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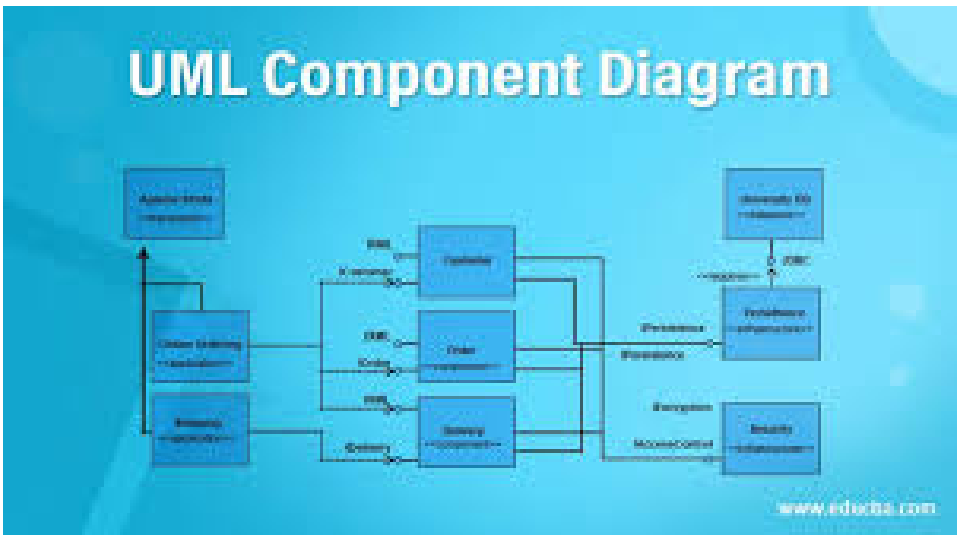
Theory→

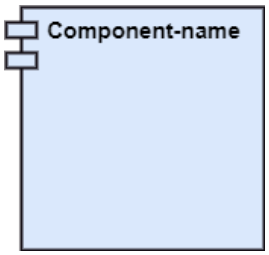
A **component diagram** is used to break down a **large object-oriented system** into the smaller components, so as to **make them more manageable.** It models the **physical view of a system** such as executables, files, libraries, etc. that resides within the node.

It visualizes the relationships as well as the organization between the components present in the system. **It helps in forming an executable system.** A component is a single unit of the system, which is replaceable and executable. The implementation details of a **component are hidden,** and it necessitates an interface to execute a function. **It is like a black box whose behaviour is explained by the provided and required interfaces.**

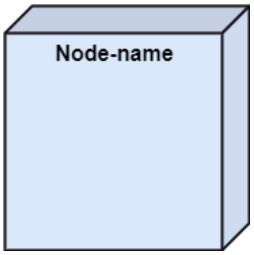


Notation of a Component Diagram

a) A component



b) A node



Purpose of a Component Diagram

Since it is a special kind of a UML diagram, it holds distinct purposes. It describes all the individual components that are used to make the functionalities, but not the functionalities of the system. It visualizes the physical components inside the system. The components can be a library, packages, files, etc.

The component diagram also describes the static view of a system, which includes the organization of components at a particular instant. The collection of component diagrams represents a whole system.

The main purposes of the component diagram are enlisted below:

1. It envisions each component of a system.
2. It constructs the executable by incorporating forward and reverse engineering.
3. It depicts the relationships and organization of components.

It represents various physical components of a system at runtime. It is helpful in visualizing the structure and the organization of a system. It describes how individual components can together form a single system. Following are some reasons, which tell when to use component diagram:

1. To divide a single system into multiple components according to the functionality.
2. To represent the component organization of the system.

The component diagram can be used for the followings:

1. To model the components of the system.
2. To model the schemas of a database.
3. To model the applications of an application.
4. To model the system's source code.

Employee management system

We have 5 components

1. Database
2. Web server
3. Employee logic
4. Manager logic
5. Admin logic

Brief description

1. Database

This component consists of 4 objects that are employee details, project details, department details and budget details.

In this component we store all information regarding employee, projects, groups, department and economical fro that we can use SQL as our database and make tables and relation according to our need.

2. Web server

It is a web application used as a link between other components like employee and manager logic.

Web server respond to the client request in either of the following two ways:

- **Sending the file to the client associated with the requested URL.**
- **Generating response by invoking a script and communicating with database**

This component consists of

- **Login page**
- **Display information**
  - **Employee**
  - **Manager**
  - **Various web pages**

3. Employee logic

This component works on the employee part of the system. It have many artefacts like

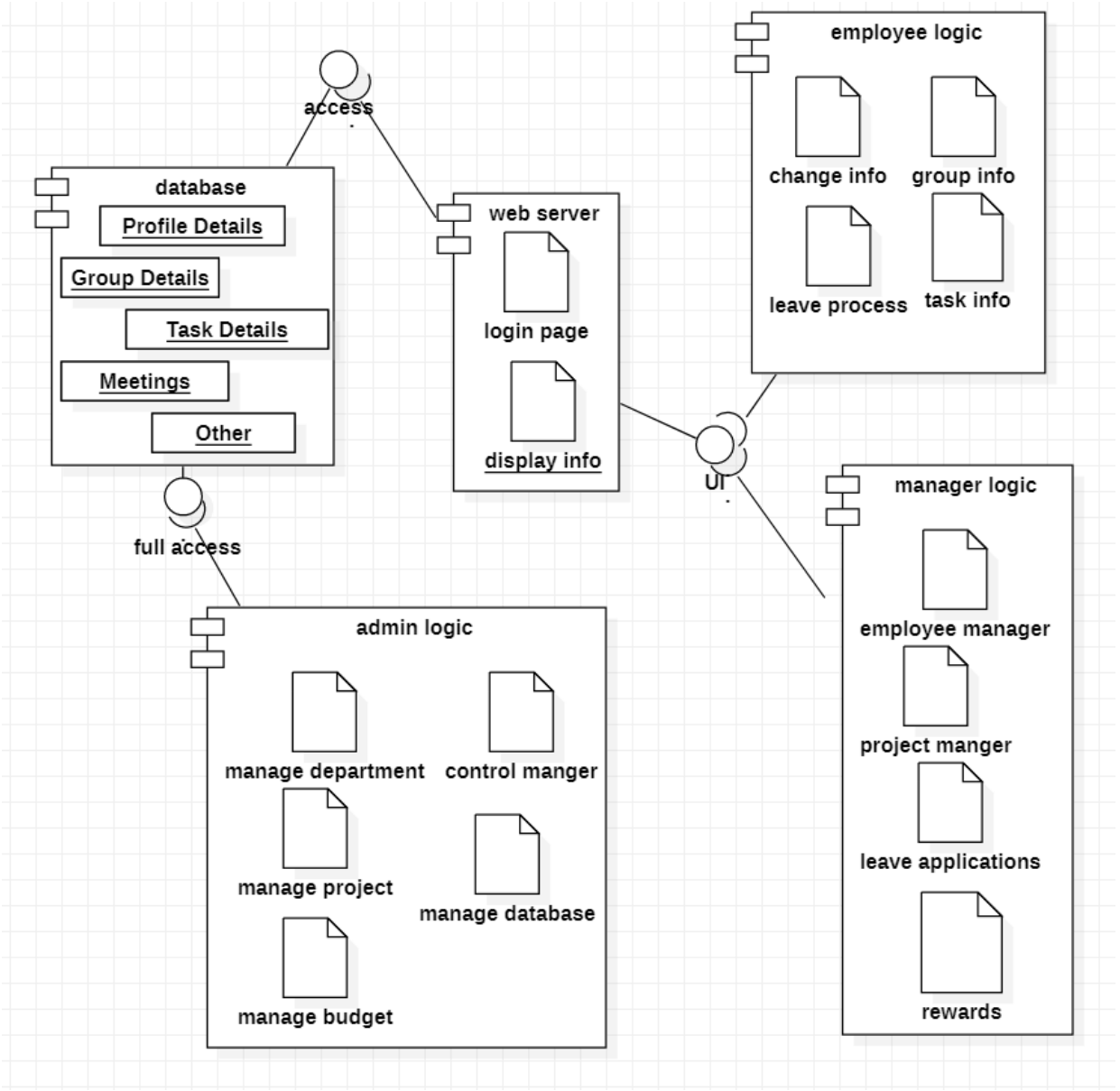
- **Employee manager**
- **change group information**
- **View task details**
- **Apply for leave**

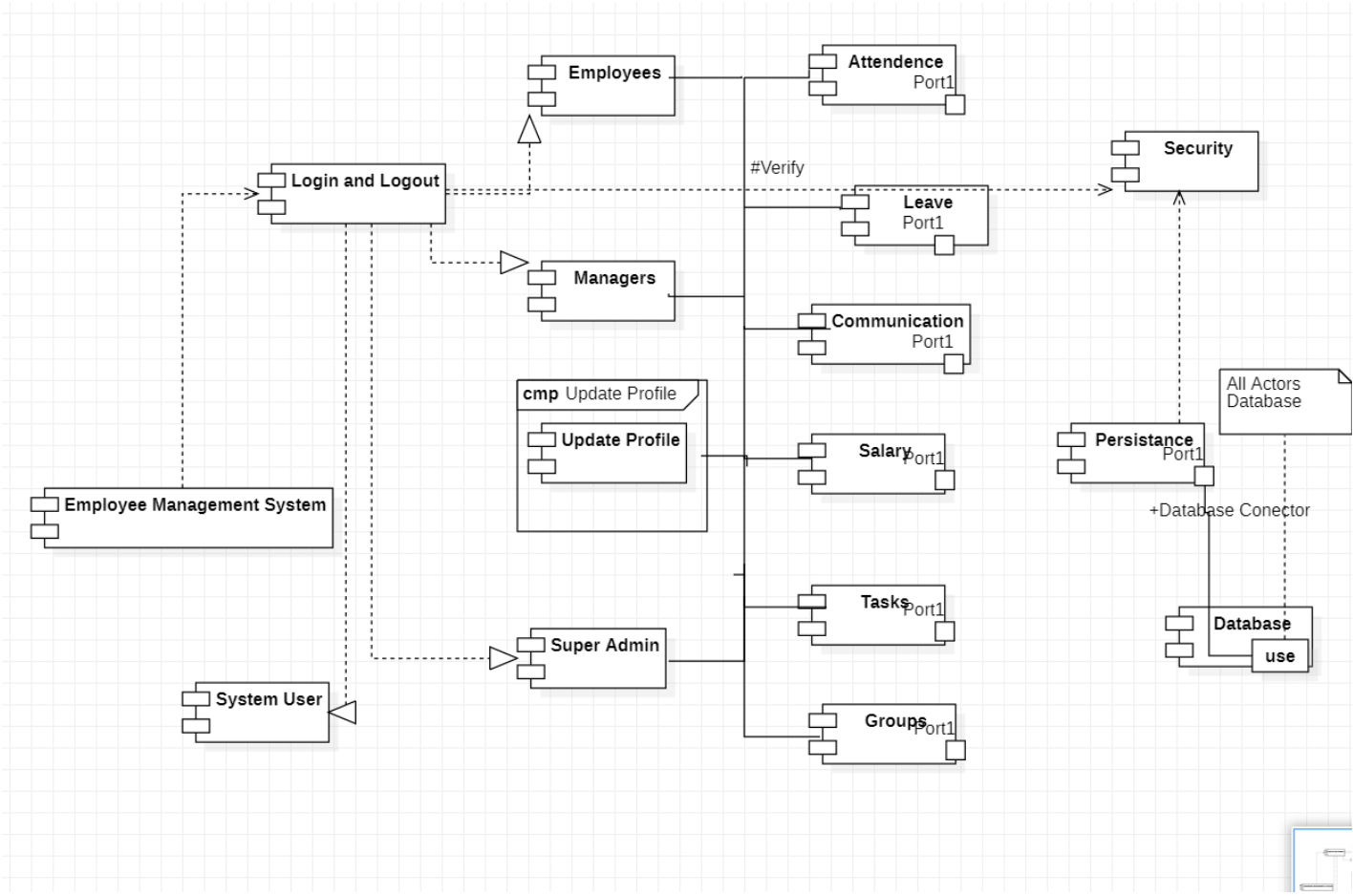
4. Manager logic

This component works on the employee part of the system. It have many artefacts like

- **Change personal information**
- **update group information**
- **change employee task details**
- **Approve or disapprove leave application**

5. Admin logic


employee logic
change info
group info
leave process
task info
access
database
Profile Details
Group Details
Task Details
Meetings
Other
web server
login page
display info
UI
full access
manager logic
employee manager
project manger
leave applications
rewards
admin logic
manage department
control manger
manage project
manage database
manage budget



Conclusion→ Successfully Studied and created Component and Deployment diagram for the demonstration of the Employee management system.
