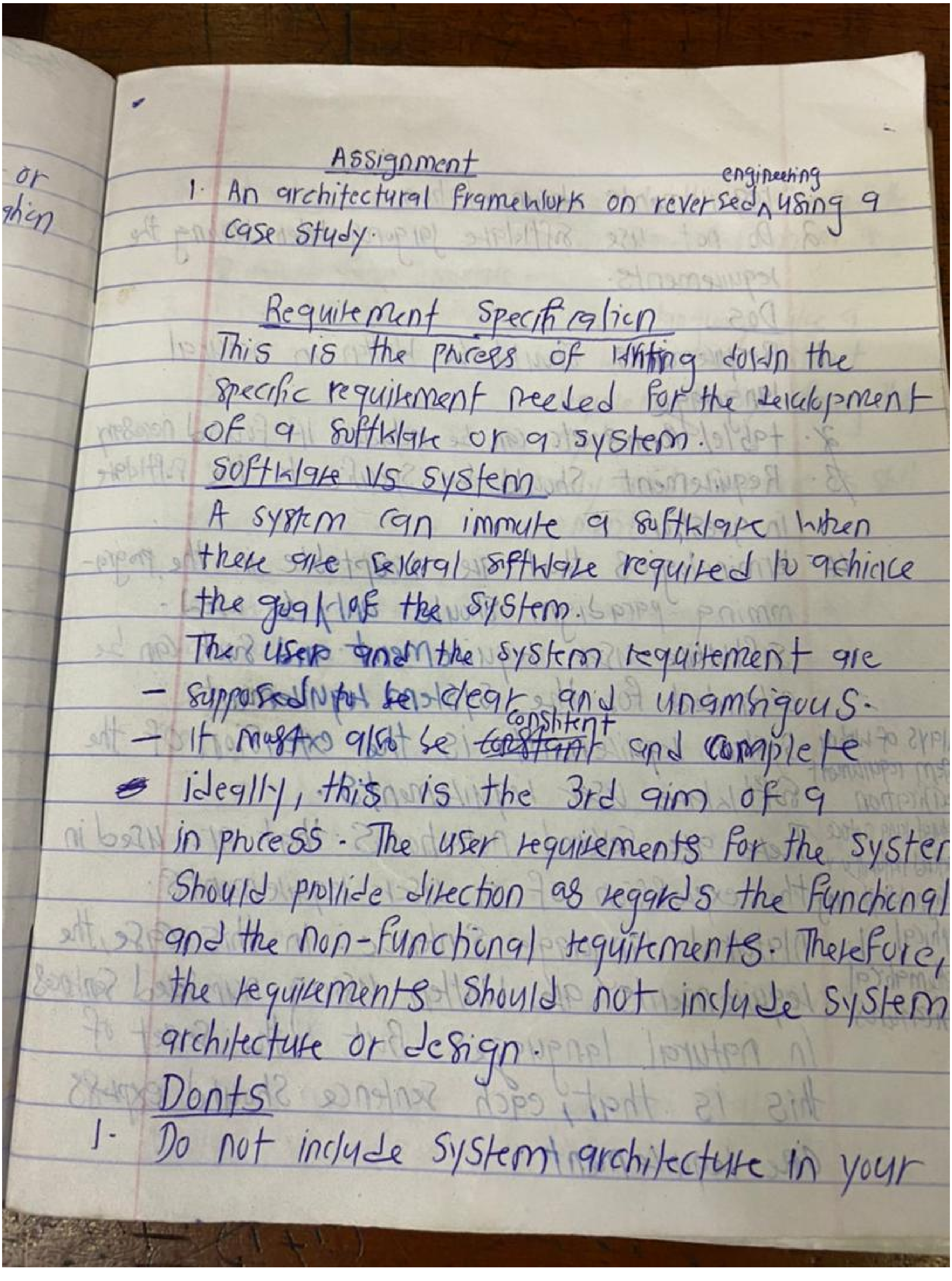


Assignment

1. An architectural framework on reversed engineering using a case study.

Requirement Specification

This is the process of writing down the specific requirement needed for the development of a software or a system.

Software vs System

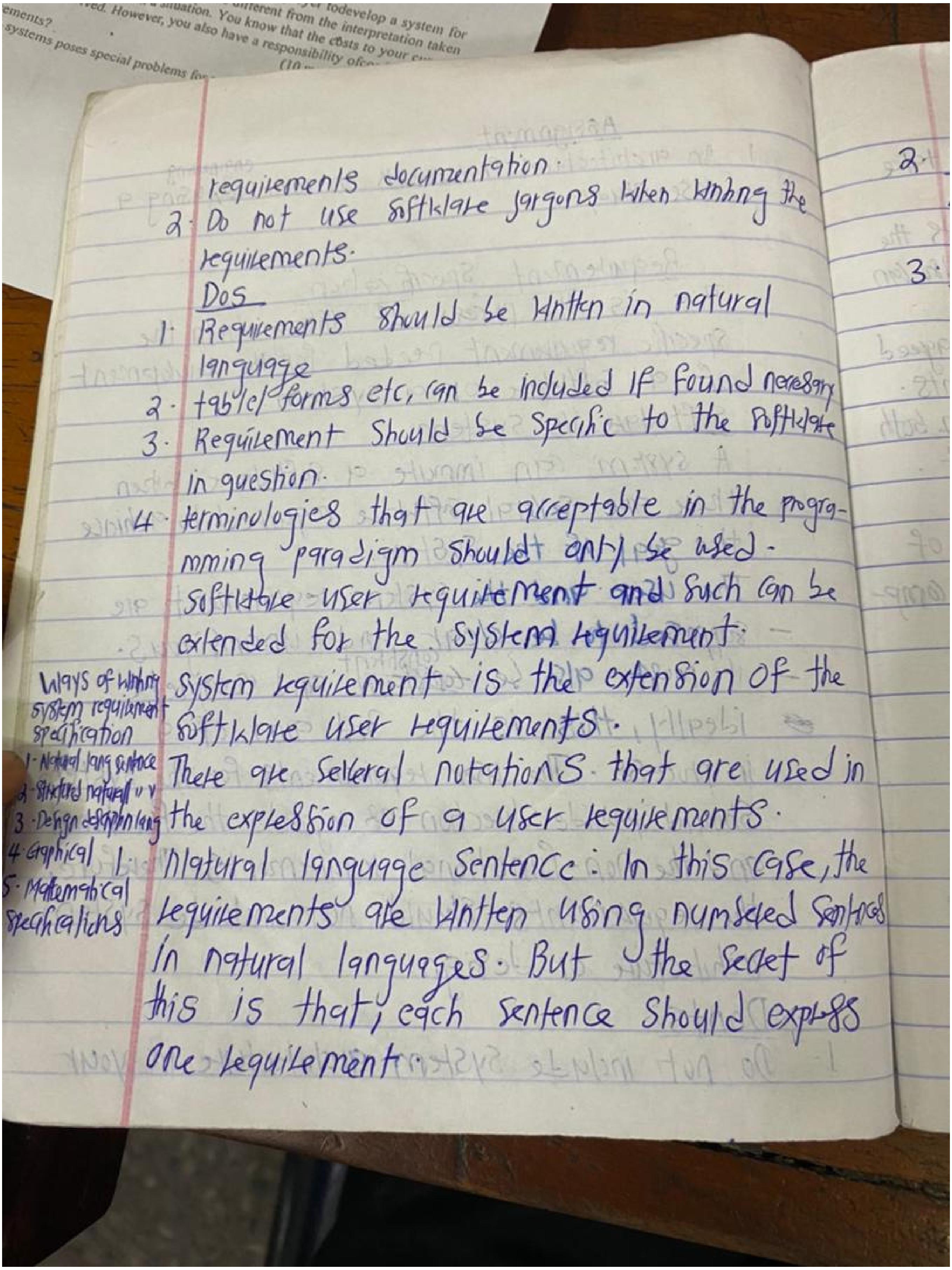
A system can immute a software when there are several software required to achieve the goal of the system.

The user and the system requirement are

- supposed to be clear and unambiguous.
- It must also be ~~constant~~ consistent and complete
- ideally, this is the 3rd aim of a in process. The user requirements for the syster Should provide direction as regards the functional and the non-functional requirements. Therefore, the requirements should not include system architecture or design.

Donts

1. Do not include system architecture in your



ements?

...ved. However, you also have a responsibility of...

...situation. You know that the costs to your...

...different from the interpretation taken

...todevelop a system for

systems poses special problems for...

(10...

requirements documentation.

2. Do not use software jargons when writing the requirements.

Dos

1. Requirements should be written in natural language

2. table/forms etc, can be included if found necessary

3. Requirement should be specific to the software in question.

4. terminologies that are acceptable in the programming paradigm should only be used.

software user requirement and such can be extended for the system requirement.

System requirement is the extension of the software user requirements.

There are several notations that are used in the expression of a user requirements.

1. Natural language sentence: In this case, the requirements are written using numbered sentences in natural languages. But the secret of this is that, each sentence should express one requirement.

Ways of writing system requirement specification

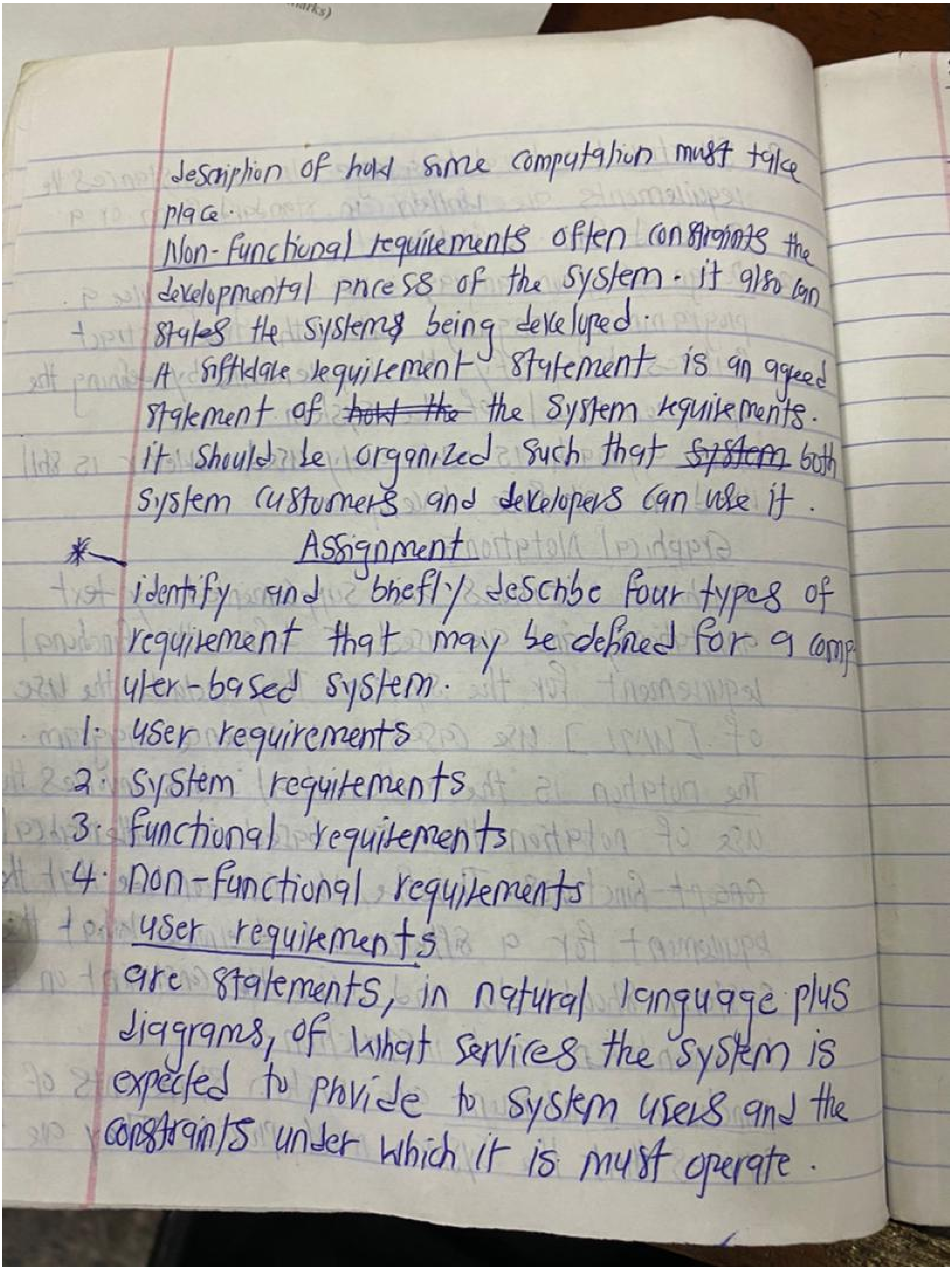
1. Natural lang sentence

2. Structured natural " "

3. Design description lang

4. Graphical

5. Mathematical specifications



description of how some computation must take place.

Non-functional requirements often constraints the developmental process of the system. it also can states the systems being developed.

A software requirement statement is an agreed statement of ~~hold the~~ the system requirements. it should be organized such that ~~system~~ both system customers and developers can use it.

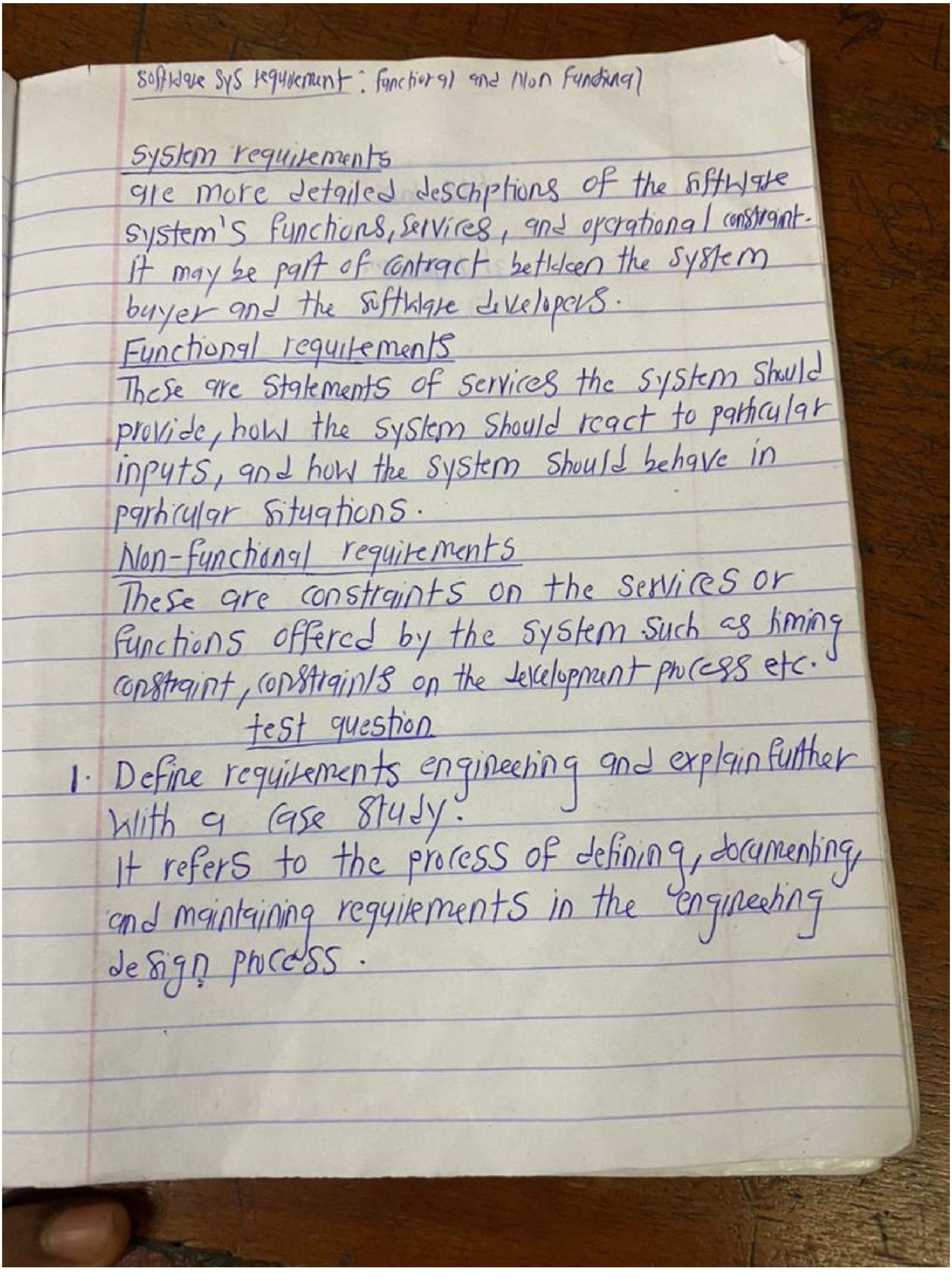
*— Assignment

identify and briefly describe four types of requirement that may be defined for a computer-based system.

1. user requirements
2. system requirements
3. functional requirements
4. non-functional requirements

user requirements

are statements, in natural language plus diagrams, of what services the system is expected to provide to system users and the constraints under which it is must operate.



Software Sys requirement : functional and Non functional

System requirements

are more detailed descriptions of the software system's functions, services, and operational constraint. It may be part of contract between the system buyer and the software developers.

Functional requirements

These are statements of services the system should provide, how the system should react to particular inputs, and how the system should behave in particular situations.

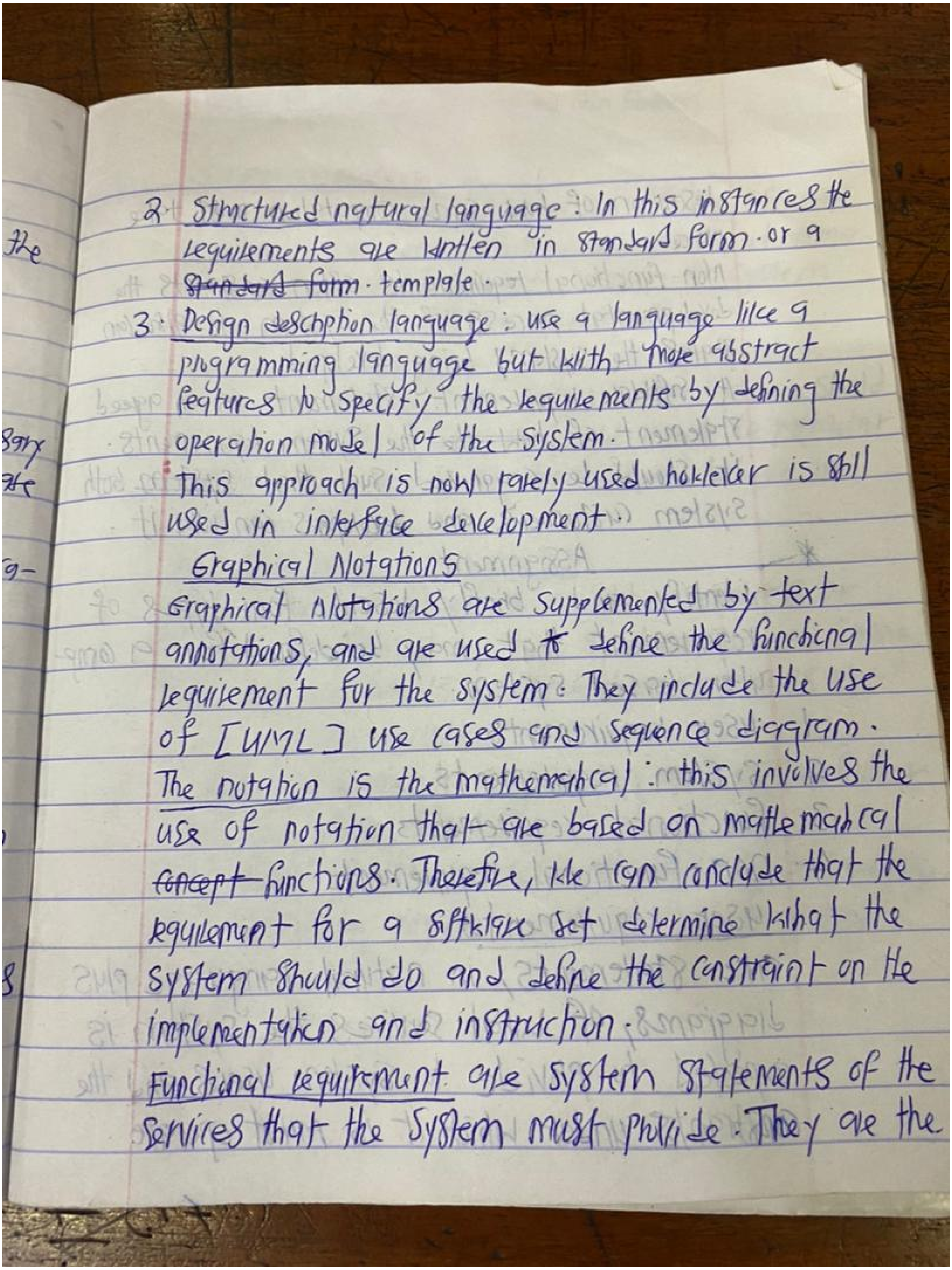
Non-functional requirements

These are constraints on the services or functions offered by the system such as timing constraint, constraints on the development process etc.

test question

1. Define requirements engineering and explain further with a case study.

It refers to the process of defining, documenting, and maintaining requirements in the engineering design process.



2. Structured natural language: In this instances the requirements are written in standard form. or a ~~standard form~~. template.

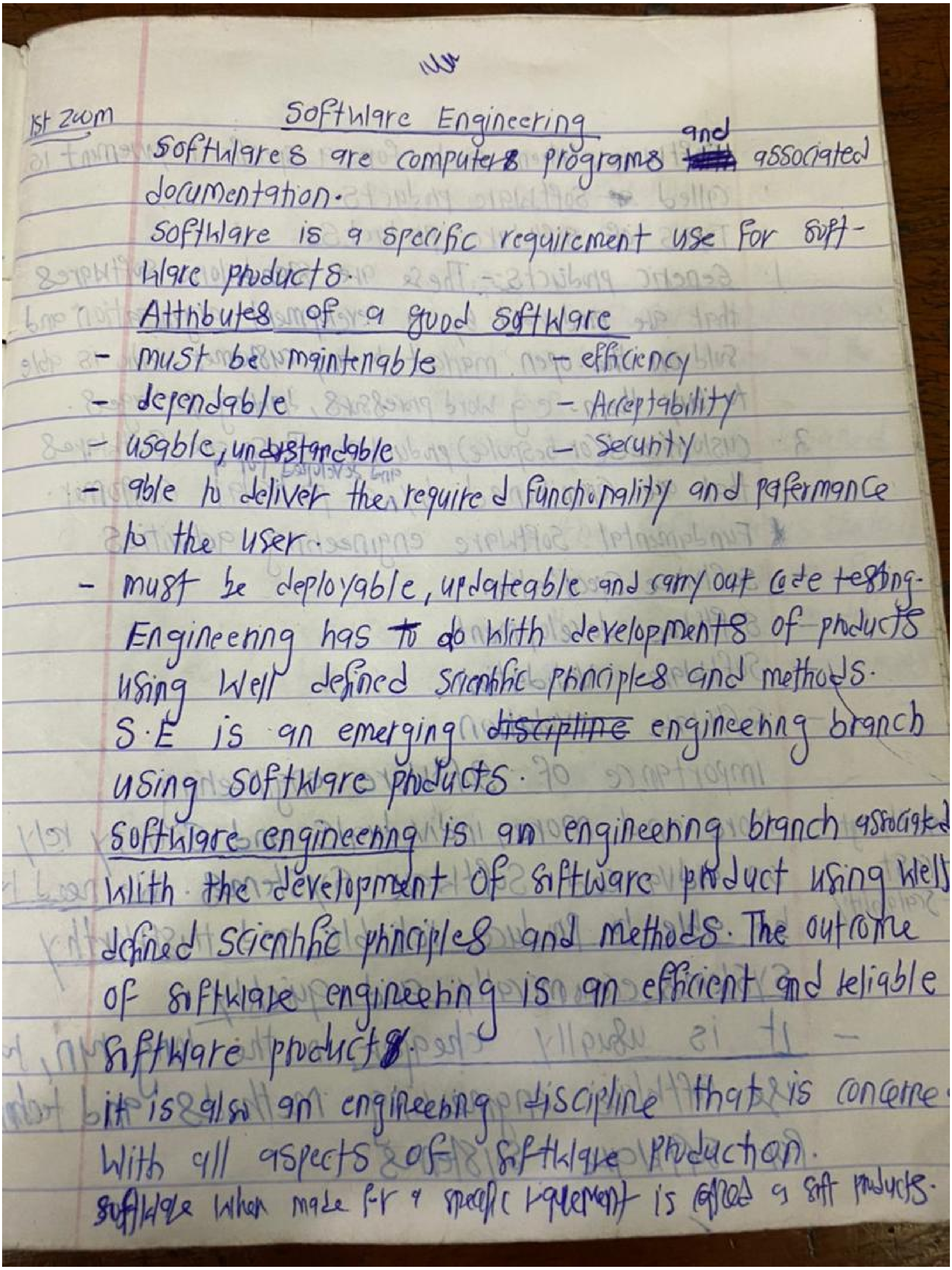
3. Design description language: use a language like a programming language but with more abstract features to specify the requirements by defining the operation model of the system. This approach is now rarely used however is still used in interface development.

Graphical Notations

Graphical Notations are supplemented by text annotations, and are used to define the functional requirement for the system. They include the use of [UML] use cases and sequence diagram.

The notation is the mathematical: this involves the use of notation that are based on mathematical ~~concept~~ functions. Therefore, we can conclude that the requirement for a software set determine what the system should do and define the constraint on the implementation and instruction.

Functional requirement are system statements of the services that the system must provide. They are the



1st zoom

Software Engineering

Softwares are computers programs and ~~[illegible]~~ associated documentation.

Software is a specific requirement use for software products.

Attributes of a good software

- must be maintenable — efficiency
- dependable — Acceptability
- usable, understandable — Security
- able to deliver the required functionality and paformance to the user.
- must be deployable, updateable and carry out code testing.

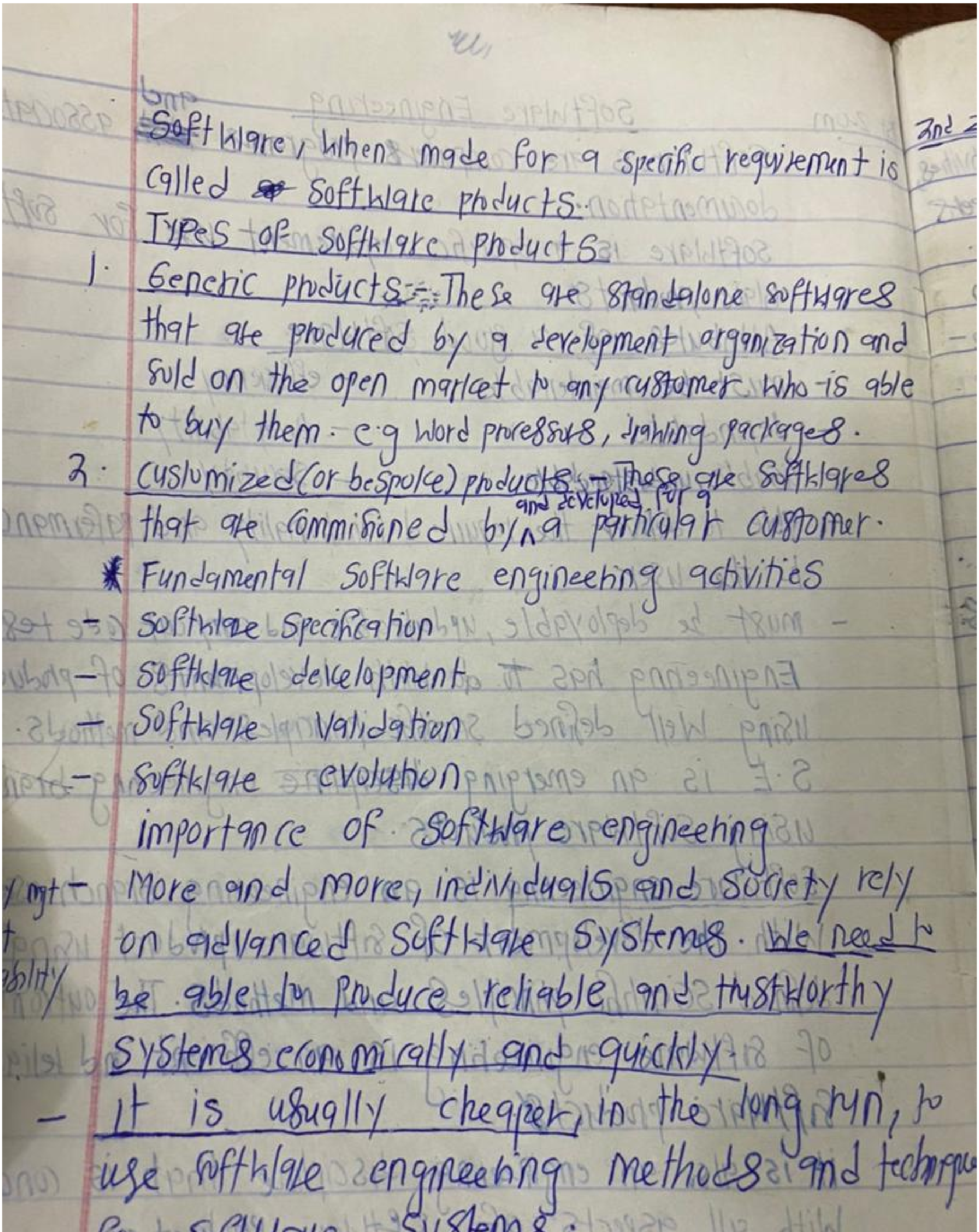
Engineering has ~~to~~ do with developments of products using well defined scientific principles and methods.

S.E is an emerging ~~discipline~~ engineering branch using software products.

Software engineering is an engineering branch associated with the development of software product using well defined scientific principles and methods. The outcome of software engineering is an efficient and reliable software products.

it is also an engineering discipline that is concerne with all aspects of software production.

software when made for a specific requirement is called a soft products.



~~Soft~~ Software, when made for a specific requirement is called ~~se~~ Software products.

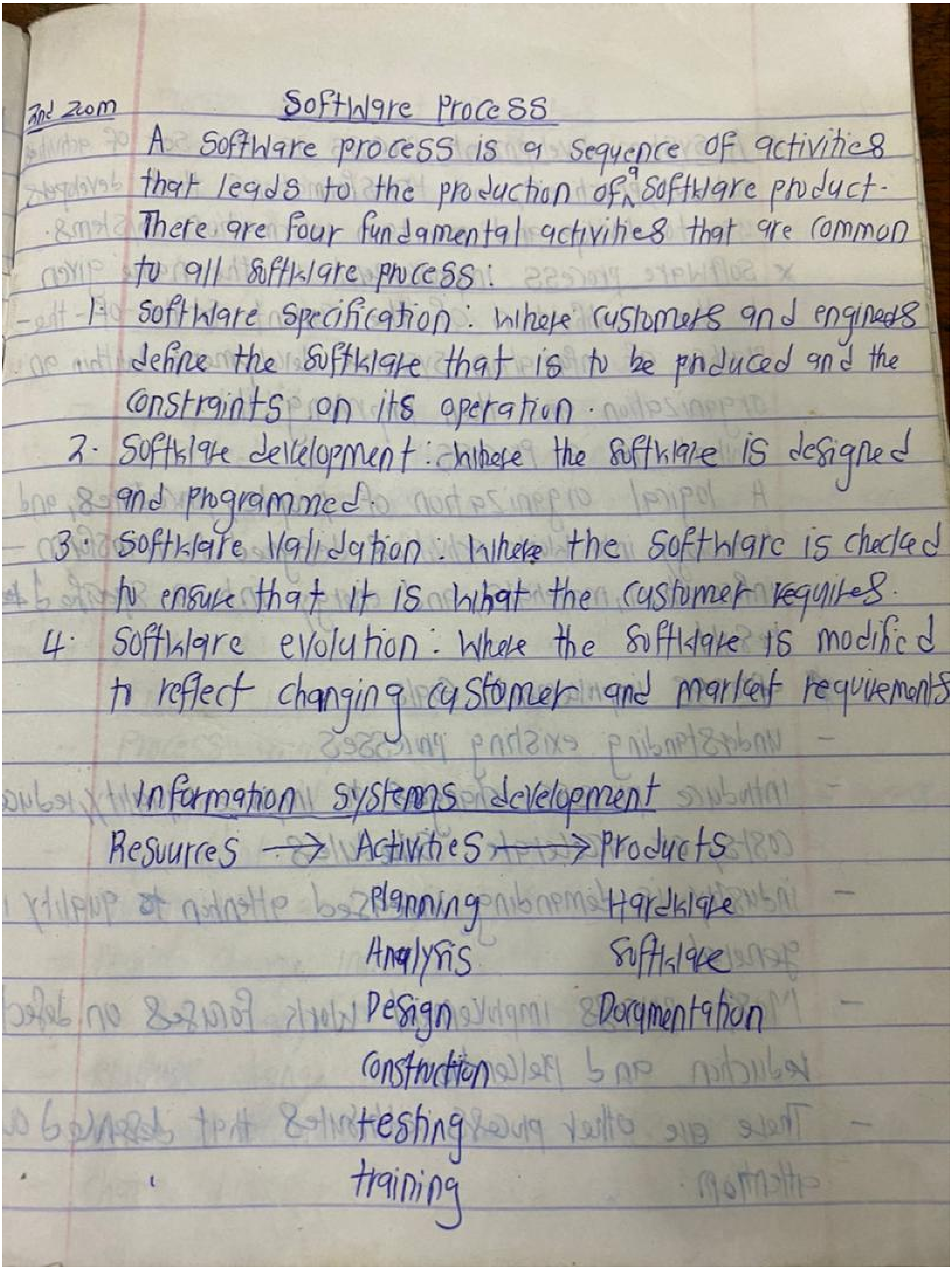
Types of Software products

1. Generic products:- These are standalone softwares that are produced by a development organization and sold on the open market to any customer who is able to buy them. e.g word processors, drawing packages.
2. Customized (or bespoke) products:- These are Softwares that are commisioned by and developed for a a particular customer.

* Fundamental Software engineering activities
- Software Specification
- Software development
- Software Validation
- Software evolution

importance of Software engineering

- More and more, individuals and Society rely on advanced Software systems. We need to be able to produce reliable and trustworthy systems economically and quickly.
- It is usually cheaper, in the long run, to use software engineering methods and techniques for Software systems.



2nd Zom

Software Process

A software process is a sequence of activities that leads to the production of a software product. There are four fundamental activities that are common to all software process:

1. software specification: where customers and engineers define the software that is to be produced and the constraints on its operation.
2. Software development: where the software is designed and programmed.
3. software validation: where the software is checked to ensure that it is what the customer requires.
4. Software evolution: Where the software is modified to reflect changing customer and market requirements

Information systems development

Resurces →	Activities →	Products
	Planning	Hardware
	Analysis	Software
	Design	Documentation
	construction	
	testing	
	training	

* A system development process is the set of activities methods, practices, and transformations that developers use to develop and maintain information systems.

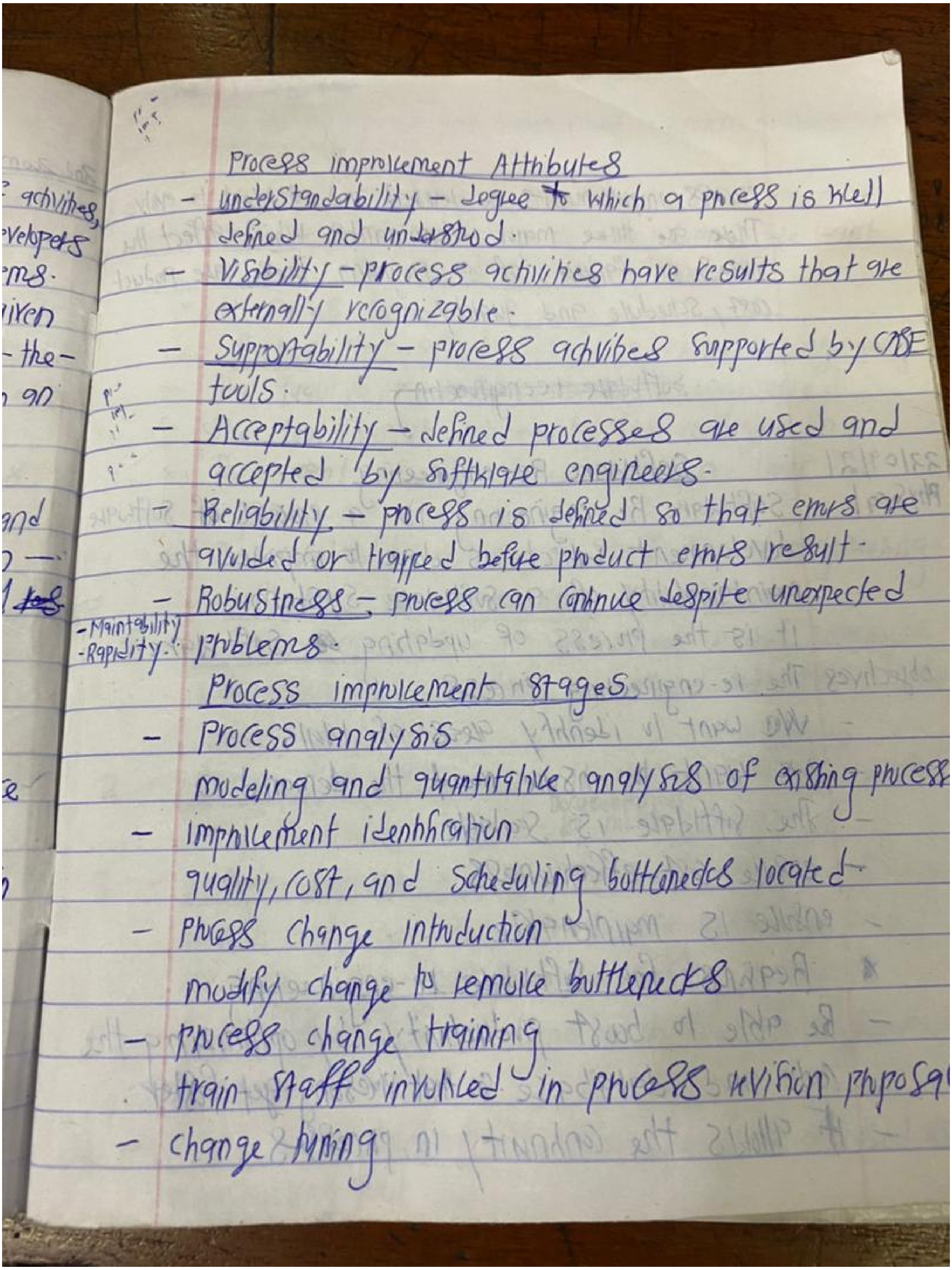
* Software process Improvement is the name given to the identification of the current state-of-the-practise of information systems development within an organization and then improving it.

What is a Process

A logical organization of people, procedures, and technology into work activities designed to transform — information, materials, and energy into a specified ~~to~~ result.

* Process improvement Goals

- understanding existing processes
- introduce process changes to improve quality, reduce costs, or accelerate schedules.
- industry is demanding increased attention to quality in general.
- Most process improvement work focuses on defect reduction and prevention.
- There are other process attributes that deserved our attention.



Process improvement Attributes

- understandability - degree ~~to~~ which a process is well defined and understood.
- Visibility - process activities have results that are externally recognizable.
- Supportability - process activities supported by CASE tools.
- Acceptability - defined processes are used and accepted by software engineers.
- Reliability - process is defined so that errors are avoided or trapped before product errors result.
- Robustness - process can continue despite unexpected problems.

-Maintability
-Rapidity.

Process improvement stages

- Process analysis

modeling and quantitative analysis of existing process

- improvement identification

quality, cost, and scheduling bottlenecks located

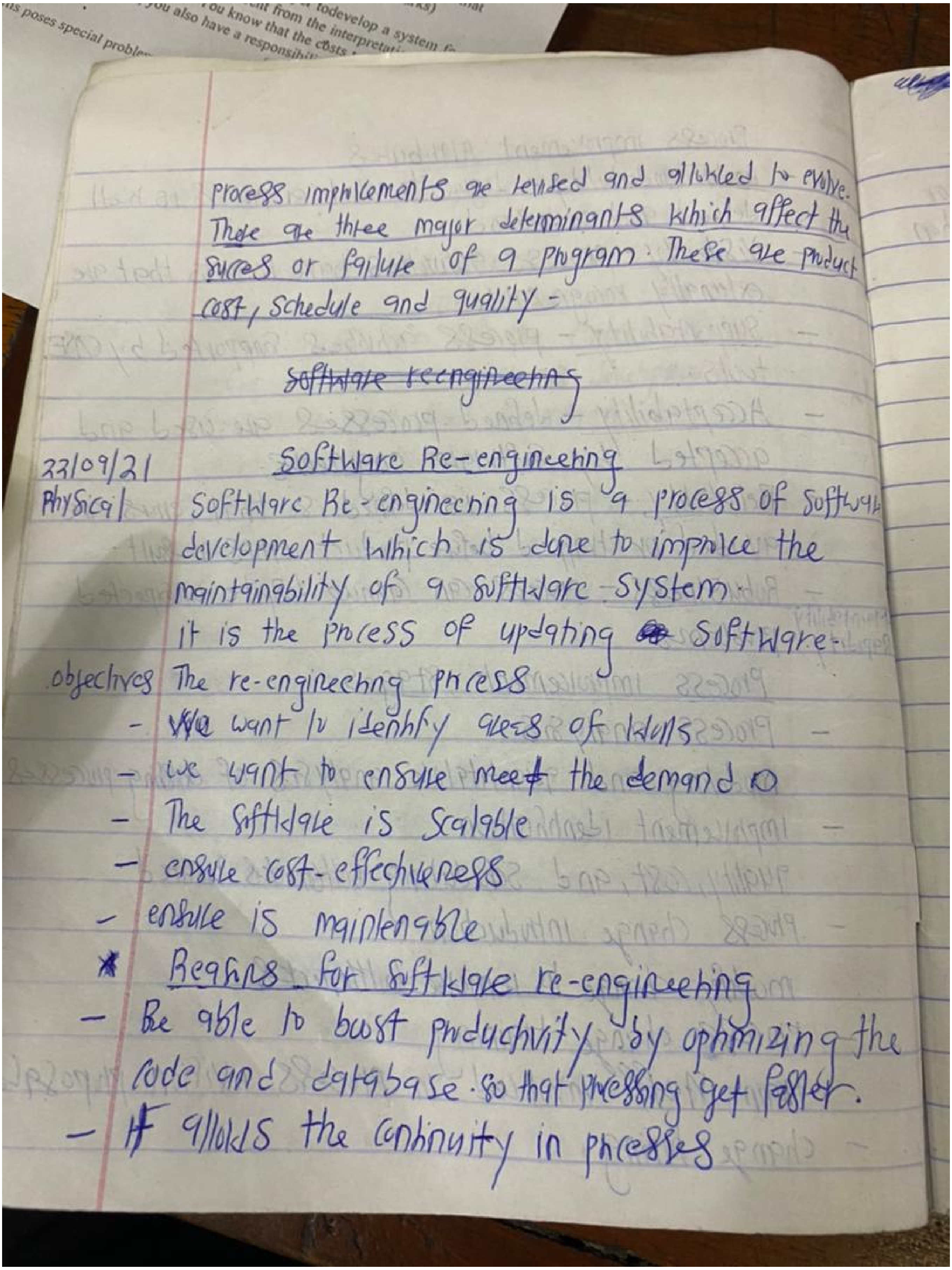
- process change introduction

modify change to remove bottlenecks

- process change training

train staff involved in process revision proposa

- change tuning



process improvements are revised and allowed to evolve. There are three major determinants which affect the success or failure of a program. These are product cost, schedule and quality.

~~Software reengineering~~

23/09/21 Physical

Software Re-engineering

Software Re-engineering is a process of software development which is done to improve the maintainability of a software system.

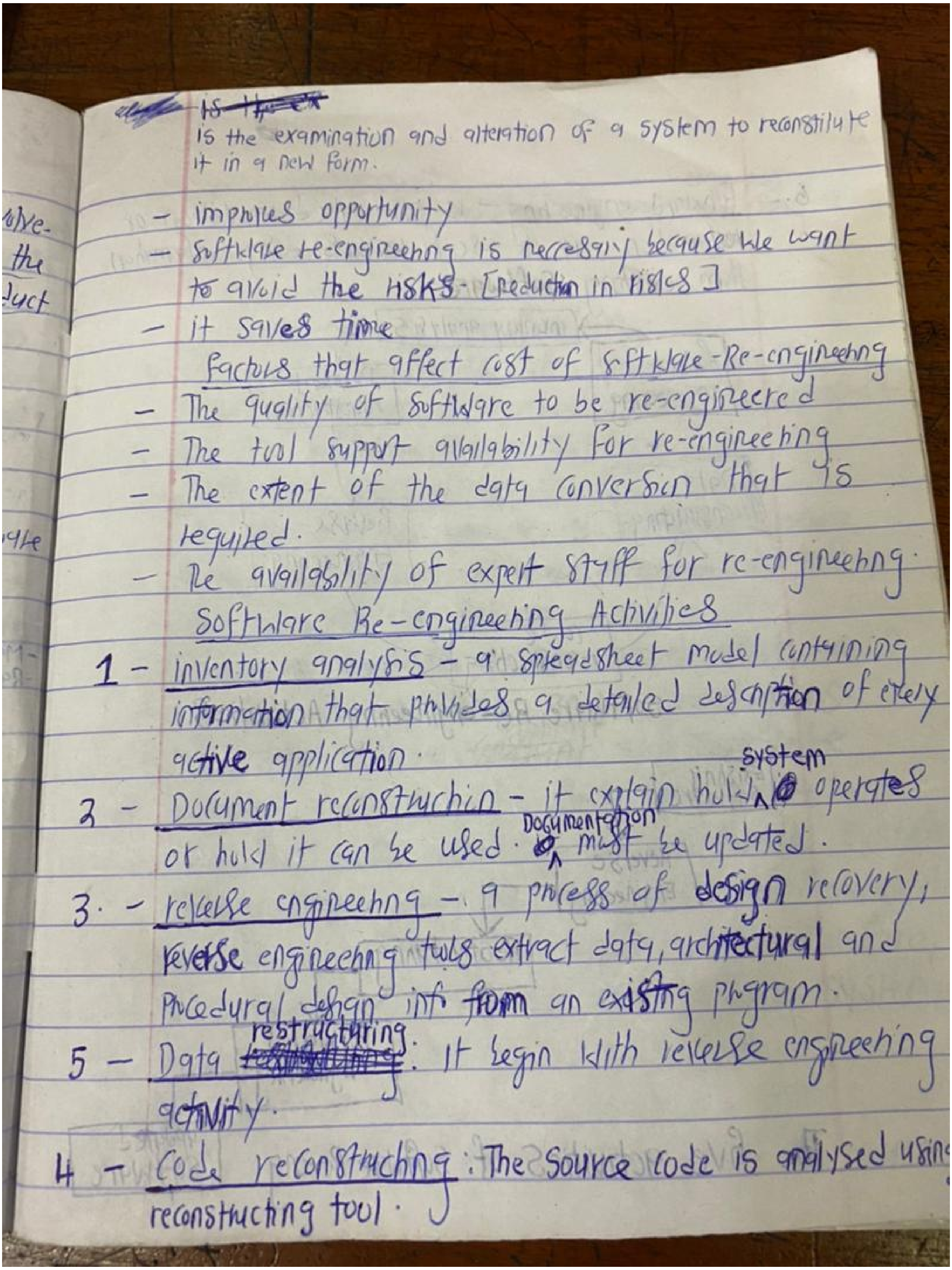
It is the process of updating software.

objectives The re-engineering process

- We want to identify areas of Walls
- we want to ensure meet the demand
- The software is scalable
- ensure cost-effectiveness
- ensure is maintenable

* Reasons for software re-engineering

- Be able to boost productivity by optimizing the code and database so that processing get faster.
- It allows the continuity in processes



~~is the ex~~
is the examination and alteration of a system to reconstitute it in a new form.

- improves opportunity
- Software re-engineering is necessary because we want to avoid the risks - [Reduction in risks]
- it saves time

Factors that affect cost of Software-Re-engineering

- The quality of Software to be re-engineered
- The tool support availability for re-engineering
- The extent of the data conversion that is required.
- The availability of expert staff for re-engineering.

Software Re-engineering Activities

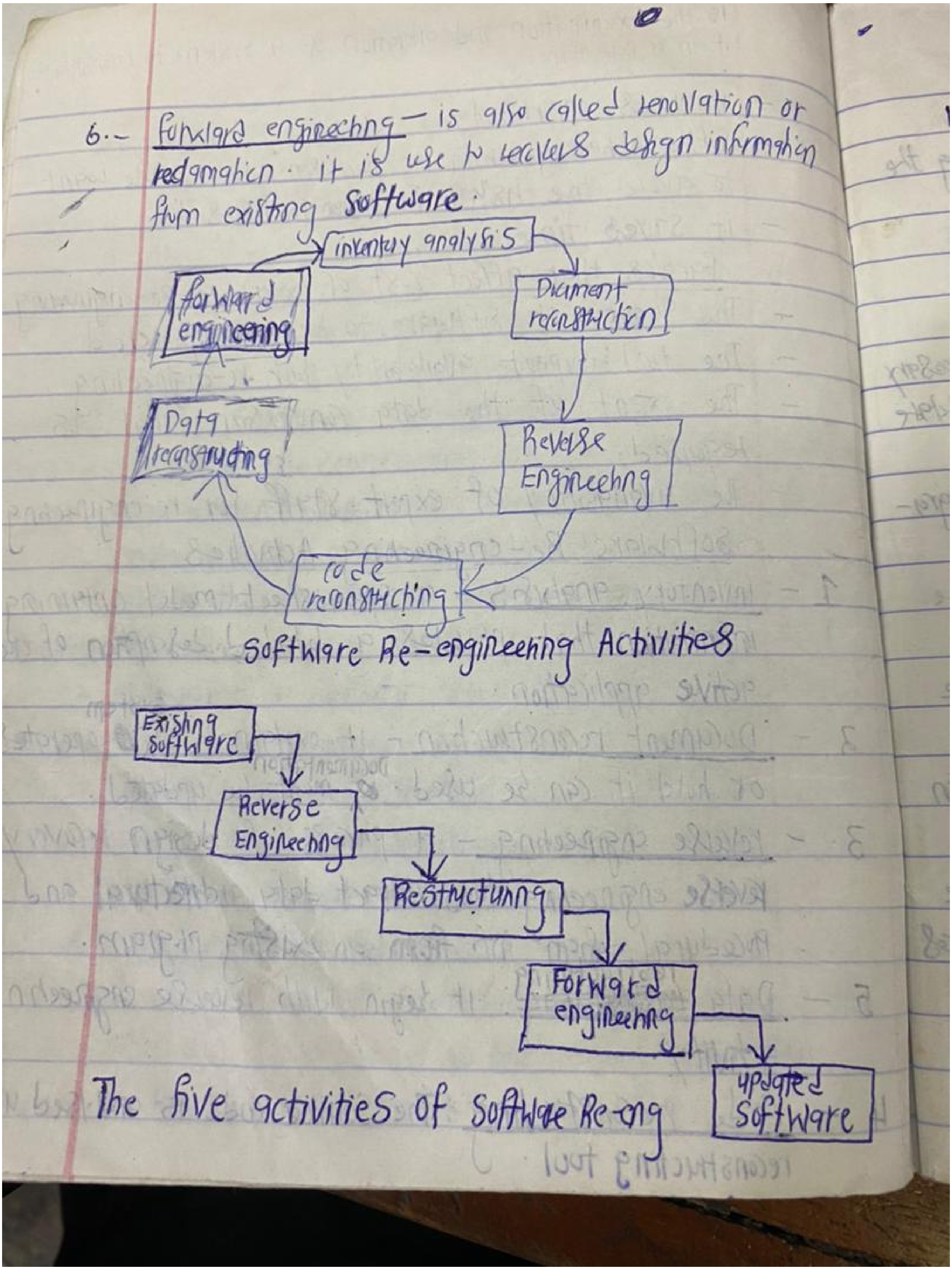
1 - inventory analysis - a spreadsheet model containing information that provides a detailed description of every active application.

2 - Document reconstruction - it explain how system operates or how it can be used. Documentation must be updated.

3. - reverse engineering - a process of design recovery, reverse engineering tools extract data, architectural and procedural design inf from an existing program.

5 - Data ~~[illegible]~~ restructuring: it begin with reverse engineering activity.

4 - Code reconstructing: The source code is analysed using reconstructing tool.



6.- Forward engineering — is also called renovation or reclamation. it is use to recover design information from existing Software.

inventory analysis
Document reconstruction
Reverse Engineering
code reconstructing
Data reconstructing
forward engineering

Software Re-engineering Activities

Existing Software
Reverse Engineering
Restructuring
Forward engineering
updated Software

The five activities of Software Re-eng