SYSTEM DESIGN

By

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Project Phases

☐ **Planning**

   ◻ Why build the system?

☐ **Analysis**

   ◻ Who, what, when, where will the system be?

☐ **Design**

   ◻ How will the system work?

☐ **Implementation**

   ◻ System delivery

Definition of System Design

□ System design is the **process of defining the architecture, interfaces, and data for a system** that satisfies *specific requirements.*

□ System design meets the needs of your business or organization through coherent and efficient systems.

□ Once your business or organization determines its requirements, you can begin to build them into a **physical system** design that addresses the needs of your customers.

CONT….

- The way you design your system will **depend on** whether you want to go for **custom development**, **commercial solutions**, or a **combination** of the two.

- A good system design requires you to think about everything in an **infrastructure**, from the **hardware** and **software**, all the way down to the **data** and how it's **stored**.

- **System Design focuses on how to achieve the objective of the system.**

CONT….

- ## The advantage of Designed system:-
    - **Easy to implement**
    - **Understandable**
    - **Reliable**
    - **Easy to maintain and test**

The Scope of System Design

□ **System design** is the phase that bridges the gap between *problem* domain and the *existing system* in a manageable way.

□ This phase focuses on the solution domain, i.e. "*how to implement?*"

Problem

↓

System Design

↓

Existing System
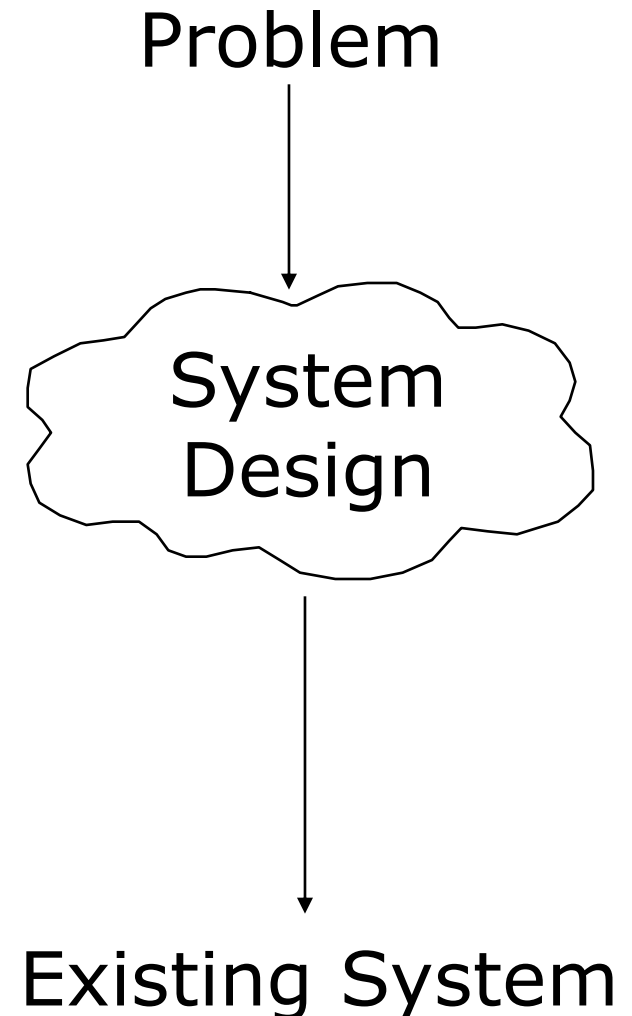
The Scope of System Design

☐ It is the phase where the SRS document is converted into a format that can be **implemented** and decides how the system will **operate**.

☐ In this phase, the complex activity of system development is **divided into several** smaller sub-activities, which coordinate with each other to achieve the **main objective** of system development.

System Design

- Identify Design Goals
- System Decomposition
- Identification of Concurrency
- Hardware Allocation
- Data Mgmt
- Global Resource Hand Leap
- Software Control Implementation
- Boundary Condition

Inputs to System Design

System design takes the following inputs :-

➢ Statement of work

➢ Requirement determination plan

➢ Current situation analysis

➢ Proposed system requirements including a conceptual data model, modified **DFDs**, and Metadata (**data about data**).

Outputs for System Design

System design gives the following outputs:-

➤ Infrastructure and organizational **changes** for the proposed system.

➤ A data schema, often a relational schema.

➤ Metadata to define the tables/files and columns/data-items.

➤ A function hierarchy diagram that graphically describes the **program structure**.

➤ Actual or pseudocode for each module in the **program**.

➤ A **prototype** for the proposed system.

Types of System Design

- **Logical Design**

- **Physical Design**

- **Architectural Design**

- **Detailed Design**

- **Conceptual Data Modeling**

- **Entity Relationship Model**

Logical Design

☐ Logical design regard/related to an **abstract representation** of the data flow, **inputs**, and **outputs** of the system.

☐ It describes the ***inputs*** (sources), ***outputs*** (destinations), ***databases*** (data stores), ***procedures*** (data flows) all in a format that meets the user requirements.

Physical Design

- Physical design focuses on how data is **entered into** a system, **verified**, **processed**, and **displayed** as **output**.

- It produces the **working system** by defining the **design specification** that specifies exactly what the candidate system does.

- It is concerned with **user interface design**, **process design**, and **data design**.

Architectural Design & Detailed Design

Architectural Design

- It is also known as **high level design** that focuses on the design of system **architecture**.
- It describes the structure and behavior of the system.
- It defines the **structure and relationship** between various modules of system development process.

Detailed Design

- It follows Architectural design and focuses on **development** of each module.
- Detailed design refines each module in detail and describe its **algorithm and data structures**

Conceptual Data Modeling & Entity Relationship Model

☐ **Conceptual Data Modeling**

➤ It is representation of organizational data which includes all the major **entities and relationship.**

➤ The main aim of conceptual data modeling is to capture as much **meaning of data** as possible.

➤ Most organization today use conceptual data modeling using **E-R model** which uses special notation to represent as much meaning about data as possible.

☐ **Entity Relationship Model**

☐ It is a technique used in database design that helps describe the **relationship** between various entities of an organization.

Screen design (interface)

- The design phase contains two tasks are **the interface and the database.**

- User interfaces should be designed to match the **skills**, **experience** and **expectations** of its expected users.

- From System users, users judge a system by its **interface** rather than its **functionality**.

- Poor user interface design is the reason why so many software systems are **never used**.

Software

Design

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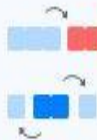- **Software Develo...**
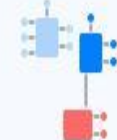
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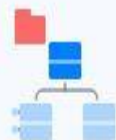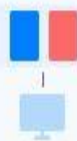
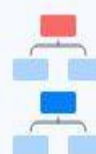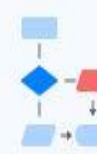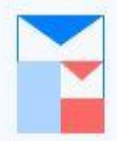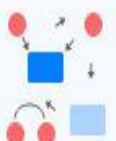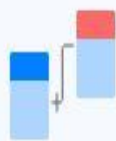| UML Modeling | Program Structure | Booch OOD | COM and OLE | Data Flow Model D... |

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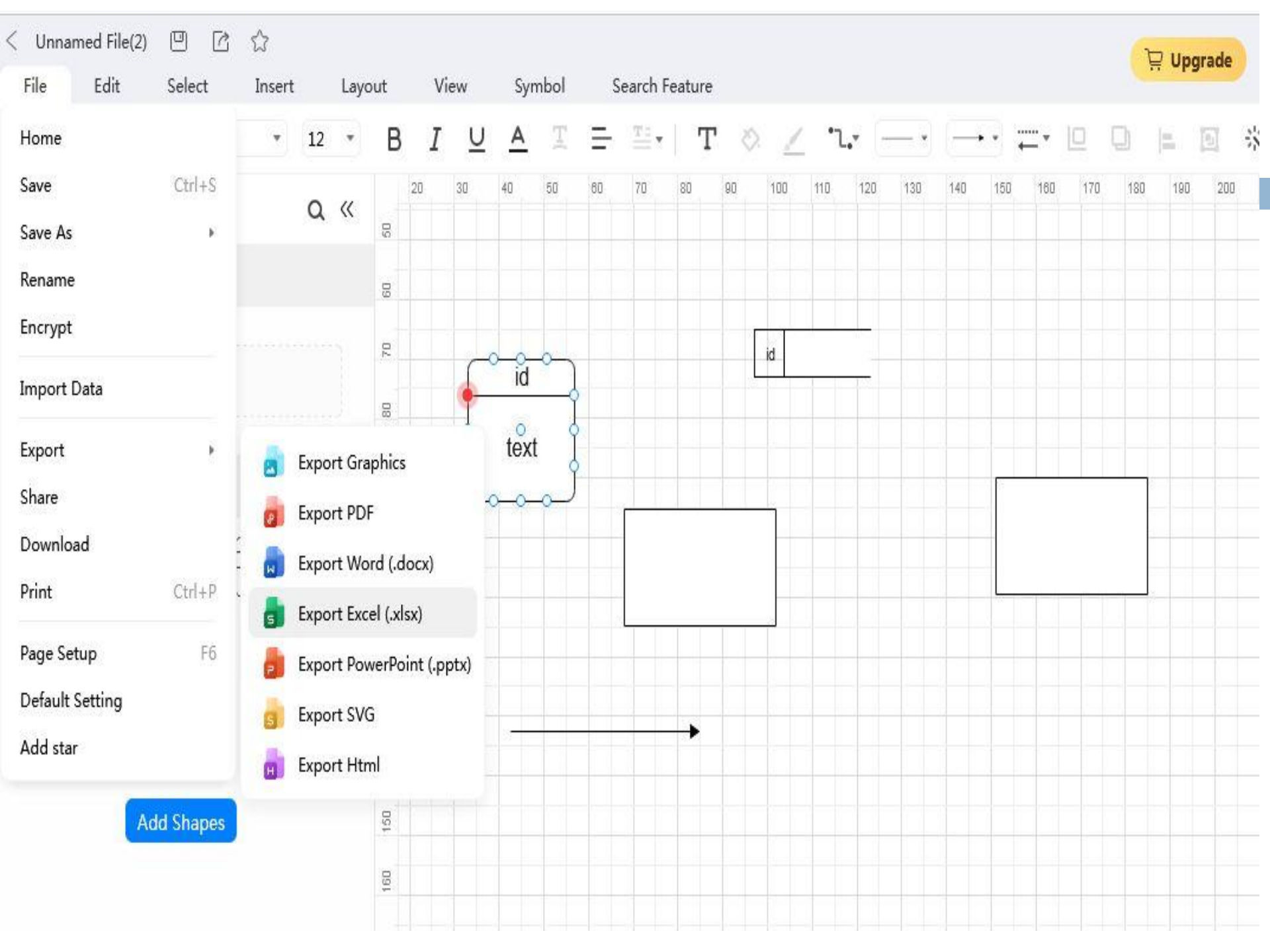- Print　　Ctrl+P
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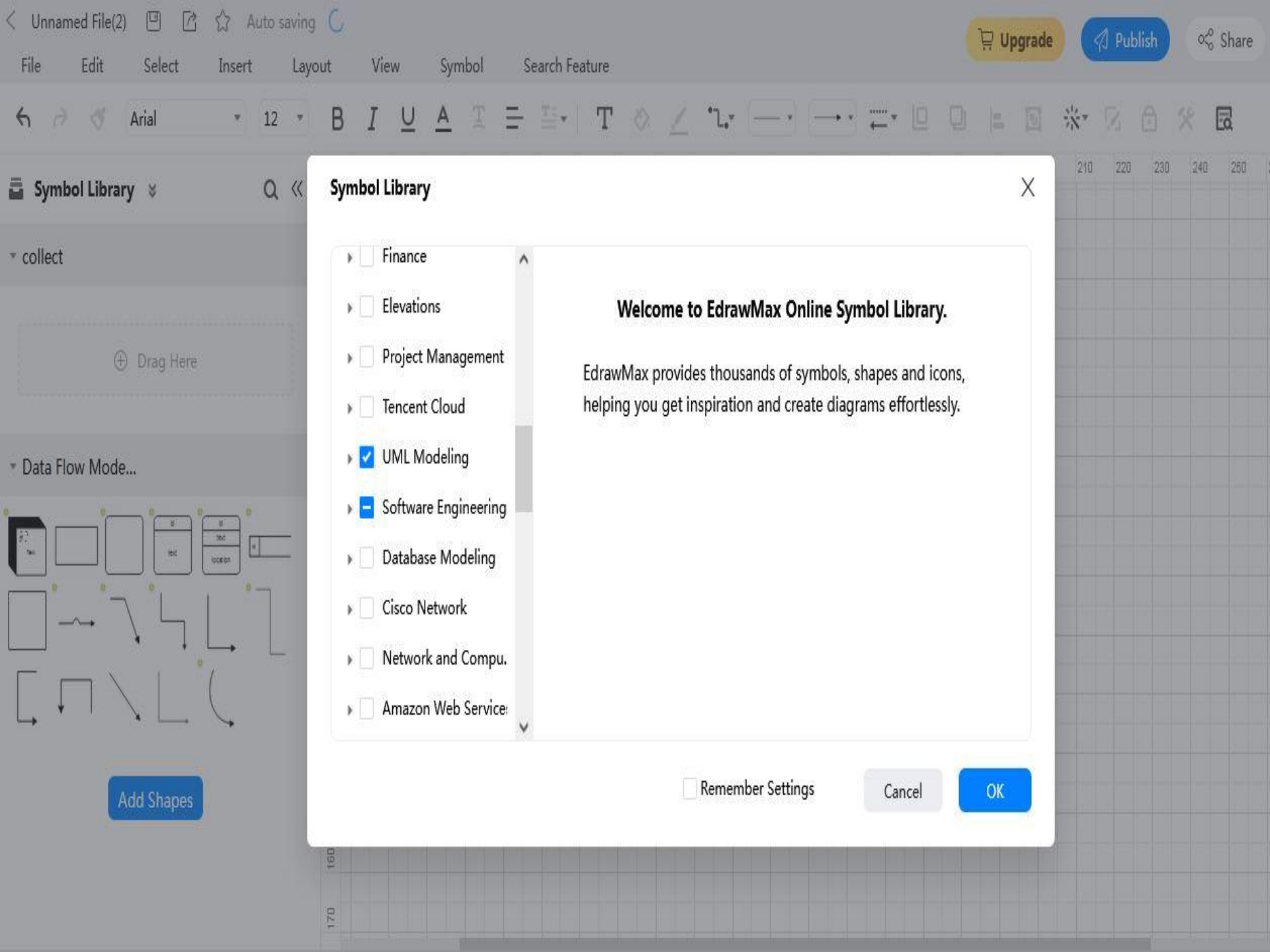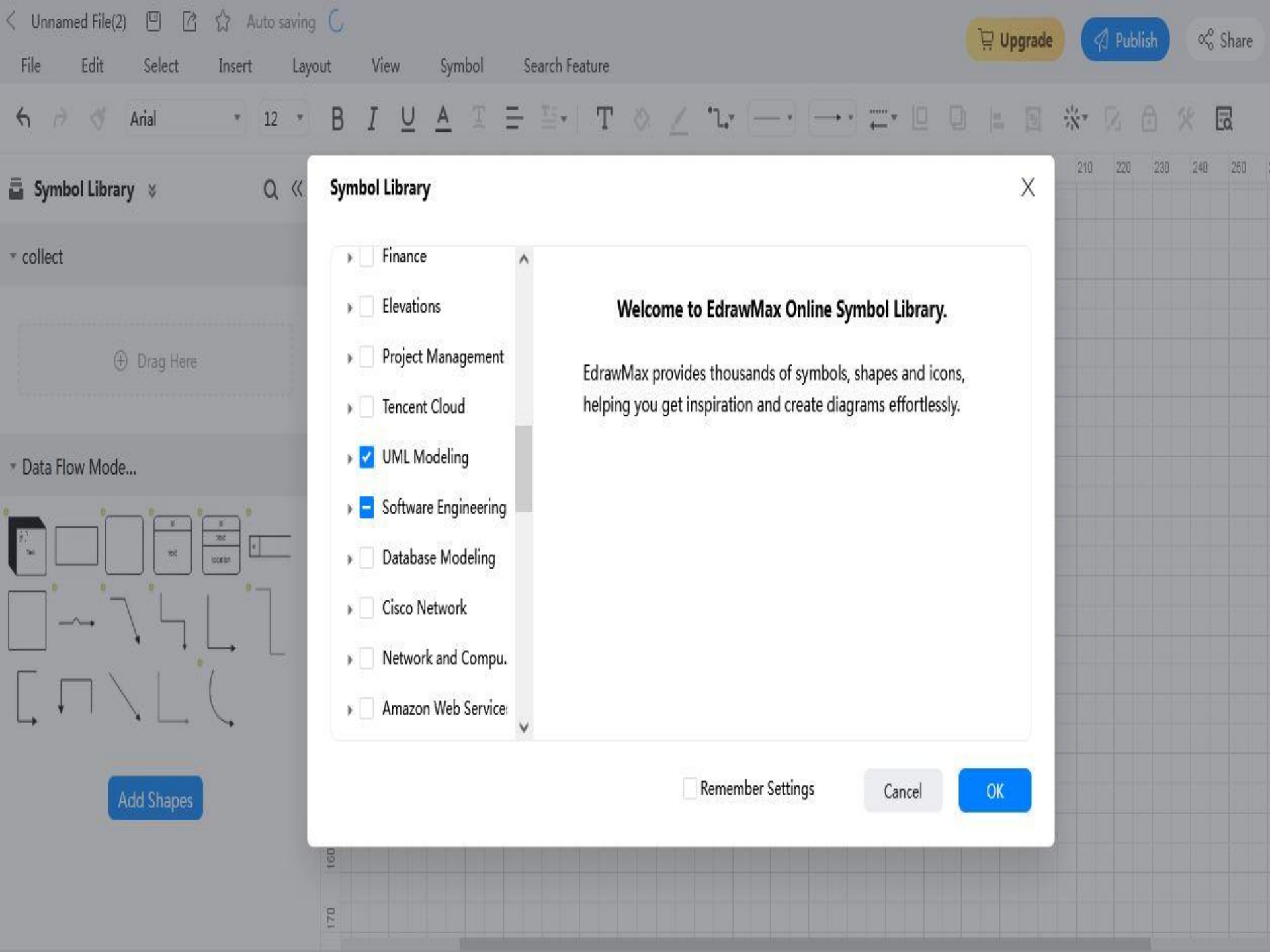**Export qu...** Normal | 💛 HD | 💛 Ultra HD

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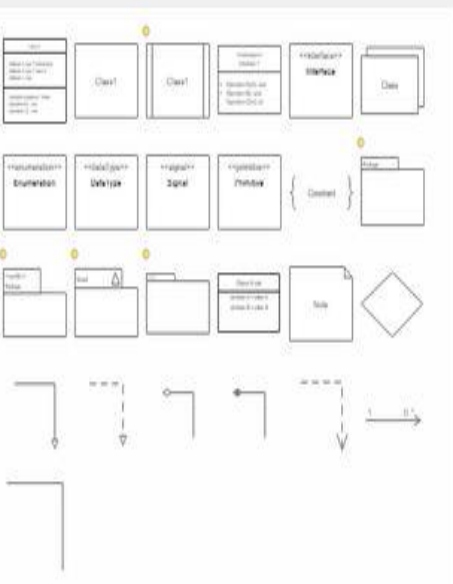File   Edit   Select   Insert   Layout   View   Symbol   Search Feature

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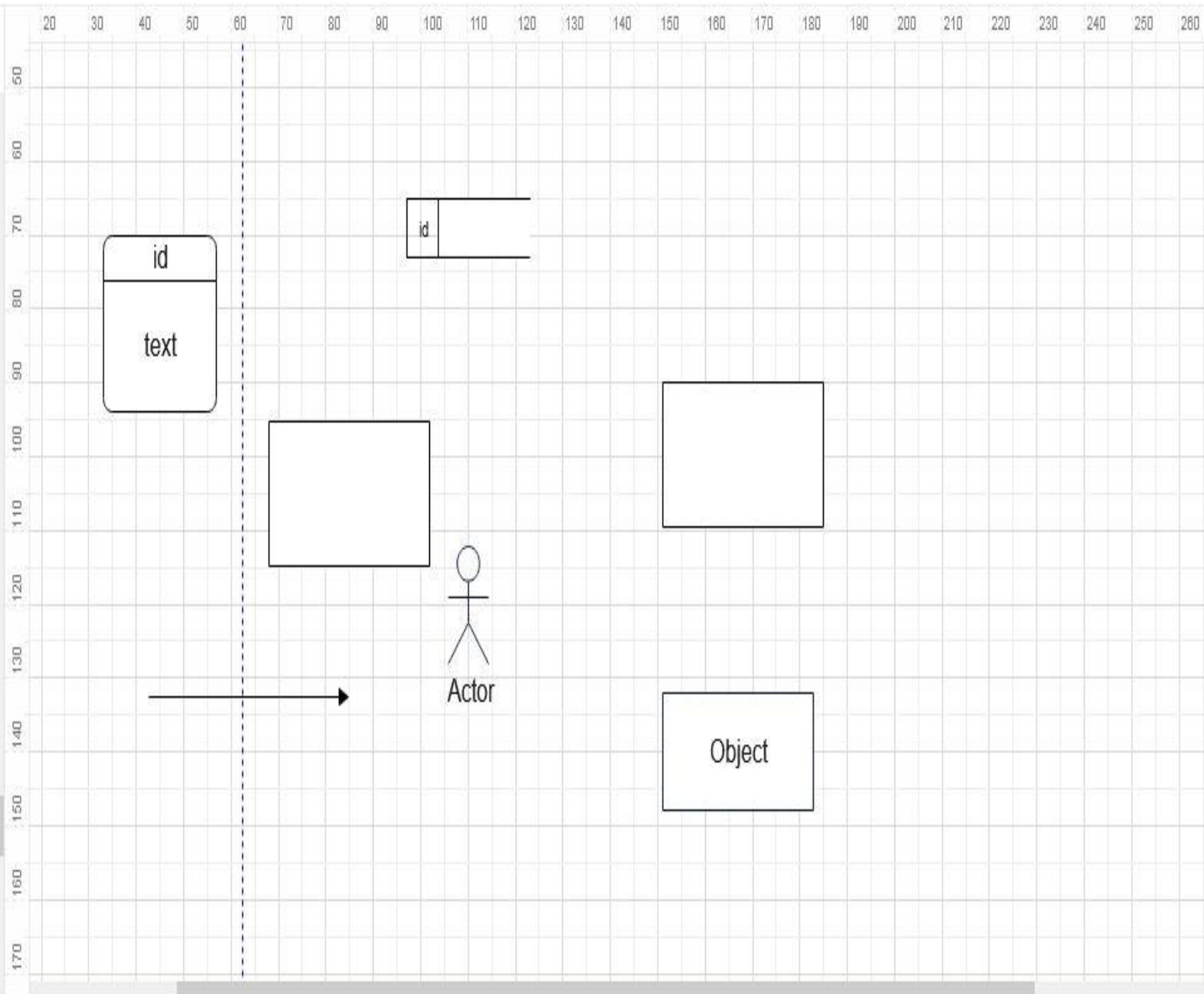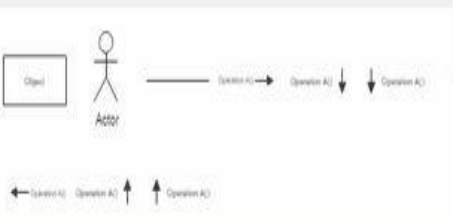
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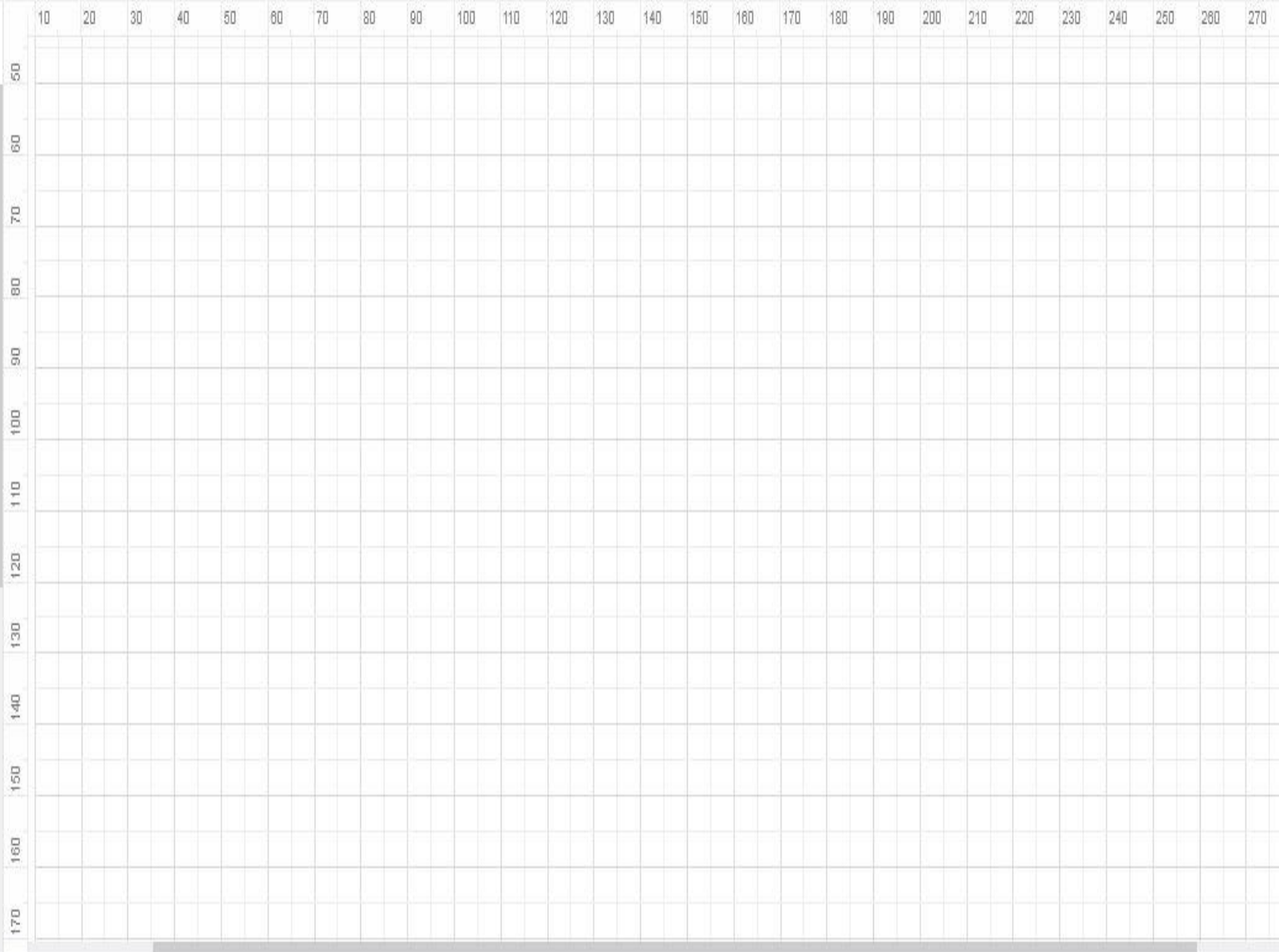
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▾ Basic Flowchart ...

Yes

Student should do

- DFD
- Class diagram
- Usecase
- Logical design

Any Question