Phase#01

FUNCTIONAL REQUIREMENTS

1-REGISTER

3-SET AN APPOINTMENT

4-COLLECT DATA BY STAFF

5-UPLOAD REPORT

6-VEIW PRESCRIPTION

7-BILLING MODULE

Test first development

1-REGISTER

A- The registration can only be done by the patient.

B- Patient have to fulfill the condition given on the website. C- Shortage of any information will not be accepted.

3-SET AN APPOINTMENT

A- The Appointment can only be set on the free time

B- Already allotted time will not be given to anyone

C- Appointment can be made a week before not more than that.

4-COLLECT DATA BY STAFF

A- The staff can only collect the necessary data like medical history and tests.

B- Staff will not be allowed to look into the personal information of Patient given during registration time.

5-UPLOAD REPORT

A- This functionality will be used by several but there will be limit

B- Doctor can see a report of test

C- Laboratory can upload the report. But can't suggest a test by their self.

D- Patient can see report but can't make changes in it.

6-VEIW/EDIT PRESCRIPTION

A- Doctor can add prescription

B- Patient can only see the prescription

C- Doctor can change this after some time

7-BILLING MODULE

A- Patient can only pay the medicine bill.

B- Chemist can upload bill of medicine.

C- Chemist can check daily and weekly accounts report.

Phase#02

Architectural Style

General overview

The hospital management system is system which is being used by many actors at a time

1- The **Patient** use system to register itself, to upload documents, to set an appointment, to check test, to check result, to check for recommended medicine.
2- At the same time from same system(database) the **Nurse** is checking for appointments, medical history of patients
3- **Doctor** is using same database to update timing of availability, suggest test to patient, and suggest medicine
4- **Chemist** is using system to check for medicine and finalize the bill to be payable by the patient
5- **Laboratory** is using system to check for test and upload result

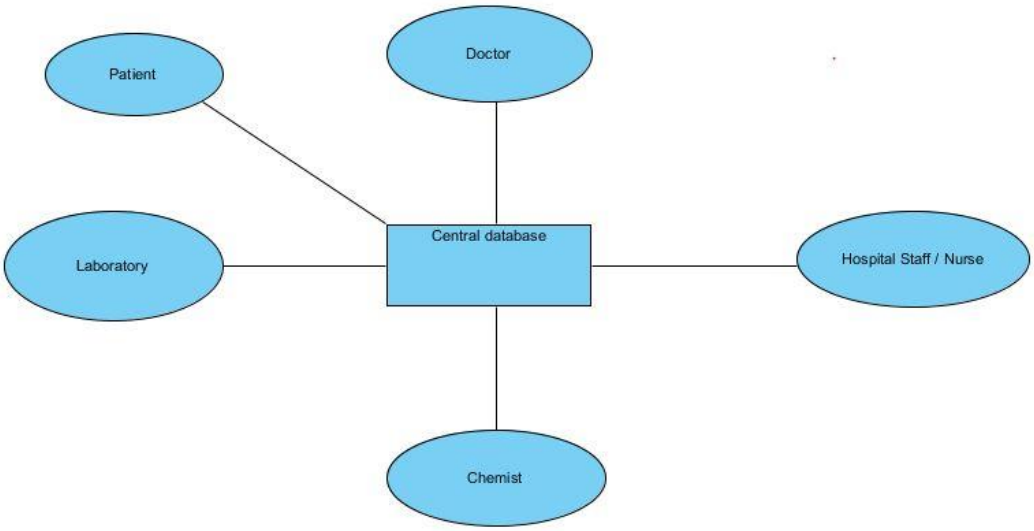
We can see the system is being used by everyone in different manners some are taking information and uploading result and some are just taking information so it is clear that the center of interest is same for everyone

Suggested Style

So form above discussion it is cleared that we will use the style of architecture which have a only one center or database (like The information container) and every actor / component take, update, insert, and add value to the system

For this the best style is ***Repository style***

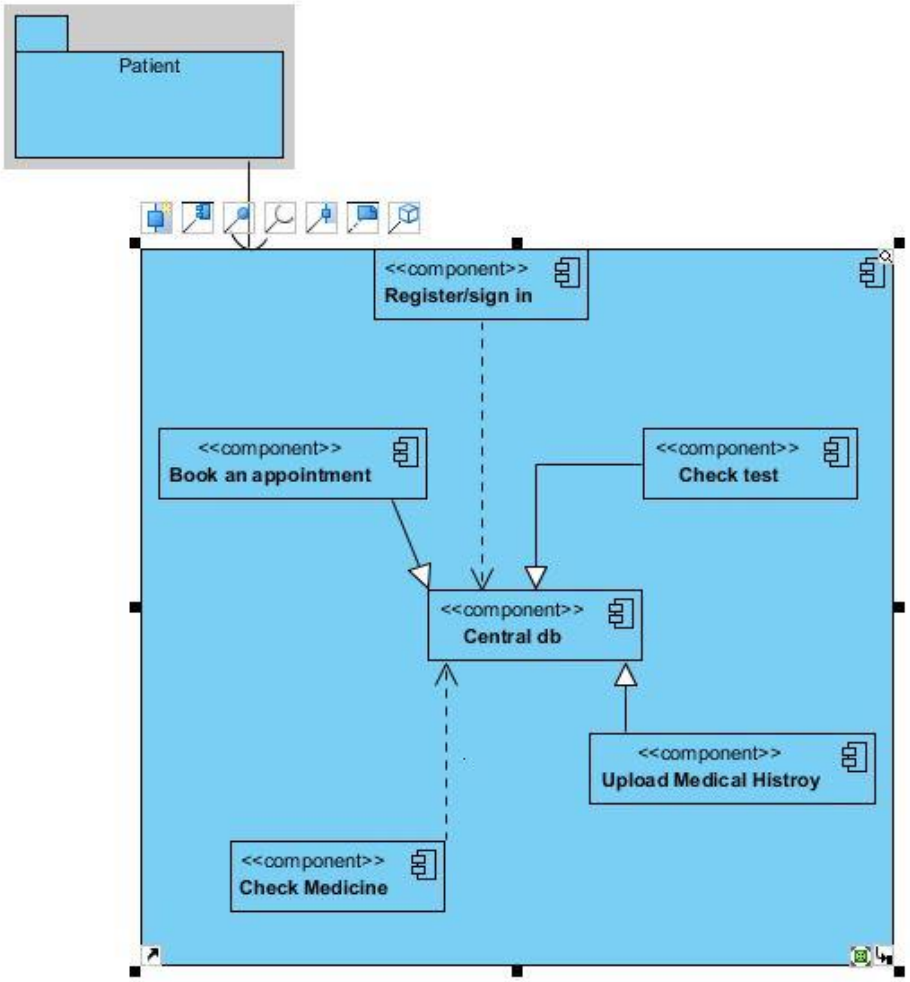
Constructed an Architecture for HMS.



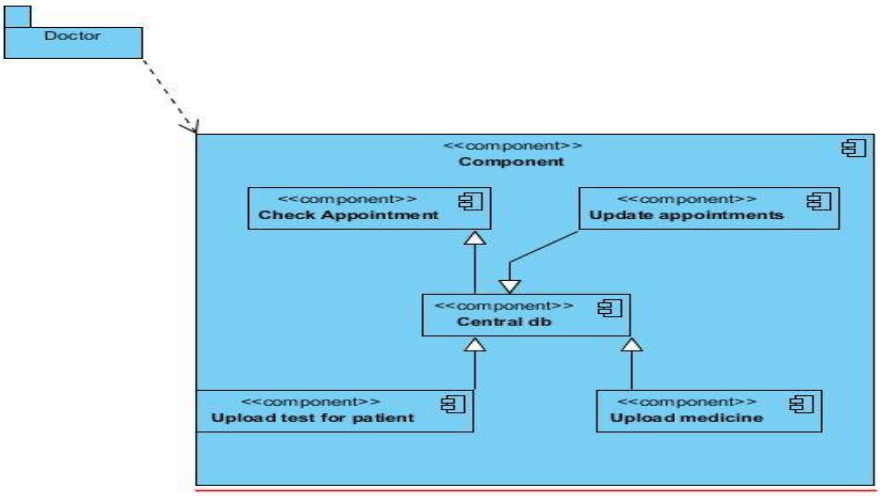
Views and views points

Developer views

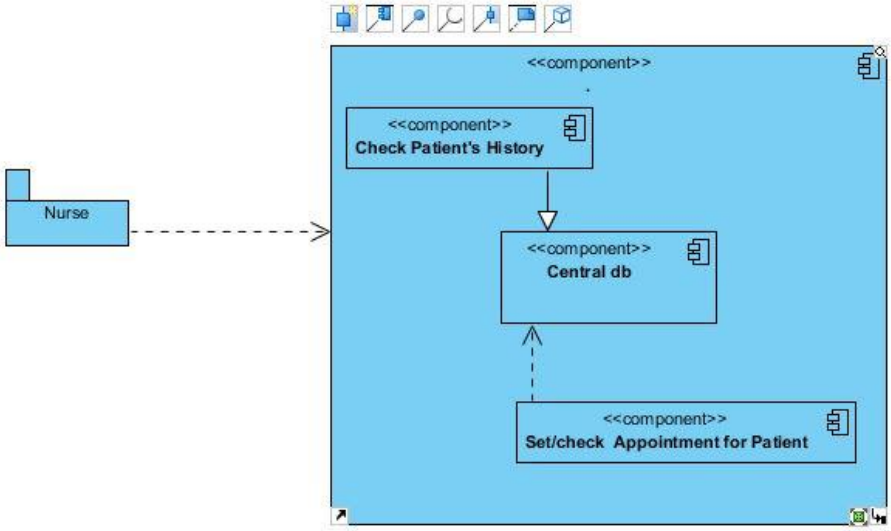
Patient



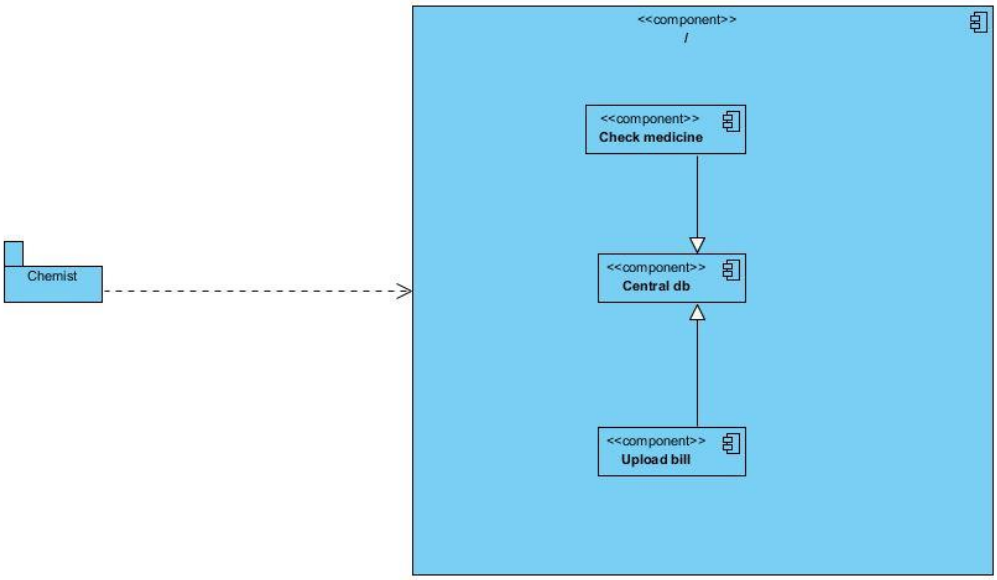
Doctor



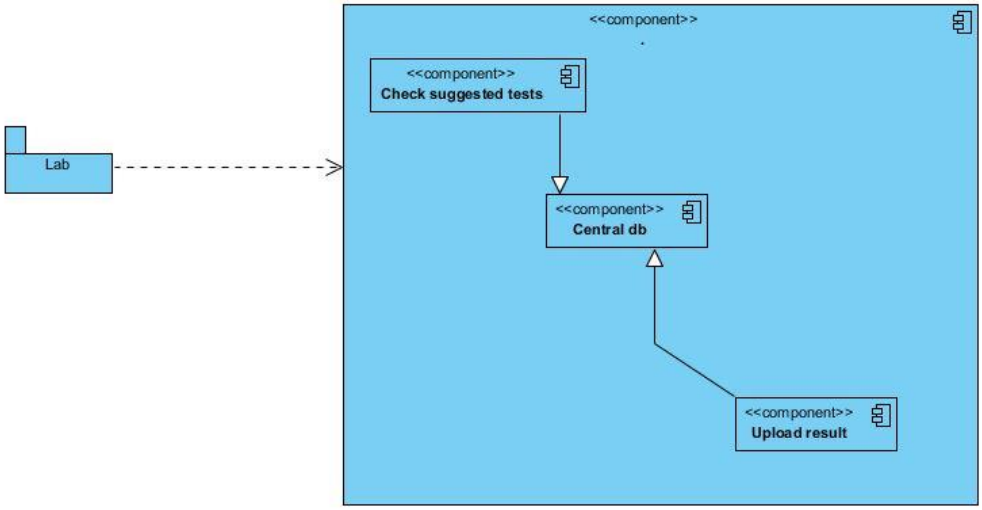
Nurse


<<component>>
<<component>>
Check Patient's History
<<component>>
Central db
<<component>>
Set/check Appointment for Patient
Nurse

Chemist


<<component>>
/
<<component>>
Check medicine
<<component>>
Central db
<<component>>
Upload bill
Chemist

Lab


<<component>>
<<component>>
Check suggested tests
<<component>>
Central db
<<component>>
Upload result
Lab

Phase#03

Qualitative Analysis Through ATAM

A-Presenting Phase:

1- Present Atam

2- Present Business Drivers

(i)-Functionalities

1- The software can register patient
2- The Software must allow to look into favourite time and book appointment
3- The software allow patient to upload form and wright the information or medical history
4- The software must allow Patient to look for doctors
5- The Patient can check the medicine recommended by doctor
6- The Patient will be able to check test
7- The Patient must have facility of online payment through any well-known services
8- The Doctor can check any Patients record
9- The doctor can suggest test and medicine for Patient
10- The Doctor is free to make any change regarding appointment
11- The lab assistant can check suggested test of specific patient
12- The lab assistant can upload test results
13- The chemist can check medicines
14- The chemist account link with online payment system

(ii)Stakeholders

Hospital Management

Government Health Department

Doctor

Nurse

Patient

Chemist

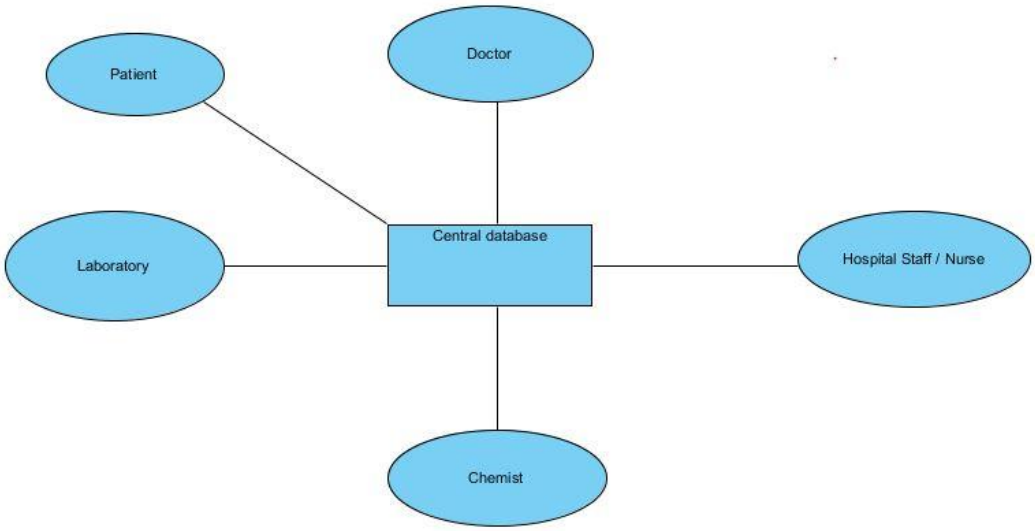
Laboratory

Attached Bank

3-Present Architectural Style

(i)-Suggested Architectural style

form above discussed functionalities it is cleared that we will use the style of architecture which have an only one centre or database (like The information container) and every actor component take, update, insert, and add value to the system for this the best style is **Repository style**



(B). Investigation and Analysis Phase:

4. Identify architectural approaches

This Architectural style is used as it is having only database which is being used by everyone so it may compromise the data integrity for this purpose this system have to go with such approach so that every user has to just

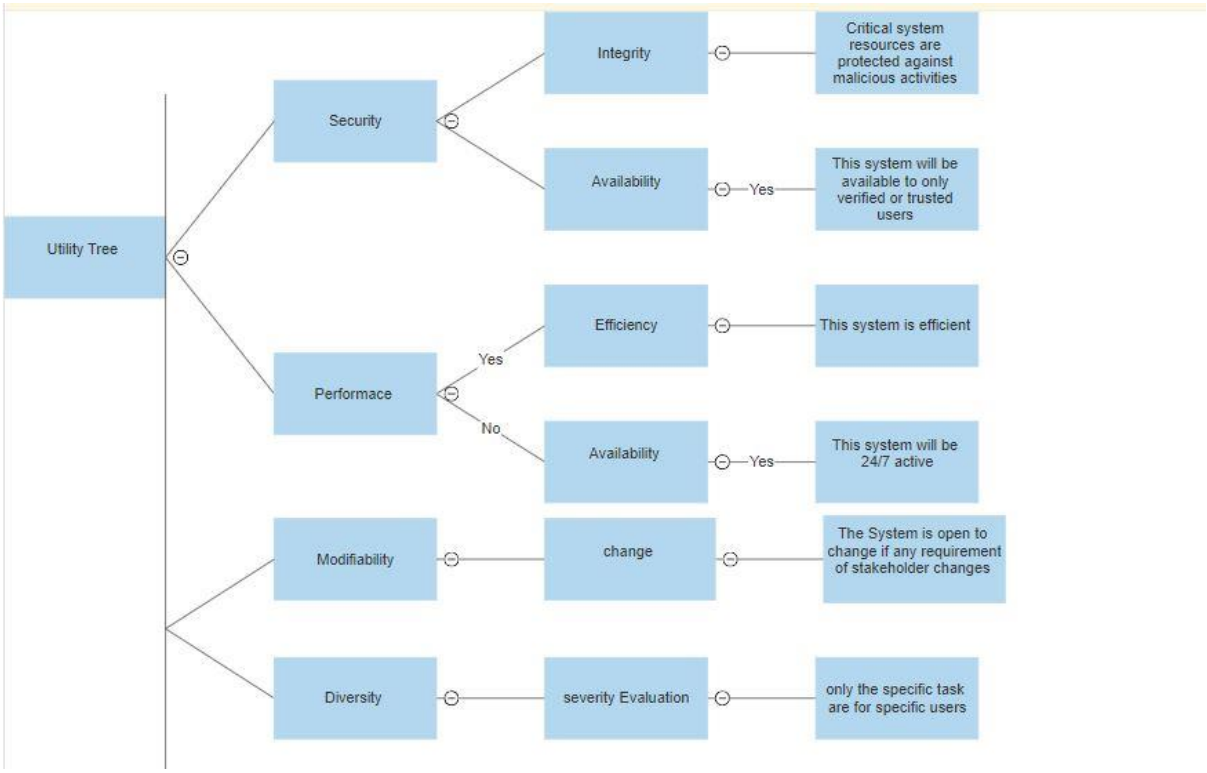
approach to certain data this will increase the performance and security as the limited data is accessible for person.

The Other style which can be used are

Blacked board architectural style

Pipe and Filter Architectural style

5. Generate quality attribute utility tree



Quality Attributes	***Stimulus***	***Response***
Security	If someone is trying to access the restricted functionality or a user is trying to look at other users data	The user will receive a warning massage and if user trying to do so system will block this user's account
Performance	If the system is being used at time of peak hours this may affect the performance	This system is design to help more user at a time but if it's limit exceeded it will be solved using the time sharing
Modifiability	This system is open to change what if there are too many new requirements for system will it take care of that	There is limit to make change if this limit approaches then it is batter to make new system.
Diversity	The user wants to do a function that is not for him like patient wants to suggest a test .	This function is restricted so user will receive warning massages until he leaves that function.

Architecture trade off points

This system is being build up for the hospital

There will be many users which will use this system at a time

The system must have ability to perform well

The security of the data being provided by user must be confidential

The system must have ability to take care of performance at peak time.

Quantitative Analysis Through Matrices

Architecture Evaluation (Quantitatively)

Size Metrics

NO Of Components	**Services**	**NO OF OPERATIONS IN A COMPONENT**
1	Register/login	2
2	Appointment	4
3	Medical history	3
4	Medicine	2
5	Test	2
6	Bill	3

No of component =6

No of Operation in system=16

Coupling Metrics

NO of Component	NO OF COMPONENT	DIRECT COUPLING	INDIRECT COUPLING
1	Register/login	6	0
2	Appointment	0	1
3	Medical history	1	2
4	Medicine	1	0
5	Test	1	0
6	Bill	2	0

Total Coupling =14

Coupling factor= copF(Sys)=Tcoup / (f^2)-f

f=6+16=22

= =14 / (22^2) +22=0.0303…..

Cohesion Metrics

NO Of Components	Cohesion Metrix CM(C)	NO OF OPERATIONS IN A COMPONENT	COHF(c)= CM(C)*(i2-i)/ F^2-f
1	3	2	0.389
2	1	4	0.0108
3	1	3	0.0259
4	1	2	0.0129
5	1	2	0.0129
6	2	3	0.0519

cohF(sys) =0.0387

Complexity Metrics

NO Of Components	Cohesion Metrix CM(C)	NO OF OPERATIONS IN A COMPONENT	COHF(c) = CM(C)*(i2-i)/ F^2-f	TCM	Complexity factor	TCM(Sys)
1	3	2	0.389	5.666	0.389/2.333 =0.0166	5.5826
2	1	4	0.0108	19	0.0108/0.7 =0.0154	19.0154
3	1	3	0.0259	18	0.0259/1.1666= 0.0222	18.022
4	1	2	0.0129	17	0.0129/2.333 =0.0055	17.0055

5	1	2	0.0129	17	0.0129/2.333 =0.0055	17.0055
6	2	3	0.0519	9	0.0519/1.1666 =0.044	9.044

TCM(SYS)=85.675

Total Coupling =14

Reusability Matric =14

Reusability Factor = CM/Tcouple(sys)

= 9/14=0.6428

Phase#04

Identifying Classes

Document

Microsoft word

Keyboard

Pages

Header

Footer

Date

Document Body

Sentences

Pictures

Tables

Rows

Column

Table Cell

User

Elimination

Keyboard

Rows

Column

Possible association

Microsoft word contain a **Document**

Document contain **Pages**

Pages have **Header, Footer, Date**

Document body have **Sentences**

Document body have **Tables**

Table Cell may have **Pictures**

User can **save** the document in the computer or can print the document

Object oriented model attributes