



slingshot college
(इस्लिङ्टन कलेज)

CS5002NA Software Engineering

Darpan Dental Home Application

20% Group Coursework

2019-20 Spring

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5	Kamlesh Kumar Singh	NP01CP4S190073	18030853

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

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1. Introduction

Software engineering is the study of analyzing user requirement and then designing, building and testing software application which will satisfy those requirements.

Here, we are making a software application for Darpan dental home which help the dental clinic to keep there patient records in a systematic way which is a computerized system named as darpan dental home. As per the requirement there should be registration of patient, patient can view there report only, patient can book appointment by them self from online form also admin have full right to cancel appointment of patient. Payment of patient is maintained by staff in the system, records of patients checkup in the clinic are recorded by staff, reminder can be set by patient which consists date and time to remind about the appointment. If patient didn't visit to checkup for 6 months then auto reminder send notification to patient visit for checkup. Register staff can only accessed necessary information of users. Termination of staff is done after the contract buffer time of 10 days is provided in order to extend the contract then staff is automatically de-registered, if staff leaves before the termination of contract period then staff is de-registered and restricted to use the system.

In these coursework requirement are to performed individual task and group task. As the individual task, each member have one individual task which required to be done by them self to complete the individual task these requirement need to be done context diagram, The level 1 DFD, level 2 DFD along with structure chart, module specifications for the individual system. In group coursework requirement are to be done analysis and design specification of the overall system which includes context diagram, data flow diagram (DFD), Entity Relationship Diagram along with Data Dictionary, module specifications as well as structure chart of the whole system and assignment diary of each member performed/ involved in group meeting.

2. Group task

a) Environmental model specification

- Context level diagram

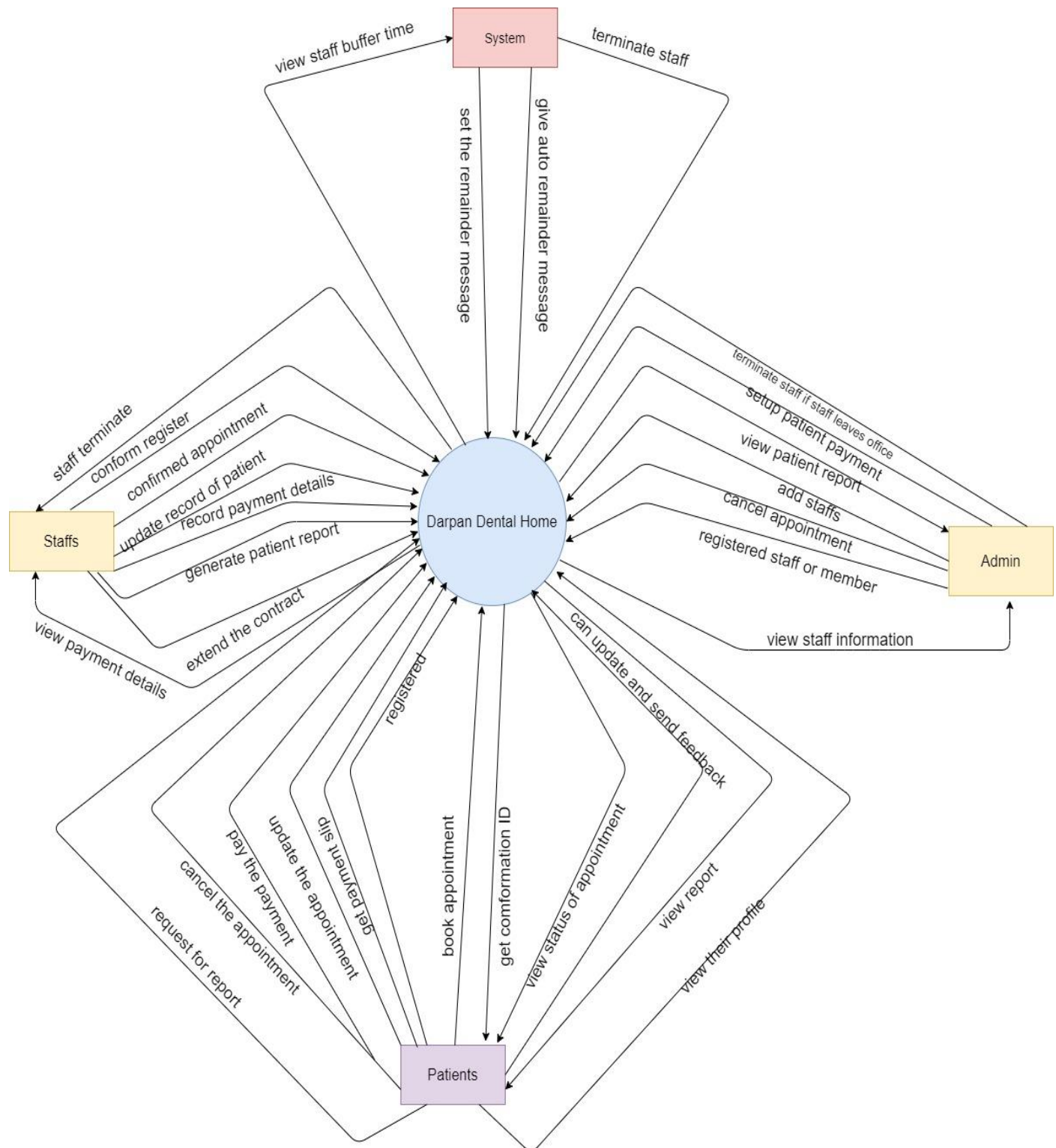


Figure 1 Context level diagram of group task.

- Level 1 DFD Diagram:

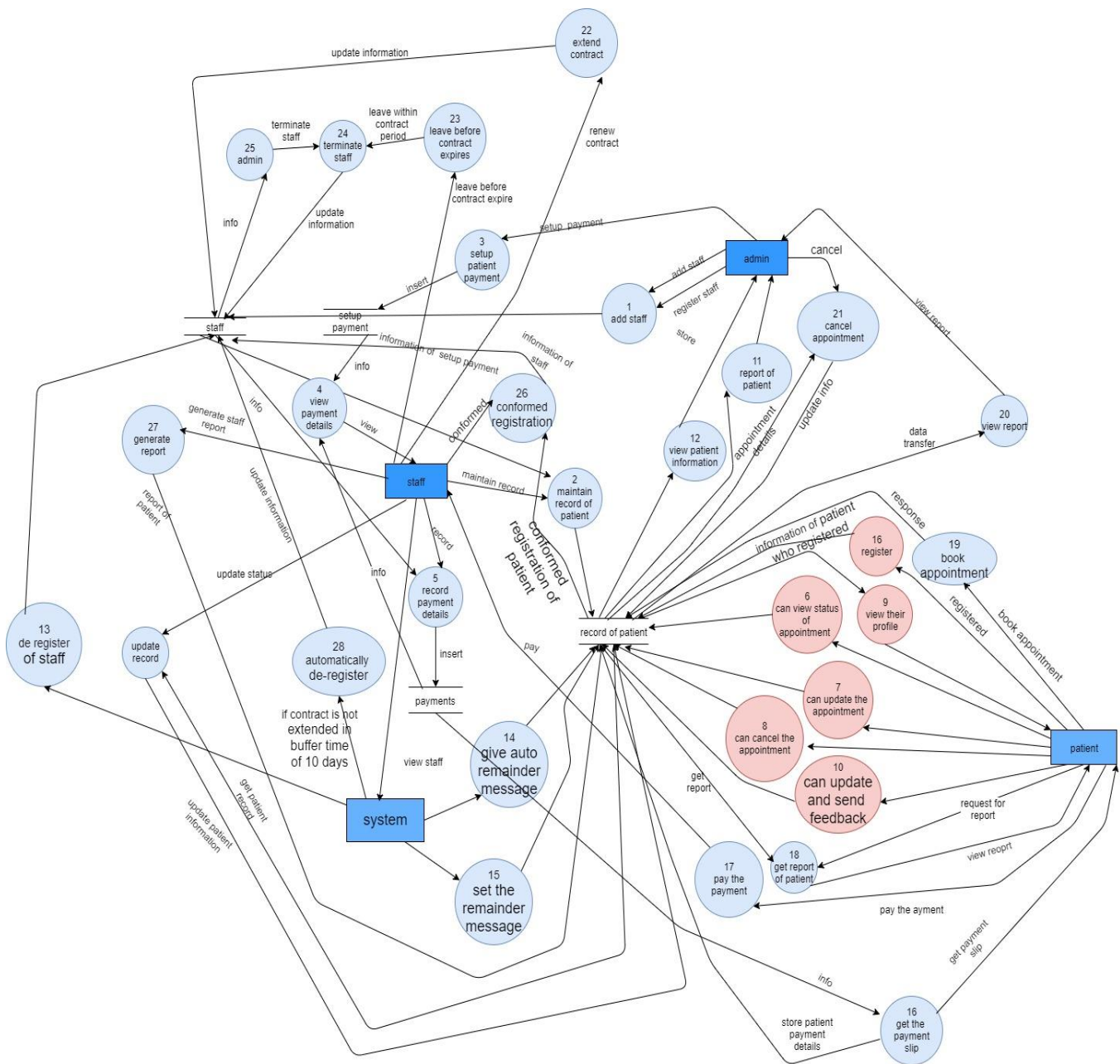


Figure 2 level 1 DFD of whole system.

b) Internal model specification

- Entity Relationship Diagram (ERD)

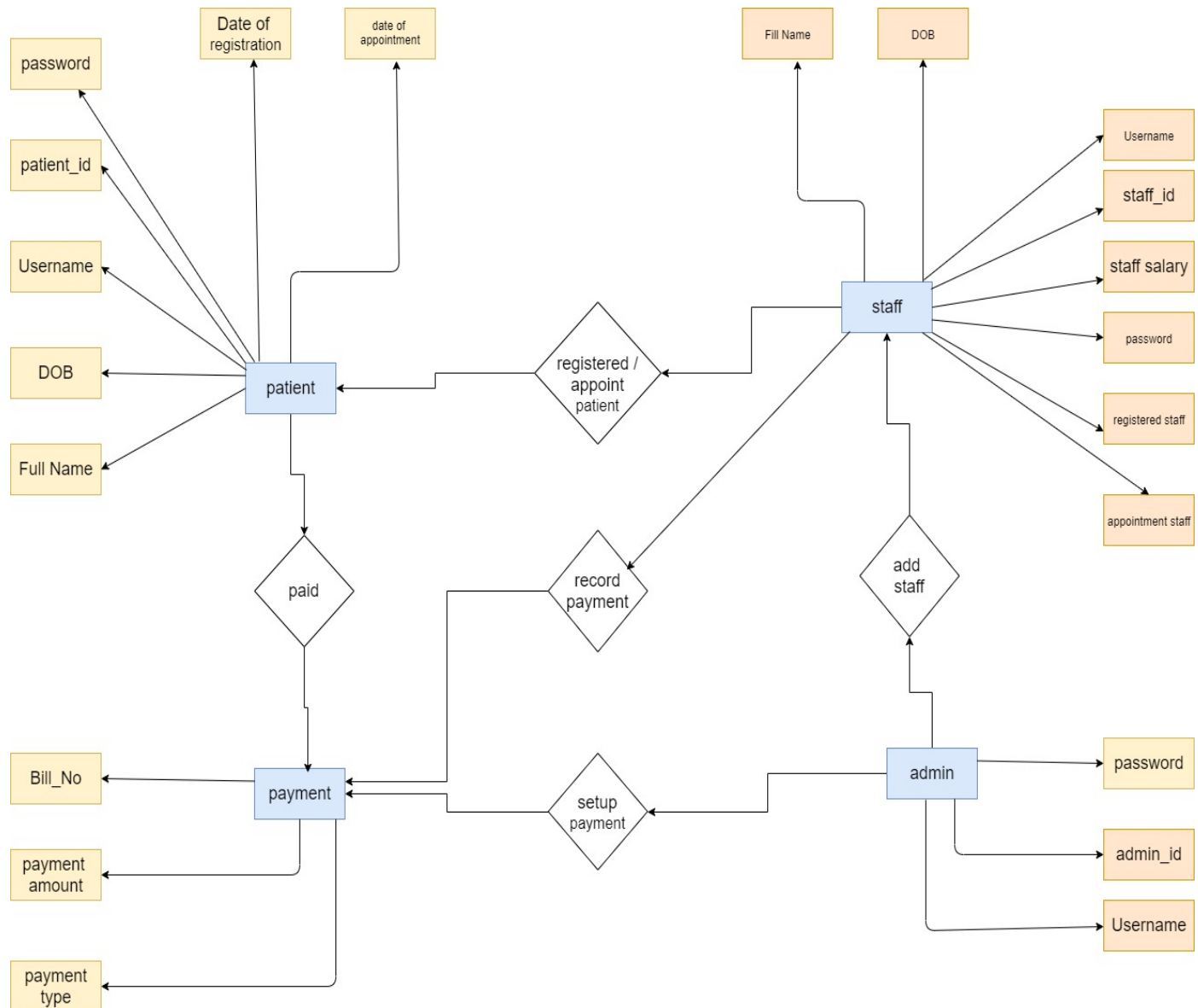


Figure 3 ERD Diagram of Group task (Dental home system)

- **Data Dictionary :**

Patient details = Full Name (String) + DOB(date) + Username(String) +{ patient_id(int)} + password(String) + Date of registration(date) + date of appointment(date) * All the details of the patient *

Payment details = Bill_No(int) + payment amount(float) + payment type(int) * All the details of the payment *

Admin details = admin_id(int) + Username(String) + password(String) * All the details of the Admin*

Staff details = full name(String) + DOB(date) + Username(String) +{ staff_id(int)} + staff_salary(float) + password(String) + registered staff(String) + appointment staff(String) *All the details of the staff *

- **Process Specification for the whole System:**

```

Patient
Do
Book appointment
End Do
Get configuration id
End Do
view appointment detail
End Do
cancel appointment
End
Staff
Do
conform appointment
End Do
Register patient
End Do
record patient
End Do
generate report
End
  
```

```
Admin
Do
Add staff
End Do
view patient detail
End Do
Cancel appointment
End Do
view staff information
End Do
register staff as patient
End Do
Terminate staff if staff leave within contract period
End
System
Do
Set remainder message
End Do
give auto message remainder
End Do
de registered staff after 10 days of buffer time automatically
END
```

c) Design specification

- Structure Chart (upper level) for the whole system:

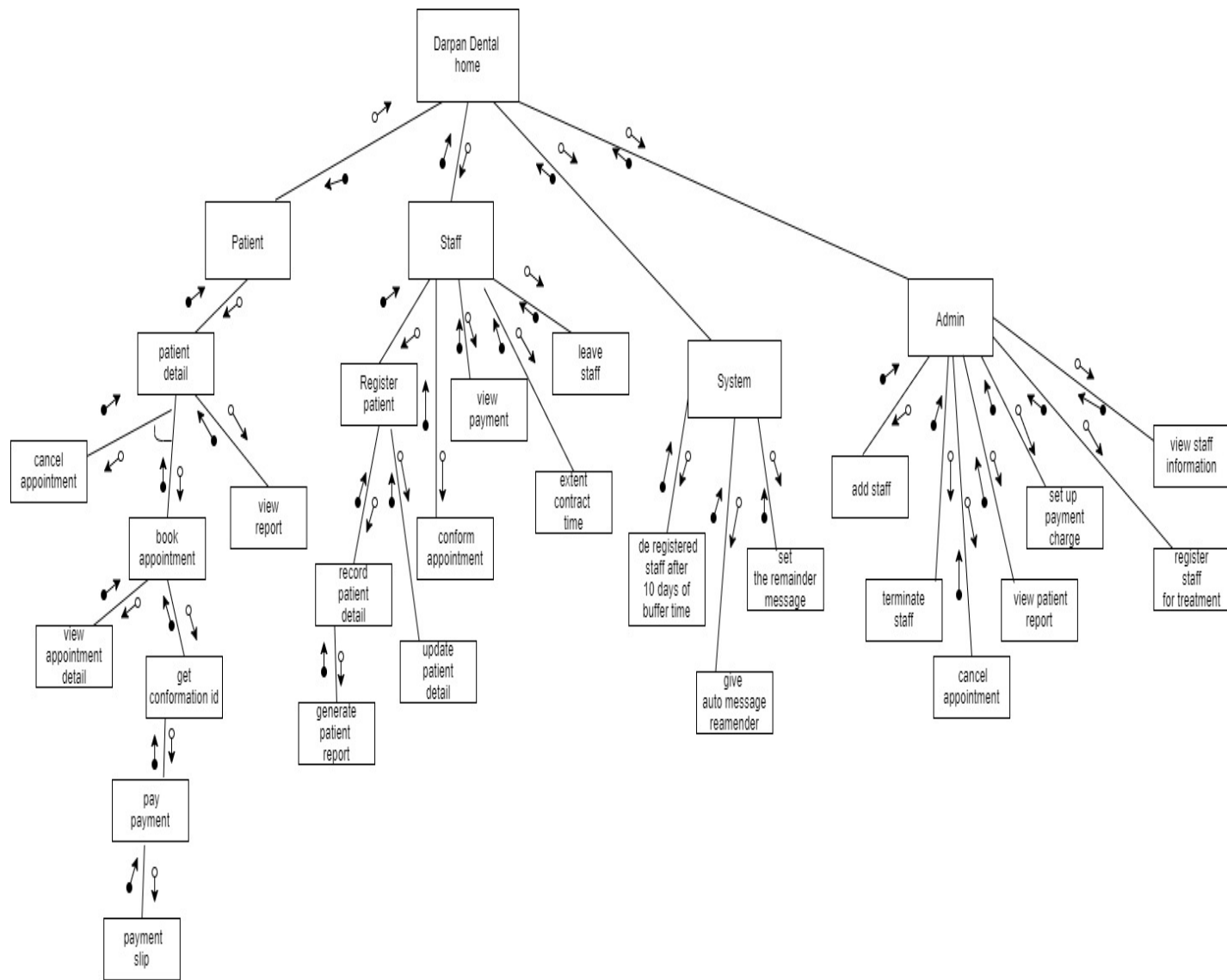


Figure 4 Structure chart of Group task (darpan dental home system)

d)Assignment diary

Assumption

We have made the assumption that the daily task of the group member will be doing on their individual task until the individual task is finished after finishing the each group member individual task then we will move towards group task in which each member have

their group task as well as each group members individual task context diagram is merge to form group task context diagram.

In the given date in the table, group member have complete their individual work and given time is time period of doing discussion over the group task. In the group task each member have there specific task 5 –jan-2020 Aklesh Yadav take responsibility to make whole report of course work and finish their individual task on date 29-dec-2019 the part module name payment of payment. Same as all group member take their responsibility on their time the all date and task of each member should canded in below given table .

Group member	Contribution	Date	Time
Aklesh Yadav (18030812)	Group task <ul style="list-style-type: none"> Report of coursework 	5-jan-2020	9:00 am – 11:00 am
	Individual task Payment of Patient <ul style="list-style-type: none"> Environmental model specification Internal model specification Model specification Structure chart 	29-dec-2019	10:00 am – 11:00 am
Navin kumar Mahato	Group task <ul style="list-style-type: none"> Structure chart 	5-jan-2020	9:00 am – 11:00 am
	Individual task Generate report of patient <ul style="list-style-type: none"> Environmental model specification Internal model specification Model specification Structure chart 	30-dec-2019	2:00 pm – 3:30 pm
Bikram Sharma	Group task <ul style="list-style-type: none"> Data flow diagram (DFD) 	5-jan-2020	9:00 am – 11:00 am

	Individual task Register of Patient	31-dec-2019	1:30 pm – 3:30 pm
	<ul style="list-style-type: none"> • Environmental model specification • Internal model specification • Model specification • Structure chart 		
Kamlesh kumar Singh	Group task	5-jan-2020	9:00 am – 11:00 am
	<ul style="list-style-type: none"> • Data dictionary 		
	Individual task Book appointment	2-jan-2020	10:00 am – 12:00 pm
	<ul style="list-style-type: none"> • Environmental model specification • Internal model specification • Model specification • Structure chart 		
Anuj Pandey	Group task	5-jan-2020	9:00 am – 11:00 am
	<ul style="list-style-type: none"> • Module specification 		
	Individual task De registration of staff	3-jan-2020	1:00 pm – 3:30 pm
	<ul style="list-style-type: none"> • Environmental model specification • Internal model specification • Model specification • Structure chart 		

Table 1: Assignment diary of Group Task

3. Individual task

Name = Bikram Kumar Sharma

ID: 18030830

College ID: NP01CP4S190050

Module Name: Register a patient

a) Environmental model specification

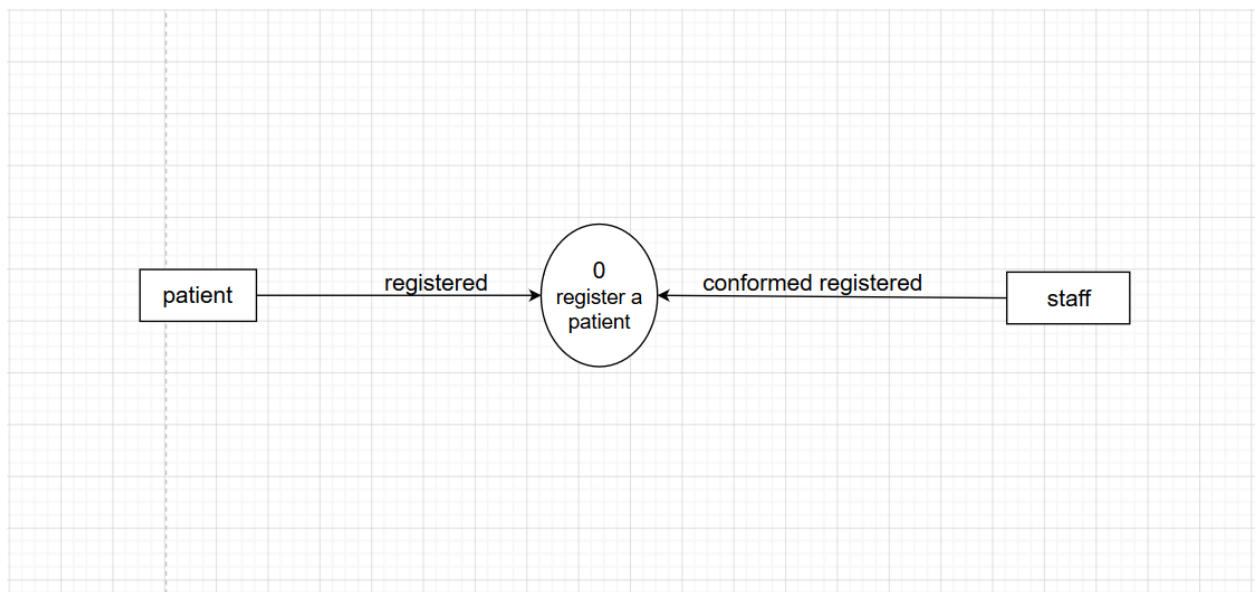


Figure 5: level 0 of individual task (register a patient)

In the context level of individual task (Register a patient), I show or describe just head of the process. Here Register a patient is main system, where patient are register and staff conformed register.

b) Internal model specification

i. Level 1:

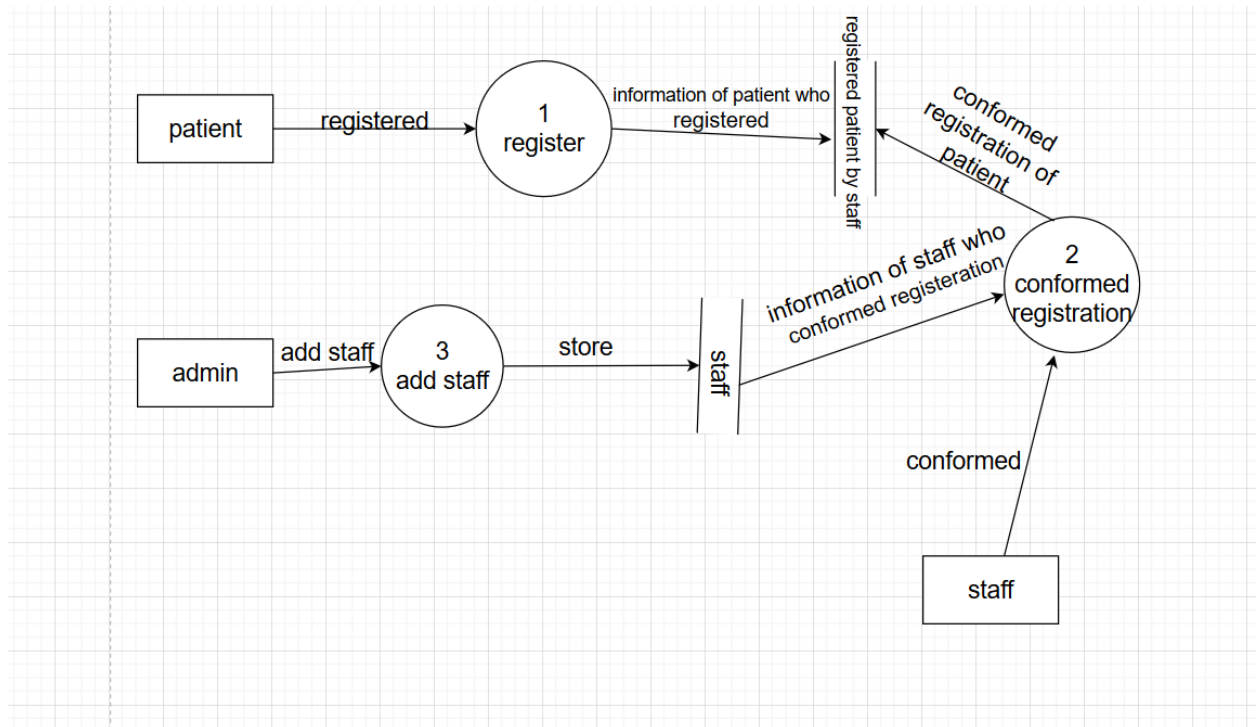


Figure 6: level 1 of individual task (register a patient)

In level 1 of individual task (register a patient), I describe in detail of register a patient system of level 0. In this level patient registered a register which is stored in registered patient by staff database, admin add staff and the record of staff is stored in

staff database, staff conform register of patient and the information of staff who conform that register of patient is known from staff database.

ii. Level 2:

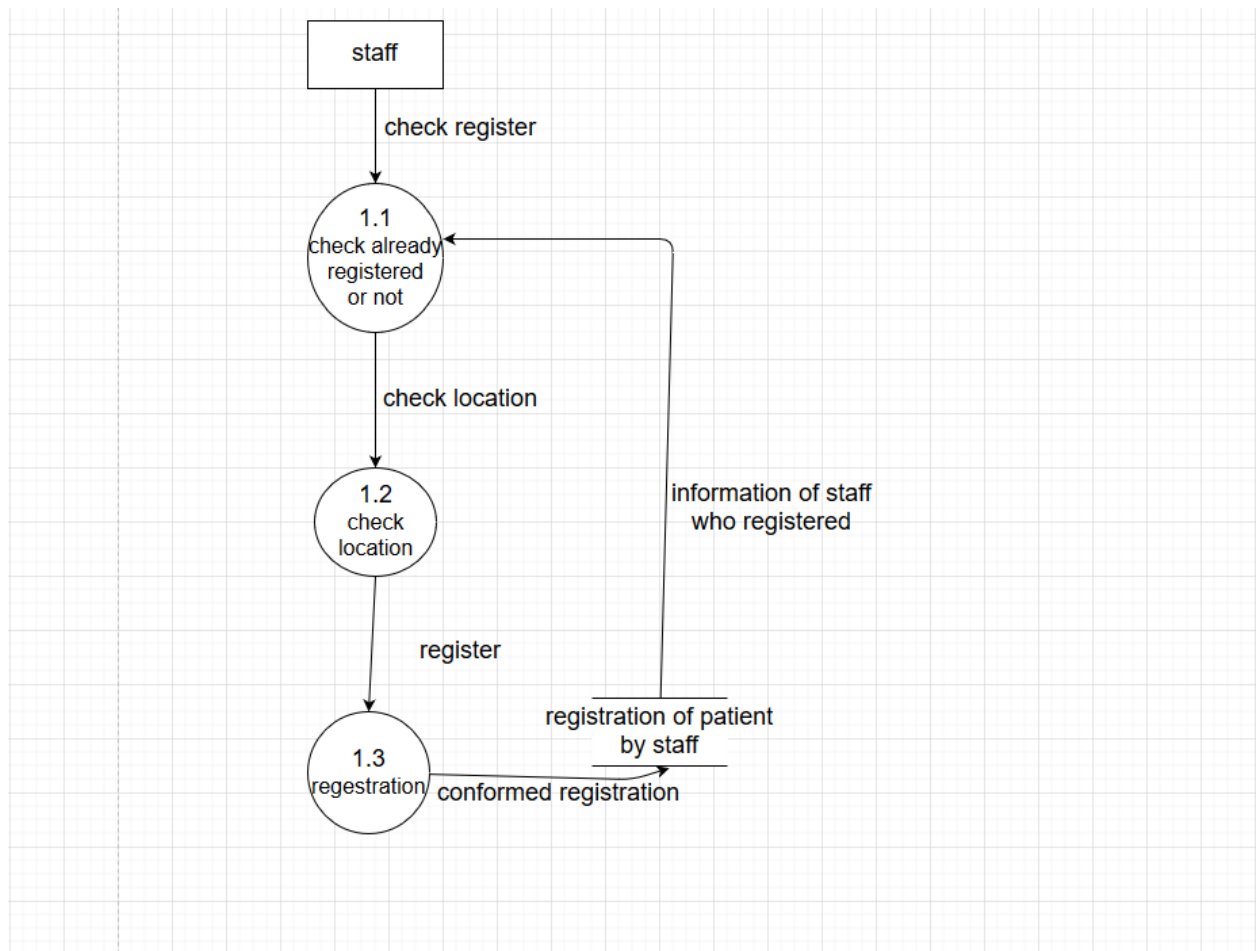


Figure 7: level 2 of individual task of register process (register a patient)

In level 2 of individual task (register a patient), I describe in detail of register process of level 1. In this level we describe a single process of level 1 in brief. Here inside register process of level 1, we first check whether a patient is register already or not. We might give priority to location of patient because patient might be from long distance and we have to give more priority to them and we might fix only some location

to register. Information of staff who registered a register of patient can be obtain from registration of patient by staff database.

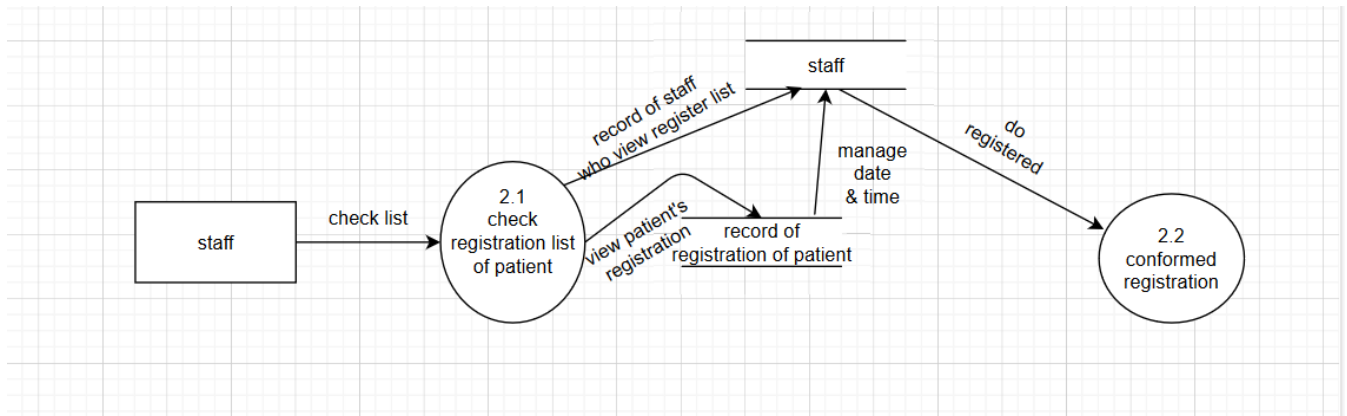


Figure 8: level 2 of individual task of conformed registered process (register a patient)

In level 2 of individual task (register a patient), I describe in detail of conformed registration process of level 1. In this level we describe a single process of level 1 in brief. Here at first staff check registration list of patient that which patient registered a register which is stored in staff database and record of registration of patient respectively. And then staff do register by conforming registration which is come from patient.

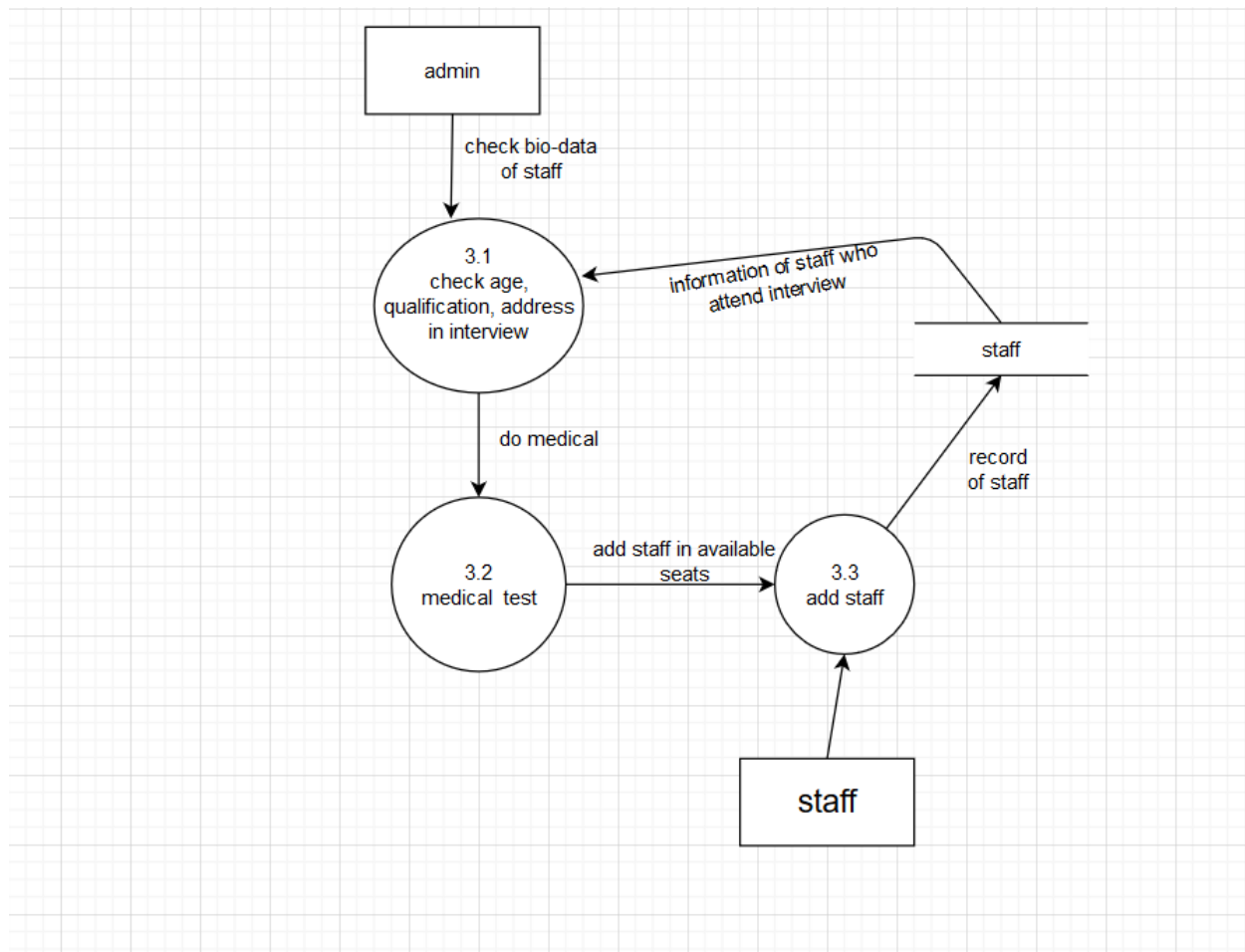


Figure 9: level 2 of individual task of add staff process (register a patient)

In level 2 of individual task (register a patient), I describe in detail of add staff process of level 1. In this level we describe a single process of level 1 in brief. Here at first admin check bio-data of interested staff and then do medical test. After that admin add staff and the record of staff is stored in staff database.

c) Design specification

i. Structure chart:

Structure chart is a chart derived from Data Flow Diagram. It represents the system in more detail than DFD. It breaks down the entire system into lowest functional modules, describes functions and sub-functions of each module of the system to a greater detail than DFD.

Structure chart represents hierarchical structure of modules. At each layer a specific task is performed.

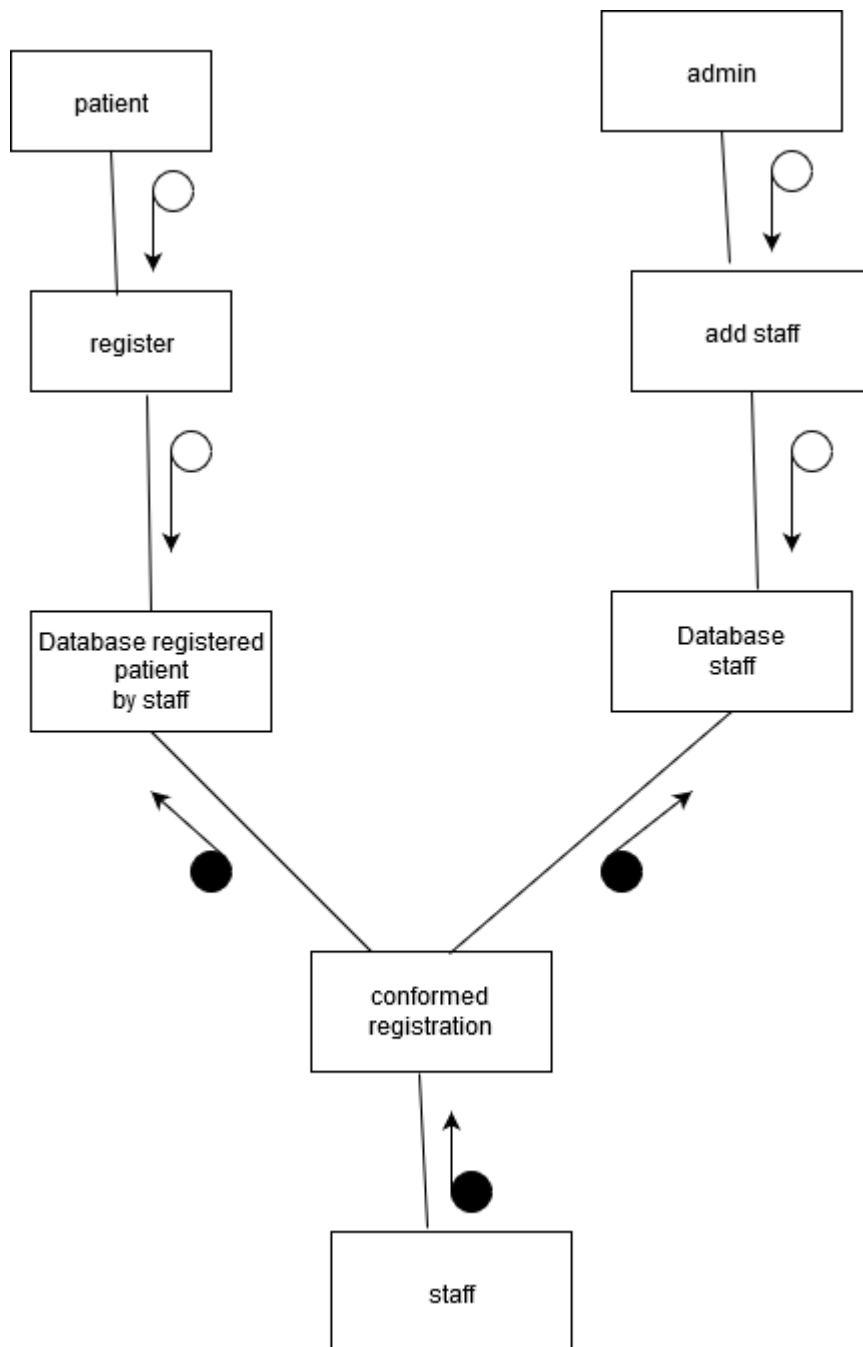


Figure 10: structure chart of individual task.

ii. Module specification (MSpecs) for corresponding module:

Module Name	-Register a patient
Purpose	-To Register a patient in Dental Home Application
Pseudocode	<pre> DO Input full Name of patient Input DOB of patient Input Username Input password Input location Input Date_of registration Input Payment_amount Input Payment_type DO Store Information of patient who registered END DO END DO DO Add staff DO Store staff information END DO END DO DO Conformed registration Do Information of staff who conformed registration DO Conformed registration of staff END DO END DO END DO </pre>

Input Parameters	-Registered -Add staff -Conformed -Information of staff who conformed registration
Output Parameters	-Information of patient who registered -Conformed registration by patient -store
Global Variables	-Registered
Local Variables	-Add staff -Conformed -Information of staff who conformed registration -Information of patient who registered -Conformed registration of patient -store
Calls	N/A
Called By	N/A

Table 2: Module specification of register of a patient

Navin kumar mahato

London Met ID : 18030850

College ID : NP01CP4S190070

Module Name: Generate report of patient

a) Environmental model specification:

❖ Context Level

A context diagram sometimes called a level 0 data-flow diagram is drawn in order to define and clarify the boundaries of the software system. It identifies the flows of information between the system and (Wikipidia, 2020)external entities. The entire software system is shown as a single process.

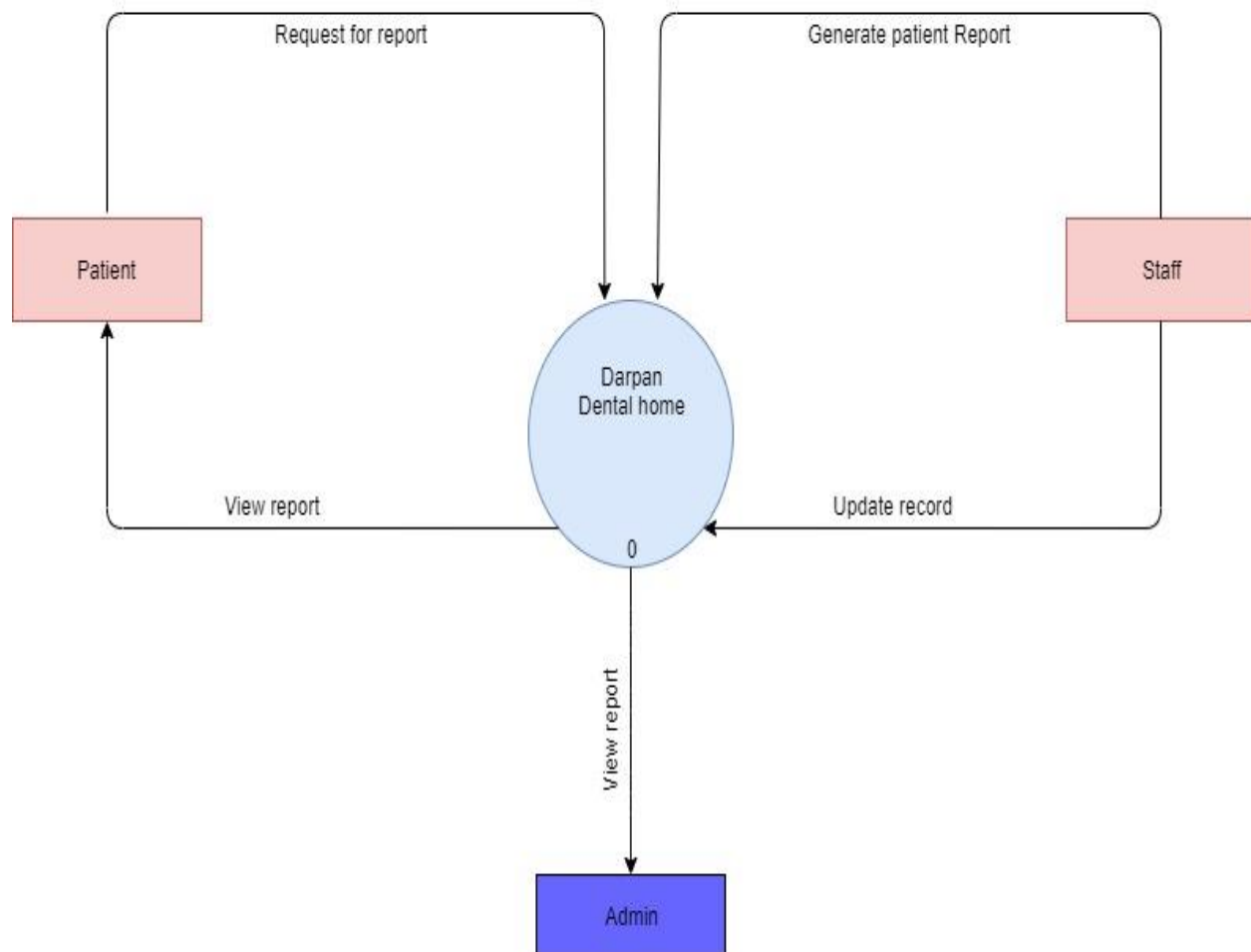
Generate report of Patient

Figure 11 context level diagram of generate report of patient.

In this above figure context level diagram name Generate report where patient request for their reports to the system and patient should be able to view their reports from darpan dental home system as well as staff generate the report and staff have to permission to update record as well as Admin of Darpan dental hpme system is allow to view patient reports.

b) Internal model specification:

❖ The Level 1 DFD fragments:

The top level is referred to Level 0 or the Context Diagram it represents the system as one process box. Level 1 data flow diagrams show incoming data flow processes and output data flows (IT, 2019)

Generate report of the patient

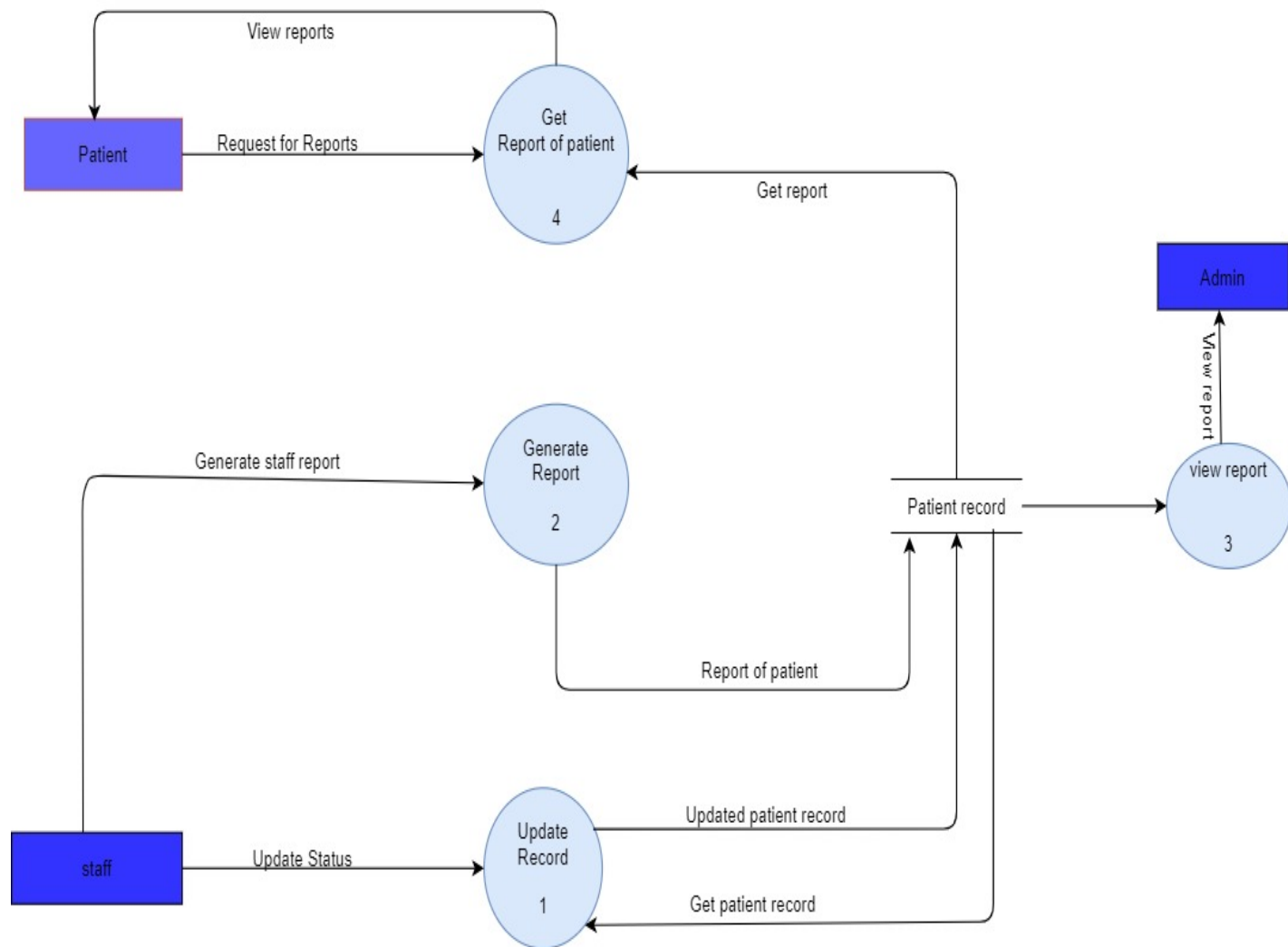


Figure 12 DFD 1 level diagram of generate report of patient.

In This above figure of level 1 DFD staff should generate the report and the process of generate report it sends their data In database of patient record after that staff should update status and the process of update record request to database for record update

then after the process of update record get response from database of patient record as name get patient record after that two process from the database view report process can get report from patient record and send it to system Admin of darpan dental home to view report of patient because system of darpan dental system is allow to view their patient record .after that process get report process should get data from database of patient record after that the process of get report of patient should send the report of patient that will be requested from patient.

❖ The Level 2 DFD Fragments:

A level 2 data flow diagram (DFD) offers a more detailed look at the processes that make up an information system than a level 1 DFD does. It can be used to plan or record the specific makeup of a system. You can then input the particulars of your own system. (IT, 2019) (Wikipedia, 2020)

Generate report Of the patient

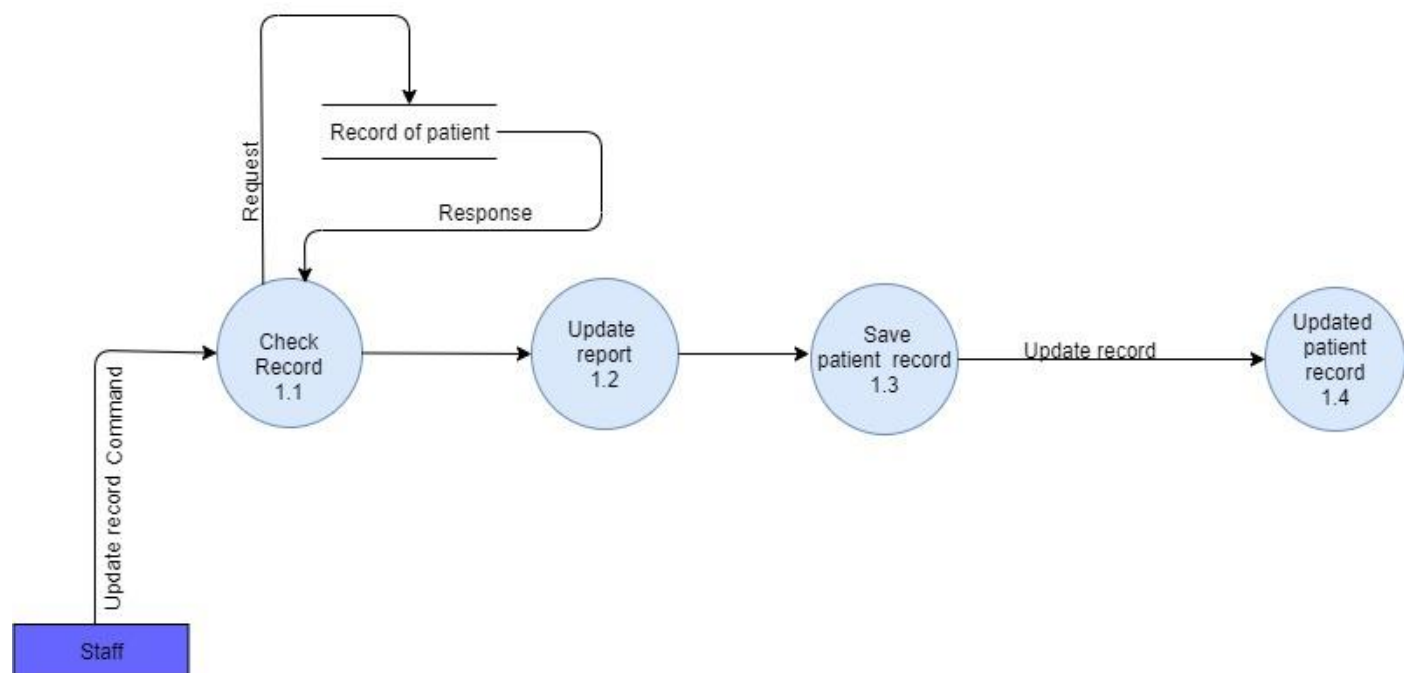


Figure 13 DFD level2 1.1 diagram of generate report of patient.

In this above figure Level 2 DFD 1.1 should describe the process Name updated data from level 1 DFD diagram where staff send update record command then after check

record process should be get command and send request to database of records of patient after that check record process should get data from database then after the process of check record send data to update report for further process then after update report get data and send it in to save patient record process for save the status of patient record after these all process at last save patient record process sends the all updated data to updated patient record process.

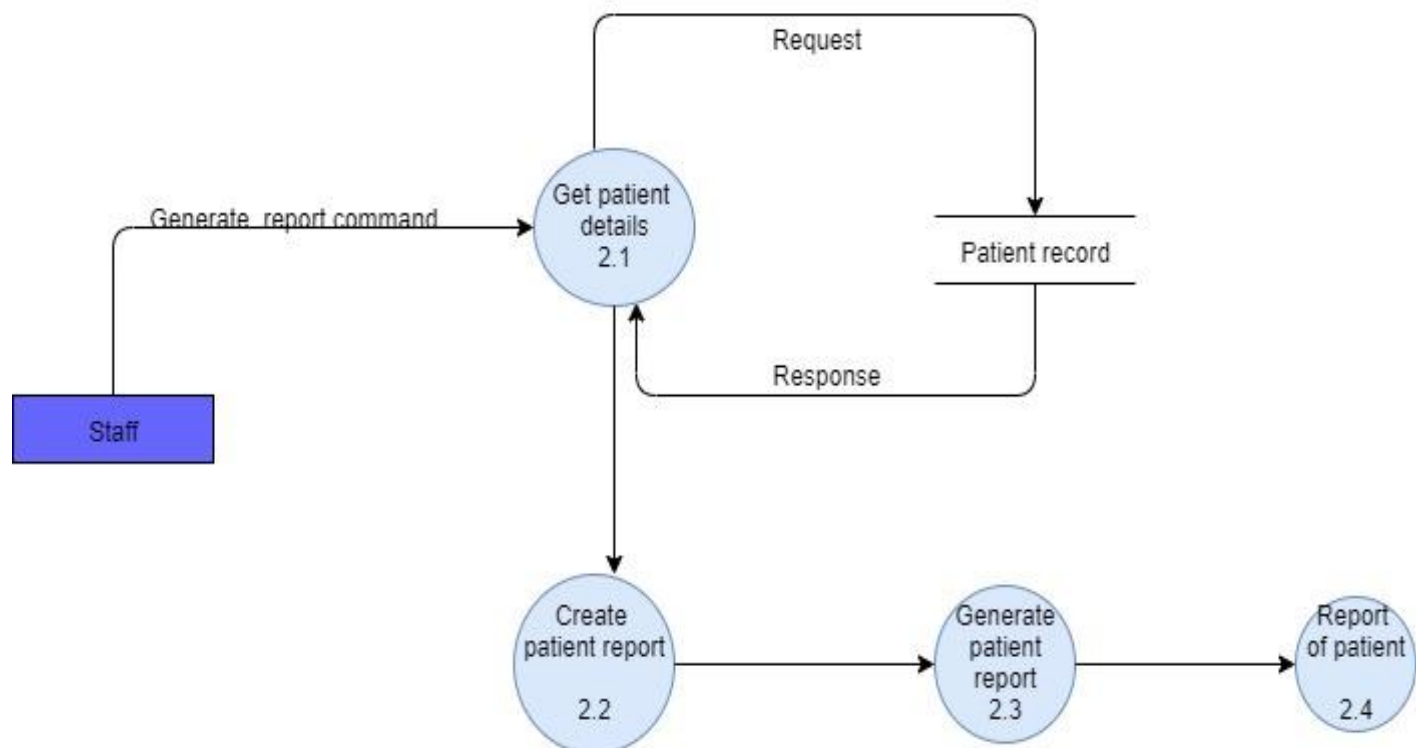


Figure 14 DFD level2 2.1 diagram of generate report of patient.

In this above figure Level 2 DFD 2.1 should describe the process where staff should have Generate the report from level 1 DFD diagram where staff send generate report command to get patient details process then after get patient details process should be get command and send request to database of patient record after that get patient details process should get data from database then after the process of get patient details send

data to create patient report for further process then after generate patient report get data and send it in to report of patient process for view the report of patient.

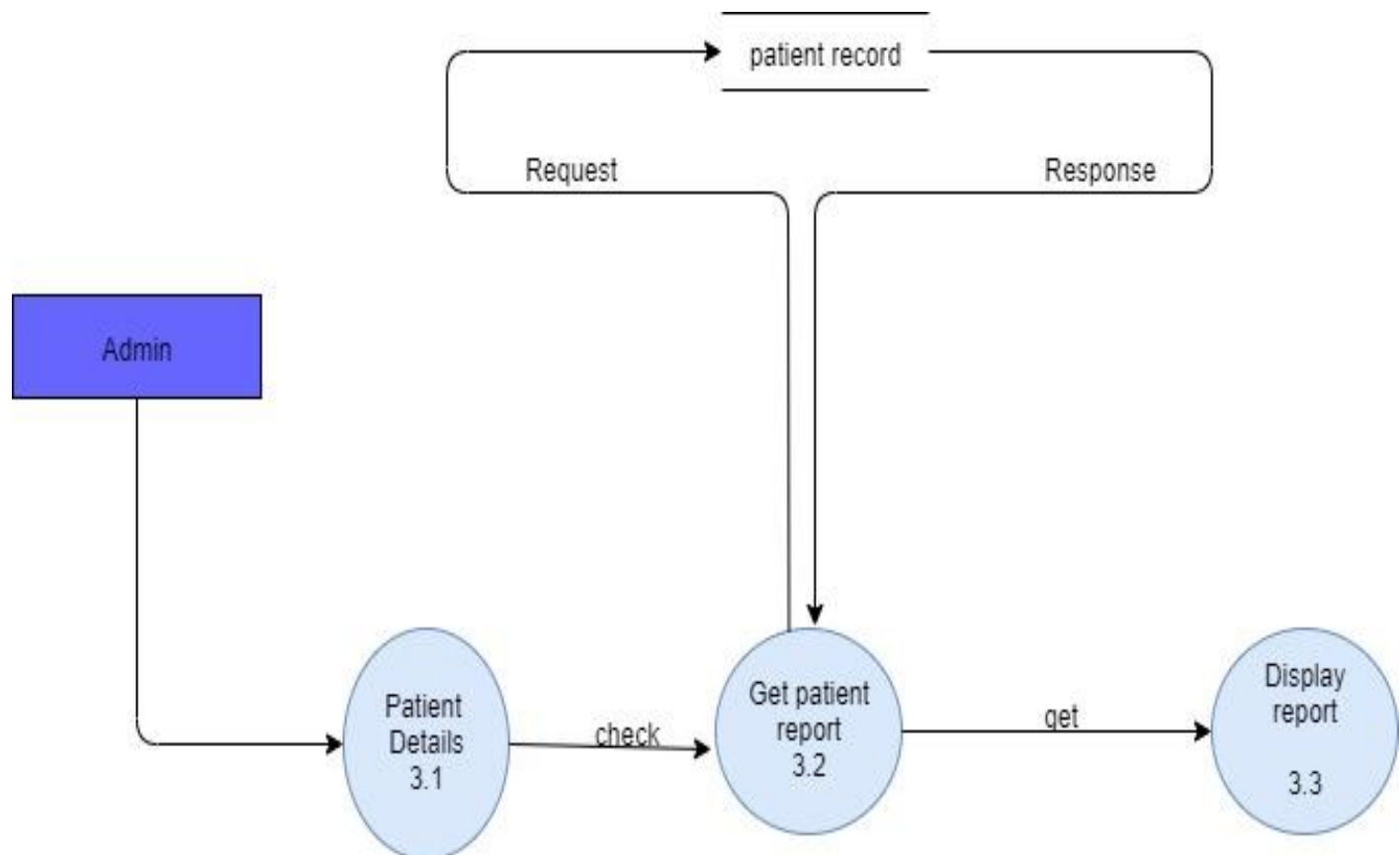


Figure 15 DFD level2 3.1 diagram of generate report of patient.

In this above figure Level 2 DFD 3.1 should describe the process where Admin should have view the report from level 1 DFD diagram where Admin send patient details to patient details process then after patient details process should be send a data to check the get patient report process from patient record database. after that get patient report process should get data from database then after the process of get patient report sends the data to Display patient report for further process then after Display patient report get data and send it in Display the report of patient.

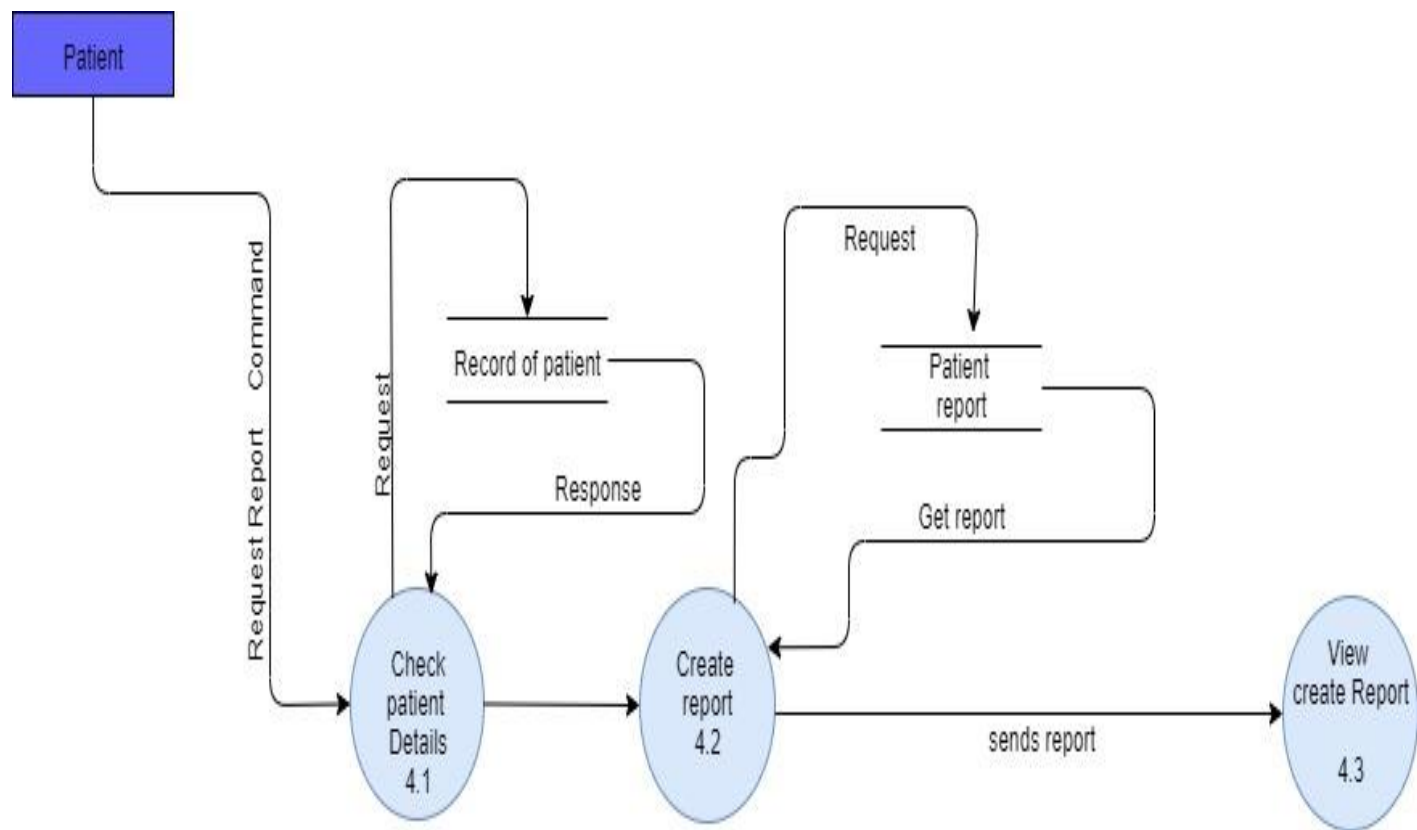


Figure 16 DFD level2 4.1 diagram of generate report of patient.

In this above figure Level 2 DFD 4.1 should describe the process where patient should have Get patient report from level 1 DFD diagram where patient send request report command to check patient details process then after check patient details process should be get command and send request to database of record of patient after that check patient details process should get data from database then after the process of check patient details send data to create report for further process then after create report process send request to Database of patient report after that the create report process get data from database and send report to view crate report process after that view report process should receive data from create report process to view the report of patient.

C) Design specification :

❖ Structure chart for the particular function:

A Structure Chart in software engineering and organizational theory is a chart which shows the breakdown of a system to its lowest manageable levels. They are used in structured programming to arrange program modules into a tree. (Wikipedia, 2020)

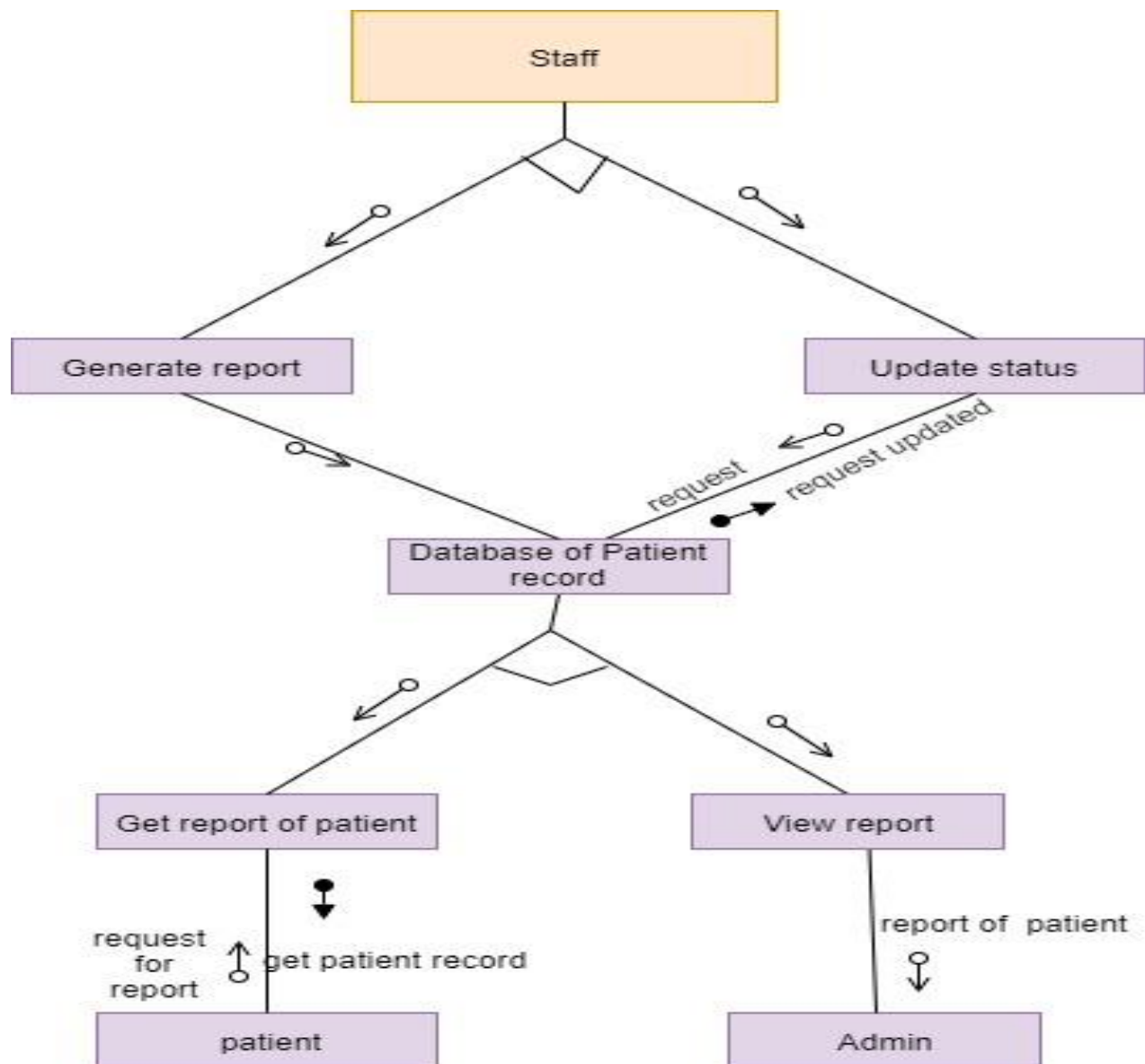
Generate report For the patient

Figure 17 Structure chart of generate report of patient.

In this above figure , this is a structure chart of the generate report of the patient for darpan dental home where all process should describe in tree model in this figure staff request

to generate the report of patient and update status of patient after that update status and generate report is connection to same database to get data from database of patient record then after database of patient record send data in two way where one is view report and another one is get report of patient after the confirmation the data view report send in to Admin to view the report because darpan dental home is allow Admin to view the patient report and get report of patient also send the data to patient to view the report of patient for view because patient should request to view their report.

❖ Module specification (MSpecs) for corresponding modules:

A functional specification identifies the operations that the module makes available and provides an individual specification for each operation typically in the form of an input-output specification describing the mapping that the operation provides from a set of input values to a set of output values. (Oxperd, 2020)

Generate report of the patient

Module name	Generate Report of the patient
Purpose	To generate report of the darpan dental home
Pseudocode	<pre> DO INPUT generate patient report command DO INPUT report of patient END DO END DO DO INPUT update status DO INPUT updated patient record OUTPUT get patient record ENDDO END DO DO INPUT view report INPUT Request for reports DO INPUT Get report ENDDO END DO DO INPUT send patient data DO OUTPUT view report reports END DO END DO </pre>
Input Parameters	Generate patient report Command

Output Parameters	View report of patient
Global Variable	N/A
Local Variable	N/A
Calls	Patient
Called by	Patient

Table 3: Module specification of generate report

Anuj panday

London Met ID : 18030822

College ID : NP01CP4S190043

Module Name: De Register a staff

De Register a Staff

a) Environmental Module Specification

The task that we had to do as an individual in this group project was all about the examination and design specification of a particular part of the given system. And the part that I chose to work on as an individual task is 'De Register a staff'. For the completion of this task I had to examine all the possible ways and design specifications which are clearly described and shown in a detailed manner below.

In order to run the Dental home so called Darpan Dental Home, one of the important tasks the system has to do is de register a staff if the contract is over. The buffer time of 10 days is given in order to renew the contract of the staff after the expiration of the contract. If contract is not renewed, then the system has to de register the staff

automatically. And if the staff leaves before the expiration of the contract, then admin is responsible to get the staff out of the system. The stuffs said above is more described in the diagram form called 0 level diagram.

Data-Flow Diagram

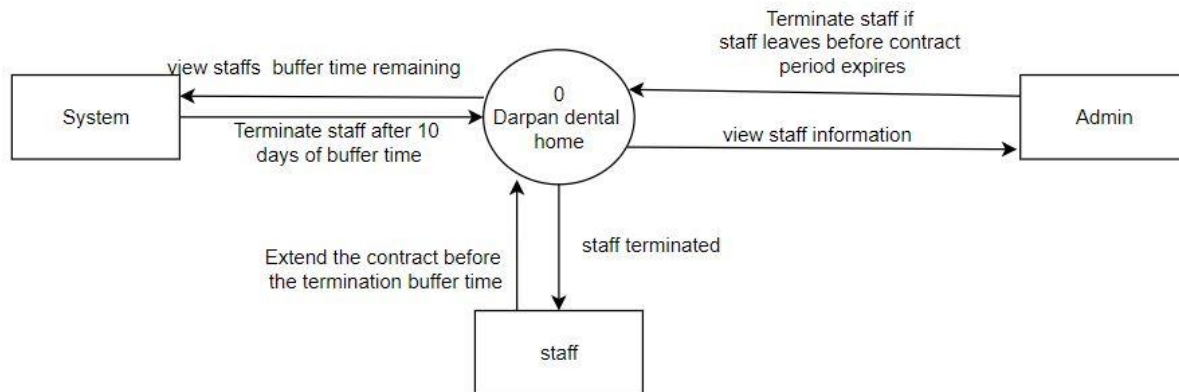


Figure 18 context level diagram of De-register staff.

The above figure represents 0 level Data-Flow Diagram (DFD) of De registration of a staff. The three entities of this Data-Flow Diagram are System, Admin and Staff which are clearly shown in the above figure. It shows that system itself and admin maintains the task of de registration of the staff as per their own conditions.

Internal Model Specifications for the system

Level 1 DFD (Data-Flow Diagram)

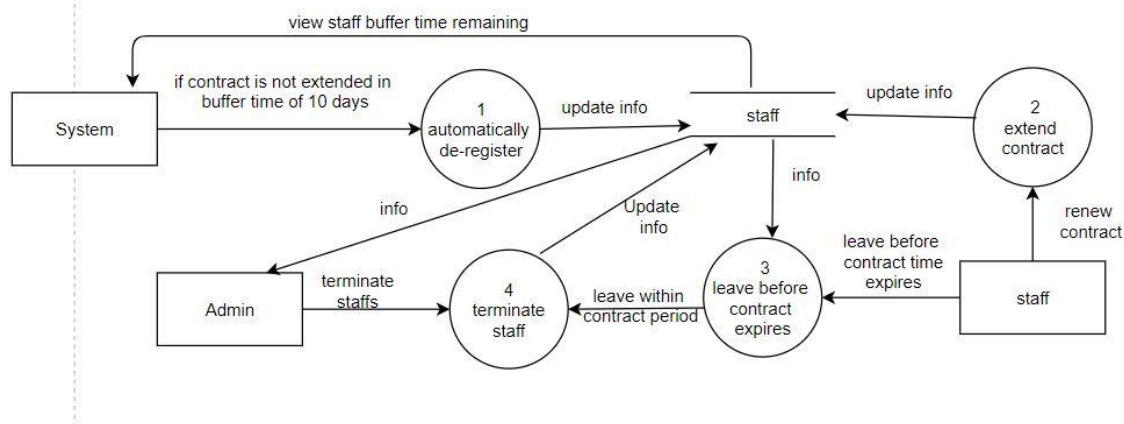


Figure 19 1 Level data flow diagram for de registration of the staff

The above figure represents level 1 Data-Flow Diagram of De registration of the staff of Dental Home application. The modules here are system, automatically de-register, staff, extend contract, leave before contract expires, terminate staff and admin which are responsible for de registration of the staff whether manually or automatically looking at the conditions given. And then the information is later updated to the system.

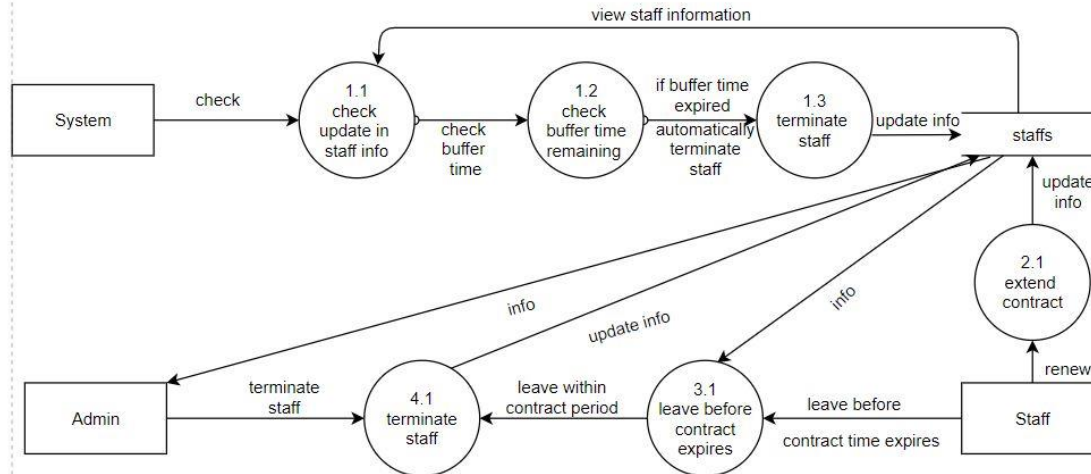
Level 2 DFD (Data-Flow Diagram)

Figure 20 2 Level of de registration of a staff

The above figure represents the level 2 Data-Flow Diagram of Dental Home application. The modules necessary here are System, check update in staff info, check the remaining buffer time, terminate staff, staff, extend contract, leave before contract expires and Admin. Here the system first check for the remaining buffer time for extension of a contract. If the buffer time is over which is 10 days, then the system automatically erases staff off of the system.

Design Specification

- Structure Chart

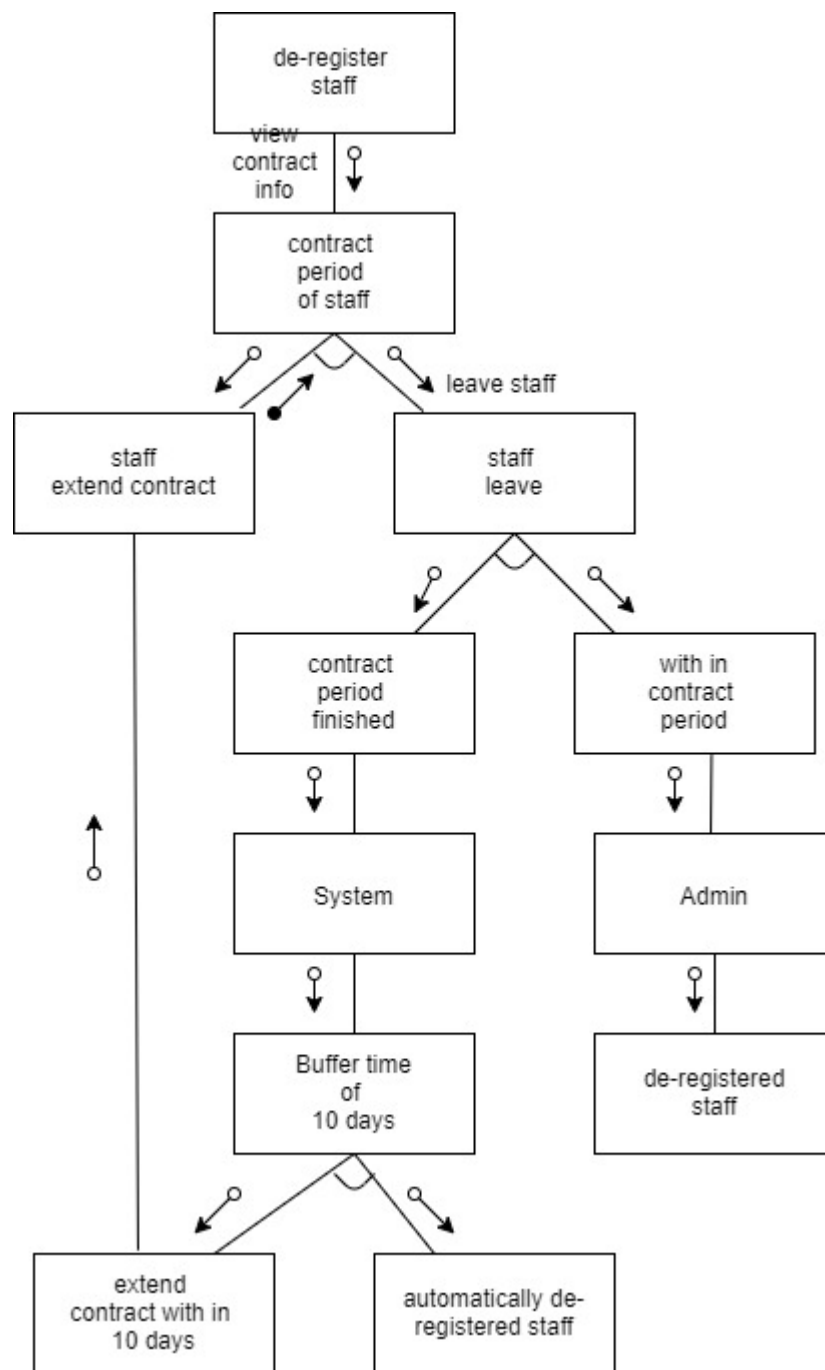


Figure 21 structure chart of (DE-register of patient)

The above figure is the structure chart of Darpan Dental Home Application for the function of de registration of a staff. As we can see that the processes done are clearly further broken down into the depth of the details with input and output parameters. The arrow with white circle in it represents input parameters where as the arrow with black circle in it represents the output result of the whole task.

Module specification

Module name	De-registered
Purpose	De registered staff
Pseudocode	Do Staff If Extend contract time End Else Leave Do Admin If Leave in contract time Do De registered staff End Do System If Extend contract in buffer time End Else Do If does not extend in buffer time End Do Automatically de registered staff End
Input parameters	Extend contract time
Output parameters	De-registered staff
Global variable	N/A
Local variable	N/A
Calls	N/A
Called by	Admin System

Table 4: Module specification of de register of staff

Aklesh Yadav

London Met ID : 18030812

College ID : NP01CP4S190033

Module Name: Payment of patient

a) Environmental model specification

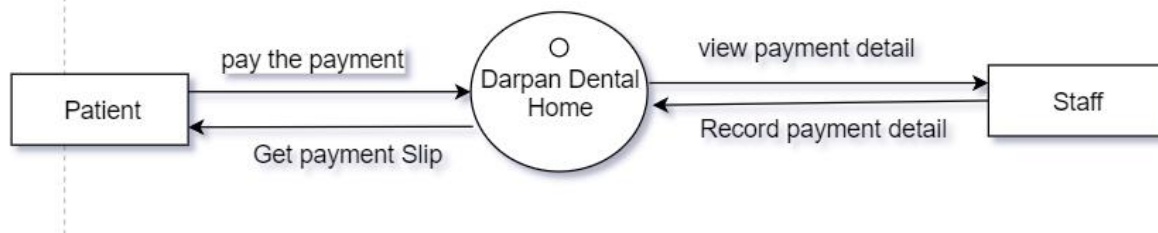


Figure 22: Context diagram

The above figure represent context diagram of Darpan dental home application for the function of patient payment. Patient pay the payment and get the payment slip. Staff registered the patient payment in the system and also record the payment detail of the patient and staff can view the payment details of patients.

b) Internal model specification for the system

- The level 1 DFD fragments

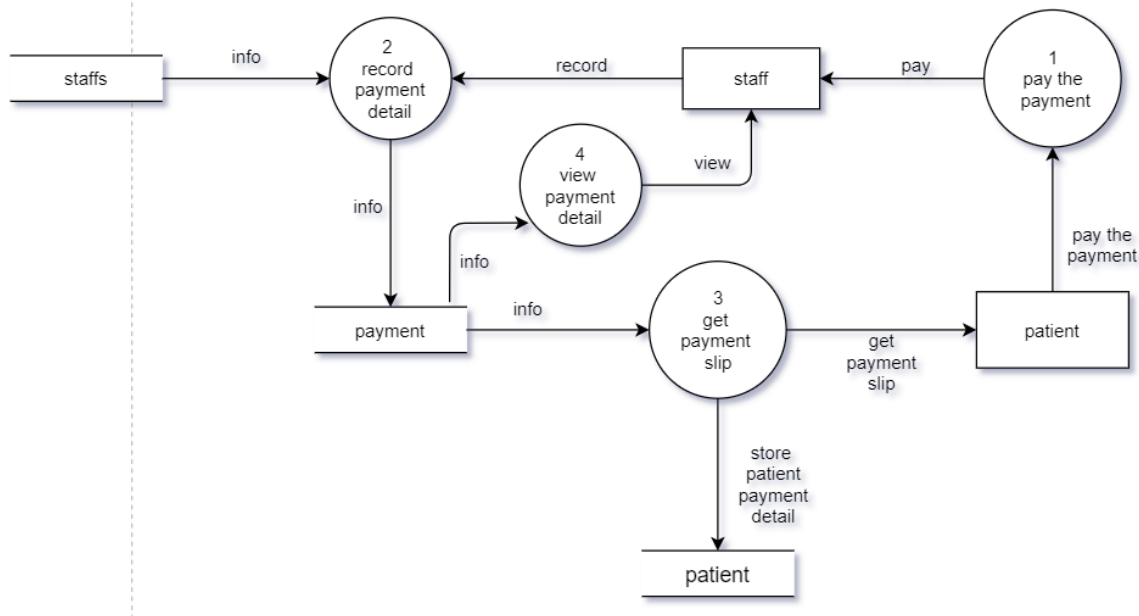


Figure 23: level 1 DFD

The above figure represent the level 1 data flow diagram (DFD) of darpan dental home application for the function of payment of patient. Patient pay the payment, staff record the payment in the system and keep the payment record in payment detail. Staff gives the payment slip after recording the payment detail in payment database. Patient gets the payment slip.

- Level 2 DFDs for the particular function

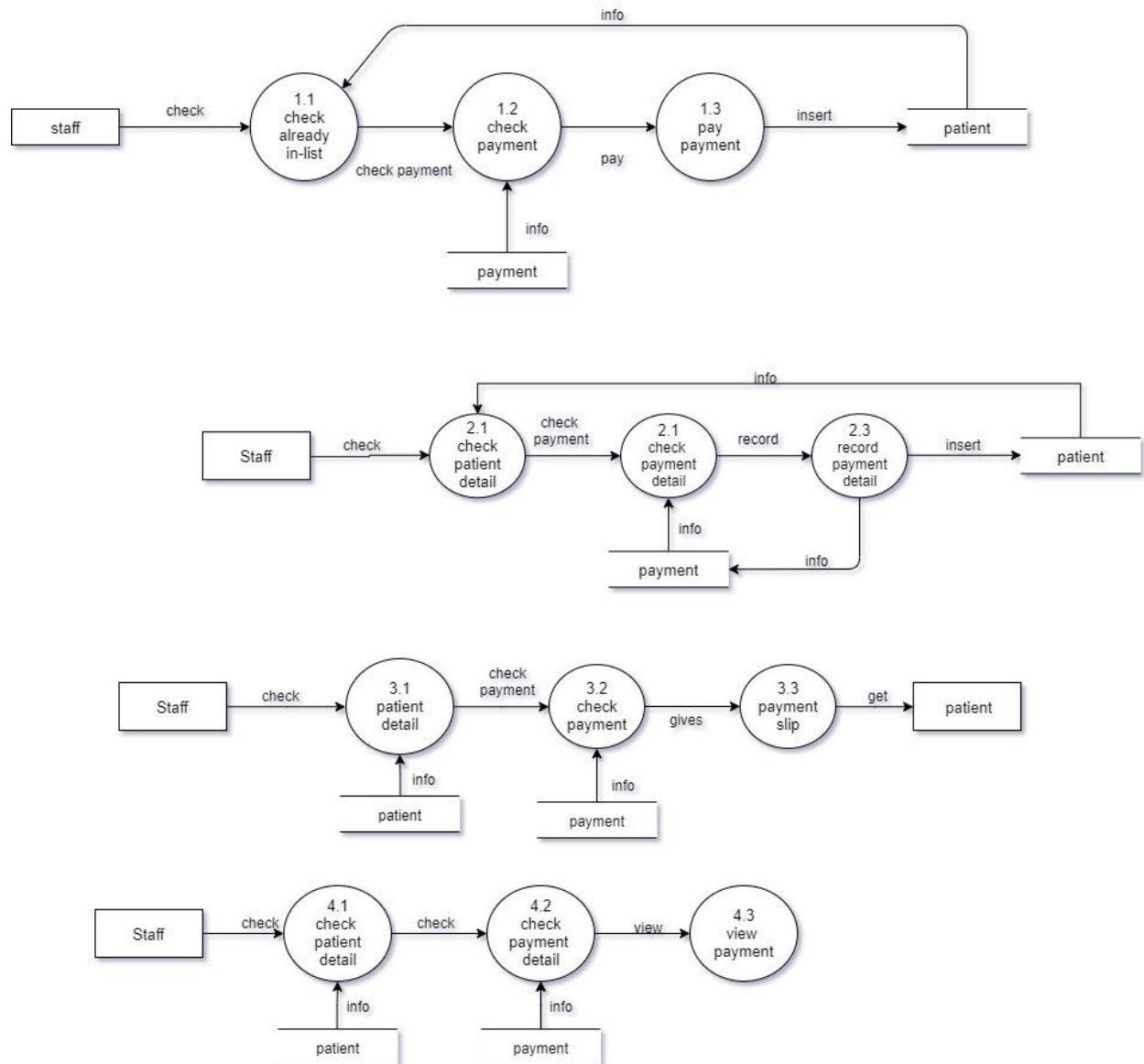


Figure 24: Level 2 DFD

The above figure represent the level 2 data flow diagram of darpan dental home for the function of payment of patient. Staff check patient in the system already exit or not in the patient database then check payment through the payment database and record the payment and update the patient database. Staff check patient detail through the patient database in the system and check payment detail in the payment database and record the payment detail and update the payment database and also insert the information in the patient database. Staff check patient detail in patient database then check the payment in the payment database and gives the payment slip and patient get the payment

slip. Staff check the patient detail in the patient database and check the payment detail information in the payment database then view the payment.

Design specification

- Structure Chart

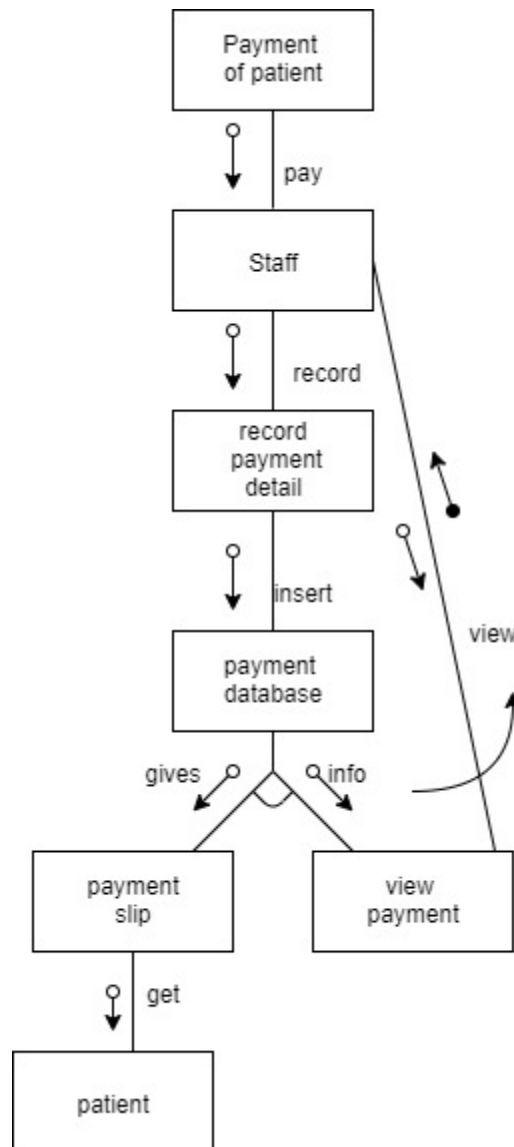


Figure 25: Structure chart of payment of patient

The above figure is the structure chart of darpan dental home application for the function of payment of patient, the process involved in the function of payment of patient broken down into detail with input and output parameters. Structure chart is the graphical model of payment of patient, peaking order of progress within the system. By arranging in order

of rank, the sequence of processes along with the movement of data and control parameters are mapped in the above figure. Structure chart is derived from data flow diagram. It represents the flow of data in the system more clear and detail than DFD. In structure chart each layer performed specific task.

Module specification (MSpecs) for corresponding modules

Payment of patient

Module name	Payment of patient
Purpose	To maintain the payment detail of patient
Pseudocode	Do Patient pay payment End Do Record payment detail View payment detail End Do Do Get payment slip End
Input parameters	Patient payment Record payment
Output parameters	Get payment slip View payment detail
Global variable	N/A
Local variable	N/A
Calls	N/A
Called by	Patient detail (Patient database is called) Payment (payment database is called)

Table 5: Module specification of payment of patient

Kamlesh kumar Singh

London Met ID : 18030853

College ID : NP01CP4S190073**Module Name: Book appointment**

1.1 Environment model specification.

1 Context Level

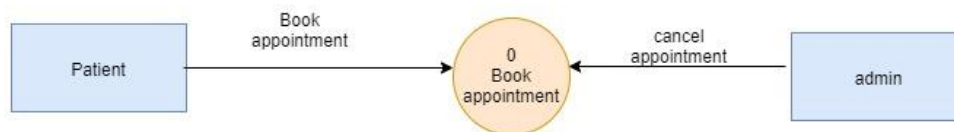


Figure 26 level 0 of individual task (Book appointment)

In the above figure Level 0 DFD (Data –flow diagram) which means the way of representing a flow of data of system. The data-flow diagram are provides information input and output of the process. The DFD has no control flow. In this DFD diagram are Book appointment of Dental Clinic which named as Darpan dental home. Patient can book their appointment them self. And Admin has special right to cancel the appointment of patient.

1.2 Internal model specification for the system.

1.2.1 The level 1 DFD fragments

In the level -1 data flow diagram is more explained than a level 0 data flow diagram. And not the more explained as a level 2 data flow diagram.it breaks the process into sub

processes which can be analysed and improved on a more close level.it chage the shape placement, text content.

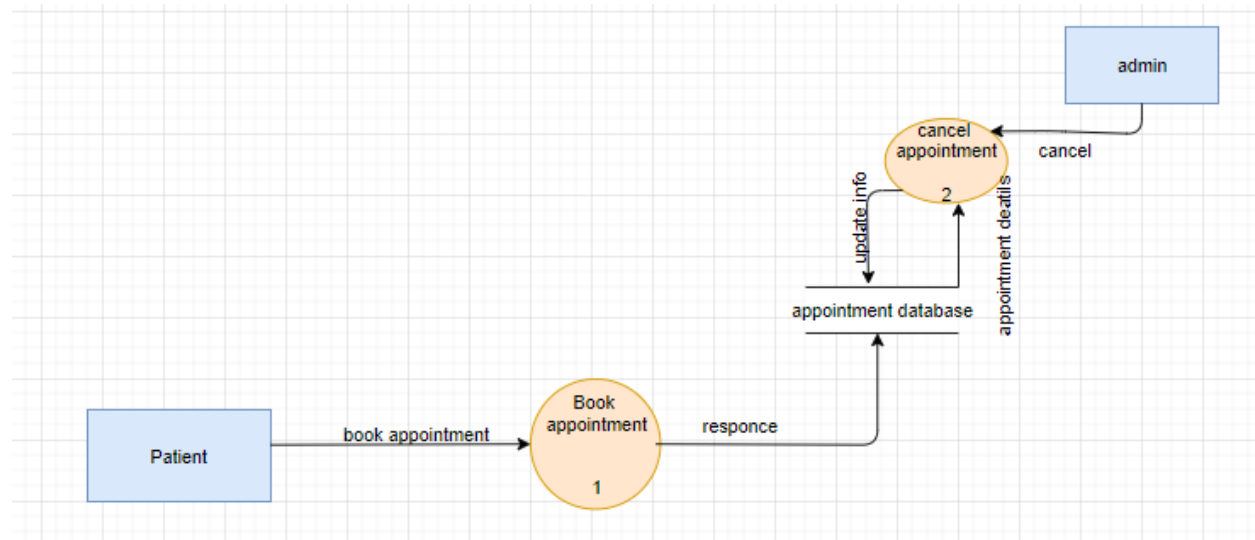


Figure 27 level 1 of individual task (Book appointment)

In the above figure are level -1 data-flow diagram. Patient should book their appointment and the process of book appointment receive data from patient and send into appointment data base for response. After get data from book appointment process appointment database send the data to cancel the appointment process and get response to update information and then after admin should cancel appointment process.

1.2.2 Level of 2 DFDs for the particular function.

In the level 2 data flow diagram are more details parts into level -1 data flow diagram. And that make an information system.it is used to records the necessary details in the system. It describe the process in the all details of the system.

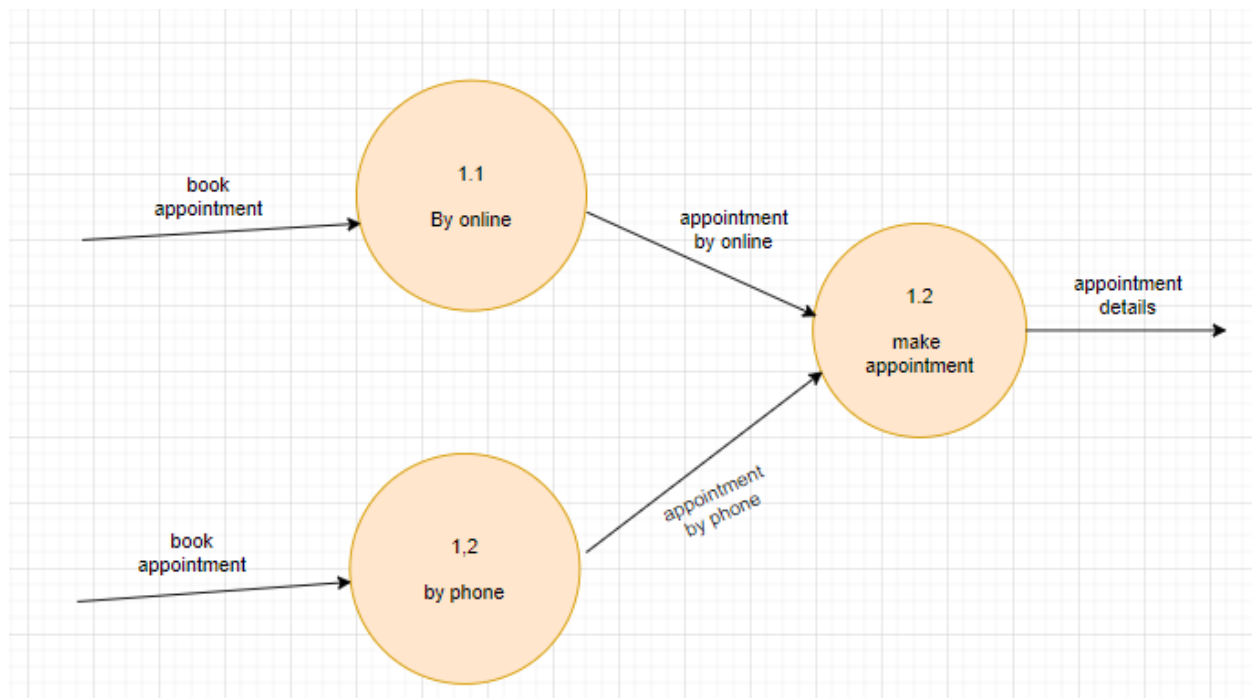


Figure 28 level 2 of individual task (Book appointment)

In the above figure level 2 of data flow diagram 1.1 where book appointment call the process by online then after by online process get data and send it into make appointment process from the help of online appointment call then after make appointment process receive data form by phone process in appointment by phone call method in by phone process data should called by book appointment.at last make appointment process release their data to view appointment details.

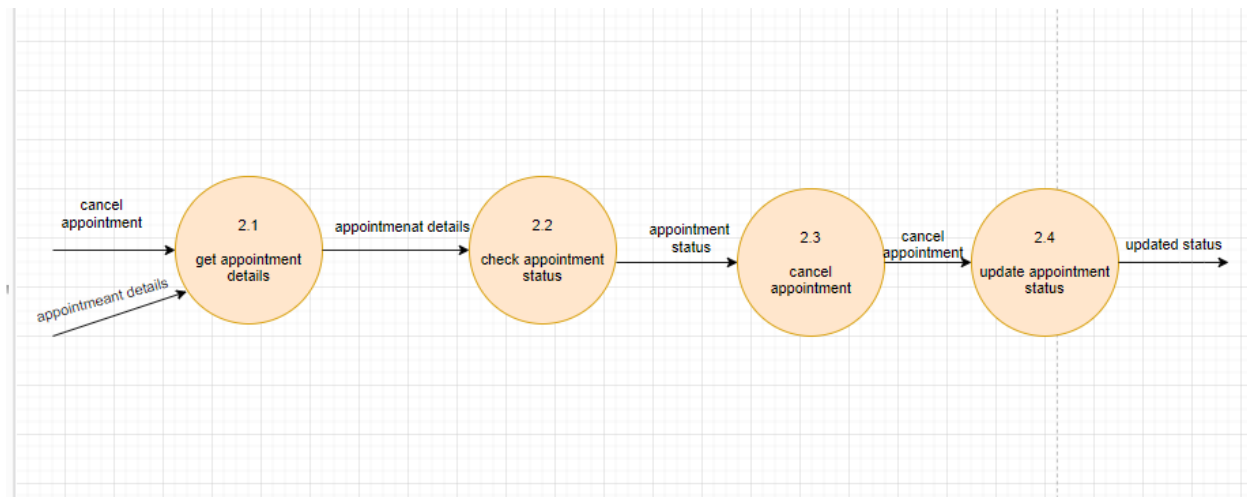


Figure 29 level 2.2.1 of individual task (Book appointment)

In this above figure level 2 DFD diagram 2.1 where cancel appointment and appointment details call the get appointment details process after the receive data get appointment details process send data in the form of appointment details call to check appointment status process for further activities after the receive the data from check appointment details process it send into cancel appointment process after the receive the data it send into update appointment status in the form of cancel appointment call method after get data from the cancel appointment process update appointment status release data to view for update status.

Design specification.

- Structure chart of the particular function.

Structure Chart represent hierarchical structure of modules. It breaks down the entire system into lowest functional modules. It describes the functions and sub functions of each module of a system to a greater detail. Structure Chart partitions the system into black boxes (functionality of the system is known to the users but inner details are unknown). Inputs are given to the black boxes and appropriate outputs are generated. Modules at top level called modules at low level. Components are read from top to bottom and left to right. When a module calls another, it views the called module as black box, passing required parameters and receiving results (GeeksforGeeks, 2020). As shown in the figure.

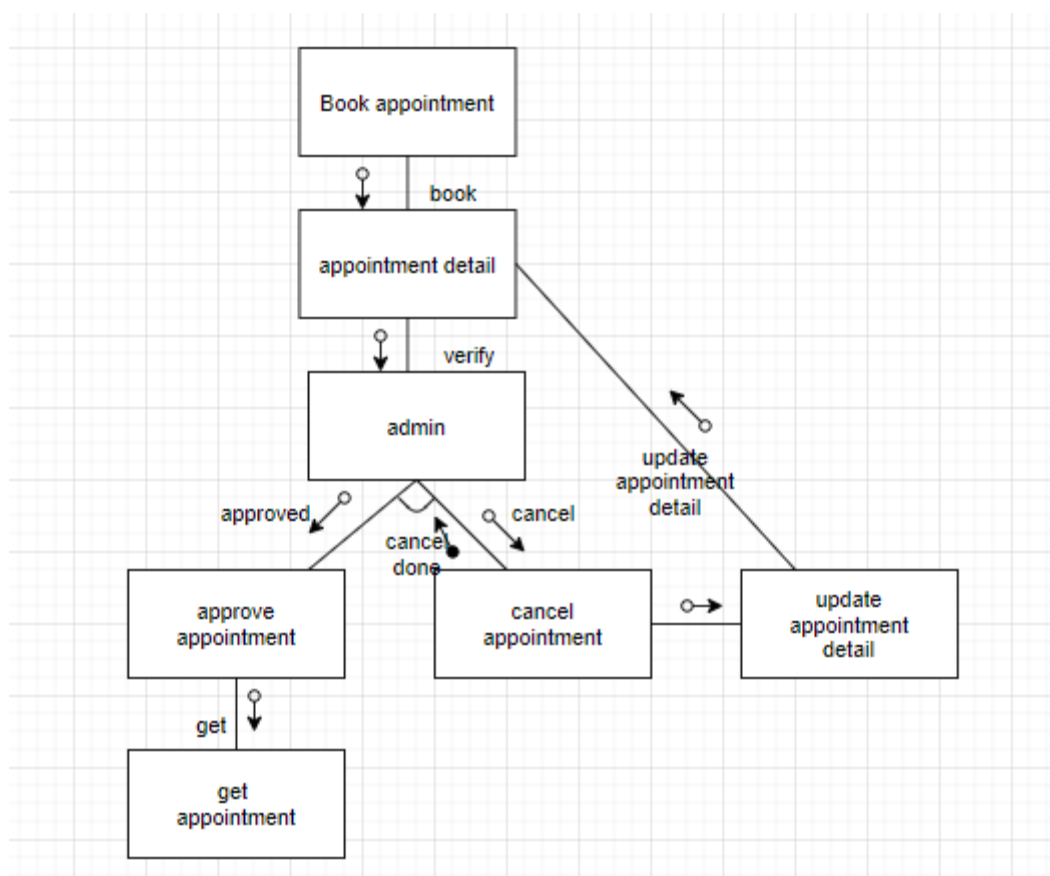


Figure 30 Structure chart of individual task (Book appointment)

- module specifications

MODULE NAME	Book appointment
PURPOSE	Patient can book an appointment them self from online or by phone.
PSEUDOCODE	Do Book appointment End Do Store in appointment database End Do View admin appointment detail End Do Update appointment detail End Do If Cancel appointment End Do Patient appointment cancel End Do If Appointment approved End Do Get appointment End
INPUT PARAMETERS	Book appointment Cancel appointment
OUTPUT PARAMETERS	Get appointment Rejected appointment
LOCAL VARIABLES	N/A
GLOBAL VARIABLES	N/A
CALLS	N/A
CALLED BY	Admin

Table 6:Module Specification of book appointment

4. Summary :

The project Darpan dental home System (DDHS) is for computerizing the working in a hospital. The software takes care of all the requirements of an average hospital and is capable to provide easy and effective storage of information related to patients that come up to the hospital. It generates test reports and provide prescription details including various Activities, work, and service to patient and staff. It also provides patient details and billing facility on the basis of patient's status whether it is an indoor or outdoor patient. The system also provides the facility of backup as per the requirement.

This project is describe to meet requirement of Darpan Dental home system(DDHS) that looking forward to maintain records of the patient and staff with patient payment details and appointment details in the computerize form to give fast service and effective service on the condition of today market .the main objective of this project was to create details report on software engineering concept ,process method and divided task. I this project we have face many problem many difficult in entity retional diagram but many research and hard work discussion with each other with group member analysis had to be made in order to achieve the proper solution.

After complete this project many skills should gain in software engineering this project is very help full for our future and further study also the following detailed specification knowledge should gained from this course work by the all member of our group:

- Environmental model specification
In Environmental model specification we should gain knowledge how to make context level diagram for Darpan dental home system .and how to describe the 1 level DFD with their process and particular method.
- Internal Model Specification
In internal model specification we have gain knowledge how to create entity relation Diagram with their all attributes and function and data dictionary with their definitions of mahor data flows and how to describe data flow and definitions of data stores and entities .and how specification the process fr elementary process this project help for further study and for future.

- Design Specification

In this design specification we have gain knowledge how to create structure diagram with their step by step process .

The given coursework has provide us many skills and knowledge regarding software engineering and its various concepts.

References

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