

Developing Child Health Record based on DHIS

Software Analysis and Design

Version 0.1

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Document Control

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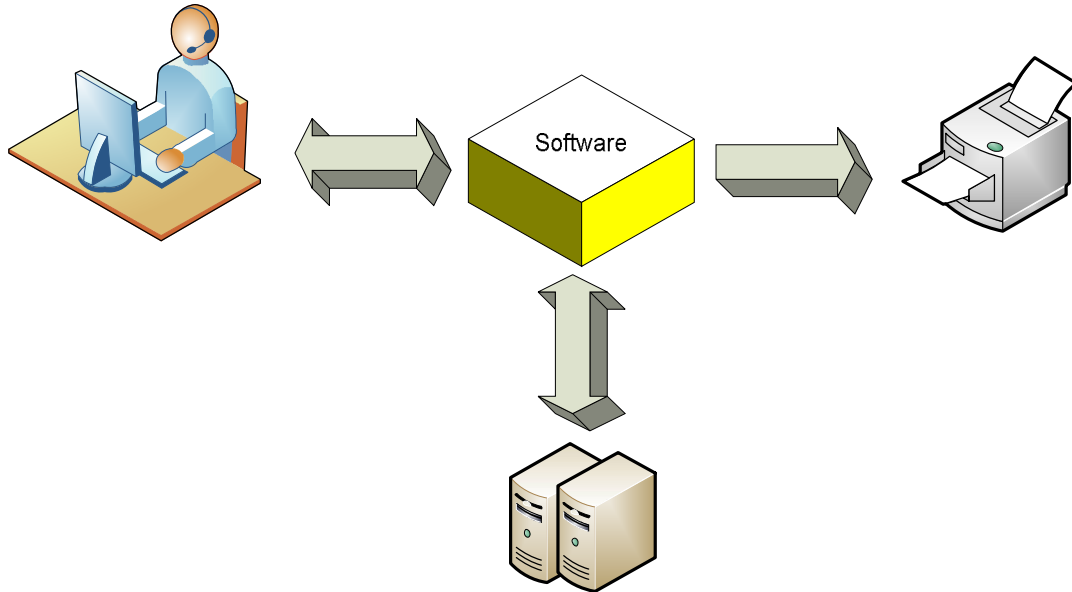
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Analysis Child Health Record System

1 Overall Description

1.1 Overall Data Flow Diagram



The software supports user to input data and reporting relative to patients.

1.2 Definitions and abbreviations

Keyword	Description
DHIS	District Health Information Software
CHR	Child Health Record

2 Specific Requirements

Building a Child Health Record system to manage private information of the children, treatment, vaccination and Prehistory in health.

2.1 Operating process of the business and Template Forms used for the system

2.1.1 Operating process of the business, as follows:

When a mother bears a child in a hospital, nursing issues a notebook to record information of the mother and the child according to the forms as follows:

1. Nursing inputs private information of the child into *Form 1*.
2. Nursing inputs information relative to the child's Prehistory in health into *Form 2*, if any.

3. According to the pregnancy examination records when the mother examines, nursing inputs information *Form 3*, if any.
4. Nursing inputs the child's details when to be born into *Form 4*.
5. Nursing inputs the child's first information of examination into *Form 5*.

After to be born, the child has to inject seven diseases. After a year, the child has to inject reminded vaccination (*reference to into 6*). Besides, nursing inputs the child's other vaccines into *Form 7*, if any.

Children's information of treating outpatient (*Form 8*), inpatient (*Form 9*) and infectious diseases (*Form 10*) will be recorded in the notebook.

Export reports:

The organisation unit in ward and in district input monthly data value and quarterly data value. And then, they send monthly reports (*reference to Form 11*) at the end of each month, and they input three-months reports, six-months report, yearly reports (*reference to Form 12*) at the end of each quarter to upper organisation unit level.

2.1.2 Template Forms

2.1.2.1 Form of a child's private information (Form 1)

GENERAL INFORMATION ABOUT CHILD			
Birthday:		Birthtime:	
Sex: Male <input type="checkbox"/> Female <input type="checkbox"/>		Child order:	
Ethnic:			
birthplace:			
Permanent address:.....			
Temporary address:.....			
Father's name:.....		Age:	
Mother's name:		Age:	
BLOOD GROUP AND Rh FACTOR			
Blood group: A <input type="checkbox"/>		B <input type="checkbox"/> O <input type="checkbox"/> AB <input type="checkbox"/>	
Rh: + <input type="checkbox"/>		- <input type="checkbox"/>	
Date of issue:			
Unit of issue:			

2.1.2.2 Form of a Prehistory in health (Form 2)

PREHISTORY IN HEALTH			
	Sex	Age	PREHISTORY IN HEALTH
Father
Mother
Brothers & Sisters
Notes		

2.1.2.3 Form of period before the birth of a mother

PERIOD BEFORE THE BIRTH OF A MOTHER			
A. Early three months:			
.....			
.....			
.....			
B. Middle three months:			
.....			
.....			
.....			
C. Last Three months:			
.....			
.....			
.....			
* Tests:			
- Urine:			
- VDRL:			
- Other (specify):			
VAT	Date of injection	At unit	Signature
First			
Second			

2.1.2.4 Form of Child's details when to be born (Form 4)

DETAILS WHEN TO BE BORN	
Born at Health Foundation:	
Weight (gram):.....	Height (cm):.....
Head circle (cm):.....	
Full month of birth <input type="checkbox"/>	No.of month in pregnance:.....(..... weeks)
Apgar: 1 minute early.....5 minutes later:	
Congenital malformation: không <input type="checkbox"/> có <input type="checkbox"/>	
If any, descript the malformation:.....	
.....	
Type of brith: Normal <input type="checkbox"/>	
Interventions <input type="checkbox"/>	
Sinh hút <input type="checkbox"/>Sinh kèm <input type="checkbox"/>	
Mổ lấy thai <input type="checkbox"/>Other <input type="checkbox"/>	
Reason:	
.....	
.....	
.....	
Needed records:	
.....	
.....	
Enter the nursing: yes <input type="checkbox"/> no <input type="checkbox"/>	
if any, diagnosis and treatment:	
.....	
.....	
Notes:	
.....	
.....	
.....	

2.1.2.5 Form of the first examination (Form 5)

The first examination

Date of examination:

Age (days):

Weight (gram):..... Height(cm):.....

Unit	Normal	Abnormal description
Da niêm		
Eyes		
Ears-Nose-Throat		
Respiratory system		
Cardiology system		
Digestive system: - Stomach - Anus		
Nervous system		
Muscles and Bone system		
Urethra System - Genitals		
Navel		

2.1.2.6 Form of a child's compelled vaccination (Form 6)

COMPLELLED VACCINATION							
Vaccin	Basecal immunity					Remained Injection (if any)	
	New-born	2 months	3 months	4 months	9 months		
BCG		■	■	■	■	■	■
Sabin	■				■		
DTC	■				■		
VGSV B			■		■		
Measles	■	■	■	■			

2.1.2.7 Form of a child's other vaccination (Form 7)

SCHEDULE VACCINATION ACCORDING TO REQUIREMENT			
Vaccination	Inject vaccine	Vaccine schedule	Injection's place
Hémophilus Influenza type b	First: Second: Third: Remain:.....		
Other Hepatitis virus	First: Second: Third: Remain:.....		
Mumps Measles Rubella Remain:.....		
Varicella Remain:.....		
Menigitis because of brain tissue (Viêm màng não mô não mô cầu) Remain:.....		
<i>Streptococcus pneumoniae</i>			
Japan encephalitis B	First: Second: Third: Remain:.....		
Rabies			
Typhoid			
Other (specify)			

2.1.2.8 Form of the child's outpatient treatment (Form 8)

SITUATION OF OUTPATIENT TREATMENT			
Date of examination	Diagnosis and treatment summary	Hopital	Signature

2.1.2.9 Form of the child's situation of intervening surgery (Form 9)

SITUATION OF OUTPATIENT TREATMENT			
Time in the hospital	Diagnosis and treatment summary	Hopital	Signature

2.1.2.10 Form of monthly report (Form 11)

BÁO CÁO CÔNG TÁC CHĂM SÓC SỨC KHỎE SINH SẢN

Tháng năm
Thời điểm báo cáo : 2009 (Báo cáo tháng)
Đơn vị báo cáo : Huyện Hóc Môn

I. TÌNH HÌNH SỨC KHỎE BÀ MẸ

1. Tổng số phụ nữ có thai			
1.1. Số 11-19 tuổi có thai			
1.2. Tổng số phiếu SKPN (chưa sanh) hiện có			
2. Số phụ nữ có thai được quản lý thai		Tỉ lệ (%)	
3. Số phụ nữ đẻ được khám thai >= 3 lần		Tỉ lệ (%)	
4. Số lần khám thai trung bình của phụ nữ đẻ			
5.1. Số phụ nữ đẻ được tiêm phòng uốn ván >=2 mũi		Tỉ lệ (%)	
5.2. Số phụ nữ đẻ được bổ sung sắt			
5.3. Số phụ nữ đẻ được XN phát hiện giang mai			
5.4. Số phụ nữ đẻ được XN HIV tự nguyện			
6. Tổng số phụ nữ đẻ			
6.1. Số đẻ tại cơ sở y tế công và tư		Tỉ lệ (%)	
6.2. Số phụ nữ đẻ được CBYT chăm sóc		Tỉ lệ (%)	
6.3. Số mổ lấy thai			
6.3.1. Số mổ tại huyện			
6.4. Số phụ nữ đẻ khám thai >= 3 lần tại trạm y tế			
6.5. Số phụ nữ đẻ đã được lập phiếu SKPN			
7. Số bà mẹ được thăm khám sau đẻ		Tỉ lệ (%)	
7.1. Số bà mẹ uống Vitamin A (200.000 đơn vị) sau đẻ			
8. Số bà mẹ được thăm khám >=2 sau đẻ		Tỉ lệ (%)	
9. Số tai biến sản khoa			

	Mắc	Chết	Tỉ lệ % chết/mắc
9.1. Băng huyết			
9.2. Nhiễm khuẩn			
9.3. Sản giật			
9.4. Vỡ tử cung			
9.5. Uốn ván sơ sinh			

10. Tổng số người mẹ chết			
11. Tổng số lần khám phụ khoa		Số lần khám phụ khoa bình quân /người /năm:	
12. Số người mắc bệnh phụ khoa		Tỷ lệ %:	
13. Số người được chữa bệnh phụ khoa		Tỷ lệ %:	
14. Tổng số phá thai		Số phá thai của phụ nữ thành phố :	
14.1. Hút thai			
14.2. Nạo thai			
14.3. Phá thai to			
14.4. Phá thai nội khoa			
14.5. Số thai từ 11-19 tuổi			
15. Tổng số bị tai biến do hút, nạo, phá thai		, trong đó	
15.1 Số chết			
Nguyên nhân chết			

II. TÌNH HÌNH SỨC KHỎE TRẺ EM

16. Số trẻ sinh ra			
16.1. Số trẻ đẻ sống			
17. Số trẻ sơ sinh được cân			
17.1. Số trẻ đẻ dưới 2.500 gram		Tỷ lệ (%)	
18. Số chết chu sinh (22 tuần thai đến 7 ngày sau đẻ)		Tỷ suất ‰	
19. Số chết sơ sinh (trong vòng 28 ngày sau đẻ)		Tỷ suất ‰	
20. Số chết sơ sinh sớm (trong vòng 7 ngày sau đẻ)		Tỷ suất ‰	
21. Số trẻ em chết < 1 tuổi		Tỷ suất ‰	
22. Số trẻ em chết < 5 tuổi		Tỷ suất ‰	
23. Số trẻ em < 5 tuổi suy dinh dưỡng		Tỷ lệ (%)	
24. Số trẻ em < 1 tuổi được tiêm đủ 6 loại vaccin		Tỷ lệ (%)	

III. KẾ HOẠCH HÓA GIA ĐÌNH

25. Các biện pháp tránh thai		
25.1.1 Số cặp vợ chồng áp dụng BPTT hiện đại		(%)
25.1.2 CPR		
25.2.1. Số người mới đặt DCTC		
25.2.2. Số người hiện mang DCTC		
25.3. Số người đang dùng thuốc tránh thai		
25.3.1 Uống		
25.3.2 Tiêm		
25.3.3 Cây		
25.4. Số người đang dùng bao cao su		
25.5. Tổng số triệt sản		
25.5.1. Số triệt sản nam		
25.5.2. Số triệt sản mới nam		
25.5.3. Số triệt sản mới nữ		
26. Số tai biến do thủ thuật KHHGD		
26.1 Số tử vong		

IV. DÂN SỐ (1 năm/1 lần trong 12 tháng)

27. Dân số trung bình	
28. Số trẻ em < 1 tuổi	
29. Số trẻ em < 5 tuổi	
30. Số phụ nữ 15-49 tuổi có chồng	

V. CÁC HOẠT ĐỘNG KHÁC

1. Số buổi giáo dục sức khỏe sinh sản tại trạm y tế	
2. Số ngày vãng gia chăm sóc SKSS của Trạm y tế	
3. Số ngày giám sát công tác CS SKSS của tuyến quận huyện	
4. Hoạt động thông tin - truyền thông - tư vấn	
Số người được tư vấn SKSS	
Số buổi truyền thông giáo dục SKSS	
Số người dự	
Số bài SKSS phát trên phương tiện thông tin	

2.1.2.11 Form of yearly report (Form 12)

BÁO CÁO CÔNG TÁC CHĂM SÓC SỨC KHỎE SINH SẢN

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1.1. Số 11-19 tuổi có thai			
1.2. Tổng số phiếu SKPN (chưa sanh) hiện có			
2. Số phụ nữ có thai được quản lý thai		Tỉ lệ (%)	
3. Số phụ nữ đẻ được khám thai >= 3 lần		Tỉ lệ (%)	
4. Số lần khám thai trung bình của phụ nữ đẻ			
5.1. Số phụ nữ đẻ được tiêm phòng uốn ván >=2 mũi		Tỉ lệ (%)	
5.2. Số phụ nữ đẻ được bổ sung sắt			
5.3. Số phụ nữ đẻ được XN phát hiện giang mai			
5.4. Số phụ nữ đẻ được XN HIV tự nguyện			
6. Tổng số phụ nữ đẻ			
6.1. Số đẻ tại cơ sở y tế công và tư		Tỉ lệ (%)	
6.2. Số phụ nữ đẻ được CBYT chăm sóc		Tỉ lệ (%)	
6.3. Số mổ lấy thai			
6.3.1. Số mổ tại huyện			
6.4. Số phụ nữ đẻ khám thai >= 3 lần tại trạm y tế			
6.5. Số phụ nữ đẻ đã được lập phiếu SKPN		Tỉ lệ (%)	
7. Số bà mẹ được thăm khám sau đẻ			
7.1. Số bà mẹ uống Vitamin A (200.000 đơn vị) sau đẻ		Tỉ lệ (%)	
8. Số bà mẹ được thăm khám >=2 sau đẻ		Tỉ lệ (%)	
9. Số tai biến sản khoa			

	Mắc	Chết	Tỉ lệ % chết/mắc
9.1. Băng huyết			
9.2. Nhiễm khuẩn			
9.3. Sản giật			
9.4. Võ tử cung			
9.5. Uốn ván sơ sinh			

10. Tổng số người mẹ chết			
11. Tổng số lần khám phụ khoa		Số lần khám phụ khoa bình quân /người /năm:	
12. Số người mắc bệnh phụ khoa		Tỷ lệ %:	
13. Số người được chữa bệnh phụ khoa		Tỷ lệ %:	
14. Tổng số phá thai		Số phá thai của phụ nữ thành phố :	
14.1. Hút thai			
14.2. Nạo thai			
14.3. Phá thai to			
14.4. Phá thai nội khoa			
14.5. Số thai từ 11-19 tuổi			
15. Tổng số bị tai biến do hút, nạo, phá thai		, trong đó	
15.1 Số chết			
Nguyên nhân chết			

II. TÌNH HÌNH SỨC KHỎE TRẺ EM

16. Số trẻ sinh ra			
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19. Số chết sơ sinh (trong vòng 28 ngày sau đẻ)		Tỷ suất ‰	
20. Số chết sơ sinh sớm (trong vòng 7 ngày sau đẻ)		Tỷ suất ‰	
21. Số trẻ em chết < 1 tuổi		Tỷ suất ‰	
22. Số trẻ em chết < 5 tuổi		Tỷ suất ‰	
23. Số trẻ em < 5 tuổi suy dinh dưỡng		Tỷ lệ (%)	
24. Số trẻ em < 1 tuổi được tiêm đủ 6 loại vaccin		Tỷ lệ (%)	

III. KẾ HOẠCH HÓA GIA ĐÌNH

25. Các biện pháp tránh thai		
25.1.1 Số cặp vợ chồng áp dụng BPTT hiện đại		(%)
25.1.2 CPR		
25.2.1. Số người mới đặt DCTC		
25.2.2. Số người hiện mang DCTC		
25.3. Số người đang dùng thuốc tránh thai		
25.3.1 Uống		
25.3.2 Tiêm		
25.3.3 Cây		
25.4. Số người đang dùng bao cao su		
25.5. Tổng số triệt sản		
25.5.1. Số triệt sản nam		
25.5.2. Số triệt sản mới nam		
25.5.3. Số triệt sản mới nữ		
26. Số tai biến do thủ thuật KHHGD		
26.1 Số tử vong		

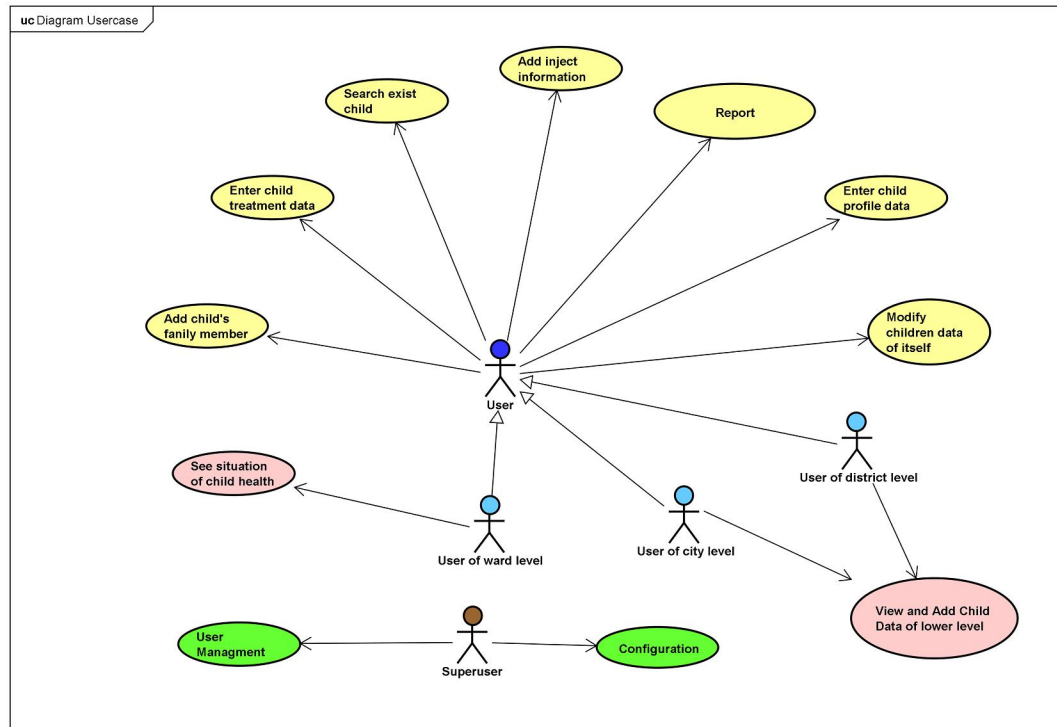
IV. DÂN SỐ (1 năm/1 lần trong 12 tháng)

27. Dân số trung bình	
28. Số trẻ em < 1 tuổi	
29. Số trẻ em < 5 tuổi	
30. Số phụ nữ 15-49 tuổi có chồng	

V. CÁC HOẠT ĐỘNG KHÁC

1. Số buổi giáo dục sức khỏe sinh sản tại trạm y tế	
2. Số ngày vắng gia chăm sóc SKSS của Trạm y tế	
3. Số ngày giám sát công tác CS SKSS của tuyến quận huyện	
4. Hoạt động thông tin - truyền thông - tư vấn	
Số người được tư vấn SKSS	
Số buổi truyền thông giáo dục SKSS	

2.2 User-case diagram



2.2.1 Actor's list into diagram

Order	Use-case
1	Superuser
2	User
3	User of city level
4	User of district level
5	User of ward level

2.2.2 Use-case's list into diagram

STT	Use-case	Notes
1	Report	<ul style="list-style-type: none"> - Number of children come - Number of low-weight child
2	View and Add Child data of lower level	<ul style="list-style-type: none"> - List children with number of records configured. - Add private information, treatment, vaccination and information of family

		members of a child in the lower level
3	Enter child profile data	- Add private information, treatment, vaccination and information of family members of a child
4	See situation of child health	- Show all information of the child from beginning of treatment up to now
5	Modify child data of itself	- Modify private information, vaccination, treatment, information of the child 's family members. User of the level can only modify data in the level
6	Configuration	- ID generation - Number of records showed on page
7	User Management	- Create a new user, edit information of an user and grant authority to an user
8	Search exist child	- Search children by id or keyword
9	Enter child treatment data	
10	Add inject information	
11	Add Child's family members	

Developing the System based on DHIS 2.0

3 Specific Requirements

3.1 Purpose

After to research DHIS 2.0, we found that DHIS is a highly flexible, open-source Health Management Information System and “Data Warehouse” solution. The system supports the capture of data linked to any level in the Organisational Hierarchy, any data collection frequency, a high degree of customisation at both the input and output side. It is multi-language enabled and has been translated into a number of languages.

Based on DHIS 2.0, we build a system to able to manage private and relative information of patients, export reports and easy to scale the system for many hopitals.

3.2 Scope

1. The system processes information, as follow:
2. Manage information of patients
3. The system’s used in many hopitals
4. Export reports

3.3 Functions

The system has main four functions, as follows:

1. *Management of patients’ private information*: name, sex, birthday, place-birth.
2. *Management of relative information*: vaccination, treatment, history disease of family, ...
3. *Management and Authority*: users can only operate data what they created.
4. *Export reports*: export reports relative to patients

3.4 Desired results

4 Non-function Requirement

1. Processing speeds fast, stable.
2. GUI is easy to use and friendly.

5 Ideas to build system from requirements

Beacause hopitals have other information fields, when to broaden the system for many hopitals (General Hopital, Mental Hopital, ...), the system can't reuse. Programmers have to implement again for new fields for every hopital. So, it's difficult to share data between hopitals.

To solve this problem, we present a solution is to build a system what can create a form in order that user can operator on it. So that, we can build forms according to information of every hopital and data, are updated on created forms, are able to share together.

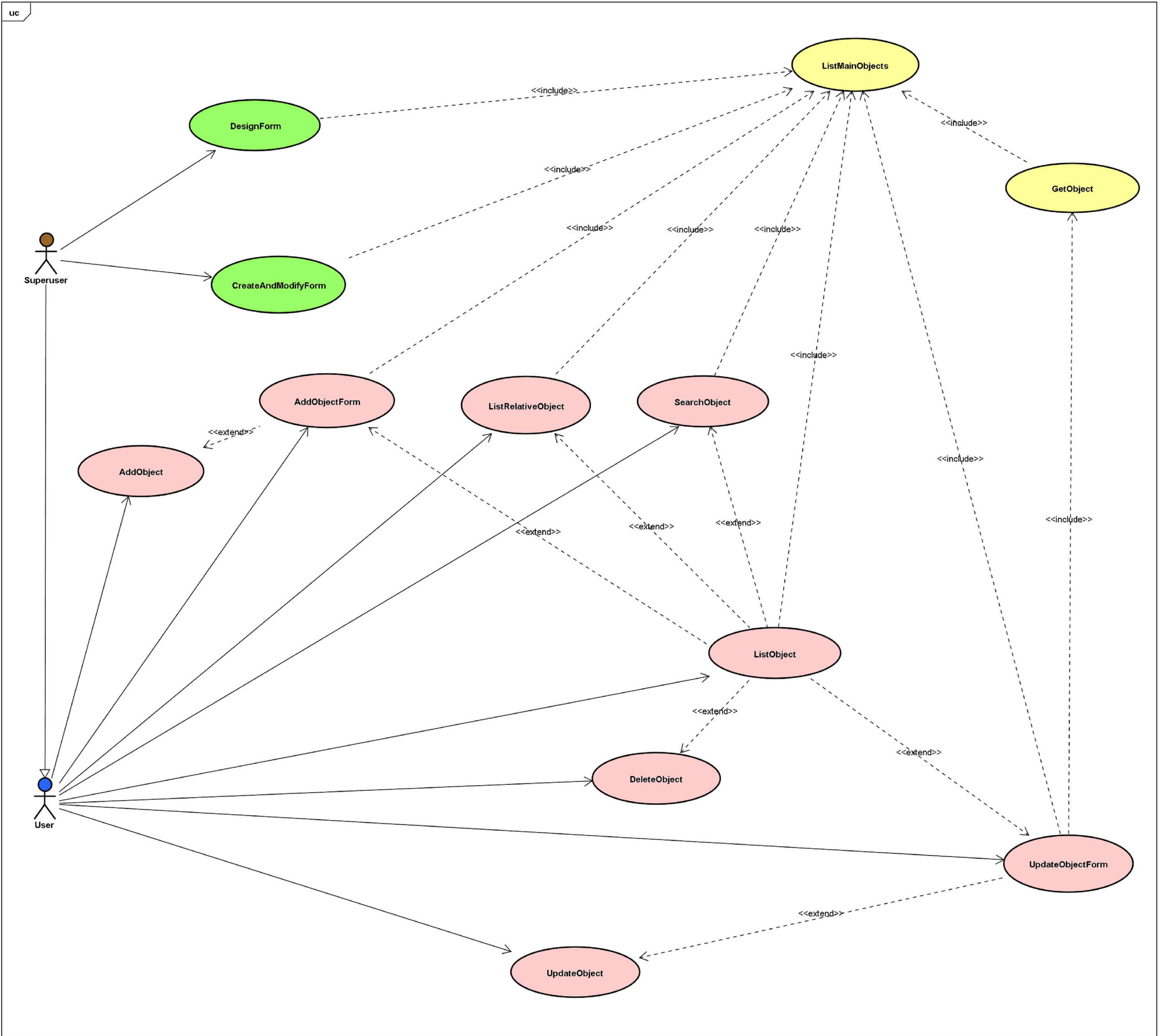
So, the functions of managing private and relative children is known to be function of managing Objects which are created by forms.

Objects is divided into two kinds, main object and sub object, to save other information of a main object. For example, main object is children (save to private information of children) and sub objects are treatment,vaccination, history disease of the child's family to save respective information.

So, when to bluid the system, only show main objects, relative objects will be accessed although its main object.

6 Modeling to requirements

6.1 Use-case Diagram



6.1.1 Actor's list into diagram

STT	Use-case	Notes
1	Superuser	Administrator
2	User	user

6.1.2 Use-case's list into diagram

STT	Use-case	Notes
1	DesignForm	Design Form
2	CreateAndModifyForm	Create and modify a form
3	AddObjectForm	Create GUI to add an object
4	AddObject	Add informtion of object
5	DeleteObject	Delete an object from Form
6	UpdateObjectForm	Create GUI to update an object
7	UpdateObject	Update information of object
8	SearchObject	Search objects by keyword
9	ListObject	Show list objects
10	Export reports	Export reports relative children
11	GetObject	Get information of an object by ID
12	ListMainObjects	List the created main objects into a menu
13	ListRelativeObject	List the realtive objects of the chosen main object

6.2 Specification of Use-case DesignForm

6.2.1 Overall

Use-case supports user to design a form.

A form presents general information of an object, as follow: name, elements, icon, visible property (yes: main object, no: subobject), maximum number of records showed and number of columns showed in List function

A element presents details information of an object, as follow: name, sort order, control type, value type, not-null property, form link, initial values.

6.2.2 Even flow

6.2.2.1 Main even flow

Usercase is started when user calls Form Management function.

1. User creates new form and respective elements
2. User clicks Save button, the system saves information of form into database.

6.2.2.2 Other even flow

None

6.2.3 Special requirements

6.2.3.1 Input data into number controls

User can't input a string into the control with the type to be number, but have to input a number.

6.2.3.2 Easy to input information

- In order that user inputs information for object easily, we gather relative fields to a group
- For example, Information of Children Object includes code, name, birthday, sex, address, ward, district, father's name, father's age, mother's name, mother's age, parents' email, parents' phone, blood group, RH (RH+, RH-), weigh, length, sequela, apgar, ... It's difficult for end-user to input all of information without groups. So, we create groups for object, as follows:
 - o *Private information* : code, name, birthday, sex.
 - o *Address* : address, ward, district.
 - o *Parents* : father's name, father's age, mother's name, mother's age, parents' email, parents' phone.
 - o *Blood group* : blood group, RH
 - o *Details when to be born* : weigh, length, sequela, apgar
 - o ...

6.2.4 Post condition

User have to login with an administrator authority.

6.3 Specification of Use-case CreateAndModifyForm

6.3.1 Overall

Use-case supports user to create a new form or modify a created form.

6.3.2 Even flow

6.3.2.1 Main even flow

User-case is started when user calls Create and Modify Form function:

1. The system shows forms' list
2. User chooses a form to create or modify
3. User clicks Create button

4. The system creates form

6.3.2.2 Other even flow

None

6.3.3 Special requirements

The system has to a function to identity a form created or not.

6.3.4 Post condition

User have to login with an administrator authority.

6.4 Specification of Use-case AddObjectForm

6.4.1 Overall

Use-case supports user to open Add object Form

6.4.2 Even flow

6.4.2.1 Main even flow

Usecase is started when user calls Add Object Form function.

1. System gets elements of object in chosed form, includes object's name, elements' list showed.
2. System shows the elements to user to input information for the object.

6.4.2.2 Other even flow

None

6.4.3 Special requirements

If a element has *not-null* properties, add *not-null checking* method into control of the element.

If a element has *date* property, add *date checking* method into control of the element.

If a element has *number* property, add *number checking* method into number control of the element.

6.4.4 Post condition

User loggons the system successfully.

6.5 Specification of Use-case AddObject

6.5.1 Overall

Use-case supports user to add an object.

6.5.2 Even flow

6.5.2.1 Main even flow

Usecase is started when user calls Add Object function.

System saves the information of new object with the inputted data into database.

6.5.2.2 Other even flow

6.5.2.2.1 No input data into not-null control

The system displays a *error message* and puts cursor into not-null control.

6.5.2.2.2 Input date wrong

The system displays a *error message* and puts the cursor into date control.

6.5.3 Special requirements

Check information of the object with *not-null* property.

6.5.4 Post condition

User loggons the system successfully.

6.6 Specification of Use-case DeleteObject

6.6.1 Overall

Use-case supports user to delete an object.

6.6.2 Even flow

6.6.2.1 Main even flow

Usecase is started when user calls Delete Object fuction:

1. User chooses an object to delete.
2. The system dislays a message to confirm delete object action.
3. User clicks *Ok* button
4. The system deletes the chosen object

6.6.2.2 Other even flow

None

6.6.3 Special requirements

Not delete an object with data into a or more relative object.

6.6.4 Post condition

6.7 Specification of Use-case UpdateObjectForm

6.7.1 Overall

Use-case supports user to open *Update Object Form*

6.7.2 Even flow

6.7.2.1 Main even flow

Usecase is started when user calls *Update Object Form* function.

1. System gets elements of object in chosed form, includes object's name, elements' list showed
2. System gets data of the chosen object.
3. System shows elements with respective data of the object

6.7.2.2 Other even flow

None

6.7.3 Special requirements

If a element has *not-null* properties, add *not-null checking* method into control of the element.

If a element has *date* property, add *date checking* method into control of the element.

If a element has *number* property, add \ method into number control of the element.

6.7.4 Post condition

User loggons the system successfully.

6.8 Specification of Use-case UpdateObject

6.8.1 Overall

Use-case supports user to update an object.

6.8.2 Even flow

6.8.2.1 Main even flow

Usercase is started when user calls Update Object function:

1. User clicks Save button.
2. The system saves the new information of the object into database.

6.8.2.2 Other even flow

6.8.2.2.1 No input data into not-null control

The system displays a *error message* and puts cursor into not-null control.

6.8.2.2.2 Input date wrong

The system displays a *error message* and puts cursor into date control.

6.8.3 Special requirements

None

6.8.4 Post condition

User loggons the system successfully.

6.9 Specification of Use-case SearchObject

6.9.1 Overall

Use-case supports user to search object by the properties.

6.9.2 Even flow

6.9.2.1 Main even flow

Usercase is started when user calls Search Object function:

1. User inputs a keyword
2. User clicks Search button
3. The system shows object's list which the system finds.

6.9.2.2 Other even flow

None

6.9.3 Special requirements

The function have to search of a *keyword* on all properties of the object.

6.9.4 Post condition

User loggons the system successfully.

6.10 Specification of Use-case ListObject

6.10.1 Overall

Use-case supports user to show object's list.

6.10.2 Even flow

6.10.2.1 Main even flow

Usercase is started when user calls Object's list function:

1. User chooses object to show list
2. The system show Object's list according to date of edit with form's number of records.

6.10.2.2 Other even flow

None

6.10.3 Special requirements

None

6.10.4 Post condition

User loggons the system successfully.

6.11 Specification of Use-case ExportReports

Use the function of DHIS's report to create reports for the system.

Daily reports

Monthly reports

Yearly reports

6.12 Specification of Use-case GetObject

6.12.1 Overall

Use-case supports user to get an object by id.

6.12.2 Even flow

6.12.2.1 Main even flow

Usercase is started when user calls *UpdateObjectForm* function.

1. The system searches an object by Id
2. The system gets the returned data to fill up the form's controls.

6.12.2.2 Other even flow

None

6.12.3 Special requirements

None

6.12.4 Post condition

User loggons the system successfully.

6.13 Specification of Use-case ListMainObject

6.13.1 Overall

Use-case is used to list the main objects of the system.

6.13.2 Even flow

6.13.2.1 Main even flow

Usercase is started when user calls the functions of the module.

1. The system searches objects by Required property to be not-null
2. The system shows results into a menu.

6.13.2.2 Other even flow

6.13.3 Special requirements

None

6.13.4 Post condition

User loggons the system successfully.

6.14 Specification of Use-case ListRelativeObject

6.14.1 Overall

Use-case is used to list the relative objects of the chosen main object.

6.14.2 Even flow

6.14.2.1 Main even flow

U=[sercase is started when user calls ListObject function:

1. The system search the relative objects of the chosen object.
2. The system show results for the every object in the list.

6.14.2.2 Other even flow

6.14.3 Special requirements

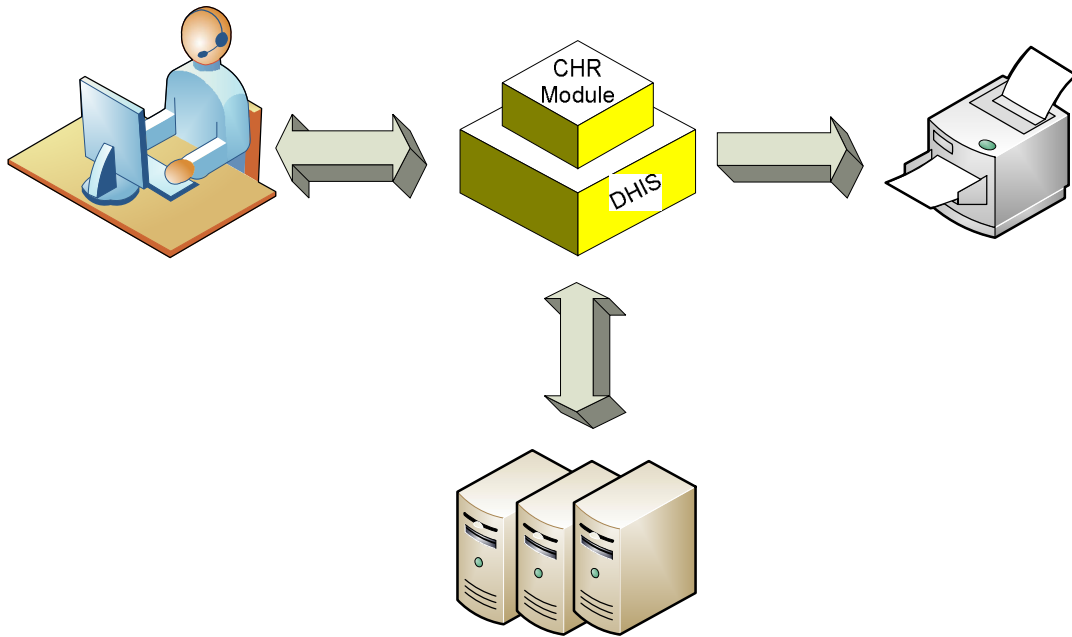
None

6.14.4 Post condition

User loggons the system successfully.

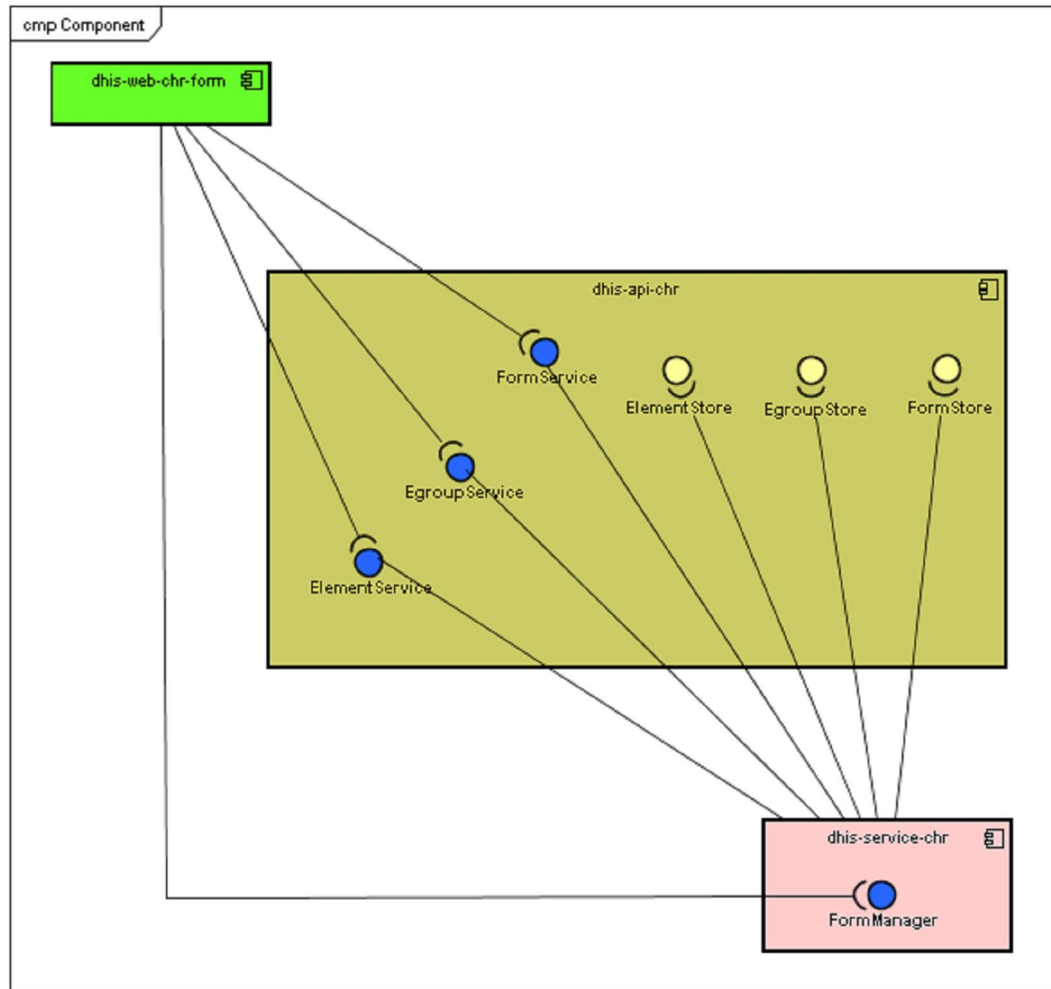
7 Design of processing

7.1 General structure of the software



The module of creating a form is integrated into the DHIS as a module. User inputs data entry and exports reports that users are allowed.

A Component model for the module, as follows:



Component *dhis-api-chr* is written into DHIS and includes user interfaces (UI), as follows:

1. **FormService**: list the forms, select all the information pertaining to the chosen form's case, select all the forms with a name inputted and select all the forms with *Required* property to be "yes", create and modify a form.
2. **ElementService**: list the corresponding elements with the chosen form, select all the information pertaining to the chosen element's case and select all the elements with the chosen egroup, create and modify a element.
3. **EgroupService**: list the corresponding egroups with the chosen form, select all the information pertaining to the chosen egroup's case and select all the egroups with the chosen form, create and modify a egroup.

Component *dhis-service-chr* provides **FormManager** service to in order that user can process the **CreateAndModifyForm** function and functions relative to an object in the system, as follows:

1. Create an object and save to the databse.
2. Get data of the chosen object.
3. Add new object into the database.

4. Update data of the chosen object into databse.
5. Delete the chosen object
6. Search objects with the values of properties which contain the inputted keyword.
7. Select all the objects relative to the chosen object.

7.2 Some important processing

7.2.1 Design a new form

A created form corresponds with an object into the system. So that a created form can process functions of an object, the form have to save data which satisfy the following requirements:

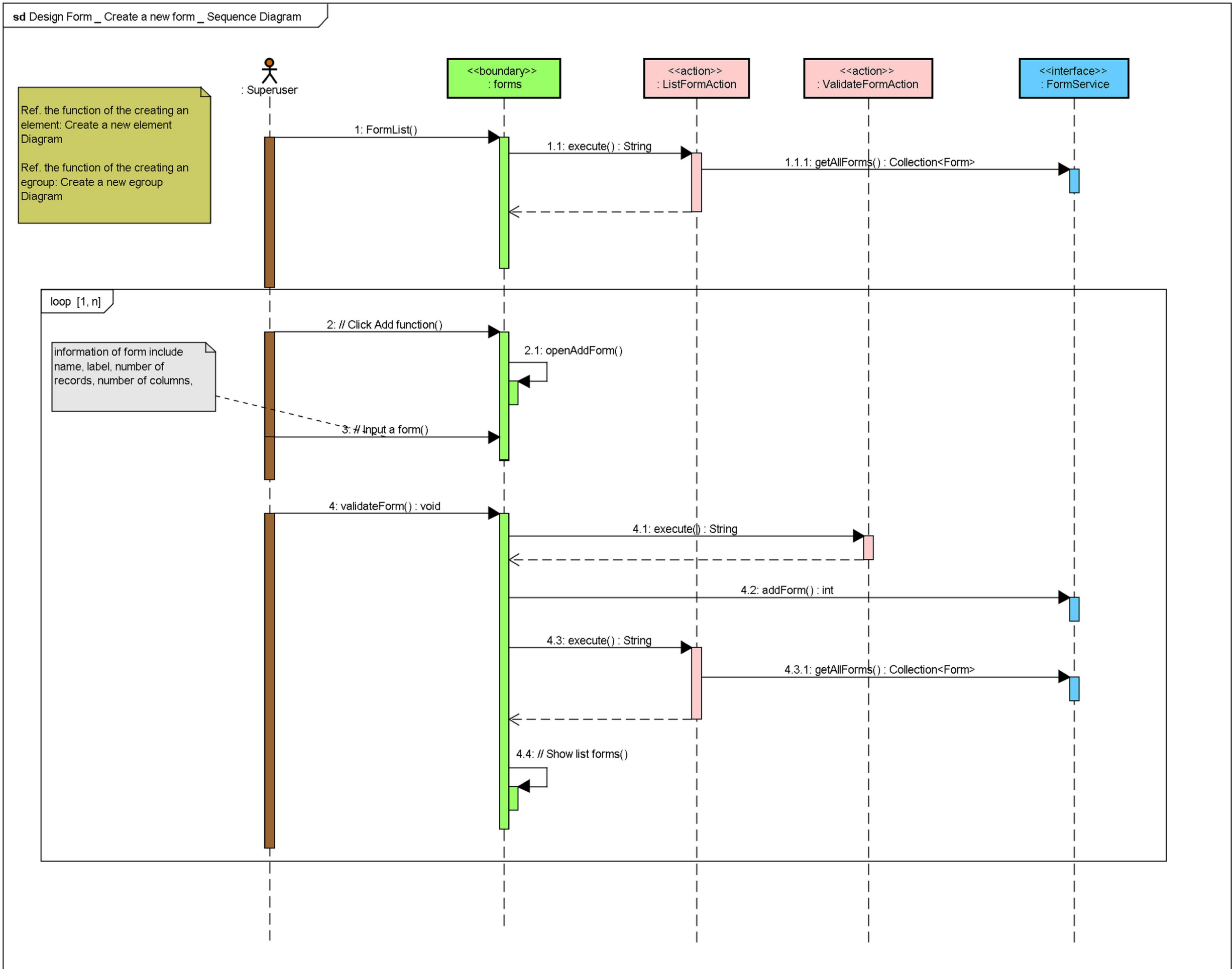
1. *List a main object's list*: form has to a property which specifies a main object and a property which specifies a icon for an object (have or not)
2. *ListObject function* : form has to properties to save maximum number of records, and number of properties showed.
3. *AddObjectForm* and *UpdateObjectForm* functions: list all properties and corresponsive controls of an object according to an order, so that user can be easy to input information for an object. So, an element has to correspond to a control type, a data type, and assigns not-null property for a data field which have to input data. In additon to, some properties of an object also need to have initial values. Besides, have to sort by an order in order that user can input data easily.
4. *ListRelativeObject*: specify objects to relative to the processing object.
5. When user operations on the related object, the system has to show some common information of the main object.

So, a form and an element include the properties, as follows:

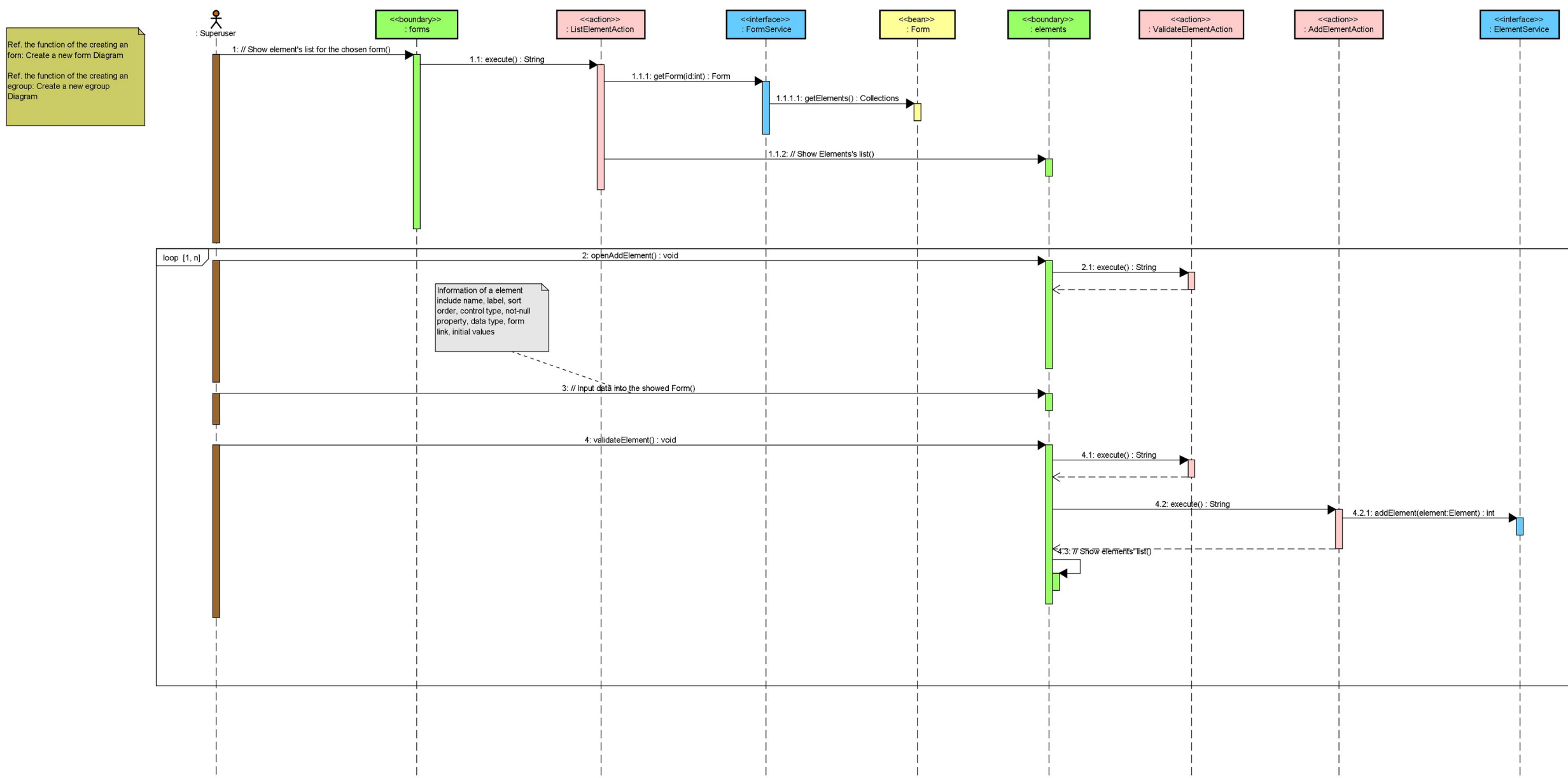
	Property	Note
Form	Name	Object's name
	Maximum number of record	Number of objects showed in ListObject funtion
	Number of column	Number of properties showed in ListObject function
	Icon	Icon of the object
	Number of column in form link showed	The properties save to common information of the main object. This field is only inputted data when the object is a main one
Element	Name	Name's element
	Sort Order	Ordinal number of the element

	Control type	Control type of the element
	Required	YES: have to input data into the control of the element. NO: have or not
	Data type	To check data inputted the control
	Form Link	Specify its main object
	Initial values	Showed when user calls AddObjectForm function

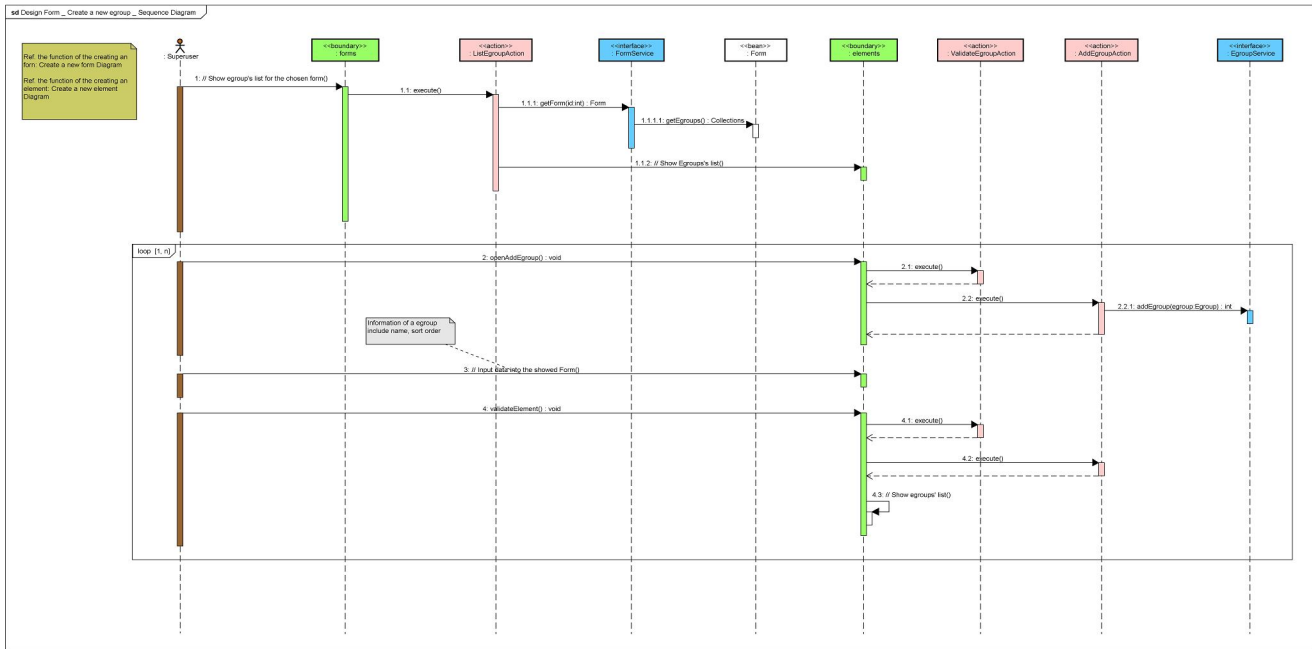
➤ *Processing to design a new form:*



➤ Processing to design an elements for the form



➤ Processing to design an egroup for the form



7.2.2 List the main objects into a menu

A main object is an object with Required property to be not-null. To list the main objects, the system process some steps, as follows:

1. Get all created objects in the system
2. Check the objects, if an object with Required property is not-null, copy it to the result list.

7.2.3 Load Add form for an object

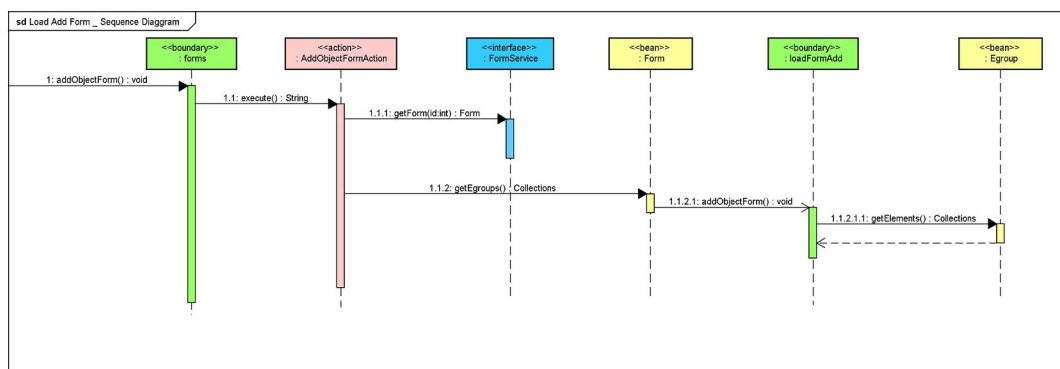
Based on the created form for an object, the system load a *add* form, as follows:

Get a form with the inputted id.

Get all of the form's ordered egroups.

1. Inspect to each egroup, get all of the ordered elements.
2. Inspect to each element, show label and corresponding control of the element on the GUI

➤ *Processing to load add form for an object*



7.2.4 Add an object

The system gets the inputted data and moves them to an array. After, it saves to array information of an object into database according to the order of the elements.

8 Design data

8.1 General database

8.1.1 Specify entities

8.1.1.1 Form Entity

Save information of an object in the system. The entity includes properties, as follow:

- *ID*: it's key property to distinguish an object from other object.
- *Name*: name of the object.
- *Number of records*: maximum number of records showed in object's list.
- *Number of columns*: number of properties showed in object's list. Properties of the object are sorted order.
- *Icon*: icon of the object. The system saves to file path into database and upload the file on server.
- *Visible*: specify to a main or sub object.
- *Number of COLUMN in form link showed*.

8.1.1.2 Element Entity

Save properties of an object. The entity includes properties, as follow:

- *ID* : it's key property to distinguish an object from other object.
- *Name*: property's name.
- *Sort order* : sorts order of elements to used for AddObjectForm and UpdateObjectForm function to create control's list according to order
- *Control type*: includes textarea, textfield, checkbox, combobox, autocomplete, data, tree, break. Break type is used for AddObjectForm and UpdateObjectForm function to create a empty space in the Form.
- *Required*: specify inputed value is null or not.
- *Data type*: includes string, date, number, double.
- *Form link* : present relative to chosen object. If object has a element with form link property, the object is subobject.
- *Initial values* : values are separated by semicolon.

8.1.1.3 Egroup Entity

Save to egroup object. The entity includes properties, as follow:

- *ID* : it's the key property to distinguish an object from other object.
- *Name* : group's name
- *Sorted order*: sorts order of groups to used for AddObjectForm and UpdateObjectForm function to create a group's list according to order.

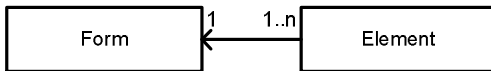
8.1.2 Schema of Entities and Relationship

8.1.2.1 Entities of list

Order	Name	Description
1	Form	Save common information of an object
2	Element	Save properties of an object
3	Egroup	Save egroups of an object

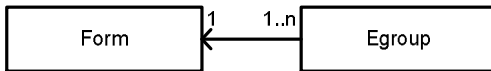
8.1.2.2 Relationship of entities

8.1.2.2.1 Form and Element



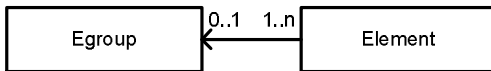
Re-examine two entities, *Form* and *Element*, a form have many elements and a element belongs to a form and a only one. So, the *Form* entity associates with *Element* one by *one-many* relationship.

8.1.2.2.2 Form and Egroup



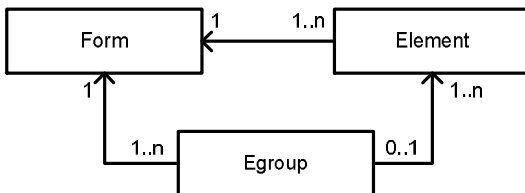
Re-examine two entities, *Form* and *Egroup*, a form have many egroups and a egroup belongs to a form and a only one. So, the *Form* entity associates with *Egroup* one by *one-many* relationship.

8.1.2.2.3 Egroup and Element



Re-examine two entities, *Egroup* and *Element*, a egroup have many elements and a element belongs to a egroup and a only one. So, the *Egroup* entity associates with *Element* one by *one-many* relationship.

8.1.3 Schema of relationship



8.2 Design data

8.2.1 Table Form

Descript information of Form:

Order	Name	Data type	Notes
-------	------	-----------	-------

1	id	integer	ID
2	name	varchar	Name created when to call the CreateAndModify function
3	label	varchar	Showed name
4	norow	integer	Maximum number of records
5	nocolumn	integer	Number of columns
6	icon	varchar	Icon of an object
7	visible	varchar	yes : a main object no: a sub object
8	nocolumnlink	integer	Number of columns in form link showed

Khóa chính: id

8.2.2 Table Element

Descript information of Element:

Order	Name	Data type	Notes
1	id	integer	ID
2	name	varchar	Name's property
3	label	varchar	Showed Name
4	type	integer	Data type
5	controtype	varchar	Control type
6	initialvalue	varchar	Initial values
7	formlink	integer	A main object's id (optional)
8	required	varchar	Value is null or not
9	sortorder	integer	Ordinal number of the object
10	formid	integer	An object's id to which the element belongs
11	groupid	integer	A group's id

Khóa chính: id

8.2.3 Table Egroup

Descript information of Egroup:


Order	Name	Data type	Notes
1	id	integer	ID
2	name	varchar	Egroup 's name
3	sortorder	integer	Ordinal number of the egroup
4	formid	integer	An object's id to which the element belongs

Khóa chính: id

8.3 Design database

8.3.1.1 Children object

Children object has common information, as follows:

- *Name:* tt
- *Label:* Danh sách trẻ
- *Number of rows showed:* 50
- *Number of columns showed:* 7
- *Icon:* 
- *Visible:* yes
- *Egroups for the object:*

Name	Sort Order	Notes
Họ tên	1	Full name
Địa chỉ thường trú	2	Address
Địa chỉ tạm trú	3	Temporary address
Cha mẹ	4	Parents

Nhóm máu	5	Blood group
Cấp số	6	Issue
Chi tiết lúc sanh	7	Details when to be born

- *Properties for the object:*


Name	Label	Data type	Sort order	Egroup	Control type	Not null	Notes
Apgar1	Apgar 1	Number	9	Chi tiết lúc sanh	textfield	No	Apgar 1
Apgar5	Apgar 5	Number	10	Chi tiết lúc sanh	textfield	No	Apgar 5
breakCM	breakCM	Number	3	Cha mẹ	break	No	Break CM
Email	Email	String	7	Cha mẹ	textfield	No	Email
Maso	Mã số	String	1	Họ tên	textfield	Yes	Code
NgayCapNhat	Ngày cập nhật	Date	3	Cấp số	date	No	Edit date
NgayLapPhi euSKTE	Ngày lập phiếu SKTE	Date	1	Cấp số	date	No	Created Date
Ho	Họ	String	2	Họ tên	textfield	Yes	Surname
Ngaysinh	Ngày sinh	Date	4	Họ tên	date	Yes	Birthday
Noisinh	Nơi sinh	String	8	Chi tiết lúc sanh	textfield	No	Birthplace
PNam	Phái nam	String	5	Họ tên	combobox	No	Sex
Conthu	Con thứ	String	7	Họ tên	combobox	No	Child order
Diachi	Địa chỉ	String	1	Địa chỉ thường trú	textarea	No	Address

PX1	Phường xã 1	String	2	Địa chỉ thường trú	combobox	No	District
QH1	Quận huyện 1	String	3	Địa chỉ thường trú	combobox	No	Ward
Diachitamtru	Địa chỉ tạm trú	String	1	Địa chỉ tạm trú	textarea	No	Temporary address
PX2	Phường xã 2	String	2	Địa chỉ tạm trú	combobox	No	Temporary district
QH2	Quận huyện 2	String	3	Địa chỉ tạm trú	combobox	No	Temporary ward
Dienthoai	Điện thoại	String	6	Cha mẹ	textfield	No	Phone number
Tencha	Tên cha	String	1	Cha mẹ	textfield	No	Father's name
Tuoicha	Tuổi cha	Number	2	Cha mẹ	textfield	No	Father's age
Tenme	Tên mẹ	String	4	Cha mẹ	textfield	No	Father's mother
Tuoime	Tuổi mẹ	Number	5	Cha mẹ	textfield	No	Father's age
MauABO	Nhóm máu	String	1	Nhóm máu	combobox	No	Blood group
MauRh	Máu RH	String	2	Nhóm máu	combobox	No	RH blood
Capso	Ngày cấp sổ	Date	4	Cấp sổ	date	No	Date of issue
CQcapso	Cơ quan cấp sổ	String	2	Cấp sổ	textfield	No	Organization of issue
Cannang	Cân nặng	Number	1	Chi tiết lúc sanh	textfield	No	Weight
Chieudai	Chiều dài	Number	5	Chi tiết lúc sanh	textfield	No	Length/Height

Vongdau	Vòng đầu	Number	4	Chi tiết lúc sanh	textfield	No	Head circle
Thangsinh	Sinh vào tháng thứ	String	3	Chi tiết lúc sanh	combobox	No	No.of month in pregnancy
Kieusinh	Kiểu sinh	String	6	Chi tiết lúc sanh	combobox	No	Type of Birth
Ditat	Di tật	String	7	Chi tiết lúc sanh	textfield	No	Malformation
KhamSS	Khám sơ sinh	String	2	Chi tiết lúc sanh	textfield	No	The first examine
Ten	Tên	String	3	Họ tên	textfield	Yes	First name

8.3.1.2 Treatment

Treatment object has common information, as follows:

- *Name*: khambenh
- *Label*: Khám bệnh
- *Number of rows showed*: 50
- *Number of columns showed*: 7
- *Icon*: 
- *Visible*: no
- *Egroups for the object*:

Name	Sort order	Notes
Thông tin trẻ	1	Private information
Nhận bệnh	2	Information when to admit
Khám bệnh	3	Information of treatment
Loại bệnh	4	Disease groups
Loại dịch vụ	5	Health service groups


- *Properties for the object:*

Name	Label	Data type	Sort order	Egroup	Control type	Not null	Notes
BHYT	BHYT	String	7	Nhận bệnh	combobox	No	Health Insurance
Ngaykham	Ngày khám	Date	1	Nhận bệnh	date	Yes	Date of Treatment
Chandoan	Chẩn đoán	String	2	Khám bệnh	textarea	No	Diagnosis
XuTri	Xử trí (Đ.trị)	String	3	Khám bệnh	textarea	No	Treatment
Tienluong	Tiên lượng	String	4	Khám bệnh	textarea	No	Prediction
Ghichu	Ghi chú	String	5	Khám bệnh	textarea	No	Notes
TT	Trẻ	Number	1	Thông tin trẻ	combobox	No	Children, it's a form link property
Giokham	Giờ khám	String	2	Nhận bệnh	textfield	No	Time of Treatment
Thangtuoi	Tháng tuổi	String	3	Nhận bệnh	textfield	Yes	Age in months
Cannang	Cân nặng (kg)	Number	4	Nhận bệnh	textfield	Yes	Weight
Chieucao	Chiều cao (cm)	Number	5	Nhận bệnh	textfield	No	Height
Bskham	BS khám	String	6	Khám bệnh	textfield	No	Doctor
Trieu chung	Triệu chứng	String	1	Khám bệnh	textarea	No	Symptom
chichngua	Chích ngừa	String	1	Loại dịch vụ	checkbox	No	Vaccination

KhamSucKhoe	Khám sức khỏe	String	3	Loại dịch vụ	checkbox	No	Health Check
TVChamSocTre	TV- Chăm sóc trẻ	String	4	Loại dịch vụ	checkbox	No	Counseling for child care
KhamBenh	Khám bệnh	String	5	Loại dịch vụ	checkbox	No	Examination
ViemHoHap	Viêm hô hấp	String	1	Loại bệnh	checkbox	No	Respiratory inflammation
TieuChay	Tiêu chảy	String	2	Loại bệnh	checkbox	No	Diarrhea
BenhKhac	Bệnh khác	String	3	Loại bệnh	checkbox	No	Other diseases
KhamTVDD	Khám - Tư vấn DD	String	2	Loại dịch vụ	checkbox	No	Counseling in nutrition
TinhTrangDD	Tình trạng DD	String	6	Nhận bệnh	textfield	No	Nutritional Status

8.3.1.3 Vaccination

Vaccination object has common information, as follows:

- *Name:* tiemchung
- *Label:* Tiêm chủng
- *Number of rows showed:* 20
- *Number of columns showed:* 7
- *Icon:* 
- *Visible:* no
- *Egroups for the object:*

Name	Sort order	Notes
Thông tin trẻ	1	Private information of the child

Tiêm chủng BCG	2	BCG vaccination
Tiêm chủng Sabin	3	Sabin vaccination
Tiêm chủng DTC	4	DTC vaccination
Tiêm chủng VGSVB	5	VGSVB vaccination
Tiêm chủng Sởi	6	Measles vaccination
Tiêm chủng khác	7	Other vaccination


- *Properties for the object:*

Name	Label	Data type	Sort order	Egroup	Control type	Not null	Notes
BCG	BCG Sơ sinh	Date	1	Tiêm chủng BCG	date	No	BCG vaccination
Sabin	Sabin 2 tháng	Date	1	Tiêm chủng Sabin	date	No	Sabin vaccination
Sabin 1	Sabin 3 tháng	Date	2	Tiêm chủng Sabin	date	No	
Sabin 2	Sabin 4 tháng	Date	3	Tiêm chủng Sabin	date	No	
Sabin nl	Sabin nhắc lại	Date	4	Tiêm chủng Sabin	date	No	

DTC2	DTC 2 tháng	Date	1	Tiêm chủng DTC	date	No	
DTC3	DTC 3 tháng	Date	2	Tiêm chủng DTC	date	No	
DTC4	DTC 4 tháng	Date	3	Tiêm chủng DTC	date	No	
DTCn 1	DTC Nhắc lại	Date	4	Tiêm chủng DTC	date	No	
VGS VB	VGS VB Sơ sinh	Date	1	Tiêm chủng VGSVB	date	No	
VGS VB1	VGS VB 2 tháng	Date	2	Tiêm chủng VGSVB	date	No	
VGS VB2	VGS VB 4 tháng	Date	3	Tiêm chủng VGSVB	date	No	
VGS VBn1	VGS VB Nhắc lại	Date	4	Tiêm chủng VGSVB	date	No	
Soi	Sởi 9 tháng	Date	1	Tiêm chủng Sởi	date	No	
Vacci nkhac	Vacci n khác	String	1	Tiêm chủng khác	textarea	No	
tt	Trẻ	Number	1	Thông tin trẻ	combob ox	No	Private information of the children

8.3.1.4 Prehistory in health

Prehistory in health object has common information, as follows:

- *Name:* khambenh
- *Label:* Khám bệnh
- *Number of rows showed:* 20
- *Number of columns showed:* 5
- *Icon:* 
- *Visible:* no
- *Egroups for the object:*

Name	Sort order	Notes
Thông tin trẻ	1	Private information of the child
Thông tin về gia đình	2	Information of the family

- *Properties for the object:*

Name	Label	Data type	Sort order	Egroup	Control type	Not null	Notes
Hotennguoithan	Họ tên người thân	String	2	Thông tin về gia đình	textfield	no	full name of the relative
Tuoi	Tuổi	Number	3	Thông tin về gia đình	textfield	no	Age
Quanhe	Quan hệ	String	4	Thông tin về gia đình	textfield	no	Relationship
Tiensu	Tiền sử	String	5	Thông tin về gia đình	textfield	no	Prehistory in health
Ghichu	ghi chú	String	6	Thông tin về gia đình	textfield	no	Notes
TT	Trẻ	Number	1	Thông tin trẻ	combobox	yes	Id of the child

9 Appendix

9.1 Main menu

The main menu is divided into three sections:

- Administrator**
 - Form management
 - Create form
- Data management**
 - Danh sách trẻ
 - Test
- Search & Report**
 - Daly reports
 - Monthly reports
 - List children according birthday

Callouts point to the following items:

- Create form functions**: points to 'Form management' and 'Create form'.
- Main objects (visible forms)**: points to 'Danh sách trẻ' and 'Test'.
- Search or Reports functions**: points to 'Daly reports', 'Monthly reports', and 'List children according birthday'.

9.2 Form management function

The 'List of forms' page shows a table of existing forms. A callout points to the table with the text 'Created forms' list in the system'.

Name	Label	Operations
tt	Danh sách trẻ	[Icons]
khambenh	Khám bệnh	[Icons]
giadinh	Gia đình	[Icons]
phieusanh	Phiếu sanh	[Icons]
sosinh	Số sinh	[Icons]
test	Test	[Icons]
tiemchung	Tiêm chủng	[Icons]

9.3 Create form

The 'generate_form' page includes a header with the DHIS2 logo and navigation links: HỖ THỐNG BÁO CÁO 7 MẪU TUYỂN XÃ, Maintenance, Services, Help, Log out.

The main content area shows:

- generate_form** title
- A dropdown menu labeled 'form' with 'Danh sách trẻ' selected.
- A 'generate_form' button.

9.4 Function of processing created object

Administrator

- Form management
- Create form

Data management

- Danh sách trẻ
- Test

Search & Report

- Daly reports
- Monthly reports
- List children according birthday

Danh sách trẻ

Search [Advanced search](#)

STT	Mã số	Họ	Tên	Ngày sinh	Giới tính	Con thứ	Địa chỉ	Operations
1	TH00003	Họ C	Tên C	2007-01-01		Con thứ 2	789	
2	TH00002	Họ B	Tên B	2006-01-01		Con thứ 1	456	