Assignment 3

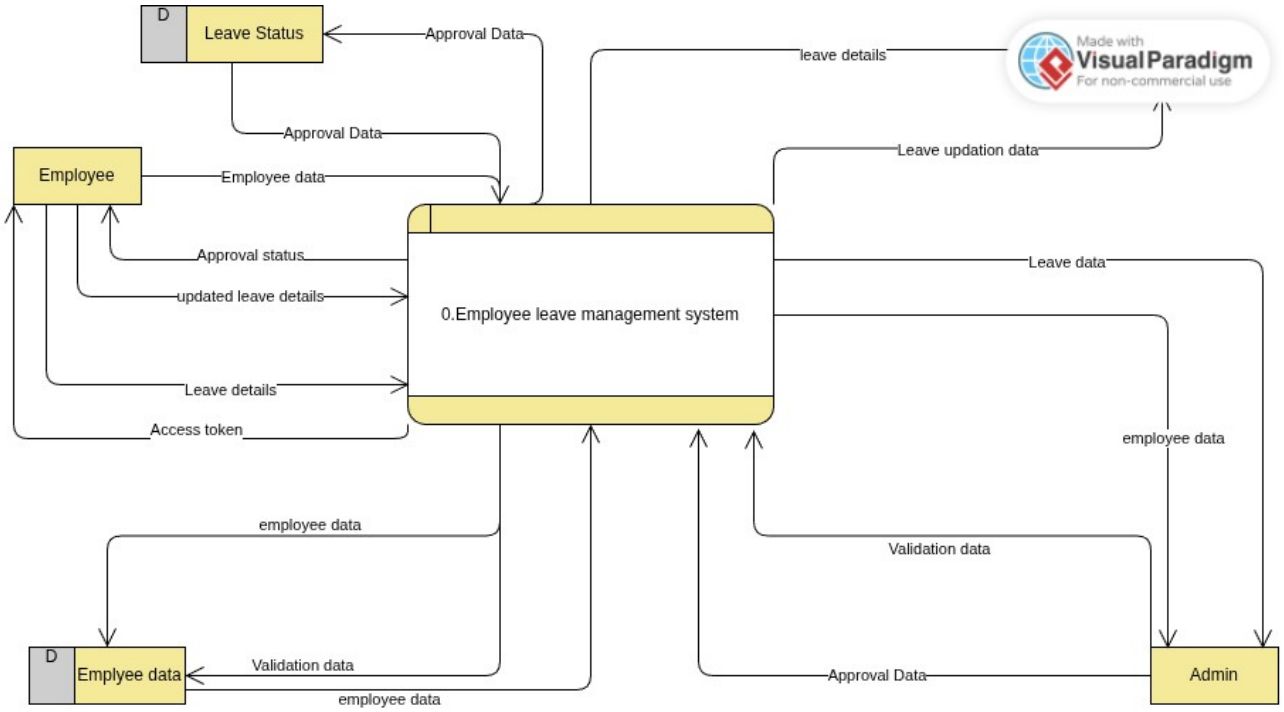
Problem statement: Employee Leave Management System

Group details:

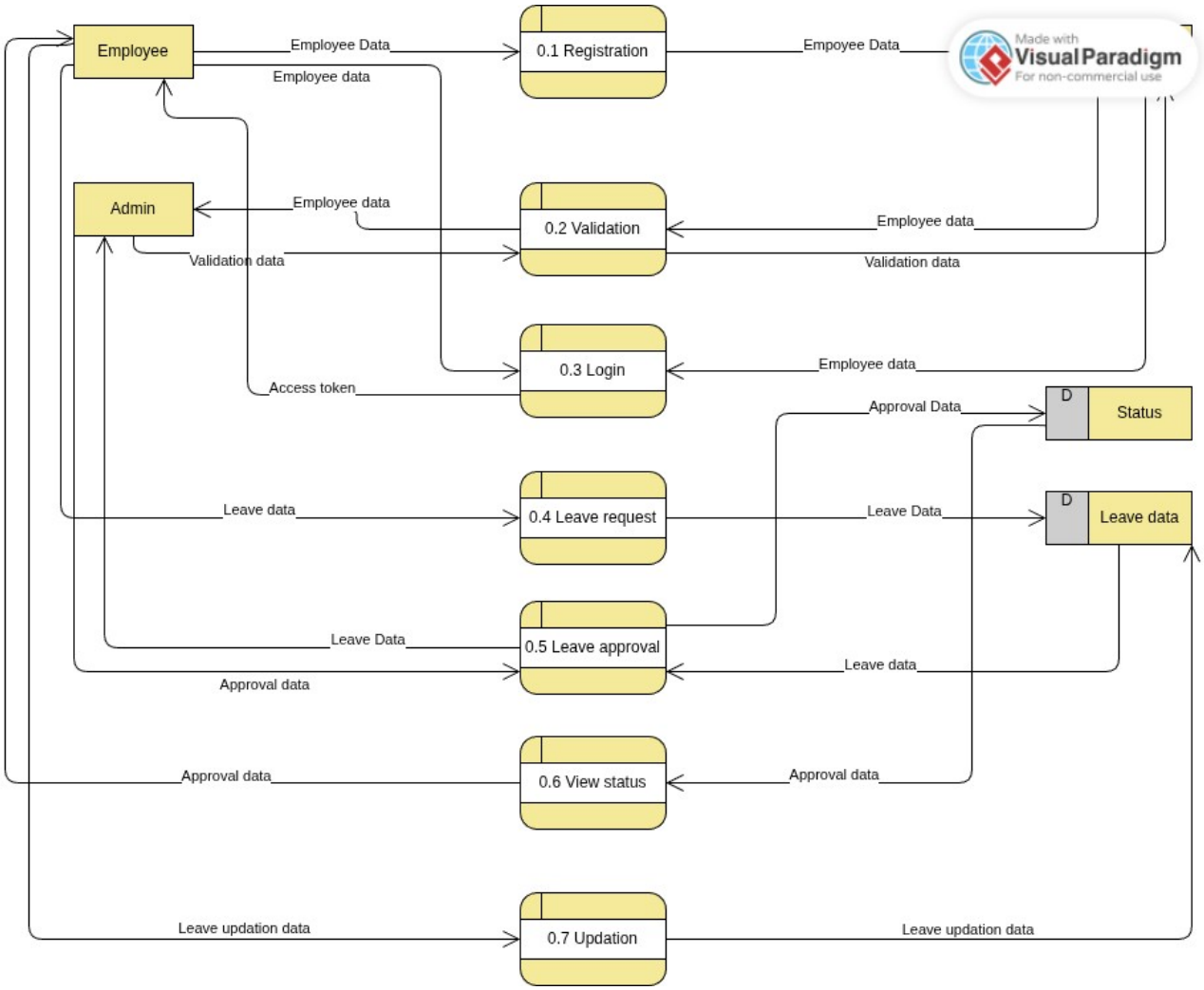
Name	**Roll no**
Sougata Patra	25
Puja Sarkar	10
Arpan Mondal	2

Data flow diagrams:

DFD L0:



DFD L1:


Employee
Employee Data
Employee data
0.1 Registration
Empoyee Data
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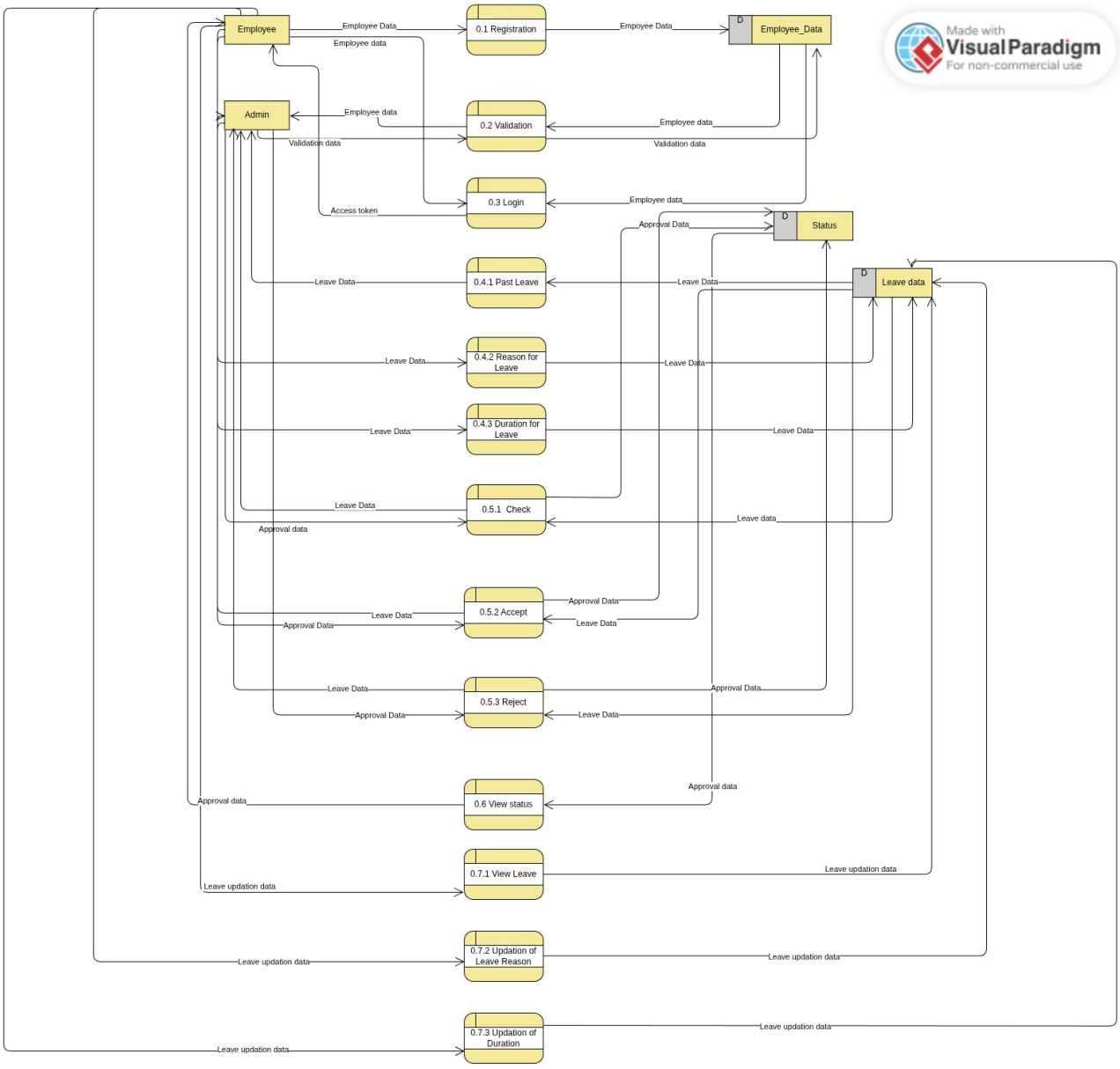
Admin
Employee data
0.2 Validation
Employee data
Validation data
Validation data
0.3 Login
Employee data
Access token
Approval Data
D
Status
Leave data
0.4 Leave request
Leave Data
D
Leave data
Leave Data
0.5 Leave approval
Leave data
Approval data
Approval data
0.6 View status
Approval data
Leave updation data
0.7 Updation
Leave updation data

DFD L2:


Employee
Admin
0.1 Registration
0.2 Validation
0.3 Login
0.4.1 Past Leave
0.4.2 Reason for Leave
0.4.3 Duration for Leave
0.5.1 Check
0.5.2 Accept
0.5.3 Reject
0.6 View status
0.7.1 View Leave
0.7.2 Updation of Leave Reason
0.7.3 Updation of Duration
D Employee_Data
D Status
D Leave data
Employee Data
Employee data
Empoyee Data
Validation data
Access token
Approval Data
Leave Data
Approval data
Leave updation data
Leave data
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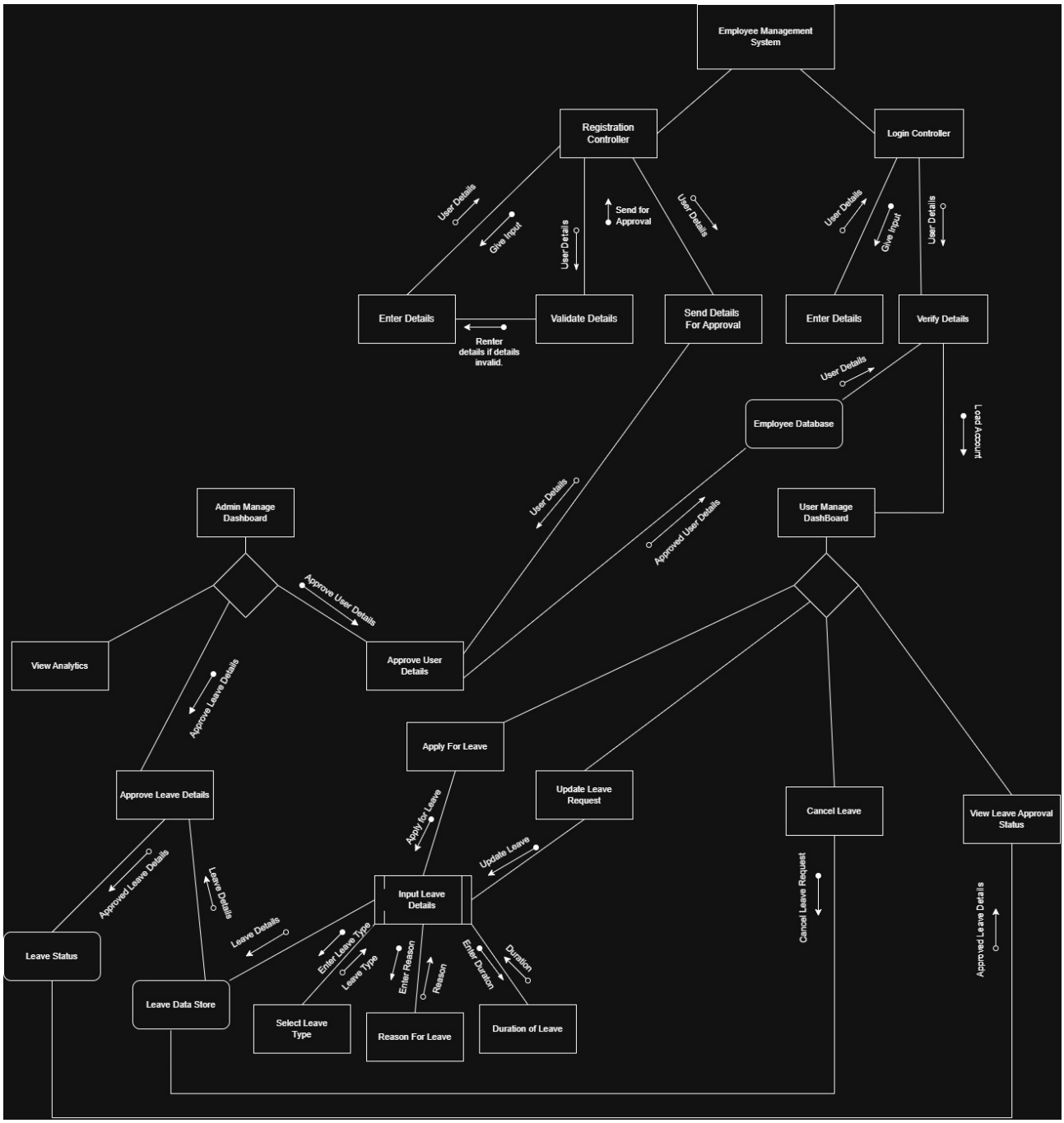
Structure chart:



Data dictionary:

Class no.	Data class	Serial no.	Data field name
1	Registration credentials	1.1	employee_id
		1.2	first_name
		1.2	last_name
		1.3	email
		1.4	password_hash
		1.5	department
		1.6	contact_number
		1.7	hire_date
		1.8	manager_id
		1.9	role
		1.10	is_approved
2	Login credentials	2.1	email
		2.2	password
		2.3	employee_id
3	Leave type	3.1	name
		3.2	description
		3.3	max_days_per_year
		3.4	leave_type_id
4	Leave request	4.1	employee_id
		4.2	leave_type_id
		4.3	start_date
		4.4	end_date
		4.5	total_days
		4.6	reason
		4.7	status
		4.8	approver_id
		4.9	approval_date
		4.10	admin_comments
		4.11	submission_date
		4.12	last_updated
5	Leave balance	5.1	balance_id
		5.2	employee_id
		5.3	leave_type_id
		5.4	used_days
		5.5	remaining_days
		5.6	last_updated

Data field name	Data type	Description	Process	Modules used	Example
employee_id	String	Unique ID assigned to each employee	0.1, 0.2	Registration controller, Login controller, Enter details, Validate details, Verify details, Send for approval, Approve details, View analytics, Apply for leave	HR-230451-XD
first_name	Varchar(50)	Employee’s first name	0.1, 0.2	Registration controller, Login controller, Enter details, Validate details, Verify details, Send for approval, Approve details, View analytics, Apply for leave	John
last_name	Varchar(50)	Employee’s last name	0.1, 0.2	Registration controller, Login controller, Enter details, Validate details, Verify details, Send for approval, Approve details, View analytics, Apply for leave	Doe
email	Varchar(100)	Employee’s email address	0.1, 0.2	Registration controller, Login controller, Enter details, Validate details, Verify details, Send for approval, Approve details, View analytics, Apply for leave	jhondoe@gmail.com
password_hash	Varchar(255)	Hashed password	0.1, 0.2	Registration controller	$2y$10$VmWQfkTyWRmeFv6DkMx65.FwMgNBJei/q1V9HKBflnndDZ5ENNSOu
department	Varchar(50)	Department name	0.1, 0.2	Registration controller, View analytics	HR
contact_number	Varchar(15)	Employee’s contact number	0.1, 0.2	Registration controller, View analytics	7956125496
hire_date	Date	Date employee joined the organization	0.1, 0.2	Registration controller, View analytics	24/10/25
manager_id	Integer	Reference to manager (admin)	0.1, 0.2	Registration controller, Enter details, Validate details, Send for approval, Approve details, View analytics, Apply for leave	HR-264359-DF
role	Enum(‘Employee’, ‘Admin’)	Defines access level	0.1, 0.2	Registration controller, Login controller	Employee
is_approved	Boolean	Registration approval status	0.1, 0.2	Registration controller, Login controller, Validate details, Verify details	FALSE

Data field name	Data type	Description	Process	Modules used	Example
email	Varchar(100)	Employee’s email address	0.3	Login controller, Enter details, View analytics	jhondoe@gmail.com
password	String	Plain text password	0.3	Login controller, Enter details	strongPassword123
employee_id	String	Unique ID assigned to each employee	0.3	Registration controller, Login controller, Enter details, Validate details, Verify details, Send for approval, Approve details, View analytics, Apply for leave	21

Data field name	Data type	Description	Process	Modules used	Example
name	Varchar(50)	Name of the leave type	0.4, 0.5, 0.6, 0.7	Apply for leave, Update leave request, Enter leave type	Sick Leave
description	Text	Description of leave policy	0.4, 0.5, 0.6, 0.7	Apply for leave, Update leave request, Reason for leave	Sick leave policy allows employees to take paid or unpaid leave when ill or injured, ensuring recovery without job loss. Medical proof may be required for extended absences.
max_days_per_year	Integer	Maximum allowable leave days	0.4, 0.5, 0.6, 0.7	Apply for leave	15
leave_type_id	Integer	Id of the leave	0.4, 0.5, 0.6, 0.7	Apply for leave, Update leave request	1234

Data field name	Data type	Description	Process	Modules used	Example
employee_id	Integer	Employee who applied for leave	0.4, 0.5, 0.6, 0.7	Registration controller, Login controller, Enter details, Validate details, Verify details, Send for approval, Approve details, View analytics, Apply for leave	HR-230451-XD
leave_type_id	Integer	Type of leave	0.4, 0.5, 0.6, 0.7	Apply for leave, Update leave request, Enter leave type	1234
start_date	Date	Leave start date	0.4, 0.5, 0.6, 0.7	Apply for leave, Duration of leave,Update leave request	10/09/2026
end_date	Date	Leave end date	0.4, 0.5, 0.6, 0.7	Apply for leave, Duration of leave, Update leave request	12/09/2026
total_days	Integer	Number of leave days	0.4, 0.5, 0.6, 0.7	Apply for leave, Duration of leave, Update leave request	2
reason	Text	Reason for leave	0.4, 0.5, 0.6, 0.7	Apply for leave, Reason of leave, Update leave request	Doctor's appointment
status	Enum(‘Pending’, ‘Approved’, ‘Rejected’, ‘Cancelled’)	Leave status	0.4, 0.5, 0.6, 0.7	Approve leave details , View approval status	Pending
approver_id	Integer	Admin who approved/rejected	0.4, 0.5, 0.6, 0.7	Approve leave details, Apply for leave	HR-264359-DF
approval_date	Date	Date of approval/rejection	0.4, 0.5, 0.6, 0.7	Approve leave details , View approval status	09/09/2025
admin_comments	Text	Comments by admin on decision	0.4, 0.5, 0.6, 0.7	Approve leave details , View approval status	Stay safe
submission_date	Timestamp	Request creation time	0.4, 0.5, 0.6, 0.7	Apply for leave,Approve leave details	08/09/2025 19:03:23
last_updated	Timestamp	Last modification time	0.4, 0.5, 0.6, 0.7	Update leave details	08/09/2025 19:03:23

Data field name	Data type	Description	Process	Modules used	Example
balance_id	Integer	Unique record for each employee-leave type pair	0.4,0.5,0.7	Apply for leave, Update leave details, Approve leave details	6761
employee_id	Integer	Employee reference	0.4,0.5,0.7	Apply for leave, Update leave details, Approve leave details, View analytics	HR-230451-XD
leave_type_id	Integer	Leave type reference	0.4,0.5,0.7	Apply for leave, Update leave details, Approve leave details	1234
used_days	Integer	Total leave taken	0.4,0.5,0.7	Apply for leave, Update leave details, Approve leave details, View analytics	2
remaining_days	Integer	Accrued - Used	0.4,0.5,0.7	Apply for leave, Update leave details, Approve leave details, View analytics	12
last_updated	Timestamp	Last update timestamp	0.4,0.5,0.7	Apply for leave, Update leave details, Approve leave details	08/09/2025 19:03:23