LONDON METROPOLITAN UNIVERSITY

islington college
(इस्लिङ्टन कलेज)

Module Code & Module Title

CS5002NI Software Engineering

Assessment Weightage & Type

20% Group Coursework

Year and Semester

2018-19 Autumn

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Submitted to: **Er. Rajesh Dware**

Assignment Due Date: **21 January 2019**

Assignment Submission Date: **21 January 2019**

We confirm that we understand our coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for our assignment to be accepted and marked. We are fully aware that late submissions will be treated as non-submission and a mark of zero will be awarded.

Table of Contents

Table of Figure

Table of tables

1. Introduction

In this coursework, we are required to create a fitness application system. The following coursework contributes 20% of the overall marks for this module and involves group work. We would like to thank the module leader and the college for providing us the opportunity to work on this topic.

In order to complete this coursework, we have some certain objectives that we need to complete. The objectives of this coursework are:

- We need to demonstrate practical knowledge of 'Structured Software Engineering' (Yourdon)
- We need to work in small group to a given time period.

Since, the coursework is related to fitness application. Here, the gym is named as Fitness GYM and they are facing a huge problem in maintaining records of the customer with their payment details. In order to reduce the problem, we are required to develop a system. We need to analyze the requirements of the system.

This fitness system helps in maintaining the records of all its users. The first process records the data of the customers who are willing to join the GYM. The system requires the customer to pay certain amount to register. The system consists of different features including de-registering customers if not active for a month, once de-registered only the admin can register the customer again. The records of the customers contain full name, date of birth, username, password, location, date of registration, payment amount and payment type.

2. Group Tasks

2.1. Environmental model specification

2.1.1. Data Flow Diagram

Data flow diagram is a graphical tool that allows user to represent flow of data in an information system. Here, the system can be physical or logical, manual or computer based. DFD shows the movement of data between entities and processes. It also includes representing the functions graphically and distributing data between system and its environment and between entities within a system. (Hoffer et al., 2008)

2.1.1.1. Context level Diagram

DFD Level 0 is a basic system process or the whole system after analyzing the requirements. The DFD 0 Level is also called a Context Diagram. The diagram helps to understand the different process of the system just-by a glance. The glance of the diagram shows the high-level process with the relationship to the entities. (Lucid Chart, 2017)

2.1.1.2. Level 1 DFD

The Level 1 DFD is the detailed specifications of the process available in the 0 Level DFD. The diagram provides the detailed pieces of the context level DFD. All the processes from the context diagram are divided into more subprocesses for better understanding. (Lucid Chart, 2017)

2.1.1.3. Level 2 DFD

After the division of the context diagram in Level 1 DFD, the level 1 DFD goes into more deeper segments of the process of level 1 DFD. This diagram may require increasing the number of process and adding more details. (Lucid Chart, 2017)

2.1.2. Context level diagram

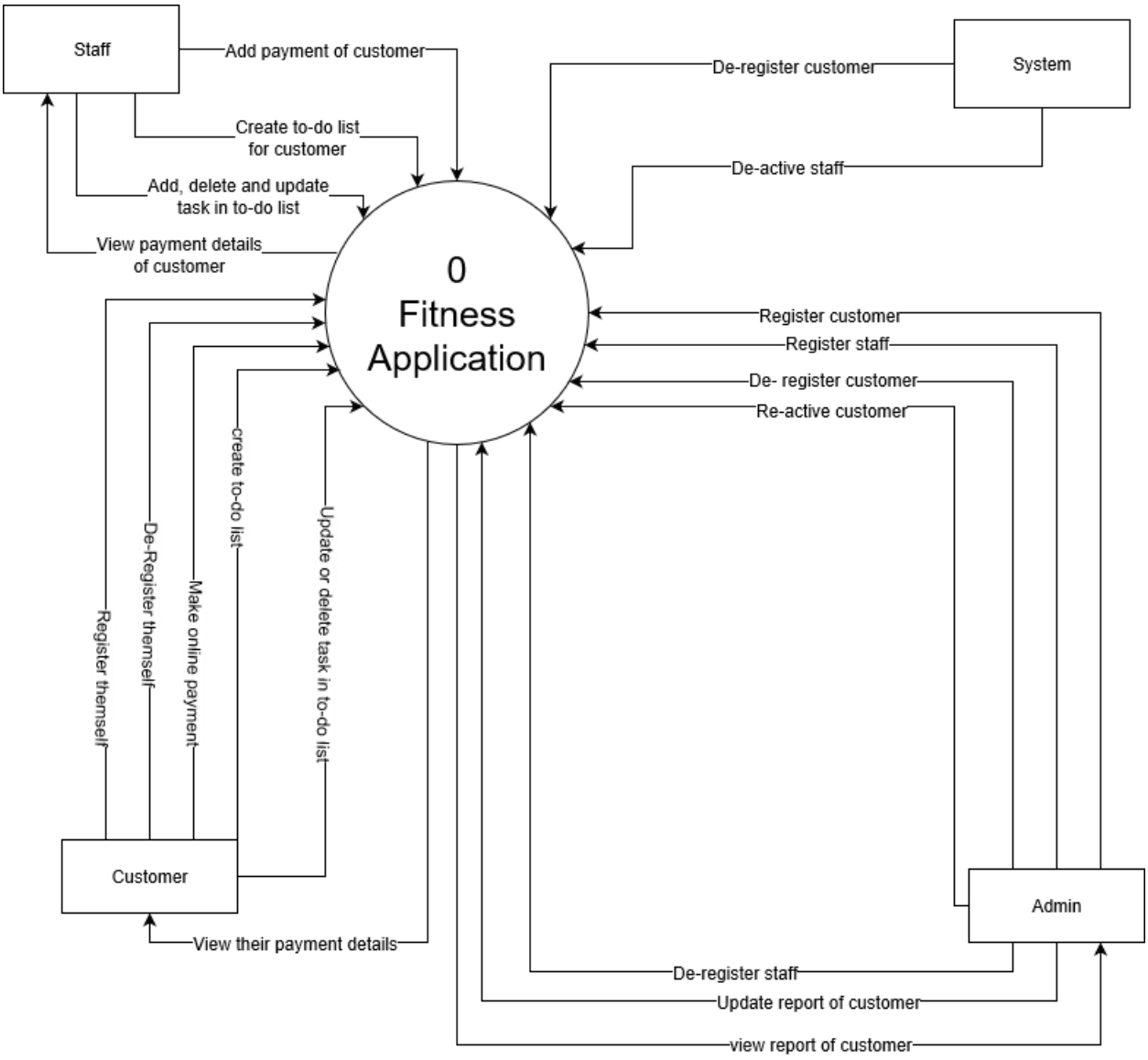


Figure 1 Group-Context level diagram

2.1.3. The level 1 DFD fragments

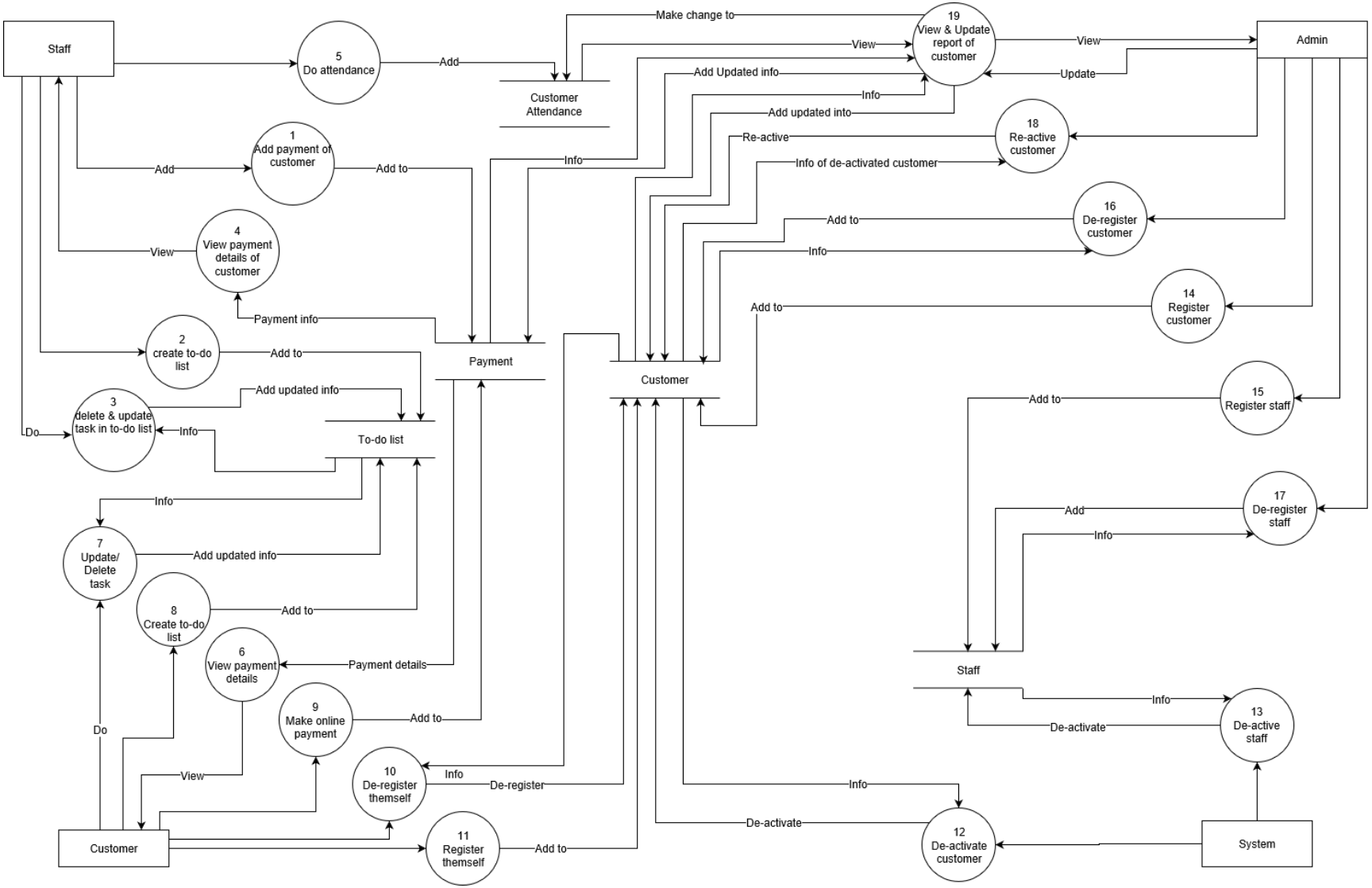


Figure 2 Group- Level 1 DFD

2.1.4. The level 2 DFD for the particular function

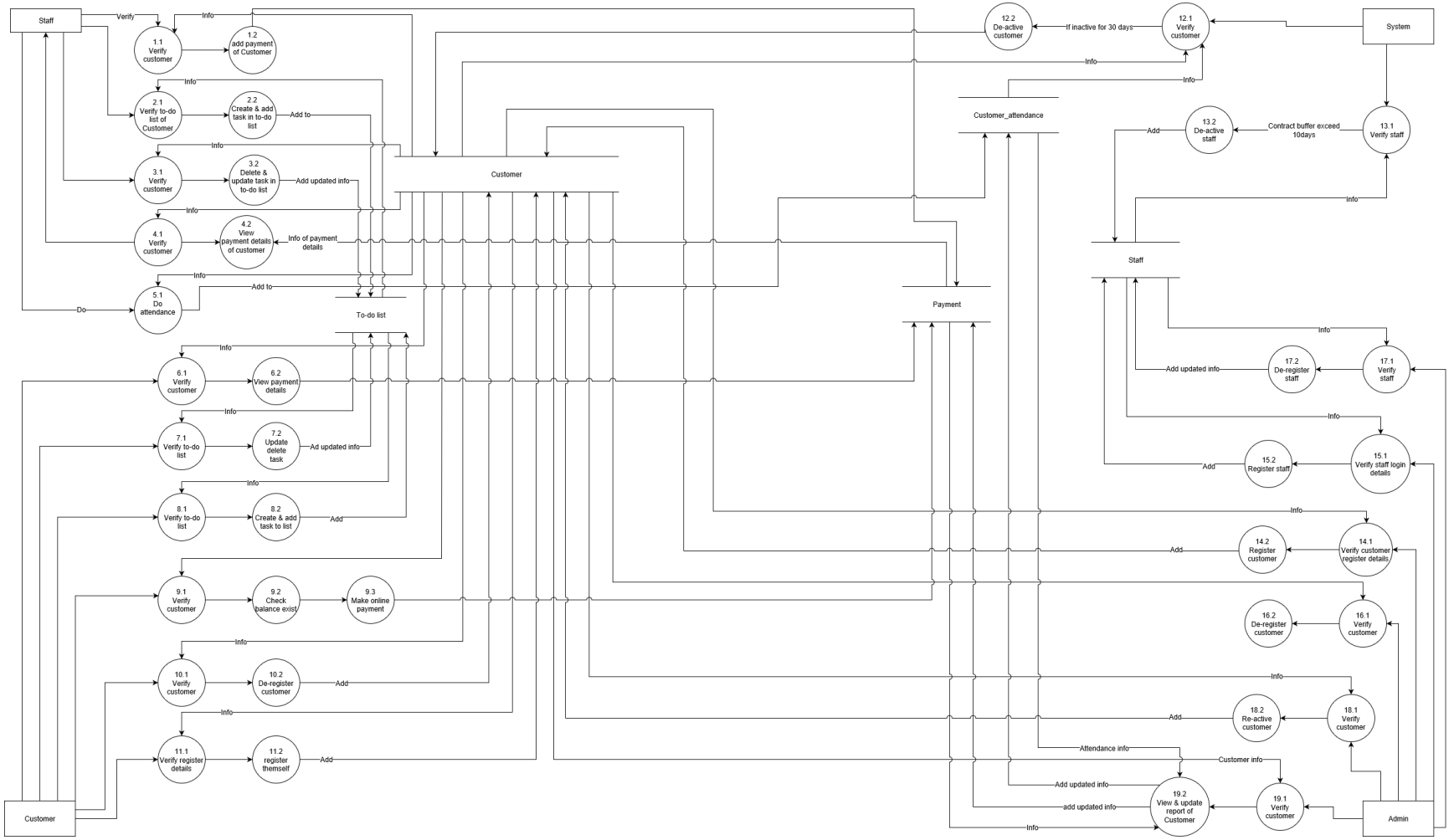


Figure 3 Group- Level 2 DFD

2.2. Internal model Specification

2.2.1. Entity Relationship Diagram (ERD)

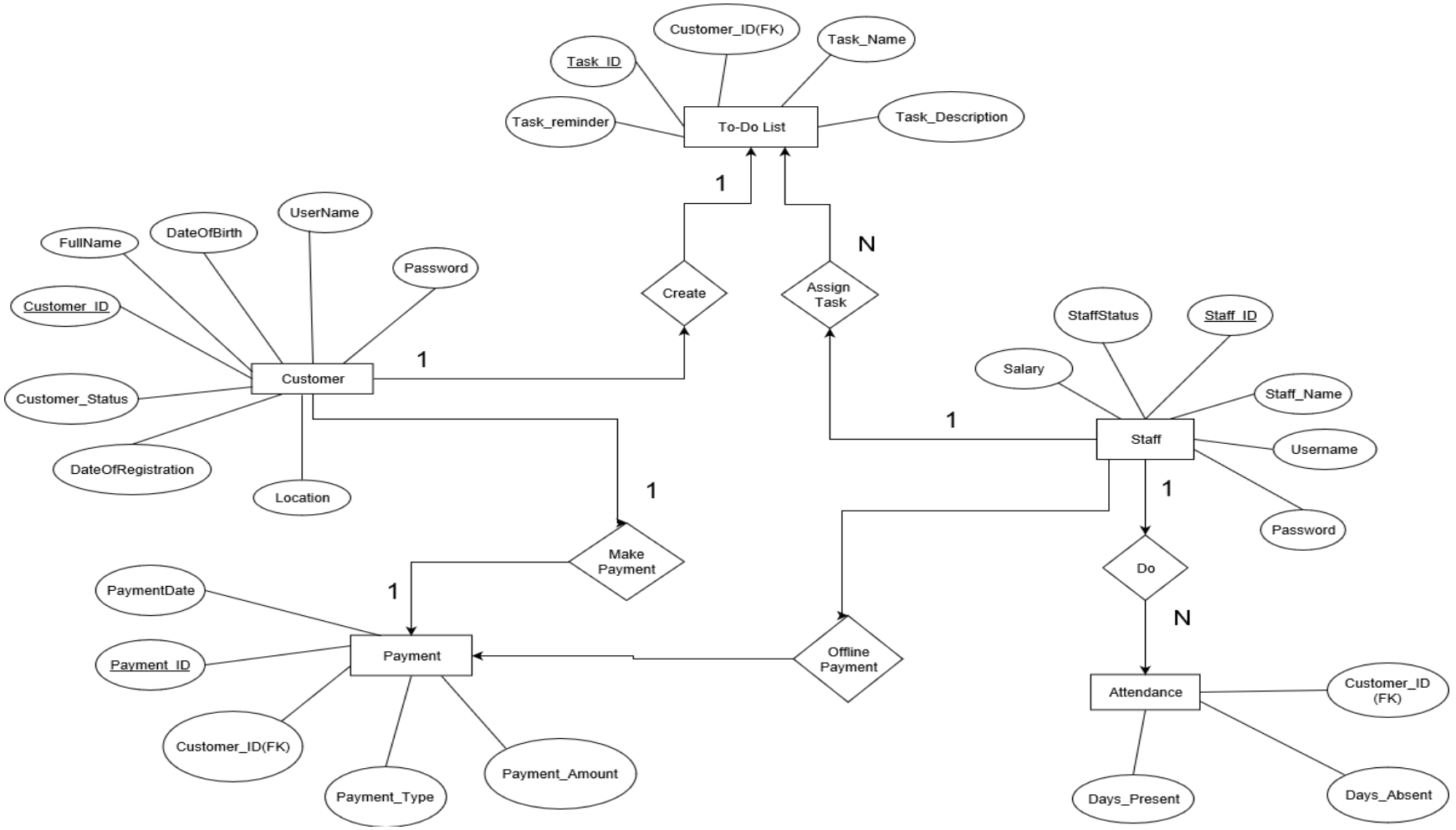


Figure 4 Group- ERD

2.2.2. Data Dictionary

2.2.2.1. Table: Customer

Entity Name	Entity description	Column Name	Column Description	Data type	Length	Primary key	Foreign key	Nullable	Unique	Notes
Customer	It records information of all the customers.	Customer_ID	Unique identity of a customer	INT	11	True	False	False	True	Auto Increment
		Full_Name	Full name of customer	VARCHAR	50	False	False	False	False	
		DOB	Date of birth of customer	VARCHAR	11	False	False	False	False	
		Username	Username of customer	VARCHAR	25	False	False	False	True	
		Password	Password of customer	VARCHAR	25	False	False	False	False	
		Location	Customer address	VARCHAR	50	False	False	False	False	
		DateOf Registration	Registered date	VARCHAR	11	False	False	False	False	

		Customer Status	Determines active or non-active customer	VARCHAR	10	False	False	False	False	

Table 1 Data Dictionary of Customer Table

2.2.2.2. Table: Staff

Entity Name	Entity Description	Column Name	Column Description	Data type	Length	Primary Key	Foreign Key	Nullable	Unique	Notes
Staff	It records information of all the staffs	Staff_ID	Unique identity of staff	INT	11	True	False	False	True	Auto Increment
		Staff_Name	Full name of staff	VARCHAR	50	False	False	False	False	
		Username	Username of staff	VARCHAR	25	False	False	False	True	
		Password	Password of staff	VARCHAR	25	False	False	False	True	
		Salary	Salary of staff	INT	11	False	False	False	False	
		StaffStatus	Status of staff	VARCHAR	25	False	False	False	False	

Table 2 Data Dictionary of Staff Table

2.2.2.3. Table: Attendance

Entity Name	Entity Description	Column Name	Column Description	Data type	Length	Primary Key	Foreign Key	Nullable	Unique	Notes
Attendance	It records number of present and absent days of customer	Customer_ID	Identity of customer	INT	11	True	False	False	True	Auto Increment
		Days_Present	Number of present days	INT	11	False	False	False	False	
		Days_Absent	Number of absent days	INT	11	False	False	False	False	

Table 3 Data Dictionary of Attendance Table

2.2.2.4. Table: To-Do list

Entity Name	Entity Description	Column Name	Column Description	Data type	Length	Primary Key	Foreign Key	Nullable	Unique	Notes
To-Do List	It records the list of tasks that an individual has to perform	List_ID	Unique identity of the task	INT	11	True	False	False	True	Auto Increment
		Customer_ID	Identity of customer	INT	11	False	True	False	False	
		Task_Name	Name of task to be performed	VARCHAR	50	False	False	False	False	
		Task_ Description	Description of the task	VARCHAR	100	False	False	False	False	

		TaskReminder	Store the reminder for the task	VARCHAR	25	False	False	False	False	

Table 4 Data Dictionary of To-Do list Table

2.2.2.5. Table: Payment

Entity Name	Entity Description	Column Name	Column Description	Data type	Length	Primary Key	Foreign Key	Nullable	Unique	Notes
Payment	It stores the details of payment made by customer.	Payment_ID	Unique identity of the payment	INT	11	True	False	False	True	Auto Increment
		Customer_ID	Identity of customer	INT	11	False	True	False	False	
		Payment_Type	Type of payment made	VARCHAR	25	False	False	False	False	
		Payment_Amount	Amount paid	INT	11	False	False	False	False	
		Payment_Date	Date of amount paid	DATE	25	False	False	False	False	

Table 5 Data Dictionary of Payment Table

2.2.3. Process Specification

2.2.3.1. Number: 1

Name: Add payment of customer

Description: This process adds the details of cash payment done by the customer to the payment table of database.

Input data flow: Customer username and password for verification.

Output Data Flow: Payment Amount of customer.

Type of Process: Online

Process Logic: To execute this process, first of all staff verify the customer and add the information of cash payment done by the customer to the payment table of database.

2.2.3.2. Number: 2

Name: Create To-do list

Description: This process creates To-do list for the customer along with adding and updating task in the to-do-list table of database.

Input Data flow: Customer username and password for verification.

Output Data flow: New Task_id, task_name and task_description.

Type of Process: Online

Process Logic: First of all, to-do list of customers is verified by staff and then new task is added to the list.

2.2.3.3. Number: 3

Name: Delete or update task in to-do list

Description: This process allows staff to delete task which is of no use along with update the existing task.

Input Data flow: Customer username and password

Output Data flow: Updated Task_id, task_name and task_description.

Type of process: Online

Process Logic: This process first verifies the To-do list of customers and make changes (delete or update task) to the list. The updated information is then again added to the To-do list table of database.

2.2.3.4. Number: 4

Name: View Payment details of customer

Description: This process allows staff to view payment details of the customer.

Input Data Flow: Customer username, password, payment_amount, payment_date, payment_type.

Output Data Flow: Payment_type, payment_date and payment_amount

Type of process: online

Process Logic: This process first verifies the customer from customer table and receive the payment information of verified customer from payment table which is then viewed by the staff.

2.2.3.5. Number: 5

Name: Do attendance

Description: This process allows staff to do attendance of the customer.

Input Data flow: Customer username, password.

Output data flow: Customer_ID, Days_present, Days_absent

Type of Process: Online

Process Logic: This process first gets the information from the customer table and adds the attendance report of customer to the attendance table.

2.2.3.6. Number: 6

Name: View payment details of them-self

Description: This process allows customer to view their payment details.

Input Data flow: Customer username, password, payment_amount, payment_date, payment_type.

Output Data flow: payment_amount, payment_date, payment_type.

Type of Process: Online

Process Logic: In this process, customer is first verified and then receive their payment information from payment table database.

2.2.3.7. Number: 7

Name: Update or delete task

Description: This process allows customer to make changes that is delete or update task in the To-do list table.

Input Data flow: username, password, task_id, task_name, task_description.

Output Data flow: updated task_id, task_name, task_description.

Type of Process: Online

Process Logic: In this process, customers are being verified to get logged in and then make changes to the task of To-do list table. The updated task is then again added to the To-do list of the verified customer.

2.2.3.8. Number: 8

Name: Create To-do list

Description: This process allows user to create their own to-do list and add task to them.

Input Data flow: username, password, task_id, task_name, task_description.

Output Data flow: new task_id, task_name, task_description

Type of Process: Online

Process Logic: In this process, customer is first verified from customer table. The verified customer then creates their own To-do list and add task along with the remainder information to them.

2.2.3.9. Number: 9

Name: Make online payment

Description: This process allows customer to make online payment to the Fitness GYM using Fitness Application.

Input Data flow: username, password, balance amount

Output Data flow: payment_date, payment_type, payment_amount

Type of Process: Online

Process Logic: In this process, customer after getting logged in to the system verify their balance amount. If the balance amount is enough, the customer can make online payment which adds the payment information to the payment table of database.

2.2.3.10. Number: 10

Name: De-register them-self

Description: This process allows customer to quit the gym and get de-registered from the fitness application.

Input Data flow: Customer username and password

Output Data flow: Updated customer information

Type of Process: Online

Process Logic: For the execution of this process, customer first verify themselves with proper username and password. After getting logged in, they can deregister themselves which adds the updated customer details to the customer table of database.

2.2.3.11. Number: 11

Name: Register them-self

Description: This process allows new customer to get registered to the Fitness GYM and use its fitness application.

Input Data flow: Existing username and password from customer table.

Output Data flow: New username, password, DOB, full name, Customer_Id, Customer_status, date of registration and location.

Type of Process: Online

Process Logic: To execute this process, first the new Username and password is checked with existing username and password from customer table. If the username does not match with the existing information, new customer is registered to the system.

2.2.3.12. Number: 12

Name: De-activate Customer

Description: This process allows system to automatically de-activate the customer being inactive for 30 days.

Input Data flow: Customer username, password, days_present, days_absent

Output Data flow: Customer_ID, Customer_Status

Type of Process: Online

Process Logic: This process is being executed by the system itself. For the execution of the process, system checks the present and absent days of customer. If the absent days exceeds 30 days, system has the privilege to automatically de-activate the customer.

2.2.3.13. Number: 13

Name: De-activate Staffs

Description: This process allows system to automatically de-activate the staff whose contract in not extended.

Input Data flow: Staff username, password, contract_time

Output Data flow: Staff_ID, Staff_Status

Type of Process: Online

Process Logic: This process is being executed by the system itself. For the execution of the process, system checks the contract and buffer time of staff. If the contact buffer exceeds 10 days, system then de-activate the customer.

2.2.3.14. Number: 14

Name: Register Customer

Description: This process allows admin of the Fitness Gym to register new customer to the Fitness application.

Input Data flow: Existing username and password from customer table.

Output Data flow: New username, password, DOB, full name, Customer_Id, Customer_status, date of registration and location.

Type of Process: Online

Process Logic: To execute this process, first the new Username and password is checked with existing username and password from customer table. If the username does not match with the existing information, new customer is being registered to the system.

2.2.3.15. Number: 15

Name: Register Staffs

Description: This process allows admin of fitness gym to register new staffs to the Fitness Application.

Input Data flow: Staffs username and password.

Output Data flow: New username, password, staff_name, staff_id, salary

Type of Process: Online

Process Logic: To execute this process, first the new Username and password is checked with existing username and password from staff table. If the username does not match with the existing information, new staff is being registered to the system.

2.2.3.16. Number: 16

Name: De-register Customer

Description: This process allows admin of Fitness Gym to remove / de-register customer from using the Fitness Application.

Input Data flow: customer username and password

Output Data flow: Updated customer information

Type of Process: Online

Process Logic: For the execution of this process, admin first verify customer with proper username and password. After the verification is completed, admin can de-register customer which adds the updated customer details to the customer table of database.

2.2.3.17. Number: 17

Name: De-register Staff

Description: This process allows admin of Fitness Gym to remove / de-register staffs from Fitness Application.

Input Data flow: Staffs username and Password

Output Data flow: Update staff Information

Type of Process: Online

Process Logic: For the execution of this process, admin first verify staff with proper username and password. After the verification is completed, admin can de-register staff and adds the updated staff details to the staff table of database.

2.2.3.18. Number: 18

Name: Re-activate Staffs or Customers

Description: This process provide privilege to admin of Fitness Gym to re-activate the staffs or customers that were de-activated by the system.

Input Data flow: Customer username, Customer_status, staff username, staff_status

Output Data flow: customer_status, staff_status

Type of Process: Online

Process Logic: For the execution of this process, admin verify customer or staff from their username and reactivate them if the they are found to be de-activated by the system.

2.2.3.19. Number: 19

Name: View and Update report of Customer

Description: This process allows Admin of Fitness Application to view and update reports of customer that are being generated by the system.

Input Data flow: customer username, password, Payment_type, Payment_amount, Days_present, Days_absent

Output Data flow: Payment_type, Payment_date, Payment_amount, Days_present, Days_absent

Type of Process: Online

Process Logic: For the execution of this process, admin first verify the customer. After the verification is completed, admin can view report of customer which includes attendance report, payment report and customer details.

2.3. Design Specification

Structure Chart for system

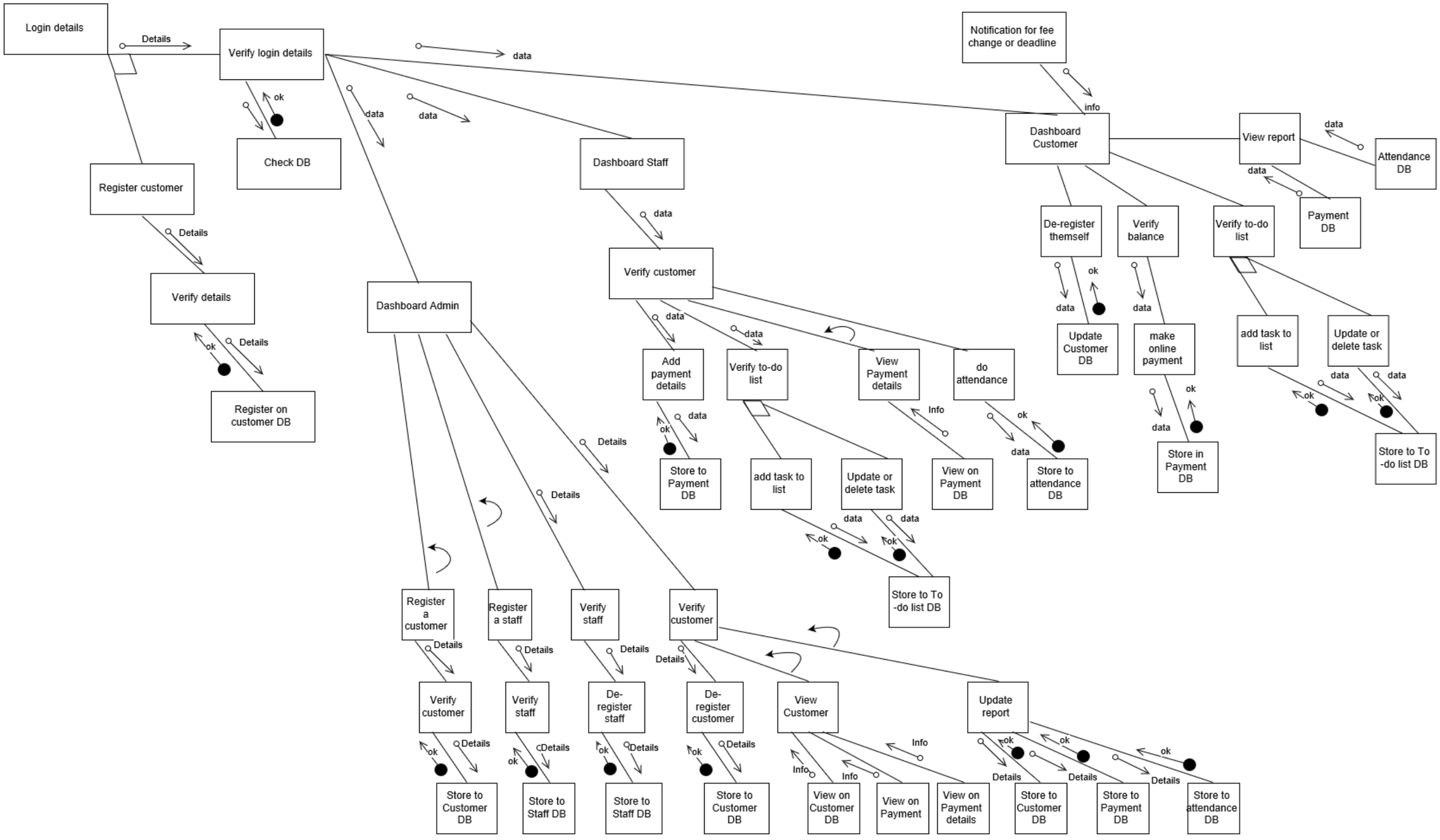


Figure 5 Structure Chart for Whole system

2.4. Assignment diary

2.4.1. All Assumptions

- Customer can make online payment to the system directly.
- Admin can view and update report of customer which include attendance report and their payment details.
- Staffs of the Fitness Gym do attendance of the customer.
- Customer and staff can view the view the payment details.

2.4.2. Omissions made in the provided specifications

No omissions are made from the provided specifications for designing context level, Data Flow Diagram and structure chart.

2.4.3. Group members responsibilities

Members Name	Task performed
Summit Shakya	Report of Customer
Indra Bahadur Oli	Payment of Customer
Unish Rajkarninar	Generate Report of customer
Swaraj Agrawal	To Do list

2.4.4. Group Meeting

2.4.4.1. Meeting 1

Meeting no.: 1

Date: **Thursday, 27 December 2018** Time: **12 AM to 2 PM**

Objective: Normal discussion for initiating our work and dividing task between group members.

Discussion

In the first meeting, we went through the question and made strategy for solving problem and divided our work accordingly. We also plan for the next meetings.

Achievement

From this discussion, we divided the task that are to be performed individually.

Members

Swaraj Agrawal

Indra Bahadur Oli

Summit Shakya

Unish Rajkarnikar

2.4.4.2. Meeting 2

Meeting no.: 2

Date: **Monday, 30 December 2018** Time: **11AM to 2 PM**

Objective: Creating Context level Diagram and level 1 DFD for group

Discussion

In the second meeting, we as a group discussed context level Diagram and Level 1 DFD for the **Fitness Application**.

Achievement

From this meeting, we completed group task for Context level Diagram and level 1 DFD.

Members

Swaraj Agrawal

Indra Bahadur Oli

Summit Shakya

Unish Rajkarnikar

2.4.4.3. Meeting 3

Meeting no.: 3

Date: **Friday, 04 December 2018** Time: **11AM to 2 PM**

Objective: Completing group task for Level 2 DFD and Structure chart

Discussion

In the third meeting, we four group members discussed about the level 2 DFD and Structure chart with proper research from valid resource.

Achievement

From this meeting, we completed our group task for Level 2 DFD and Structure chart for **Fitness Application.**

Members

Swaraj Agrawal

Indra Bahadur Oli

Summit Shakya

Unish Rajkarnikar

2.4.4.4. Meeting 4

Meeting no.: 4

Date: **Thursday, 10 January 2019** Time: **11AM to 2 PM**

Objective: Completing individual task

Discussion

In this meeting, we discussed about the individual task once again and proposed each member to complete the task.

Achievement

From this meeting, each member got ideas for doing their individual task related to creating Context level diagram, Level 1 DFD, Level 2 DFD and Structure chart.

Members

Swaraj Agrawal
Indra Bahadur Oli
Summit Shakya
Unish Rajkarnikar

2.4.4.5. Meeting 5

Meeting no.: 5

Date: **Friday, 18 January 2019** Time: **11AM to 2 PM**

Objective: Completing Module Specification, Process Specification and finalizing report for the coursework

Discussion

In this meeting, we discussed about the process and module specification and encourage every group member to complete the task.

Achievement

The module and process specification was finally completed and report for the coursework was made ready for submission.

Members

Swaraj Agrawal
Indra Bahadur Oli
Summit Shakya
Unish Rajkarnikar

3. Individual Tasks

3.1. Environmental model specification

3.1.1. Context level diagram: Register a customer

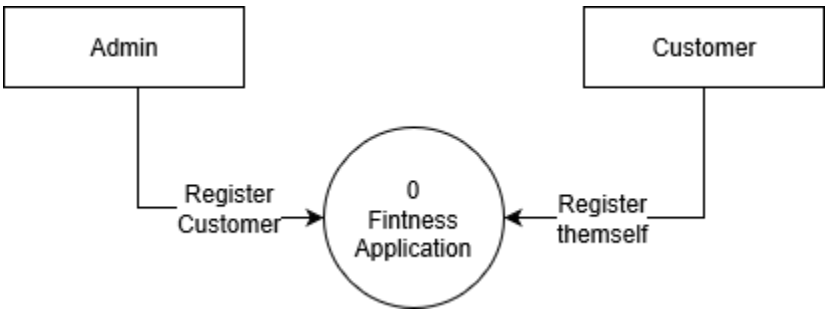


Figure 6 Context Level Diagram for register a Customer

Context level diagram of register customer gives the simple explanation of entity that register customer to the system. It shows that Admin can register customer and customer themselves can get registered to the Fitness Application.

3.1.2. Context level diagram: Payment of a customer

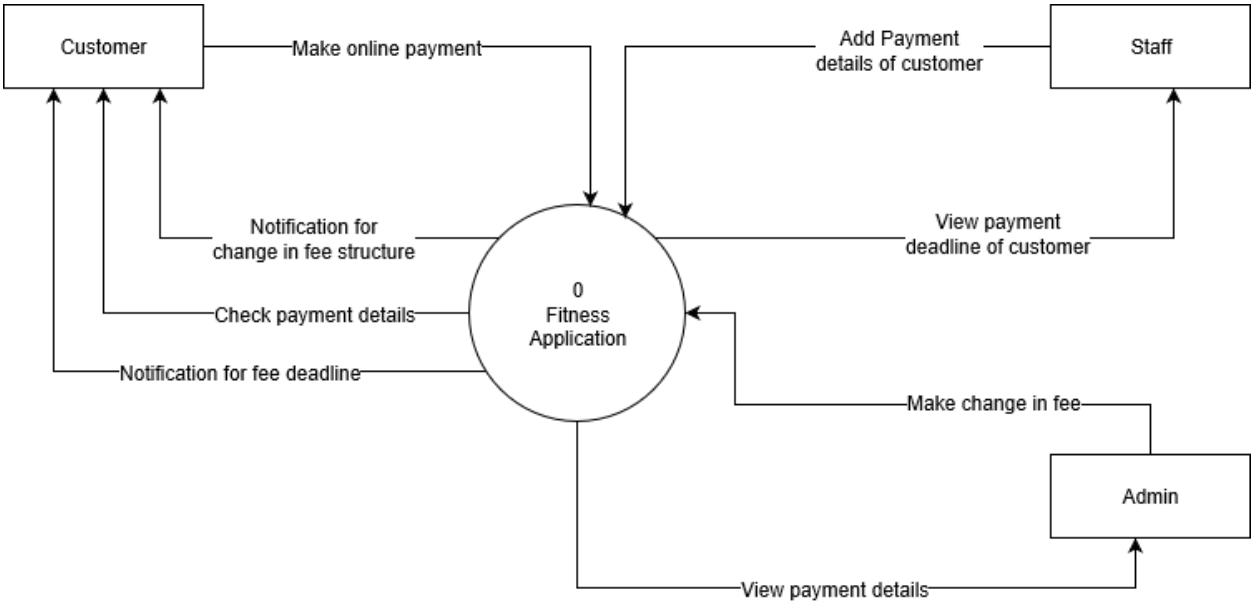


Figure 7 Context Level Diagram for payment of a Customer

Context level diagram of Payment of customer shows that Customer can make online payment, check payment details of themselves, get notification of change in fee structure along with the fee deadline. Staff is an entity related to the payment of customer for adding and viewing payment details of the customer. In addition, admin can also view payment along with making changes in the fee structure of customer

3.1.3. Context level diagram: Generate report of a customer

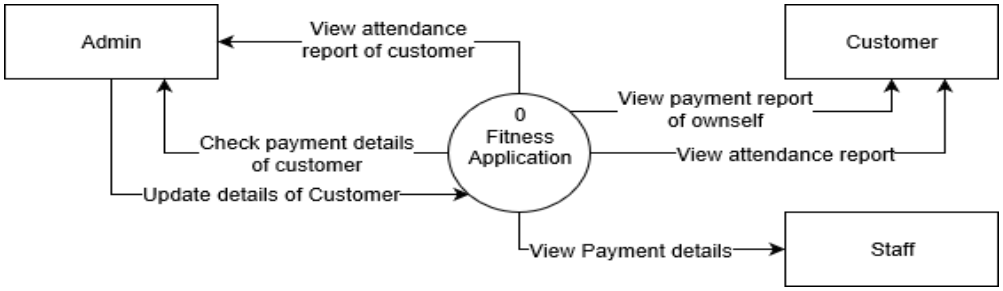


Figure 8 Context Level Diagram for Report of a Customer

Context level Diagram for Generate report of customer shows that Admin of fitness application can view and update attendance report or payment details of the customer. Customer can view their payment and attendance report as well. In addition, staff can view the payment details of the customer.

3.1.4. Context level diagram: To Do list

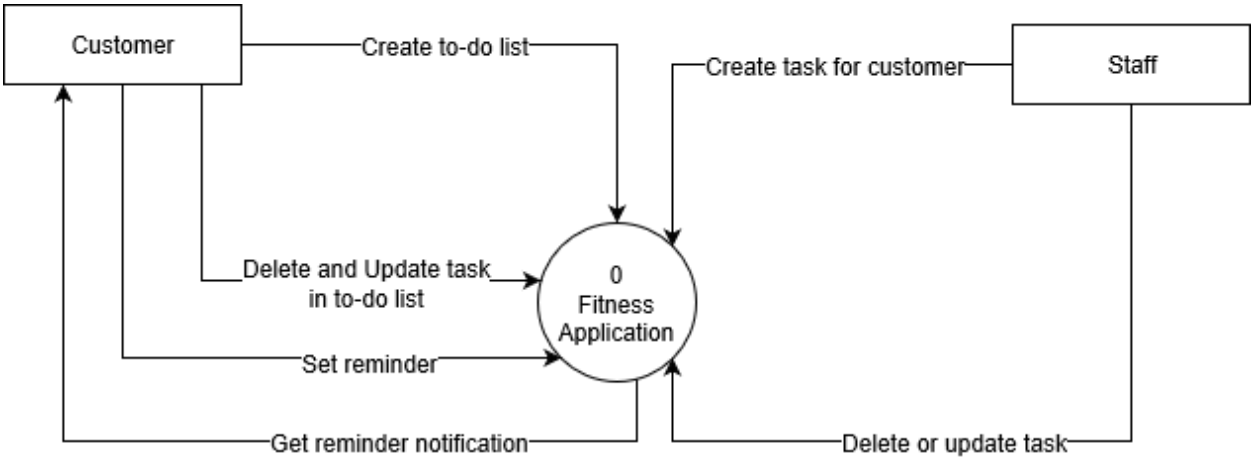


Figure 9 Context Level Diagram for To-Do list

Context level diagram of To Do List shows that Customer and staffs are the entities that performs operations related to the To Do List. Customer can create, delete and update task along with setting and receiving reminder notifications. In the same way, staff can also create delete and update task for the customer using Fitness application.

3.2. Internal Model Specification

3.2.1. The level 1 DFD fragments

3.2.1.1. Level 1 DFD: Register a customer

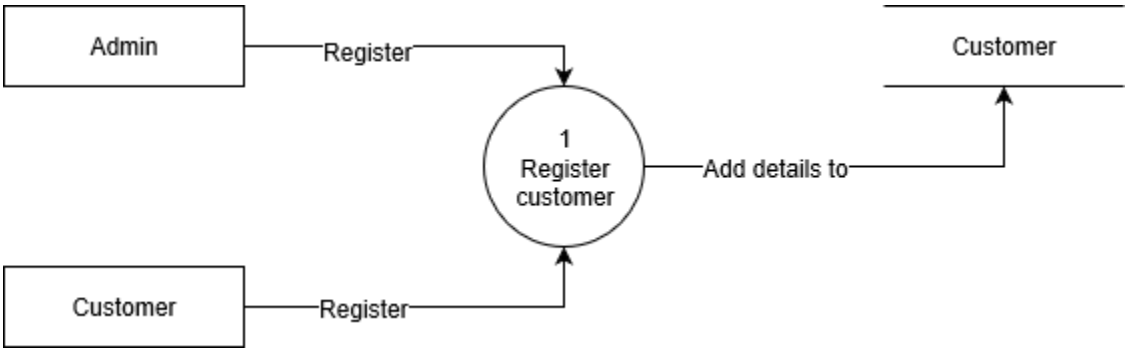


Figure 10 Level 1 DFD for Register a Customer

From the Level 1 DFD of register a customer, we can assume that the entity admin registers a customer through the process named register customer, which then sends the details of the customer to the customer database. In addition, when a customer register himself, it also goes through the same process and is stored to database.

3.2.1.2. Level 1 DFD: Payment of a customer

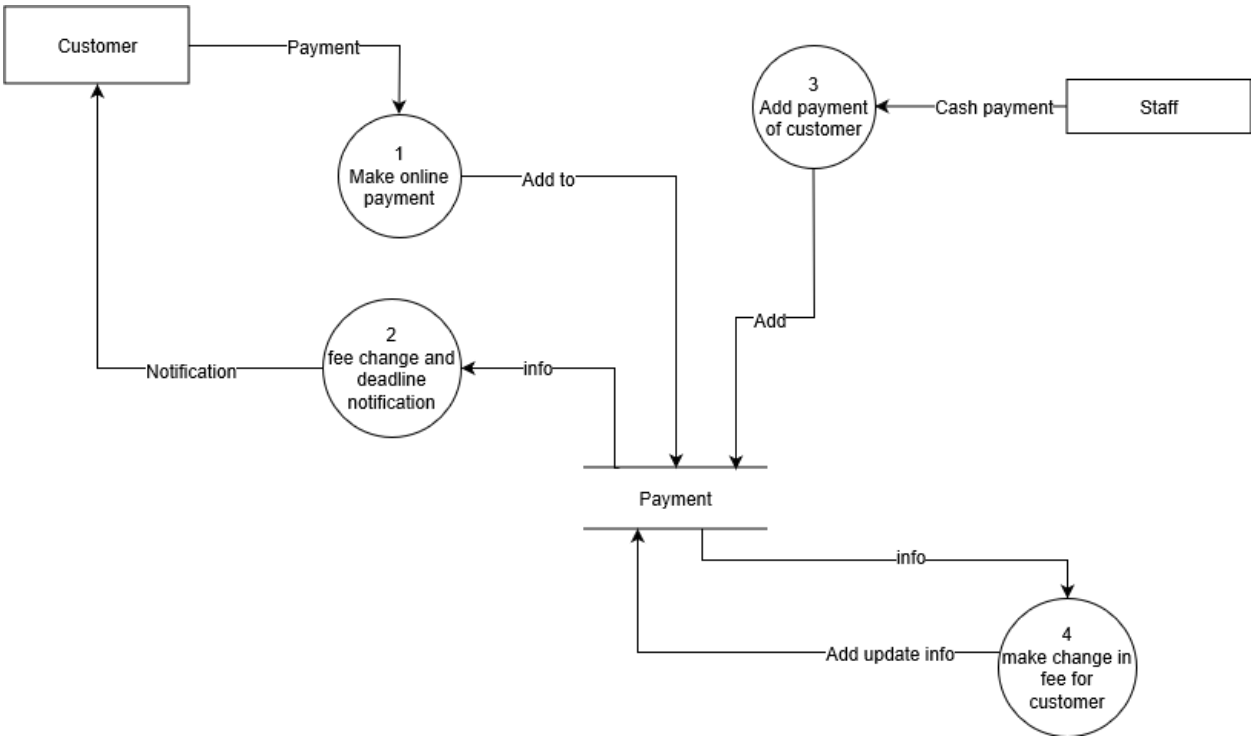


Figure 11 Level 1 DFD for Payment of a Customer

As shown above, the figure represents the data flow of the payment module. This module contains only two entities customer and staff. The customer is responsible for making payments through online method and staff is responsible for receiving payment from the customers through cash and storing to payment database. Here, the staff can also make changes to the customer fee which is updated to the database and the system notifies the customer through another process.

3.2.1.3. Level 1 DFD: Generate report of a customer

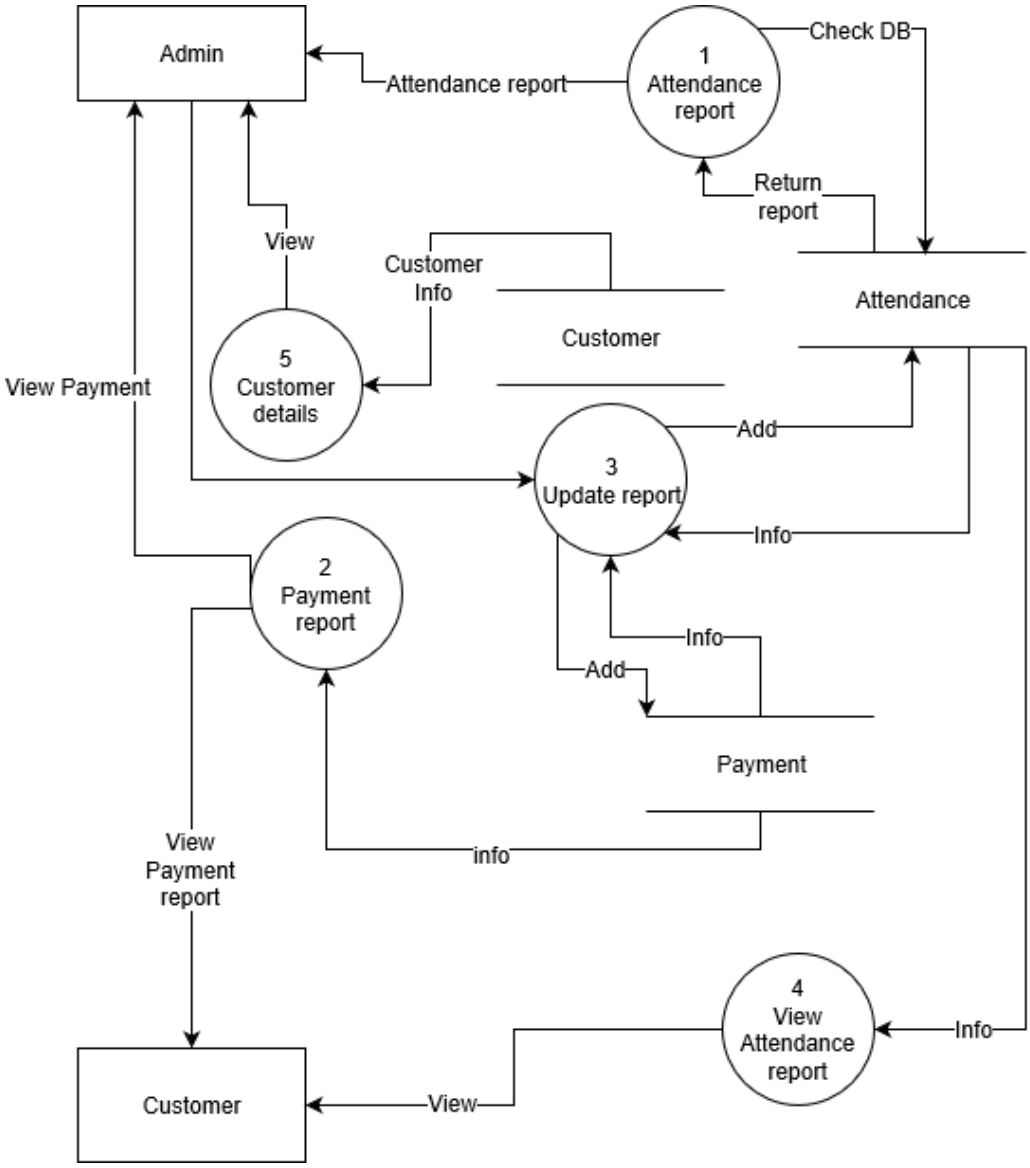


Figure 12 Level 1 DFD for Report of a Customer

Here, the Level 1 DFD of Generate report of customer shows the admin generating report of attendances and payments of the customer, which is retrieved from their respective databases and can make changes to it if required. The customer is also eligible for generating his payment and attendance report through the processes. Moreover, staff of the Fitness can also view the payment details of the customer.

3.2.1.4. Level 1 DFD: To do list

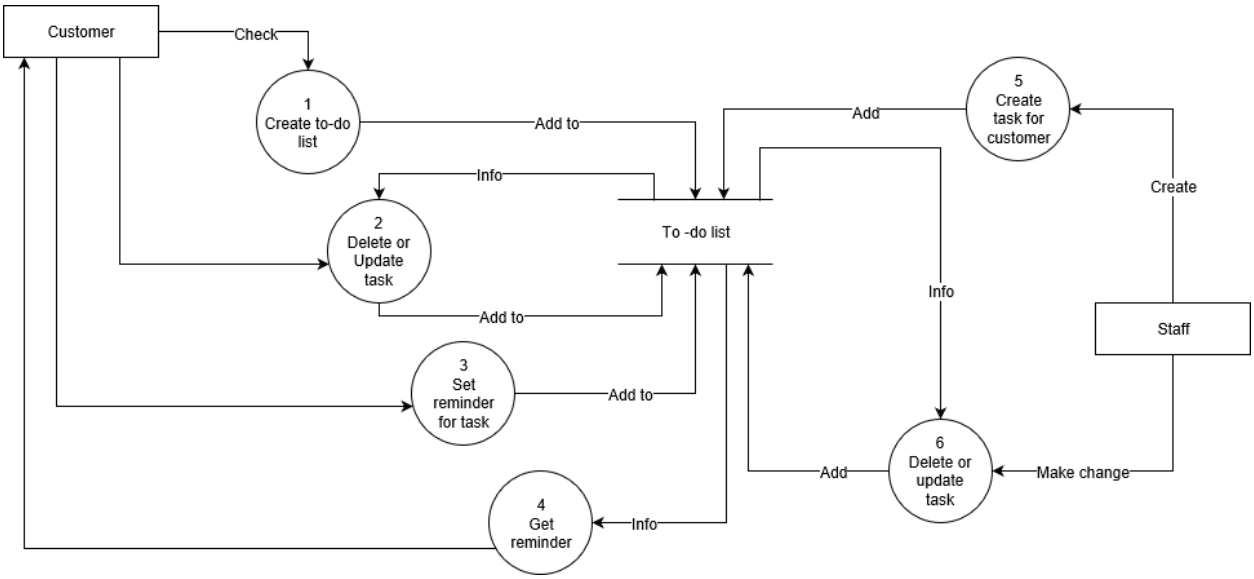


Figure 13 Level 1 DFD for To-Do List

In the above Level 1 DFD of To Do list, the customer entity customer creates a to-do list for himself which is added to the database named to-do list. The entity customer can delete or update the task and again stored to the database. The other process the customer can achieve in this module are the customer can set a reminder for completing the tasks and gets a reminder through another process. In this module, the other entity is named staff who can also delete and update the tasks for the customer. Atlas, the staff also creates the to-do list.

3.2.2. The level 2 DFDs for the particular function

3.2.2.1. Level 2 DFD: Register a customer

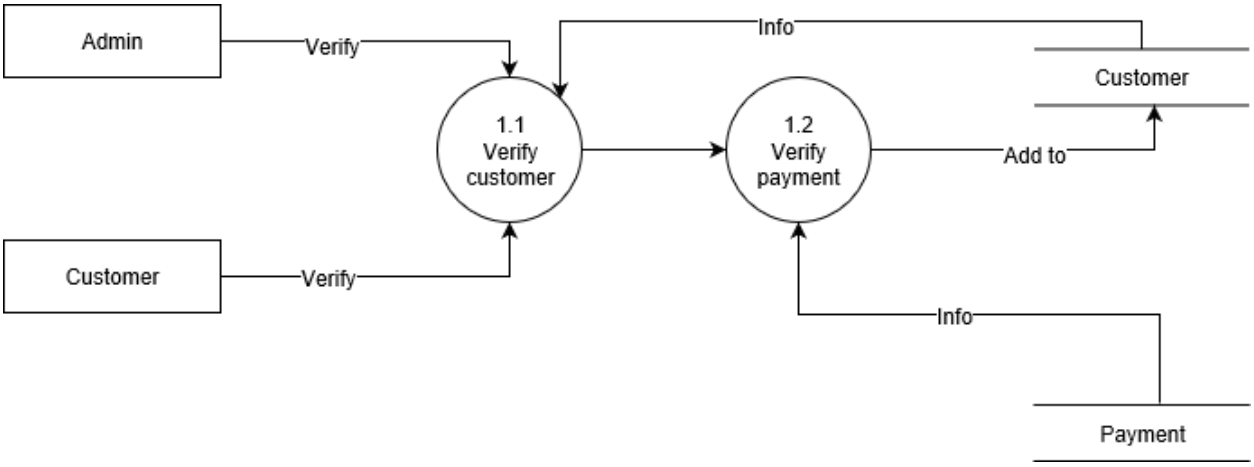


Figure 14 Level 2 DFD for Register a Customer

Above Level 2 DFD of Register a customer consists two entities admin and customer. Firstly, the admin verifies if the customer is valid or not. After the validation is completed, system accepts the payment information because the customer need to pay certain amount before getting registered. Here, when the customer registers online, he also goes through the verification process and makes the payment and is added to the database. Here the payment process retrieves the payment details from the payment database.

3.2.2.2. Level 2 DFD: Payment of a customer

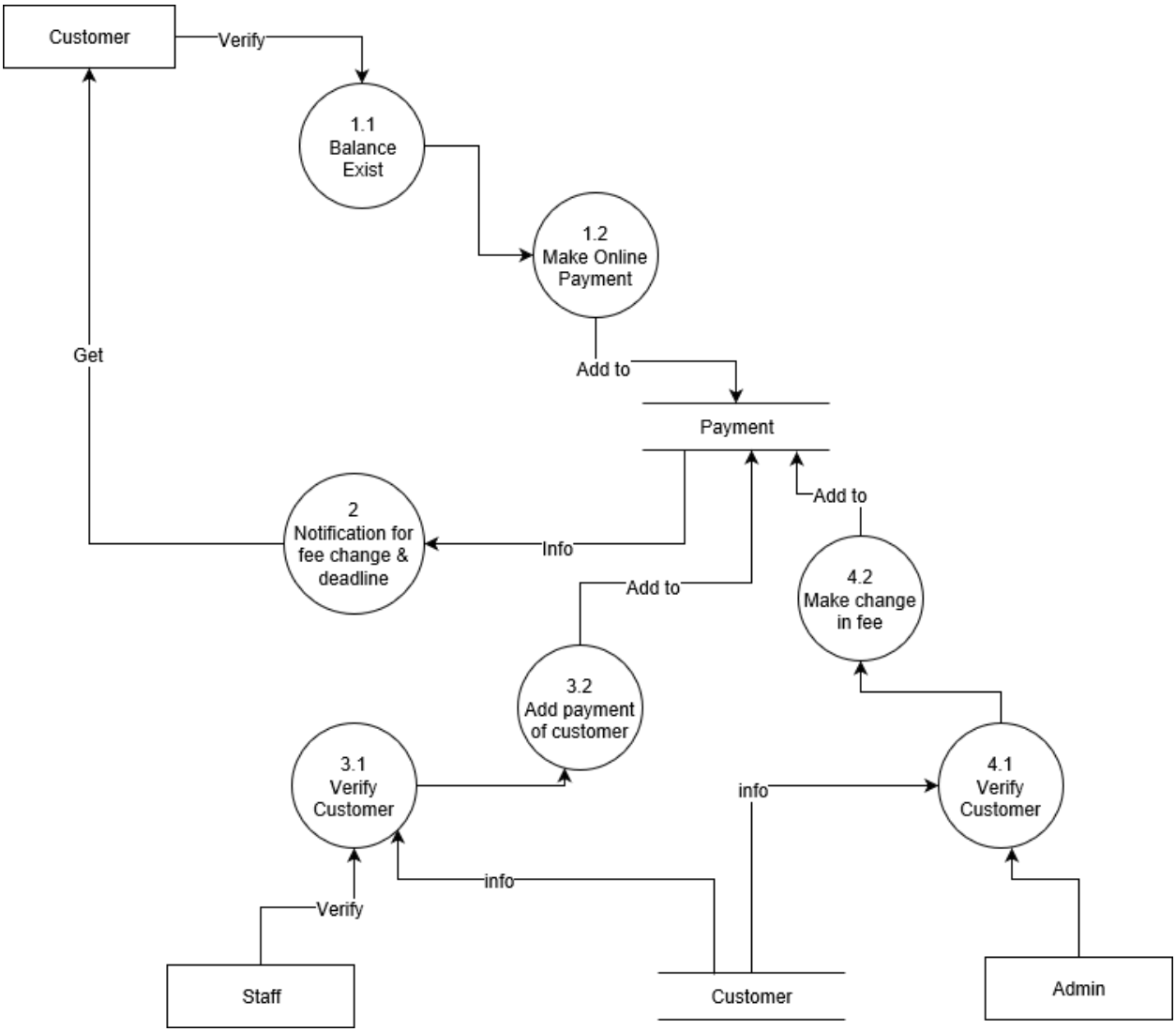


Figure 15 Level 2 DFD for Payment of a Customer

The above Level 2 DFD of Payment of customer shows that this module consists of three entities admin, staff and customer. To make online payment, the customer verifies the balance and then makes the payment following adding to the database. Here, the staff verifies the customer if the person is a valid customer or not then receives the payment which is added to the payment database. The admin also goes through the similar process as the staff until verifying customer and then he makes fee changes, which is updated to the payment database. Here, while verifying the customer's validation the entities retrieve the data of customer from the customer database.

3.2.2.3. Level 2 DFD: Generate report of a customer

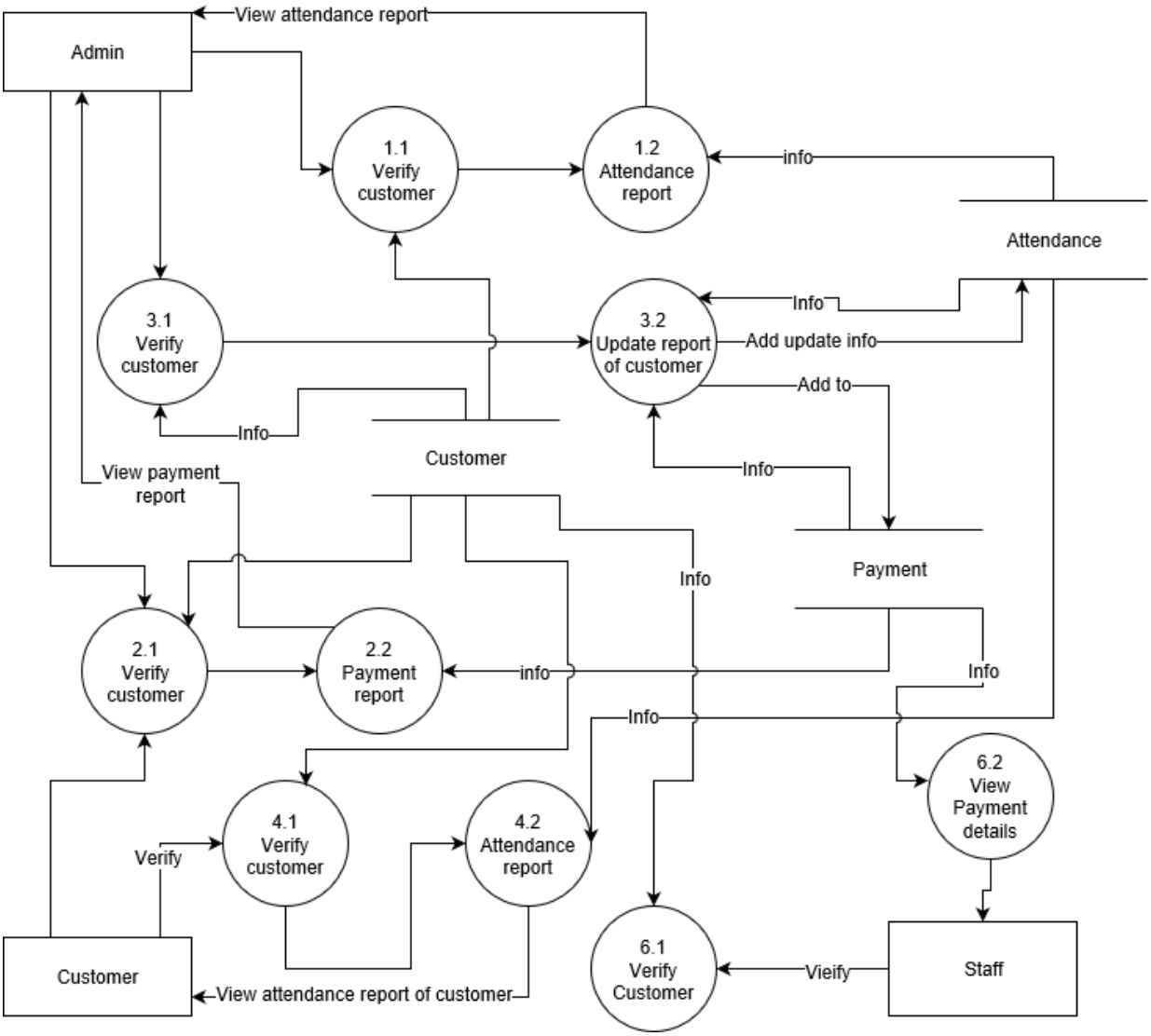


Figure 16 Level 2 DFD for Report a Customer

The above figure represents the generate report of customer module. This module includes three entities, which are admin, staff and customer. The admin can generate reports of attendance of customer and payments of customers. For generating the reports, the admin must go through processes like verifying customer, retrieving reports from the databases. The customer can also generate the report regarding the payments and the attendance of himself through the similar processes followed by the admin whereas the staff can view the payment report of the customer after the customer is verified.

3.2.2.4. Level 2 DFD: To do list

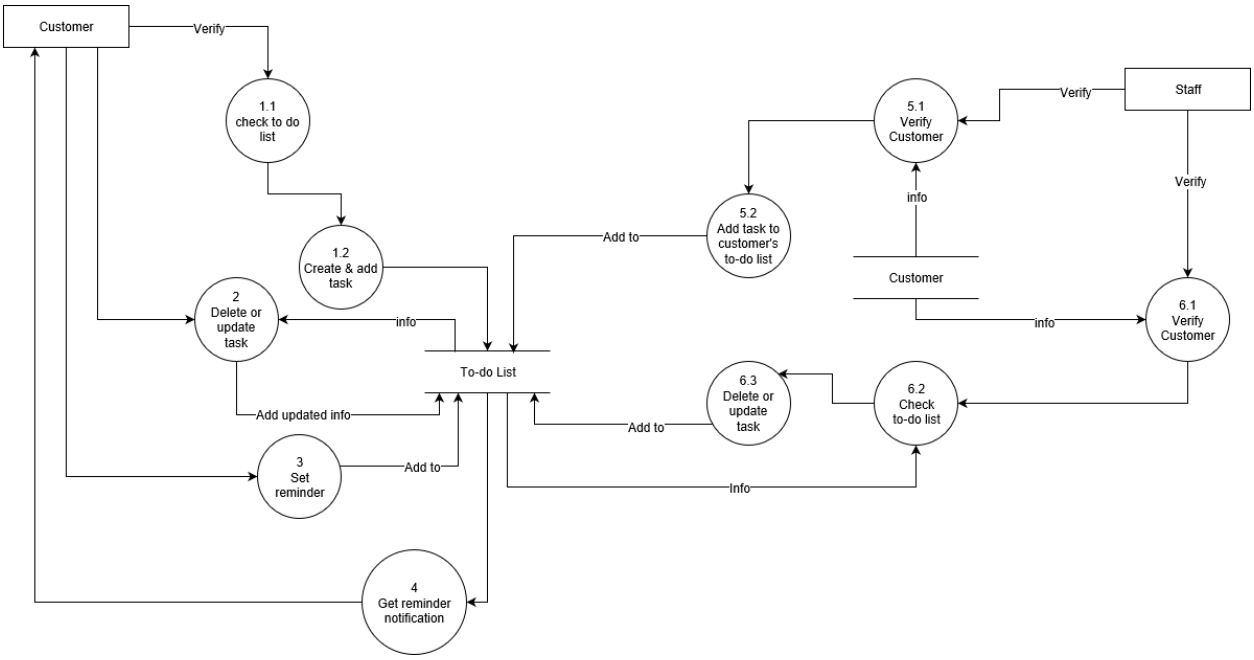


Figure 17 Level 2 DFD for To-Do List

From the above image, we can say that the module represents the to-do list with two different entities customer and staff. The customer is responsible for limited processes like checking to-do list, creating and adding tasks, deleting and updating tasks, and setting up reminders which are all connected with the to-do list database. The other entity staff is responsible for processes like verifying customers, adding tasks to the to-do list of the customer, checking to-do list and deleting and updating tasks. For the verification of customer, the details are retrieved from the customer database.

3.3. Design Specification

3.3.1. Structure Chart

3.3.1.1. Structure chart for Register a customer

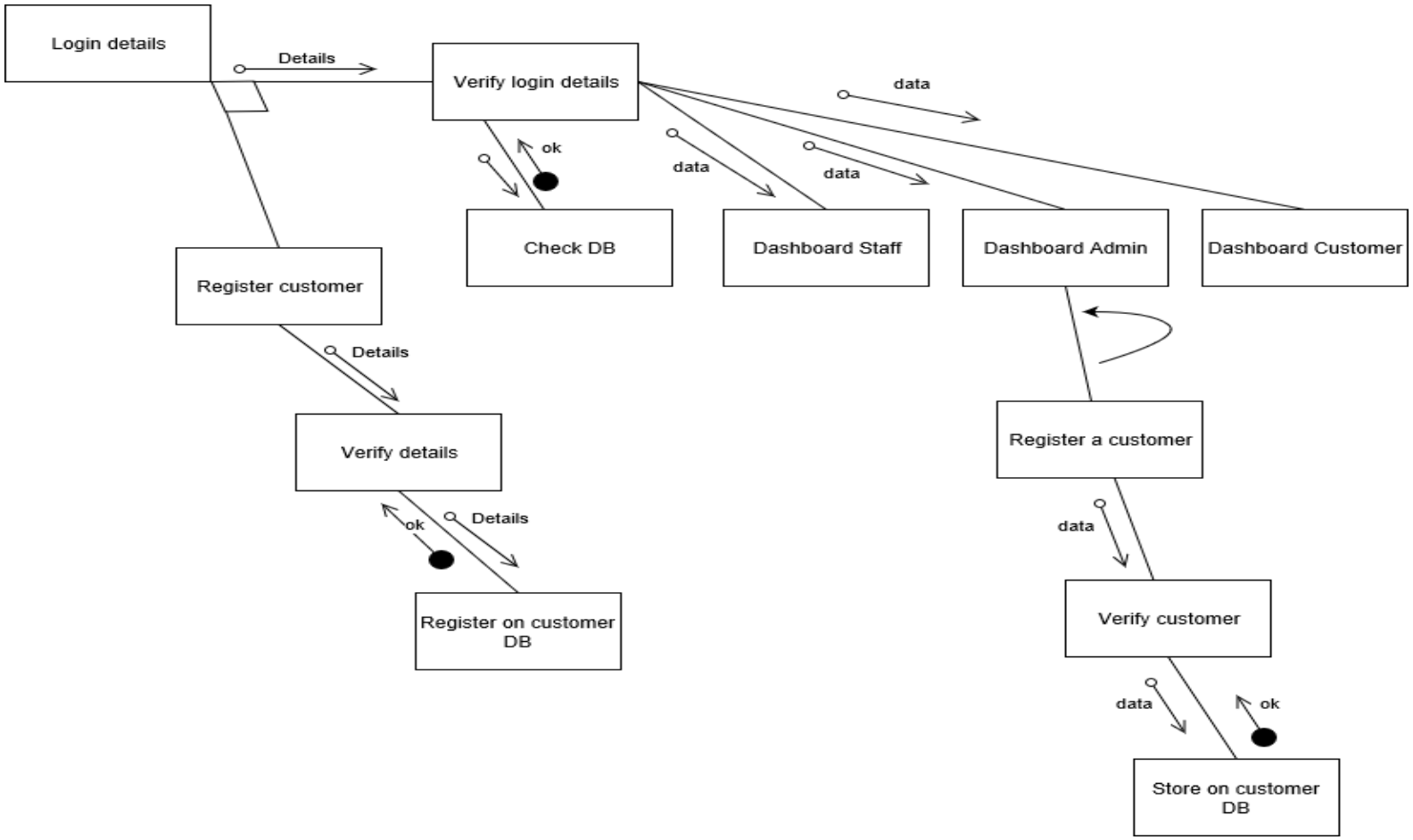


Figure 18 Structure Chart for Register a Customer

3.3.1.2. Structure chart for payment of a customer

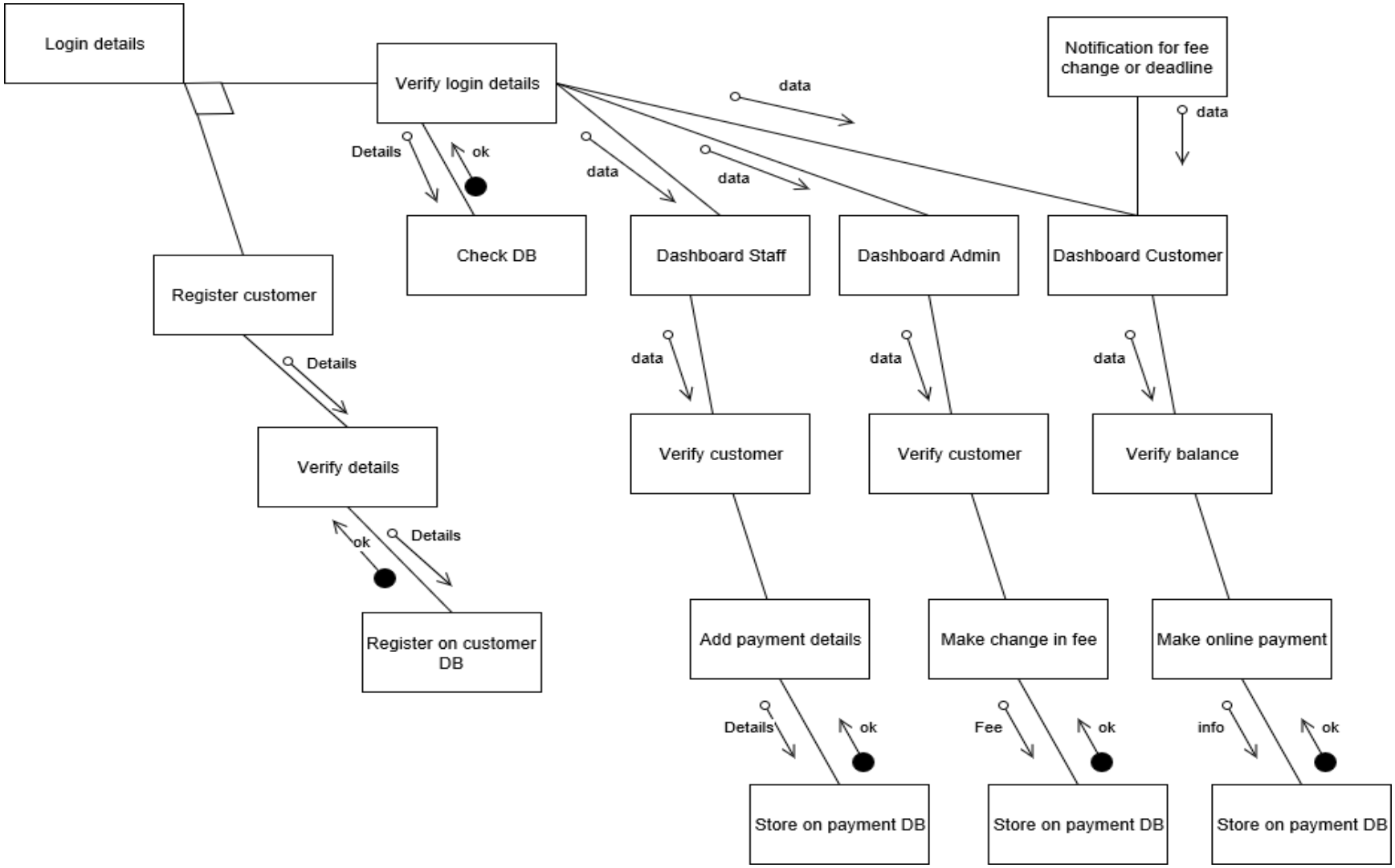


Figure 19Structure Chart for Payment of a Customer

3.3.1.3. Structure chart for Generate report of a customer

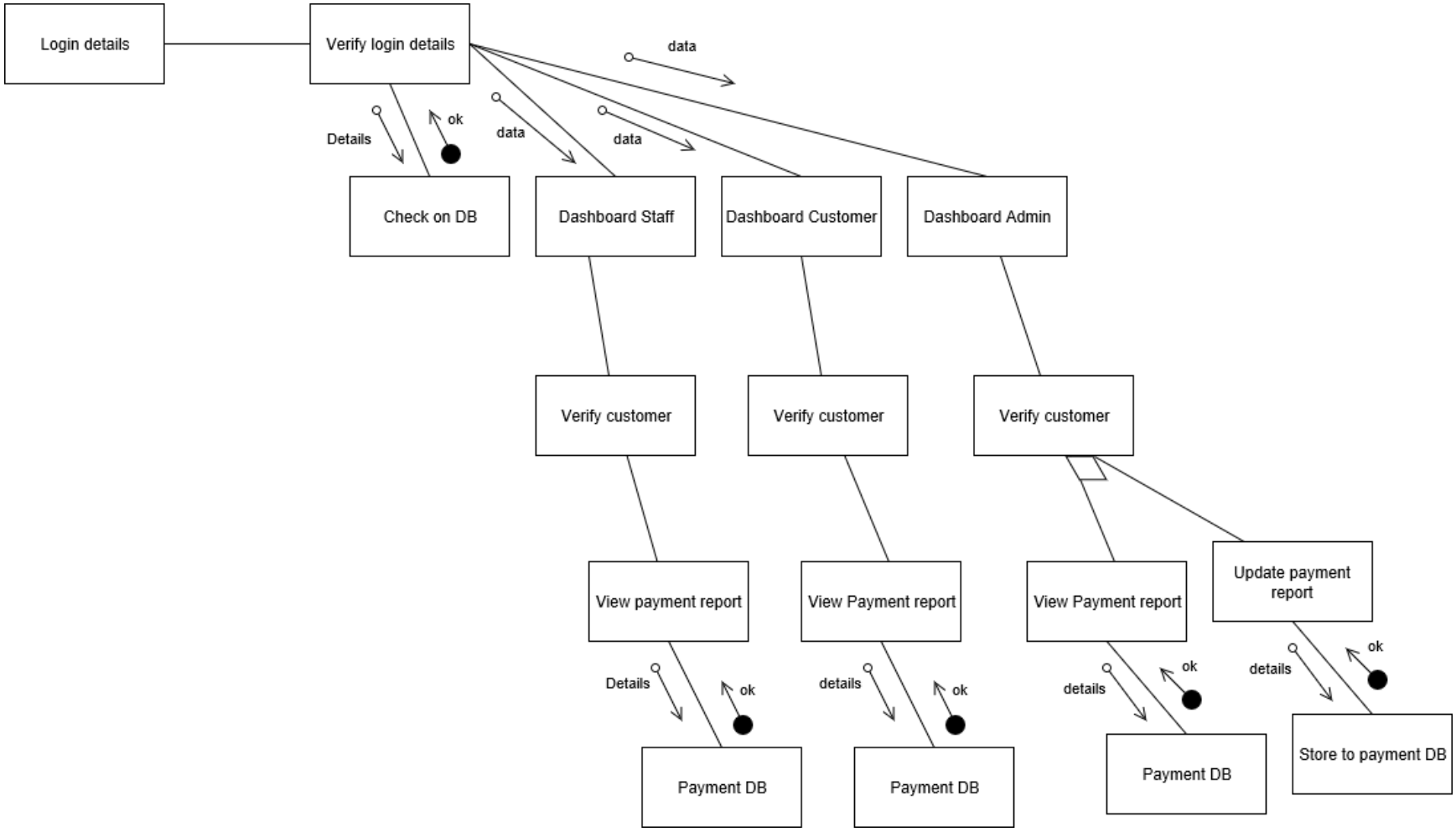


Figure 20Structure Chart for Report of a Customer

3.3.1.4. Structure chart for To-Do list

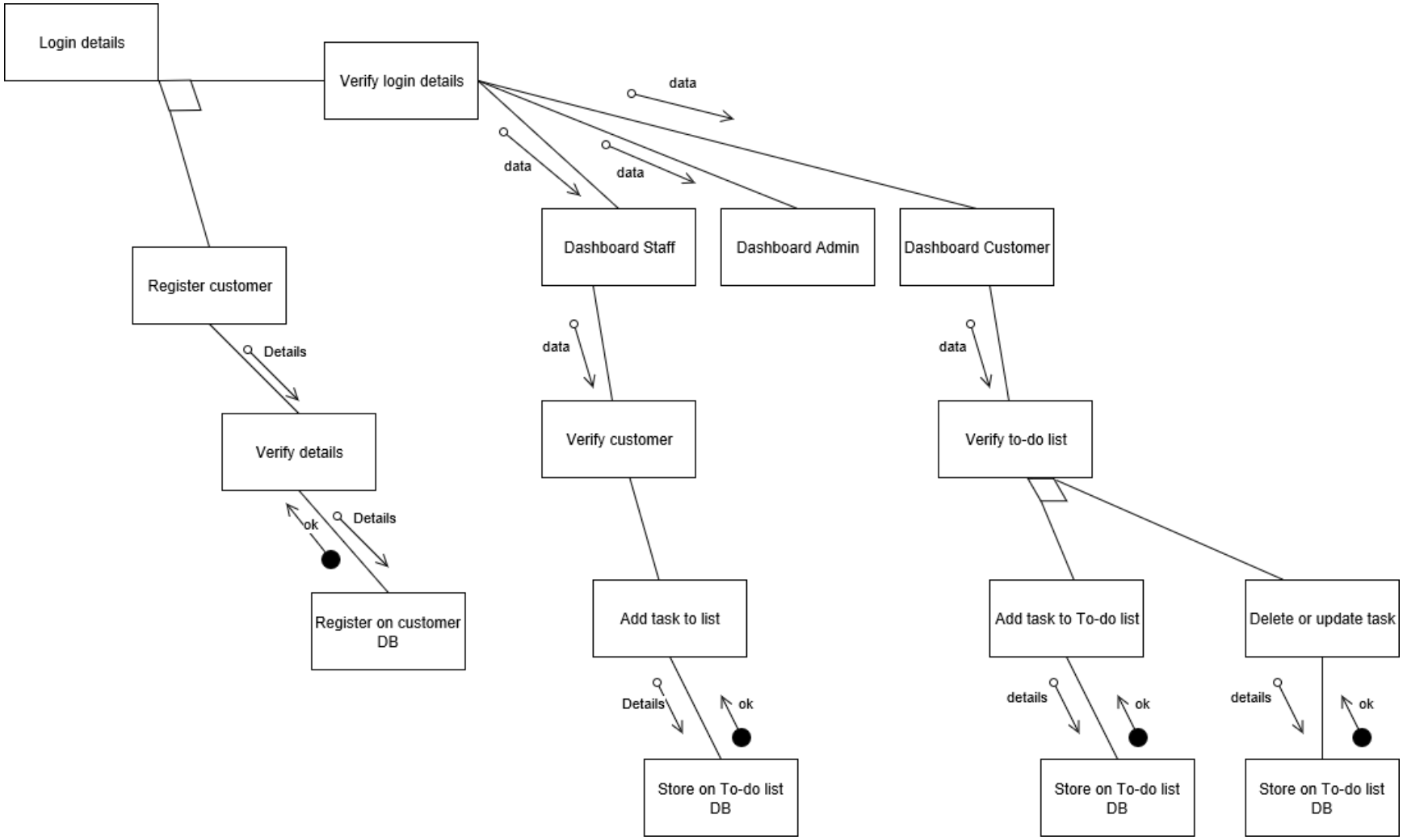


Figure 21Structure Chart for To-Do List

3.3.2. Module Specification

MODULE NAME: Register a customer

MODULE PURPOSE: This module's main function is to add the new customer and allow them to use the application of fitness gym.

PSEUDOCODE:

```
Define registerCustomer()
DO
    Check username with the existing username in database
    IF (Username is matched)
    DO
        DISPLAY Message related to username already exist
    END DO
    ELSE
    DO
        Register to the database table
    END DO
    END ELSE
    END IF
END DO
```

INPUT PARAMETER: Customer username

OUTPUT PARAMETER: Customer username, password, DOB, Customer_status, Location, Date_of_registration

GLOBAL VARIABLE: username

LOCAL VARIABLE: username, password, DOB, Customer_status, Location, Date_of_registration

CALLS: N/A

CALLED BY: N/A

MODULE NAME: Payment of a customer

MODULE PURPOSE: The purpose of this module is to record the payment information of a customer. The information includes ID of payment, ID of customer, type of payment and amount of payment and date of payment.

PSEUDO CODE:

```
Define PaymentOfCustomer()
DO
    Verify customer
    IF (Customer exist)
        DO
            DISPLAY Payment Details
        END DO
        END IF
        ELSE
```

```
            DO
                DISPLAY Error Message
            END DO
            END ELSE
        IF (logged in by admin)
            VERIFY Customer
            IF (Customer exist)
            DO
                Make changes in fee of customer
            END DO
            END IF
        END IF
END DO
```

INPUT PARAMETER: Customer_ID, username, password

OUTPUT PARAMETER: Payment_ID, Customer_ID, Payment_Type, Payment_date, Payment_Amount

GLOBAL VARIABLES: Customer Session ID

LOCAL VARIABLES:

CALLS: N/A

CALLED BY: Generate Report

MODULE NAME: Generate Report

MODULE PURPOSE: The purpose of generate report module is generating report of the customer which include information related to customer payment details and attendance. The report may be generated by the admin or the customer itself.

PSEUDO CODE:

```
DEFINE Generate Report
DO
    Verify Customer
    IF (Customer is verified)
    DO
        RETURN Attendance Report
        CALL paymentOfCustomer();
    END DO
    END IF
ELSE
DO
    DISPLAY Customer not available
END DO
END ELSE
END DO
```

INPUT PARAMETER: Payment ID, Customer ID, Payment Type, Payment Amount, Days_Present, Days_Absent

OUTPUT PARAMETER: Payment ID, Customer ID, Payment Type, Payment Amount, Days_Present, Days_Absent

GLOBAL VARIABLES: customer username and password

LOCAL VARIABLES: Payment ID, Customer ID, Payment Type, Payment Amount, Days_Present, Days_Absent

CALLS: Payment of customer

CALLED BY: N/A

MODULE NAME: To-Do List

MODULE PURPOSE: The purpose of this module is to create a to-do list for the customer during sessions.

PSEUDO CODE:

```
DEFINE To-do List()
DO
    Verify Customer
    DO
        IF (Customer Available)
        DO
            DISPLAY To-do List
            Allows DELETE or UPDATE task
            ADD updated task to To-Do list
```

```
            END DO
            END IF
            ELSE
            DO
                DISPLAY "Customer not found"
            END DO
            END ELSE
        END DO
END DO
```

INPUT PARAMETERS: Task_ID, Customer session id

OUTPUT PARAMETERS: Task_name, Task_Description, Task_remainder

GLOBAL VARIABLES: Customer username and password

LOCAL VARIABLES: Task_name, Task_Description, Task_remainder

CALLS: N/A

CALLED BY: N/A

4. Summary

To conclude, all the required steps for a system development was completed with much research. The coursework helped us to experience a real time scenario of a software development process. Completion of the assessment not only fulfilled our coursework but most importantly helped us to learn the significance of planning and designing a system before its development.

Data flow diagram (up to level 2), structure chart, data dictionary was properly implemented during the completion of the project. These proper planning of the system will be helpful for development part of the project. Various features of the system such as registration, to-do list, payment have been well implemented in the system

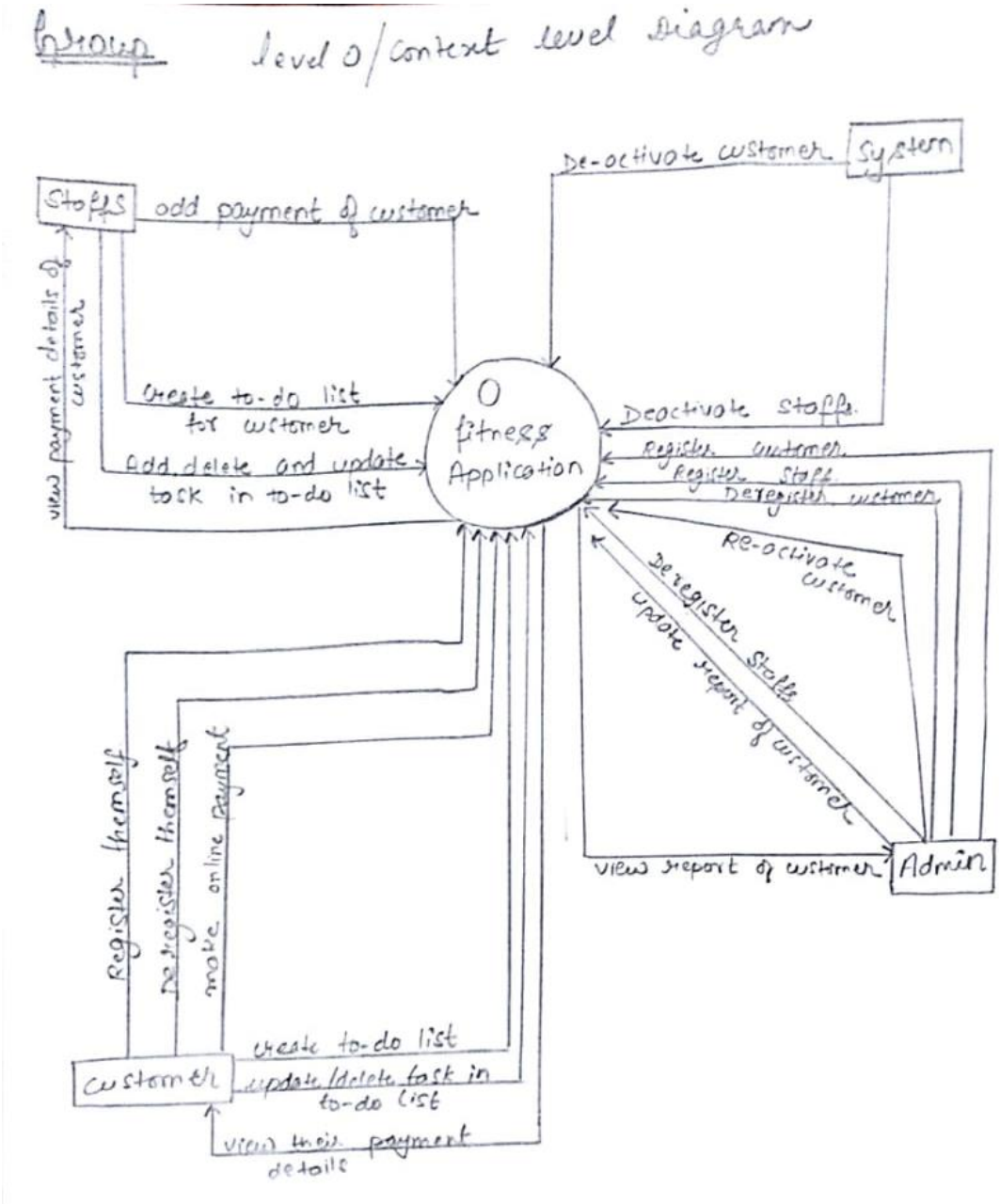
5. References

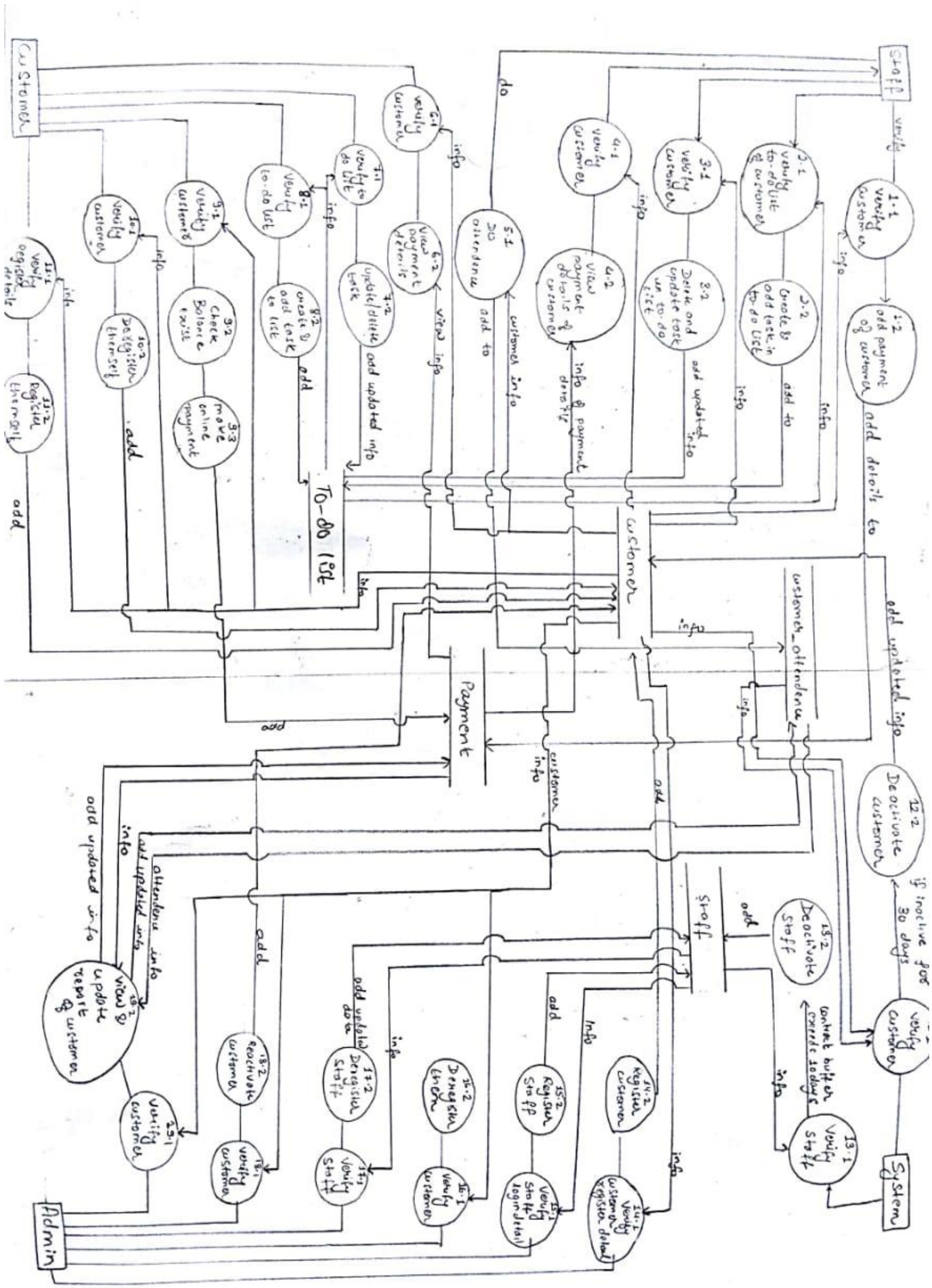
Hoffer, J.A., George, J.F. & Valacich, J.S. (2008) *Modern Systems Analysis and Design*. 5th ed. Pearson Education India.

Lucid Chart. (2017) *Lucid Chart* [Online]. Available from: https://www.lucidchart.com/pages/data-flow-diagram?a=0 [Accessed 20 January 2019].

6. Appendix

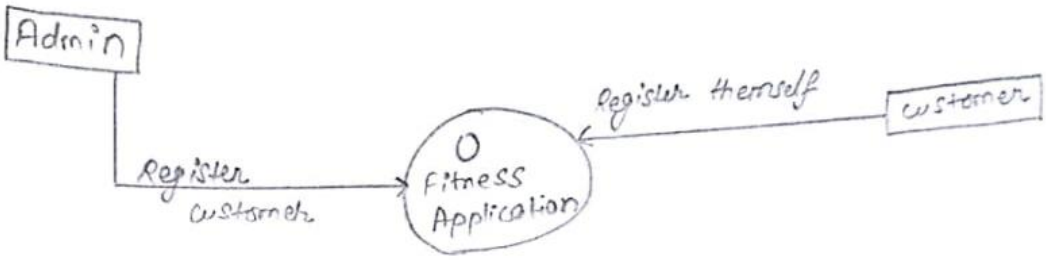
6.1. Evidences



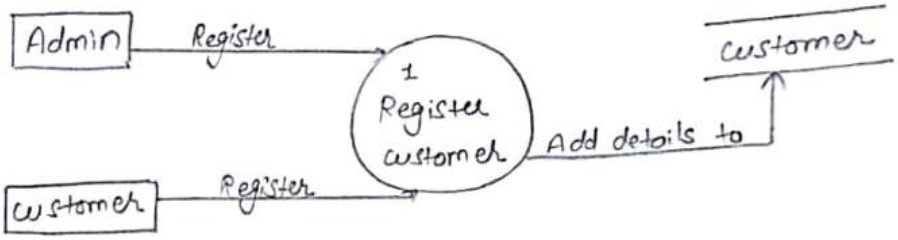

Customer
Staff
System
Admin
To-do list
Payment
customer_attendance

(1) Register customer

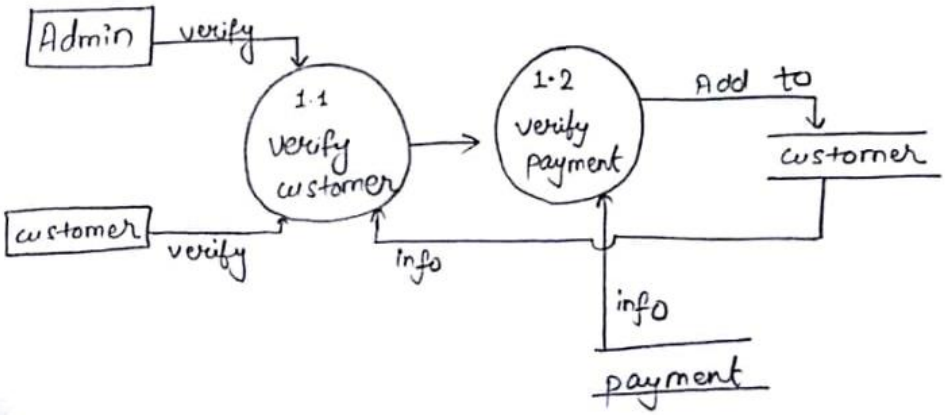
level 0



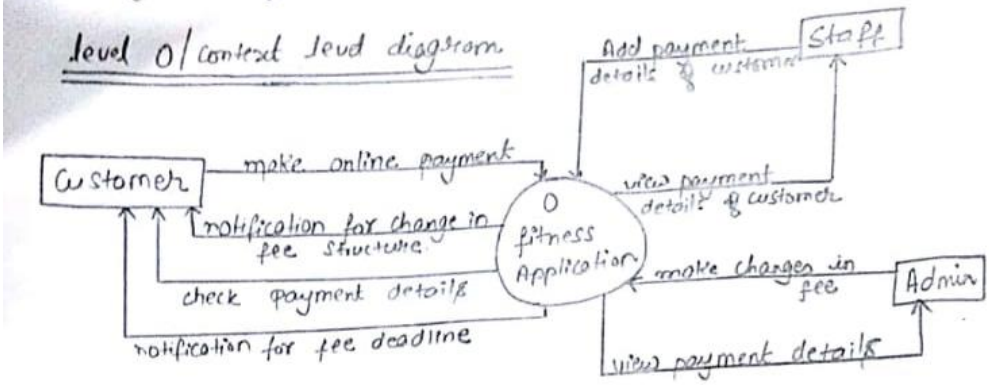
level 1 DFD

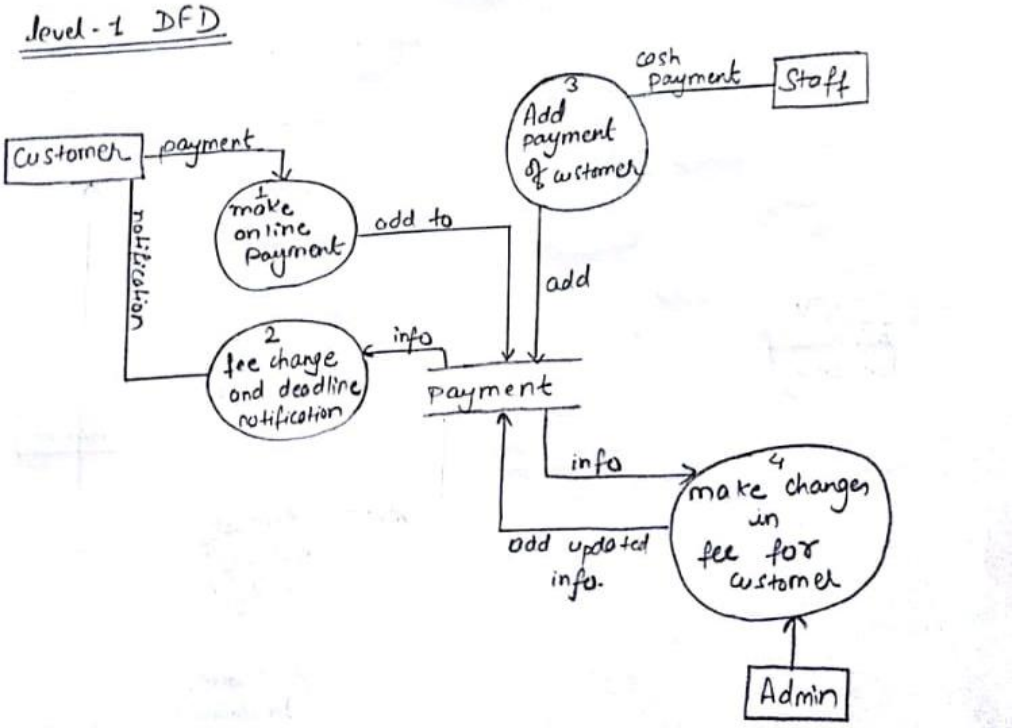


level 2 DFD

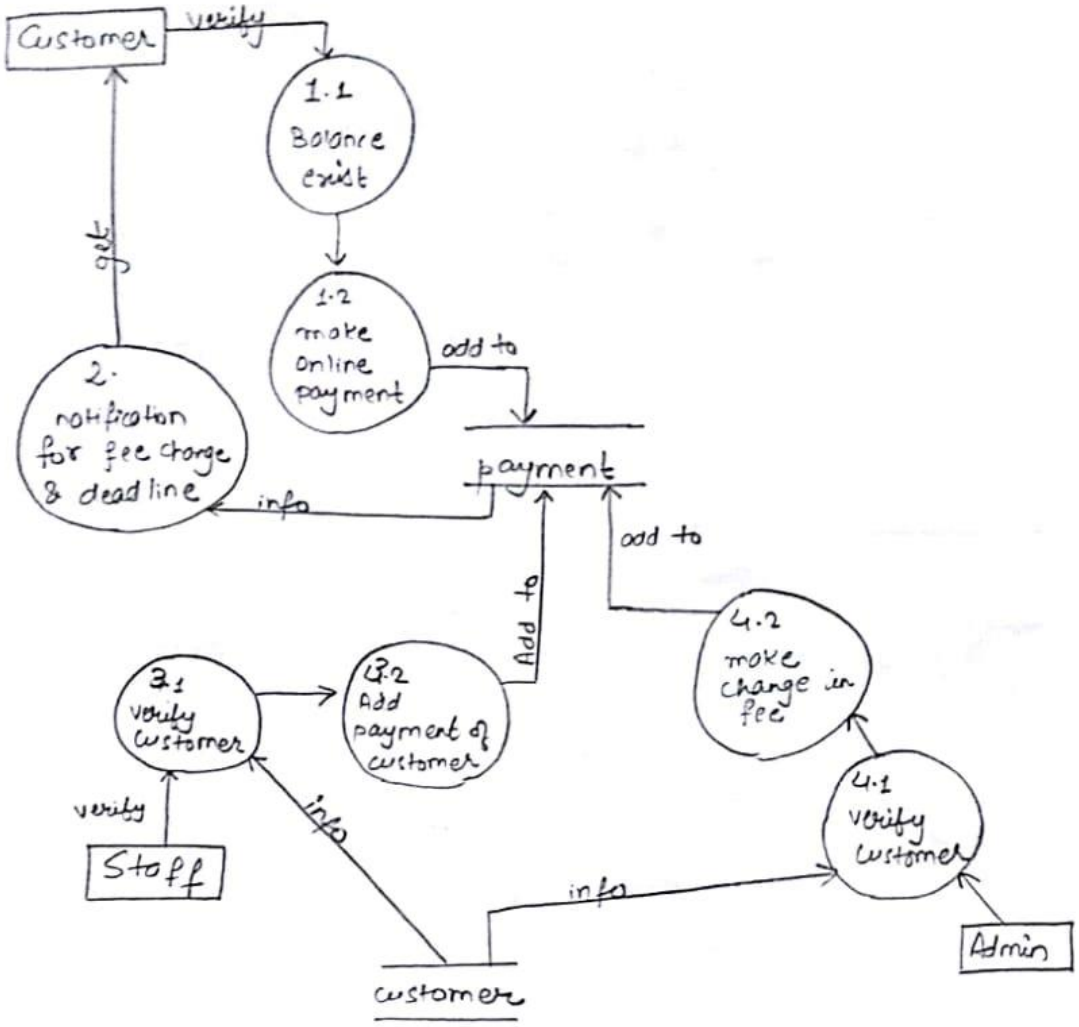


(2) Payment of customer



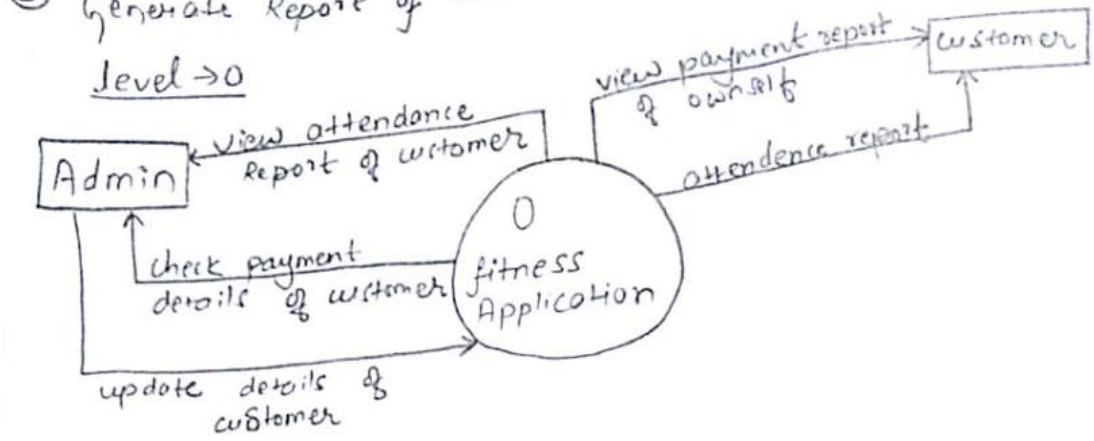


Level - 2 DFD (Payment of customer)

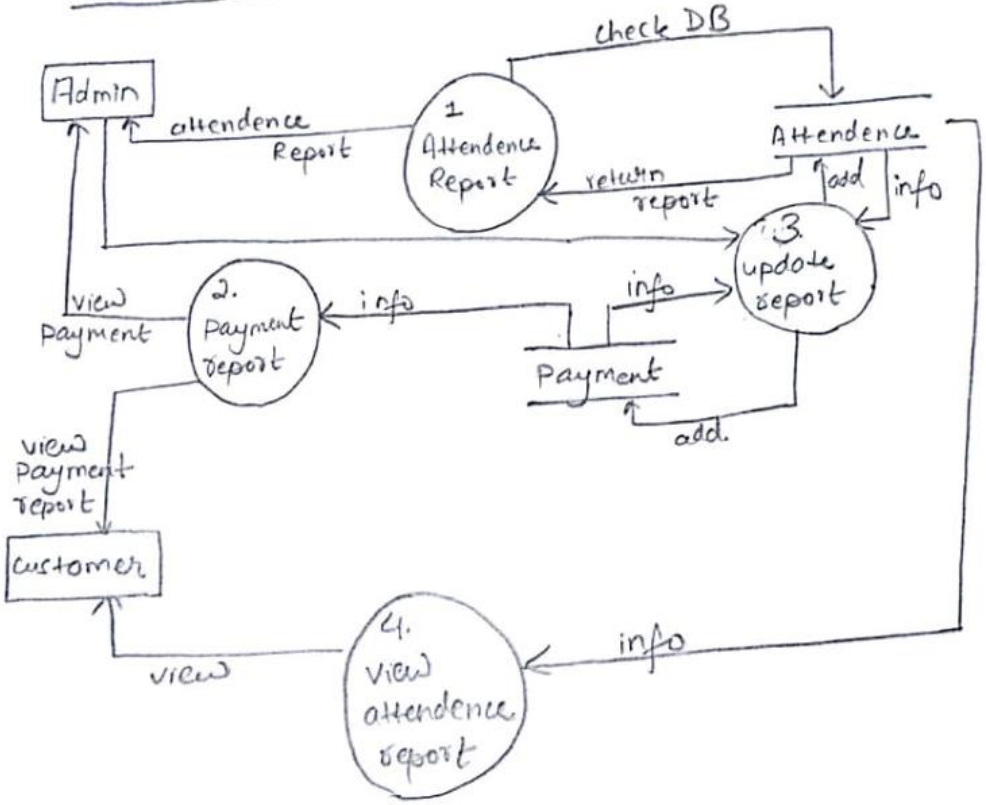


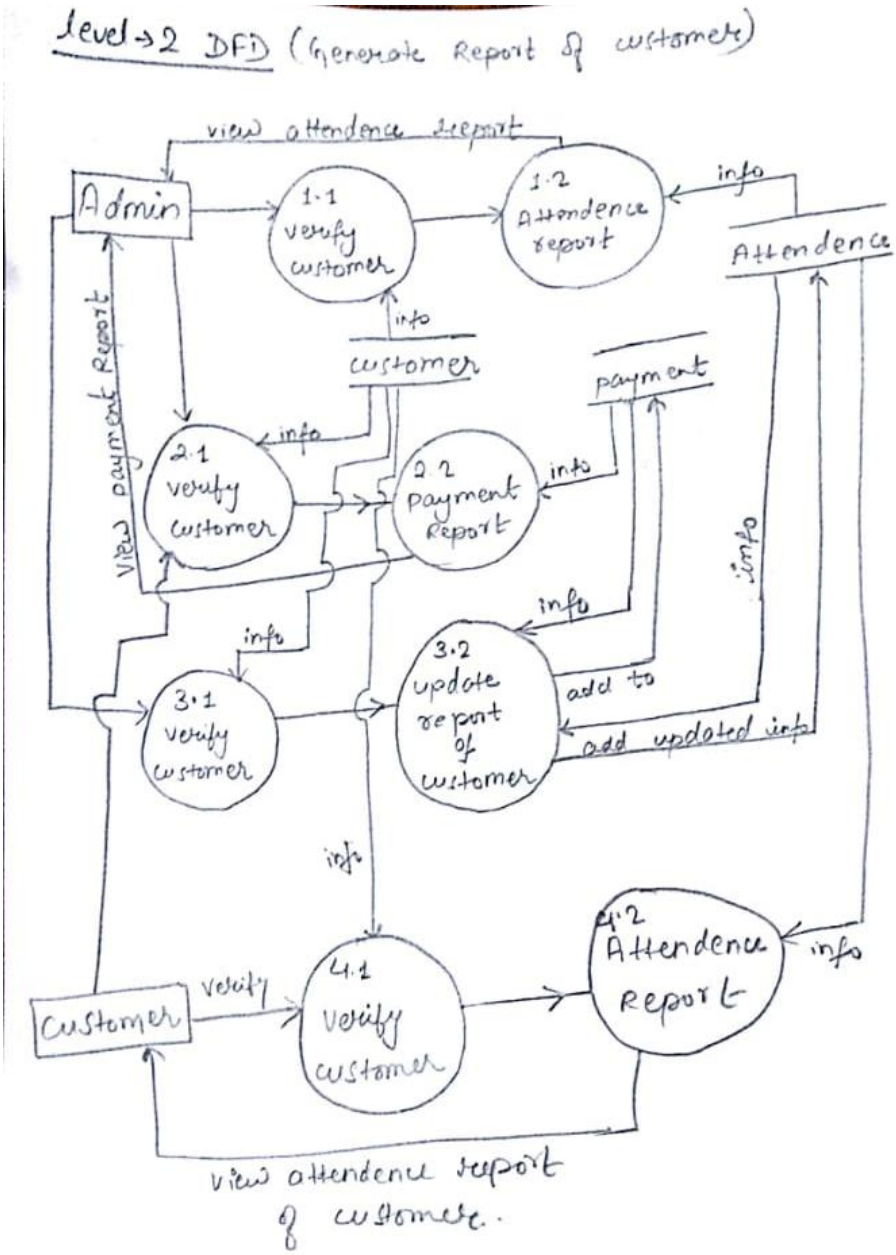
③ Generate Report of customer.

Level → 0



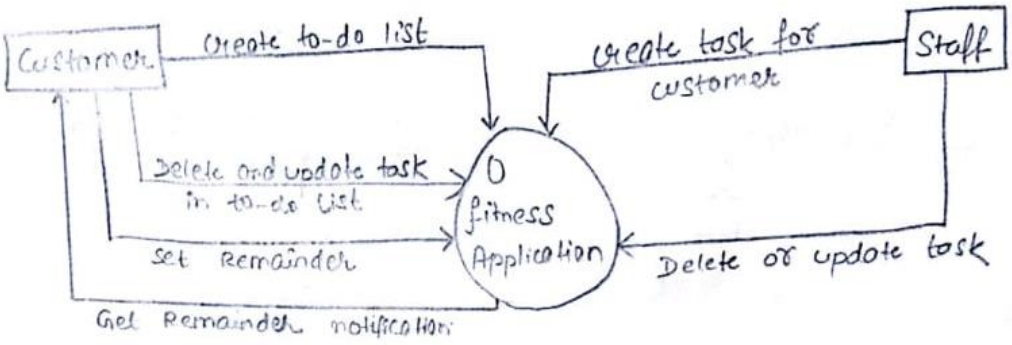
Level → 1 DfD



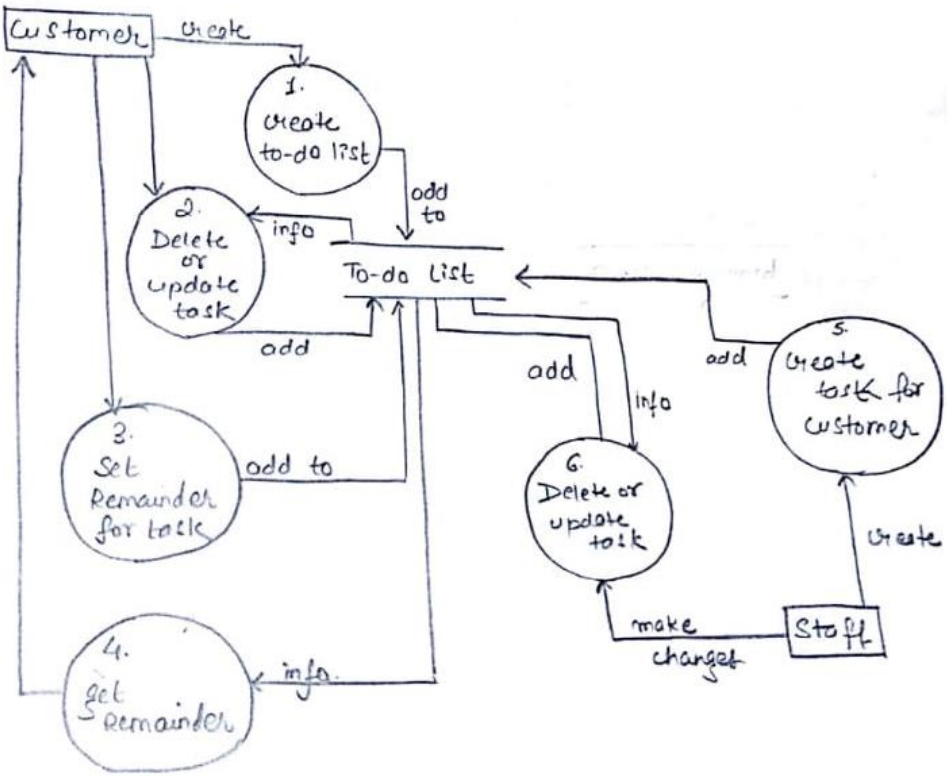

level→2 DFD (Generate Report of customer)
view attendence report
Admin
1.1 verify customer
1.2 Attendence report
info
Attendence
info
customer
payment
view payment Report
2.1 verify customer
info
2.2 payment Report
info
info
info
3.2 update report of customer
add to
add updated info
3.1 verify customer
info
4.2 Attendence report
info
Customer
verify
4.1 verify customer
view attendence report of customer.

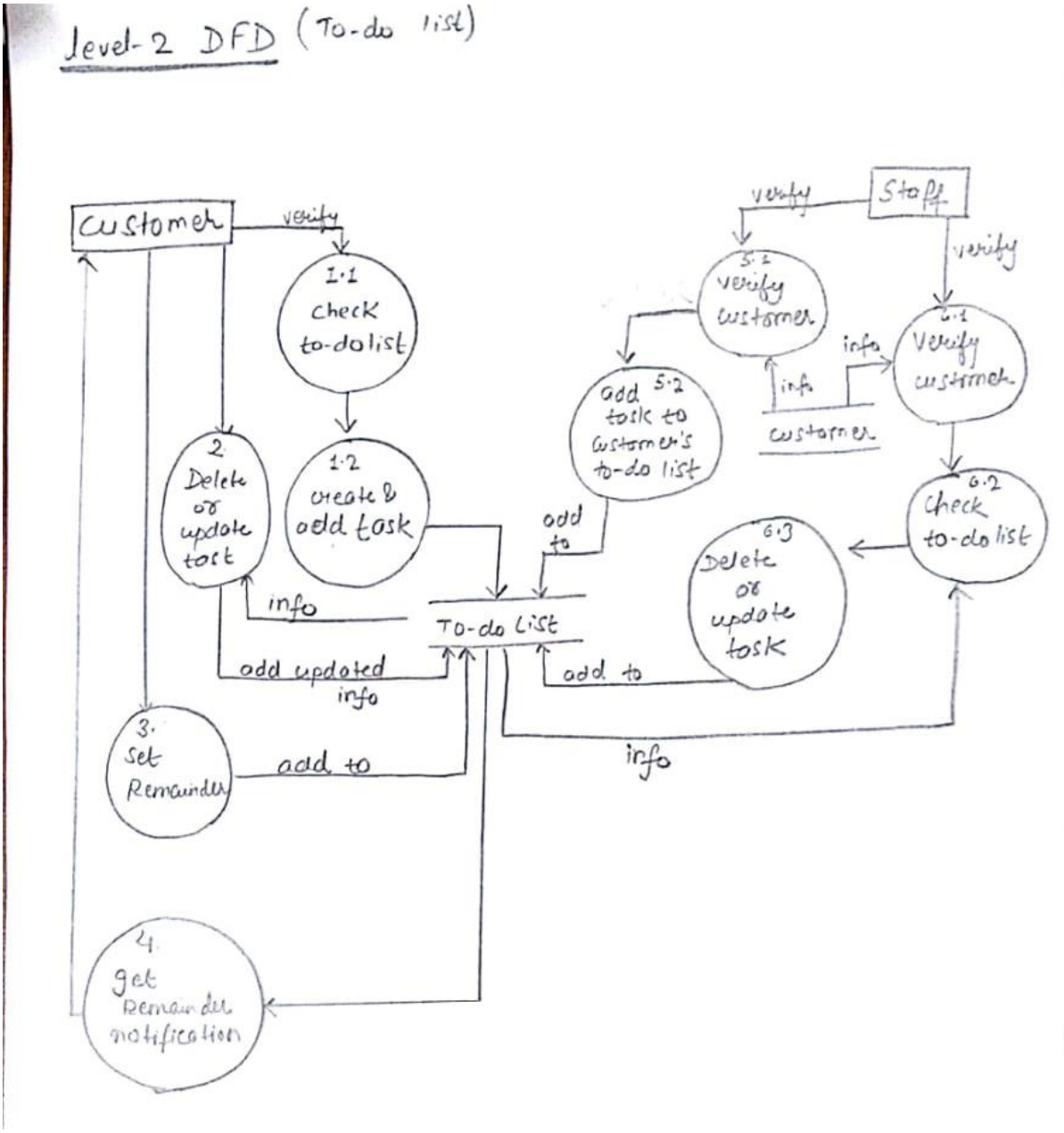
④ To do list

level-0 / context level diagram



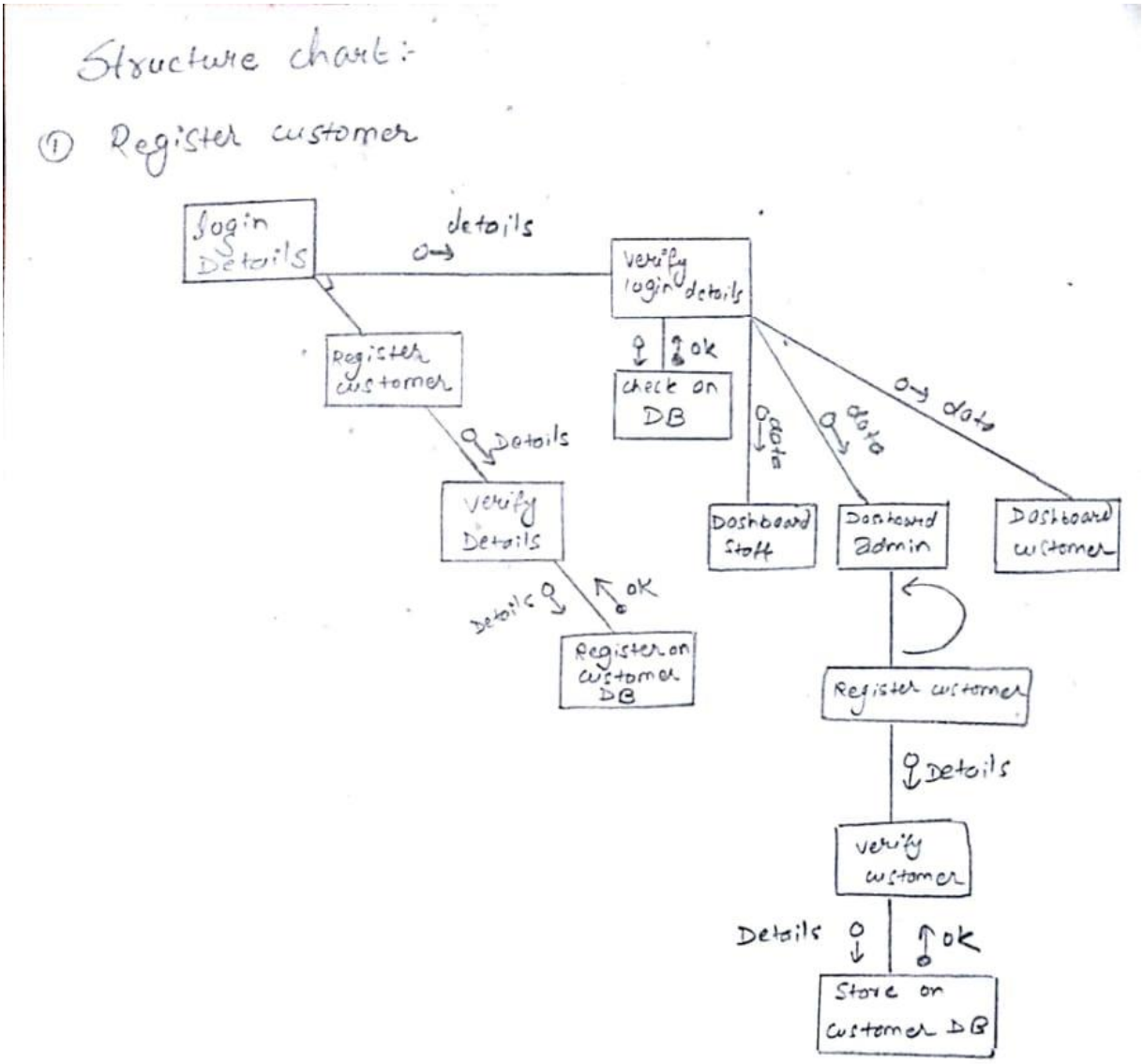
level-1 DFD

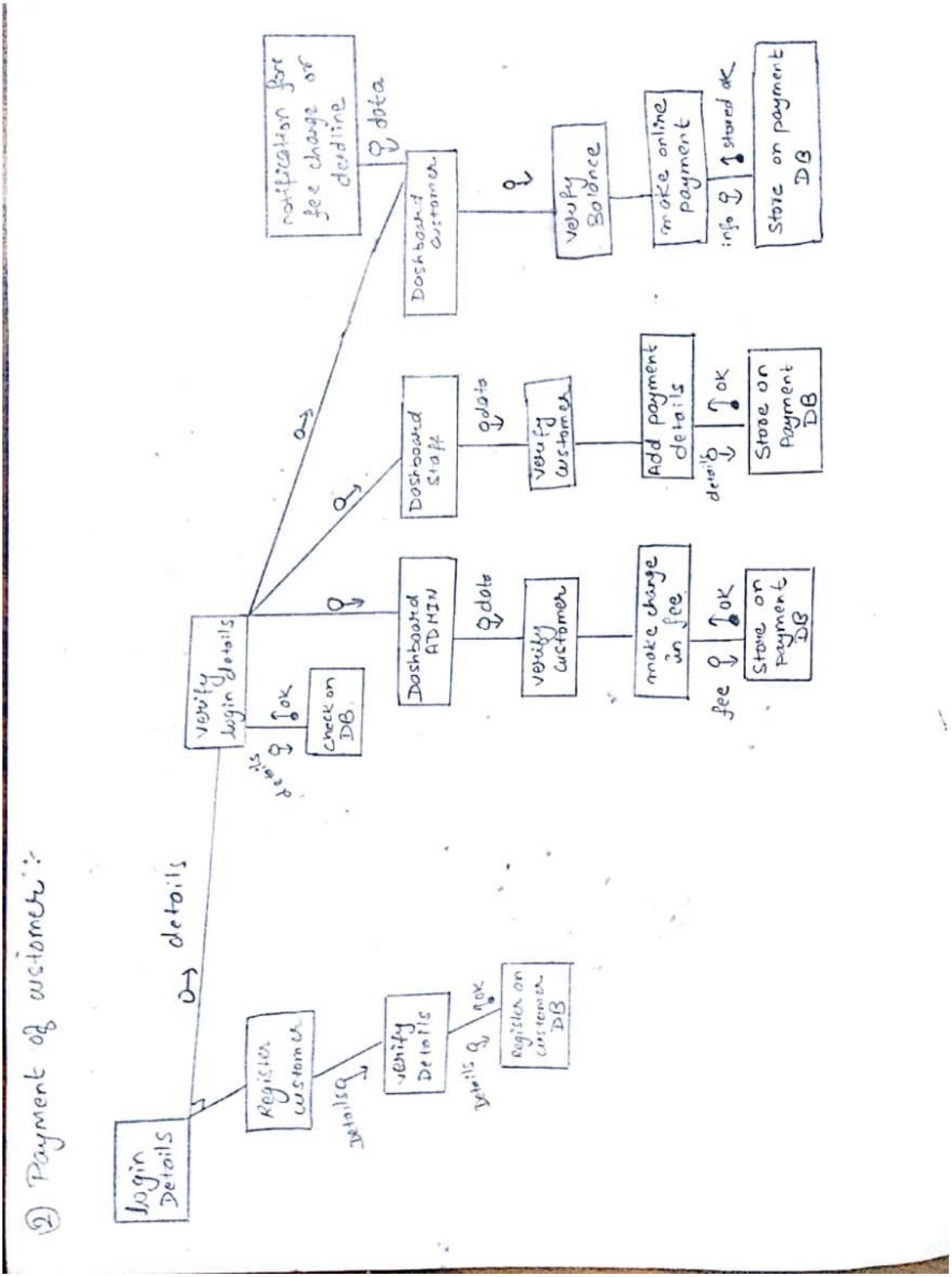


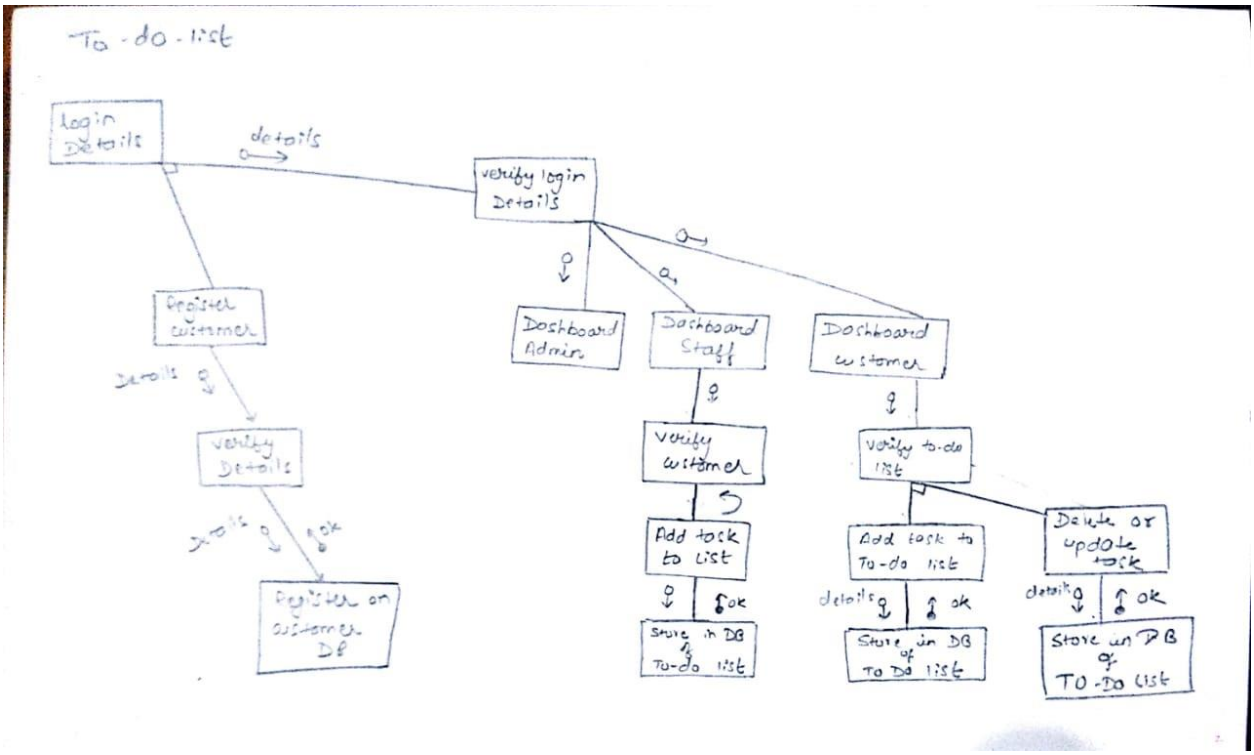

level-2 DFD (To-do list)
customer
verify
I.1 check to-do list
2 Delete or update task
1.2 create & add task
info
add updated info
3. Set Remainder
add to
4 get Remainder notification
To-do List
add to
verify
Staff
verify
5.2 verify customer
5.1 Verify customer
info
info
customer
add 5.2 task to customer's to-do list
add to
6.2 check to-do list
6.3 Delete or update task
add to
info

Structure chart:-

① Register customer




② Payment of customer :
Login Details
details
verify login details
check on DB
ok
details
Register customer
details
verify Details
details
ok
Register on customer DB
Dashboard ADMIN
data
verify customer
make change in fee
ok
fee
Store on payment DB
Dashboard staff
data
verify customer
Add payment details
ok
details
Store on Payment DB
Dashboard customer
verify Balance
make online payment
info
stored ok
Store on payment DB
notification for fee change or deadline
data


To-do-list
Login Details
details
verify login Details
Register customer
Details
verify Details
Details
ok
Register on customer DB
Dashboard Admin
Dashboard Staff
Dashboard customer
Verify customer
Add task to list
ok
Store in DB To-do list
Verify to-do list
Add task to To-do list
details
ok
Store in DB of To Do list
Delete or update task
details
ok
Store in DB of TO-Do List