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CLASS : SYBSc

ROLL NO. : D 042

SUBJECT : SOFTWARE ENGINEERING

SAP ID : 40315220002

Sundaram

FOR EDUCATIONAL USE

Q1) What is software? Explain various types of software.

→ Software is a set of instructions, data or programs used to operate computers and execute specific tasks. It is the anti-thesis of hardware, which describes the physical aspects of a computer (i.e., external hardware).

Software is a generic term used to refer to applications, scripts and programs that run on a device.

A device's running programs, scripts, and applications are collectively referred to as "software" in this context.

The two main categories of software are application software and system software.

An application is software that fulfils a specific need or performs tasks. System software is designed to run a computer's hardware and provides a platform for applications to run on top of.

Among the various types of software, the most common types include:

i) Application Software: It is a computer software package that performs a specific function for a user, or in some cases, for another application. Examples: web browsers, office suites, image editors, etc.

ii) System Software: These are designed to run a computer's application programs and hardware. The OS is the best example

of system software; it manages all ~~other~~ the other computer programs. Examples: firmware.

iii) Driver Software: This type of software can be considered as system software. Also called device drivers. They control the devices and peripherals connected to a computer, enabling them to perform their specific tasks.

iv) Middleware: It describes software that mediates between application and system software or between two kinds of application software. ~~Example~~:

Q2) What is software engineering?

→ Software engineering is the process of designing, developing, testing, and maintaining software. It is a systematic and disciplined approach to software development that aims to create high-quality, reliable and maintainable software. Software engineering includes a variety of techniques, tools, and methodologies, including requirements analysis, design, testing, and maintenance.

Key Principles of Software Engineering:

i) Modularity: Breaking the software into smaller, reusable, components, that can be developed and tested independently.

ii) Maintenance : Regularly updating and improving the software to fix bugs, add new features, and address security vulnerabilities.

iii) Testing : Verifying that the software meets its requirements and is free of bugs.

iv) Design Patterns : Solving recurring problems in software design by providing templates for solving them.

Q3) Explain requirement gathering steps.

→ 1) Assign Roles :

Identify and assign roles to team members responsible for gathering requirements. These roles may include a project manager, business analyst, system architect, and other relevant stakeholders.

2) Meet with Stakeholders :

Engage with key stakeholders, such as end-users, ~~clients~~ clients, managers, and subject matter experts, to understand their perspectives on the system. Conduct ~~interview~~ interviews, surveys, or workshops to gather insights into their needs and expectations.

3) Gather and Document :

This involves gathering functional and non-functional requirements. Functional requirements specify what the system should do, while non-functional requirements focus on qualities like performance, security and usability.

4) List Assumptions and Requirements :

Clearly list and differentiate between assumptions and requirements. Assumptions are statements taken for granted or accepted as true without proof, while requirements are explicit needs that must be fulfilled by the system.

5) Get Approval :

Share the gathered requirements with stakeholders for review and validation. Seek their approval to ensure that everyone is on the same page and agrees with the documented requirements. This helps prevent ~~misu~~ misunderstandings ~~and~~ creep later in the project.

6) Monitor Progress :

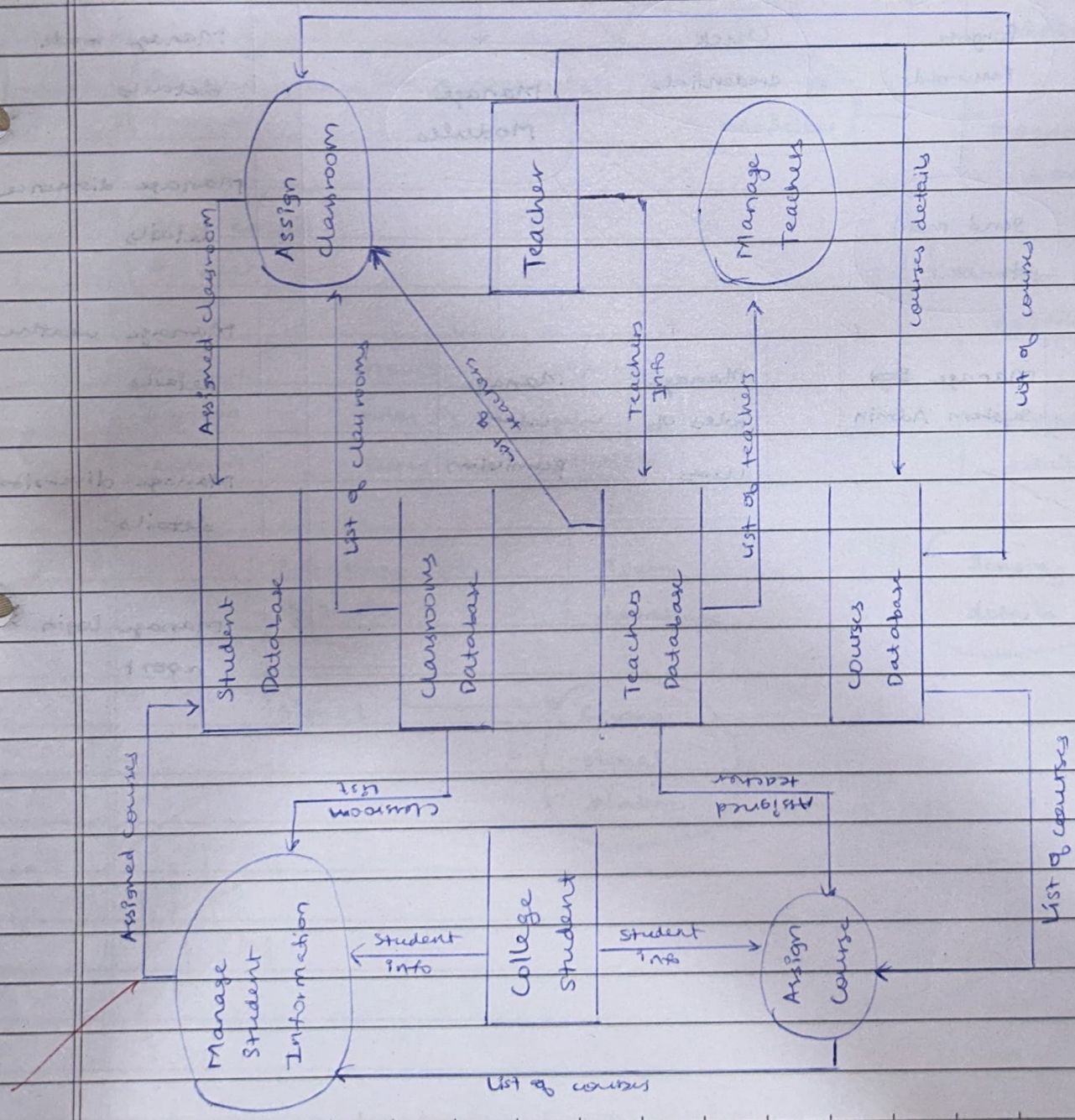
Continually monitor and update the requirements ~~as needed~~, ~~th~~ throughout the development process. This is because changes may ~~arise~~ arise due to evolving business needs, technological advancements, or unforeseen issues.

15/12/23

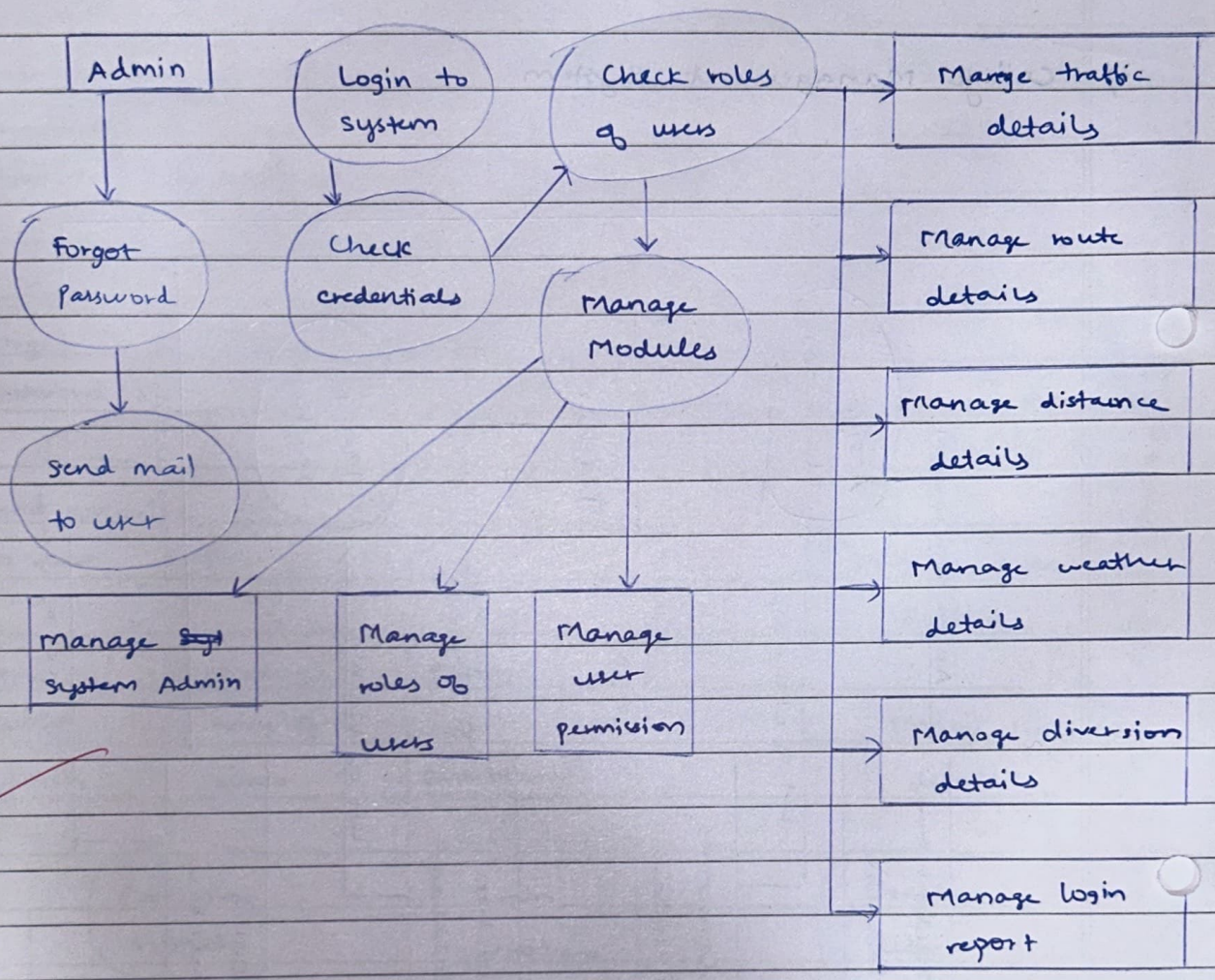
Assignment 2 - Data Flow Diagram

Q) Draw a data flow diagram for the following:

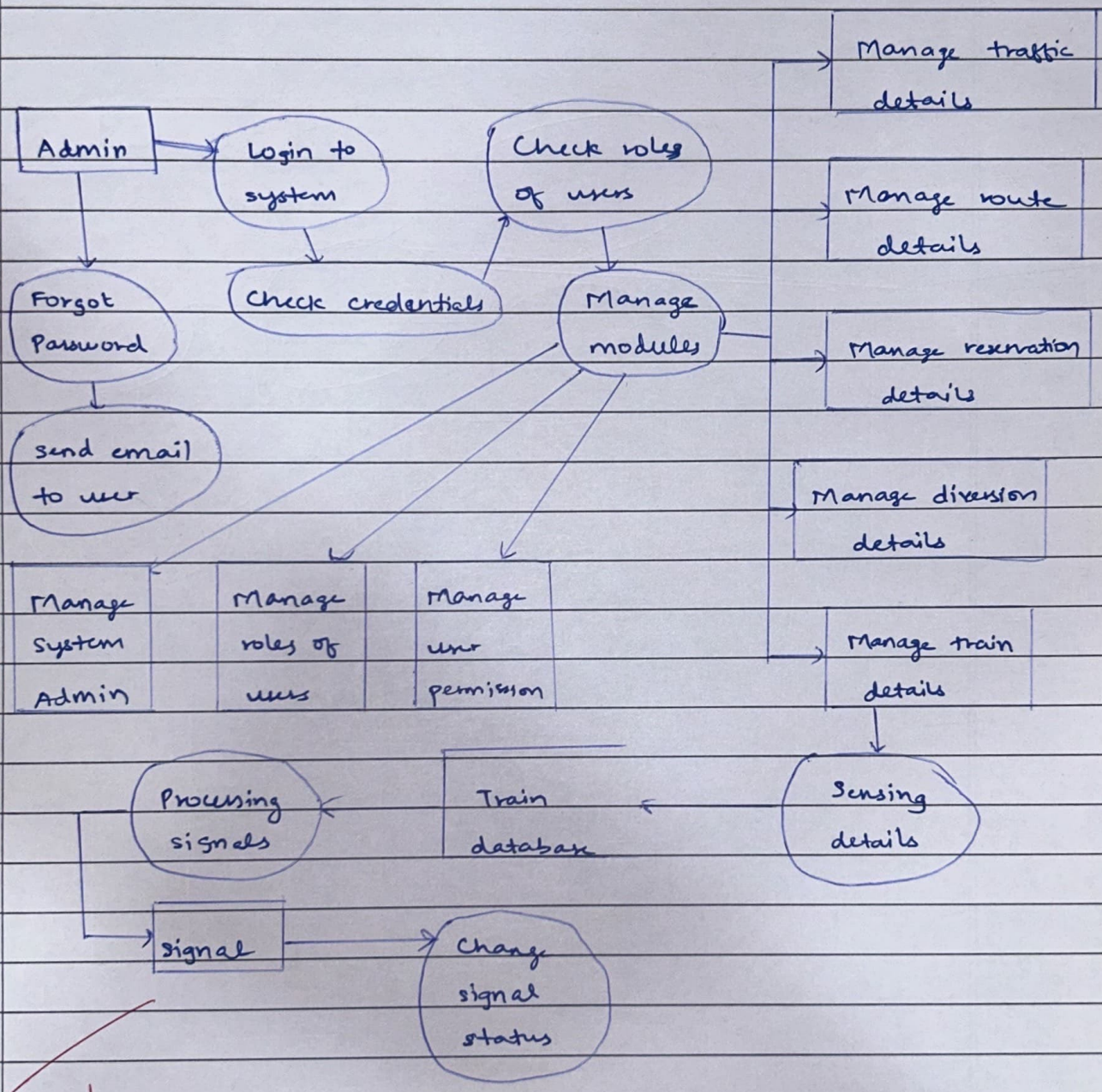
i) College Management System



ii) Air Traffic Management System



iii) Railway management system integrated with signalling process.



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