CHAPTER-3
DESIGN

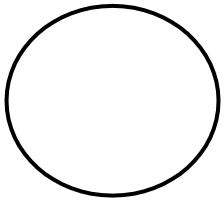
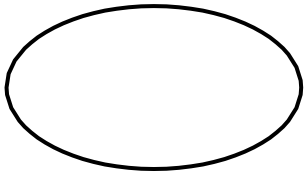
3.1 Data Flow Diagram

- DFD (data flow diagram) is also known as bubble chart or data flow graph.
- DFD's are very useful in understanding the system and can be effectively used during analysis. It shows flow of data through a system visually. The DFD is a hierarchical graphical model of a system the different processing activities or functions that the system performs and the data interchange among these functions.
- It views a system as a function that transforms the inputs into desired output.
- Each function is considered as a process that consumes some input data and produces some output data.
- Function model can be represented using DFD.
- DFD graphically representing the functions, or processes, which capture, manipulate, store, and distribute data between a system and its environment and between components of a system.
- The visual representation makes it a good communication tool between User and System designer.
- Structure of DFD allows starting from a broad overview and expand it to a hierarchy of detailed diagrams.

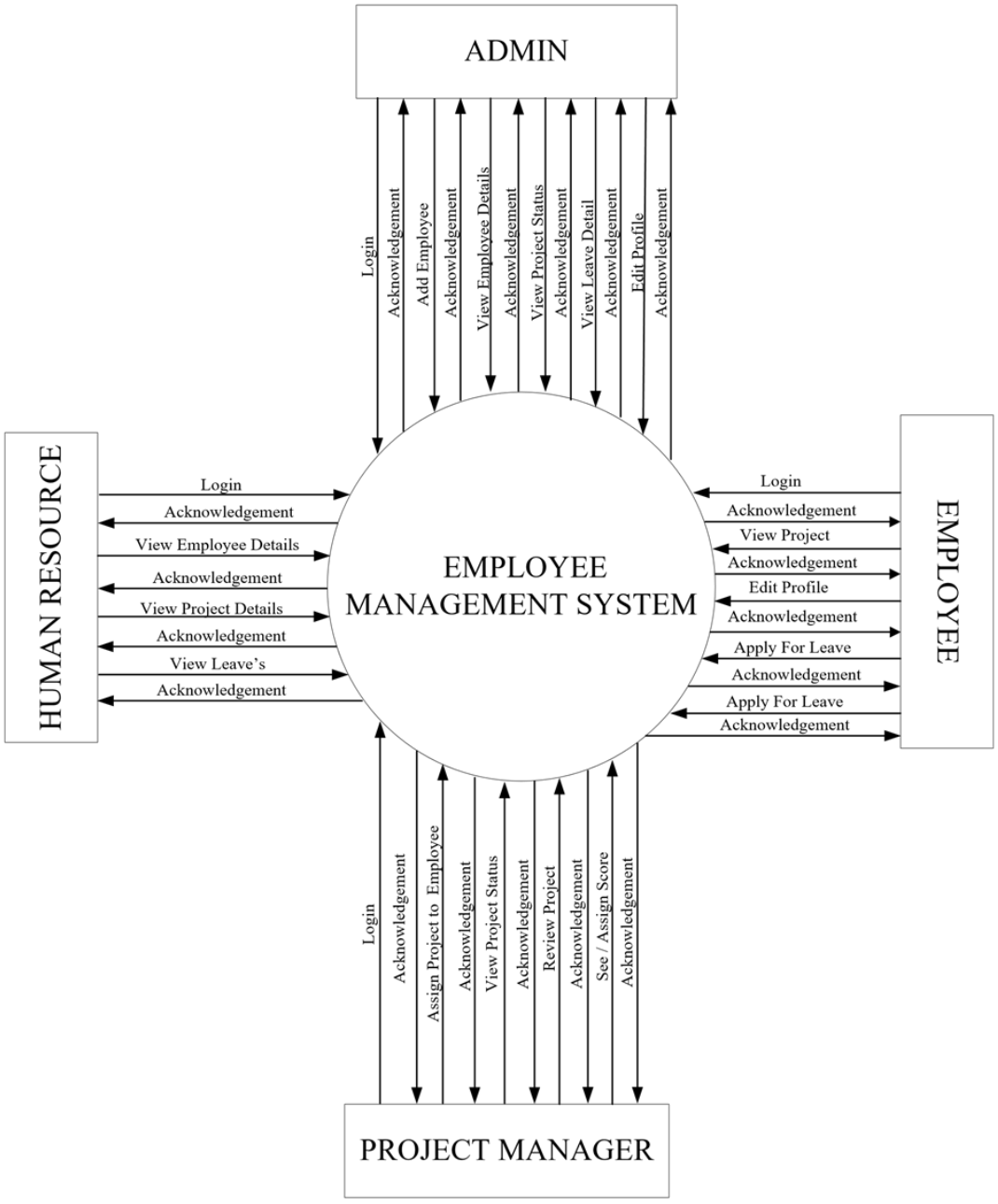
- DFD has often been used due to the following reasons:

1. Logical information flow of the system.
2. Determination of physical system construction requirements.
3. Simplicity of notation.
4. Establishment of manual and automated systems requirements.

[Table 2: Data Flow Diagram Symbols]

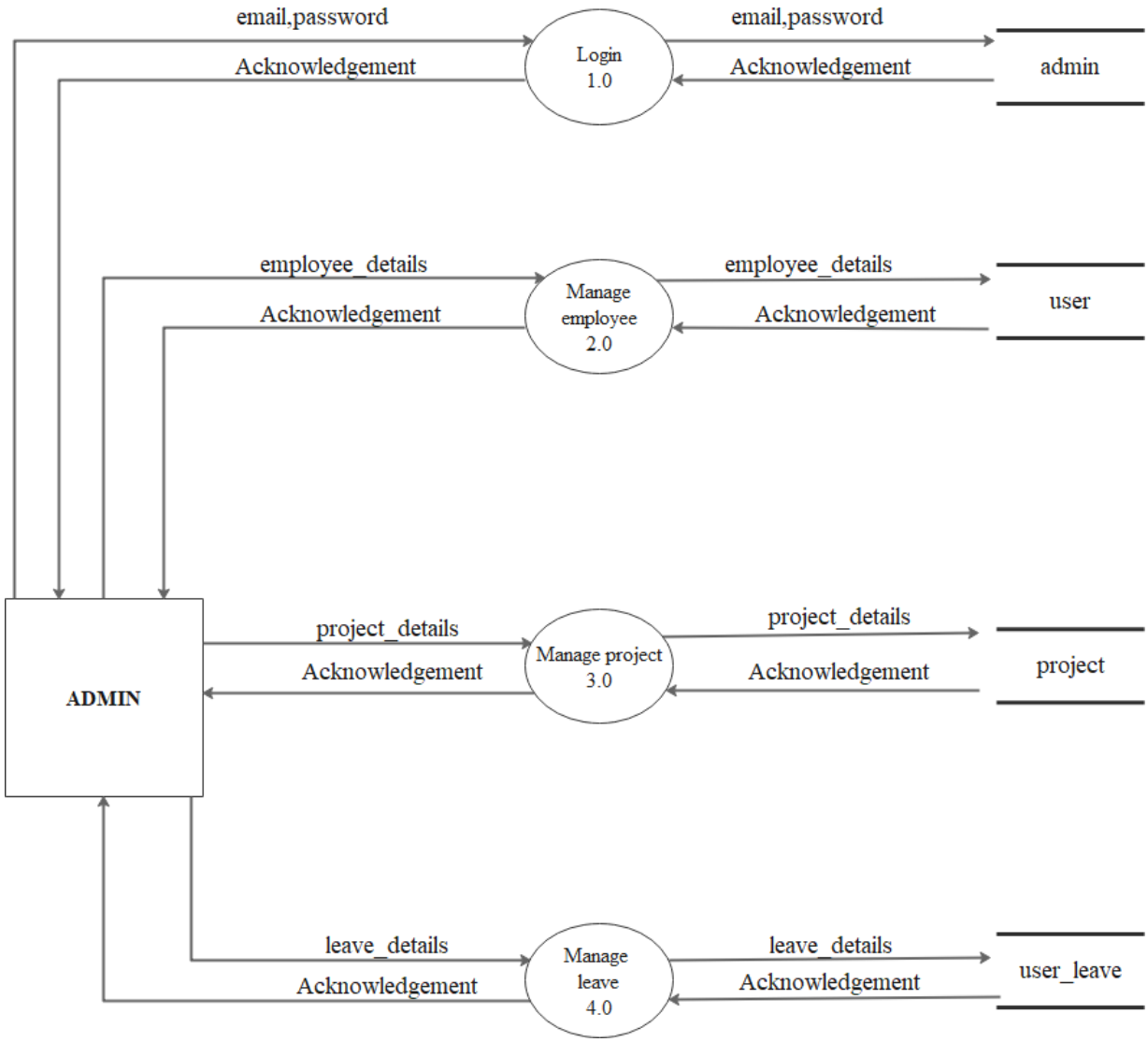
Symbols	Description
	**Entity:** Entities are external to the system which interacts by inputting the data.
	**System:** It shows the system name.
	**Process:** It shows the part of the system that transforms into outputs.
	Data Flow: It passes the data from one part to another.
	**Data Store:** Data store is represented by two parallel lines. It is generally logical file or database.

Level 0: context



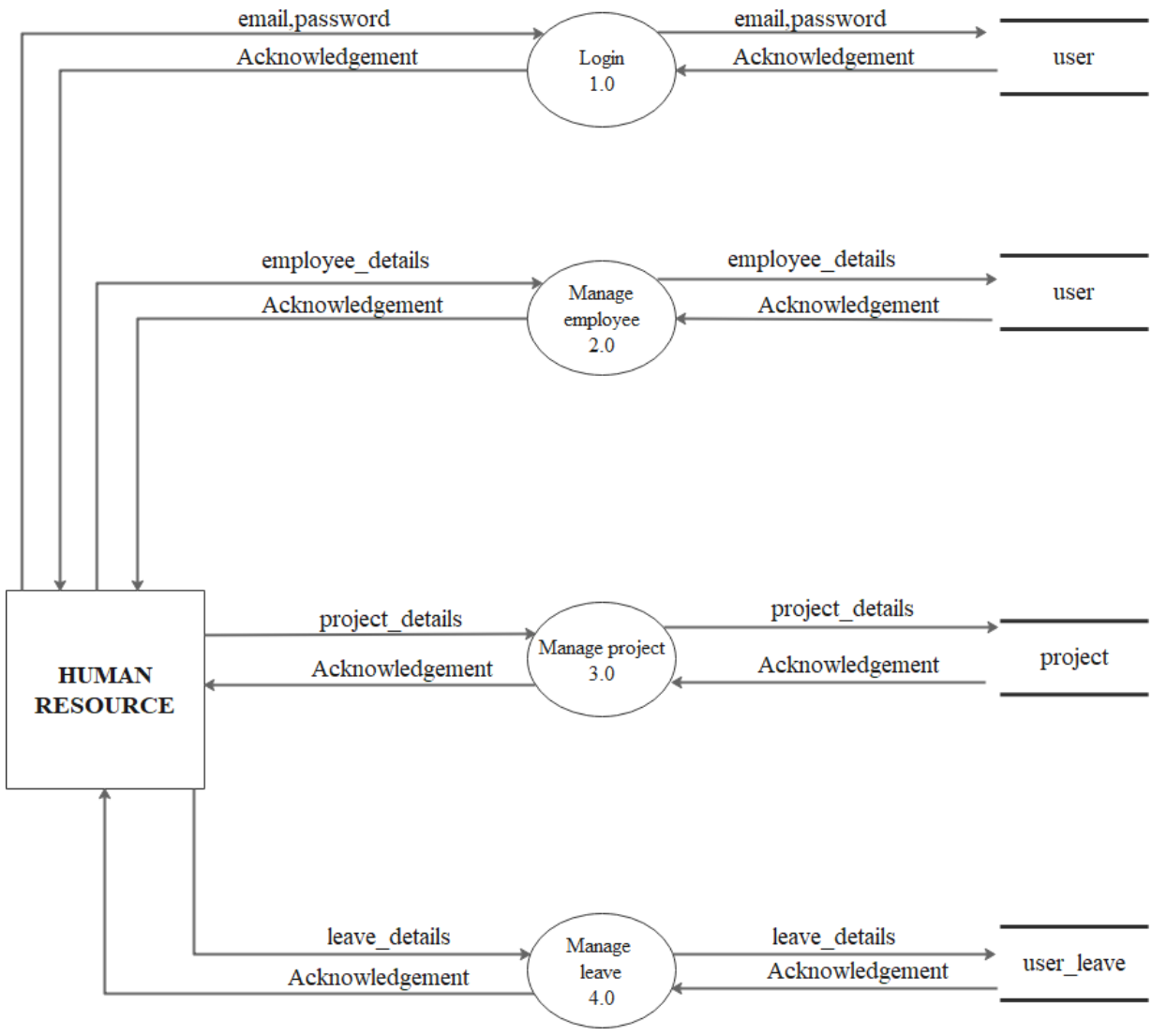
[Figure 2: Context level]

Level 1: Admin



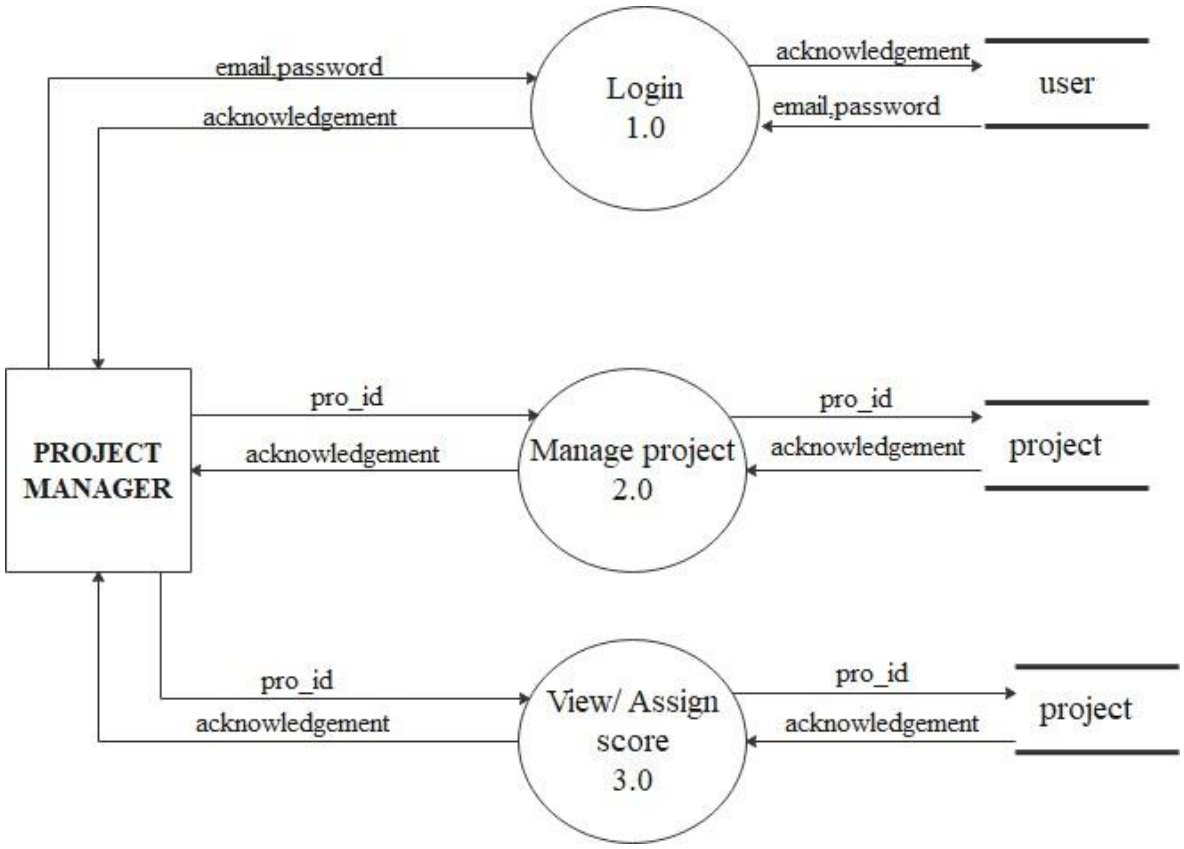
[Figure 3: DFD Level 1: Admin]

Level 1: HUMAN RESOURCE



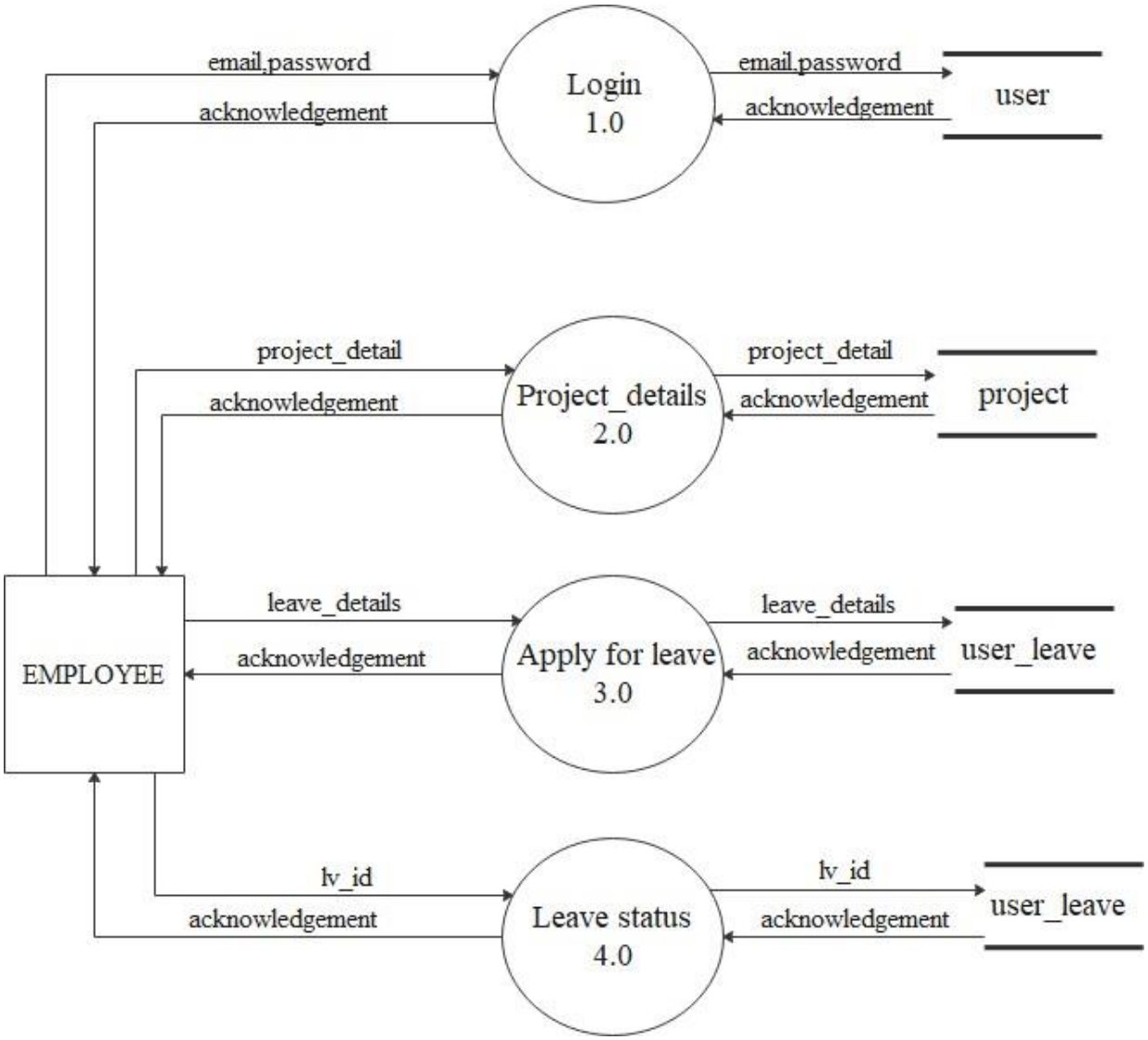
[Figure 4: DFD Level 1: Human Resource]

Level 1: Project Manager



[Figure 5: DFD Level 1: Project manager]

Level 1: EMPLOYEE

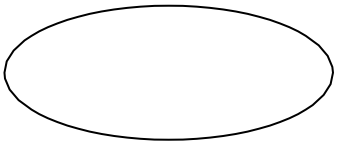
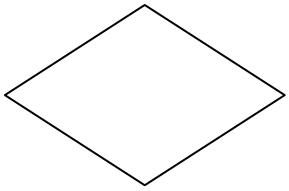
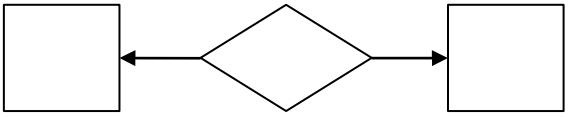
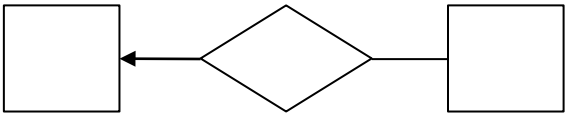
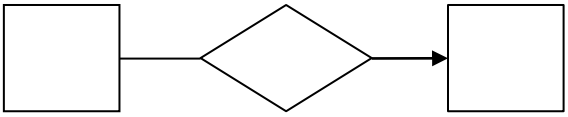
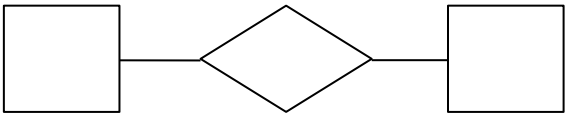


[Figure 6: DFD Level 1: Employee]

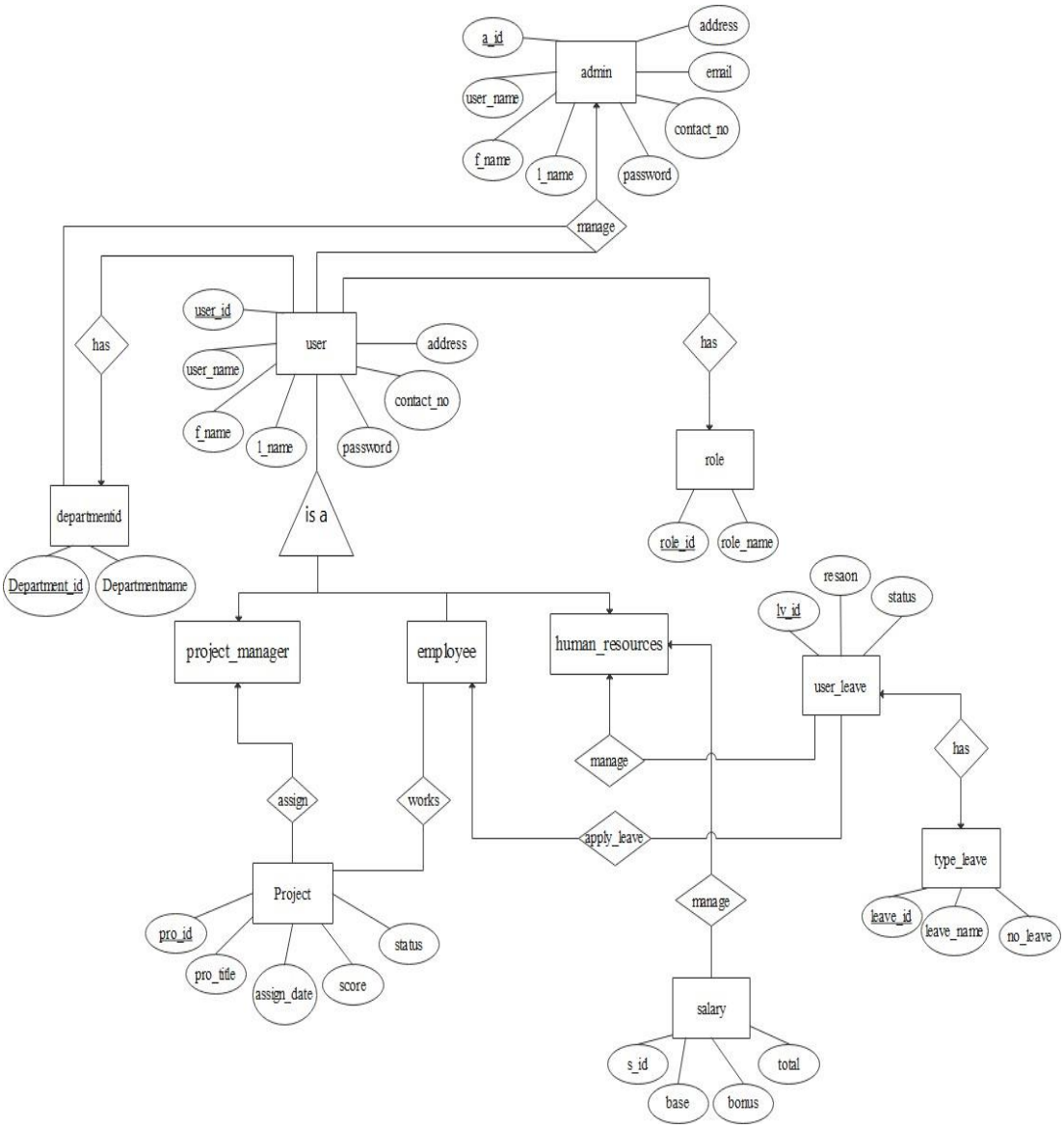
3.2 ER-Diagram

An Entity Relationship (ER) Diagram is a type of flowchart that illustrates how "entities" such as people, objects or concepts relate to each other within a system. ER Diagrams are most often used to design or debug relational databases in the fields of software engineering, business information systems, education and research. Also known as ERDs or ER Models, they use a defined set of symbols such as rectangles, diamonds, ovals and connecting lines to depict the interconnectedness of entities, relationships and their attributes. They mirror grammatical structure, with entities as nouns and relationships as verbs.

[Table 3: ER-Diagram Symbols]

Symbols	Description
	**Entity:** Data object is real world entity or thing. It is represented by a rectangle shape. An entity is an object or concept about which you want to store information.
	**Attributes:** An attribute is property of characteristic of an entity. It is represented by oval shape.
	**Relationship:** Entity are connected each other via relations. Generally, relationships in binary because there are two entities are related to each other.
	**Cardinality (One to One):** An instance of entity A can relate to one instances of entity B.
	**Cardinality (One to Many):** An instance of entity A can relate to one or many instances of B but we can only relate one instance of A.
	**Cardinality (Many to One):** One or more instances of entity A can relate to one instances of B.
	**Cardinality (Many to Many):** One or more instances of entity A can relate to one more instance of entity B.

ER-Diagram:



[Figure 7: ER Diagram]

CHAPTER-4
SYSTEM MODELING

4.1 Database Dictionary

1. **Table Name :** admin
   Primary Key: a_id

[Table 1: admin]

SR.NO	FIELD NAME	DATATYPE(SIZE)	CONSTRAINT	DESCRIPTION
1	a_id	Int(3)	Primary key	Admin's id
2	Fname	Varchar(15)	Not null	Admin's firstname
3	Lname	Varchar(15)	Not null	Admin's lastname
5	Password	Varchar(15)	Not null	Password of admin
6	contact_no	Bigint(13)	Unique key	Contact no of admin
7	Email	Varchar(30)	Unique key	Email of admin
8	Address	Varchar(100)	Not null	Address of admin
9	Dob	Date	Not null	Date of birth
10	Doj	Date	Not null	Date of join
11	a_pic	Varchar(30)	Not null	Picture of admin

2. **Table Name:** user
   Primary Key: user_id
   Foreign key: ROLE_ID, dep_Id

[Table 2: user]

SR.NO	FIELD NAME	DATATYPE(SIZE)	CONSTRAINT	DESCRIPTION
1	user_id	Int(3)	Primary key	Id of user
2	Username	Varchar(10)	Unique key	User's name
3	Firstname	Varchar(15)	Not null	User's first name
4	Lastname	Varchar(15)	Not null	User's last name
5	Password	Varchar(10)	Not null	User's password
6	contact_no	Bigint(13)	Unique key	User's contact_no
7	Email	Varchar(30)	Unique key	User's email
8	Address	Varchar(100)	Not null	User's address
9	DOB	Date	Not null	Dob of user
10	DOJ	Date	Not null	Doj of user
11	emp_pic	Varchar(100)	Not null	Picture of user
12	ROLE_ID	Int(3)	Foreign key	Role of user
13	dep_Id	Int(3)	Foreign key	Department of user
14	Salary	Int(10)	Not null	User's Salary
15	medical_lv	Int(10)	Not Null	User Medical Leave
16	casual_lv	Int(10)	Not Null	User Casual Leave
17	lwp_lv	Int(10)	Not Null	User lwp Leave

3. **Table Name:** role
   Primary Key: role_id

[Table 3: role]

SR.NO	FIELDNAME	DATATYPE(SIZE)	CONSTRAINT	DESCRIPTION
1	ROLE_ID	Int(3)	Primary key	Role id of user
2	role_name	Varchar(30)	Unique key	Role name of user

4. **Table Name:** departmentid
   Primary Key: dep_id

[Table 4: departmentid]

SR.NO	FIELD NAME	DATATYPE(SIZE)	CONSTRAINT	DESCRIPTION
1	dep_id	Int(3)	Primary key	Id of department
2	dep_name	Varchar(30)	Unique key	Department name

5. **Table Name:** project
   Primary Key: pro_id
   Foreign key: user_id

[Table 5: project]

SR.NO	FIELDNAME	DATATYPE(SIZE)	CONSTRAINT	DESCRIPTION
1	pro_id	Int(3)	Primary key	Project id
2	user_id	Int(3)	Foreign key	User id
3	pro_title	Varchar(50)	Unique key	Project title
4	pro_desc	Varchar(50)	Not null	Project description
5	assign_date	Date	Not null	Assign date
6	DOS	Date	Not null	Date of start
7	due_date	Date	Not null	Due date
8	p_type	Int(1)	Not null	Project Type
9	G_type	Int(1)	Not null	Group Type
10	pro_work	Varchar(50)	Not null	Project Work
11	status	Varchar(10)	Not null	Project Status

6. **Table Name :** user_leave
   Primary Key: lv_id
   Foreign key : user_id , lvtype_id

[Table 6: user_leave]

SR.NO	FIELD NAME	DATATYPE(SIZE)	CONSTRAINT	DESCRIPTION
1	lv_id	Int(3)	Primary key	User's Leave id
2	user_id	Int(3)	Foreign key	User's name
3	lvtype_id	Int(3)	Foreign key	Types of leaves
4	Dos	Date	Not null	Date of start
5	Doe	Date	Not null	Date of end
6	Reason	Varchar(100)	Not null	Reason for leave
7	Status	Varchar(20)	Not null	Status for leave

7. **Table Name :** type_leave
   Primary Key: leave_id

[Table 7: type_leave]

SR.NO	FIELD NAME	DATATYPE(SIZE)	CONSTRAINT	DESCRIPTION
1	leave_id	Int(3)	Primary key	Leave id
2	leave_name	Varchar(20)	Not null	Leave name
3	no_leaves	Int(3)	Not null	Number of leaves

8. **Table Name :** Salary
   Primary Key: salary_id
   Foreign key : user_id , dep_id

[Table 8: user_leave]

SR.NO	FIELD NAME	DATATYPE(SIZE)	CONSTRAINT	DESCRIPTION
1	salary_id	Int(3)	Primary key	User's salary id
2	user_id	Int(3)	Foreign key	User Id
3	dep_id	Int(3)	Foreign key	Department Id
4	Base Salary	Int(6)	Not null	Base Salary Of Employee
5	Bonus	Int(5)	Not null	Salary Bonus
6	Total	Int(10)	Not null	Total