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Spring 2015

ClinNet Radiology Module by SabiaMed Healthcare Technologies

Software Requirement and Design Description

Radiology Master Configuration

COOP 3010-39 Professional Practice
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May 22, 2015

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Introduction

ClinNet by SabiaMed is a software application designed to bring the best environment and technologies for healthcare system. Actually, the healthcare system is transitioning to new technologies requiring electronic record and billing. ClinNet is able to satisfy this new requirement. Moreover, ClinNet provide additional tools that help improve the services of diverse specialties. One of this services provided by ClinNet is the radiology module. This module can be configured by user preference but, this configuration must be done with data base using Structured Query Language (SQL). The present work specifies the requirement, and design of an application that configure radiology module without the knowledge of SQL, providing user friendly configuration tool.

Radiology Module

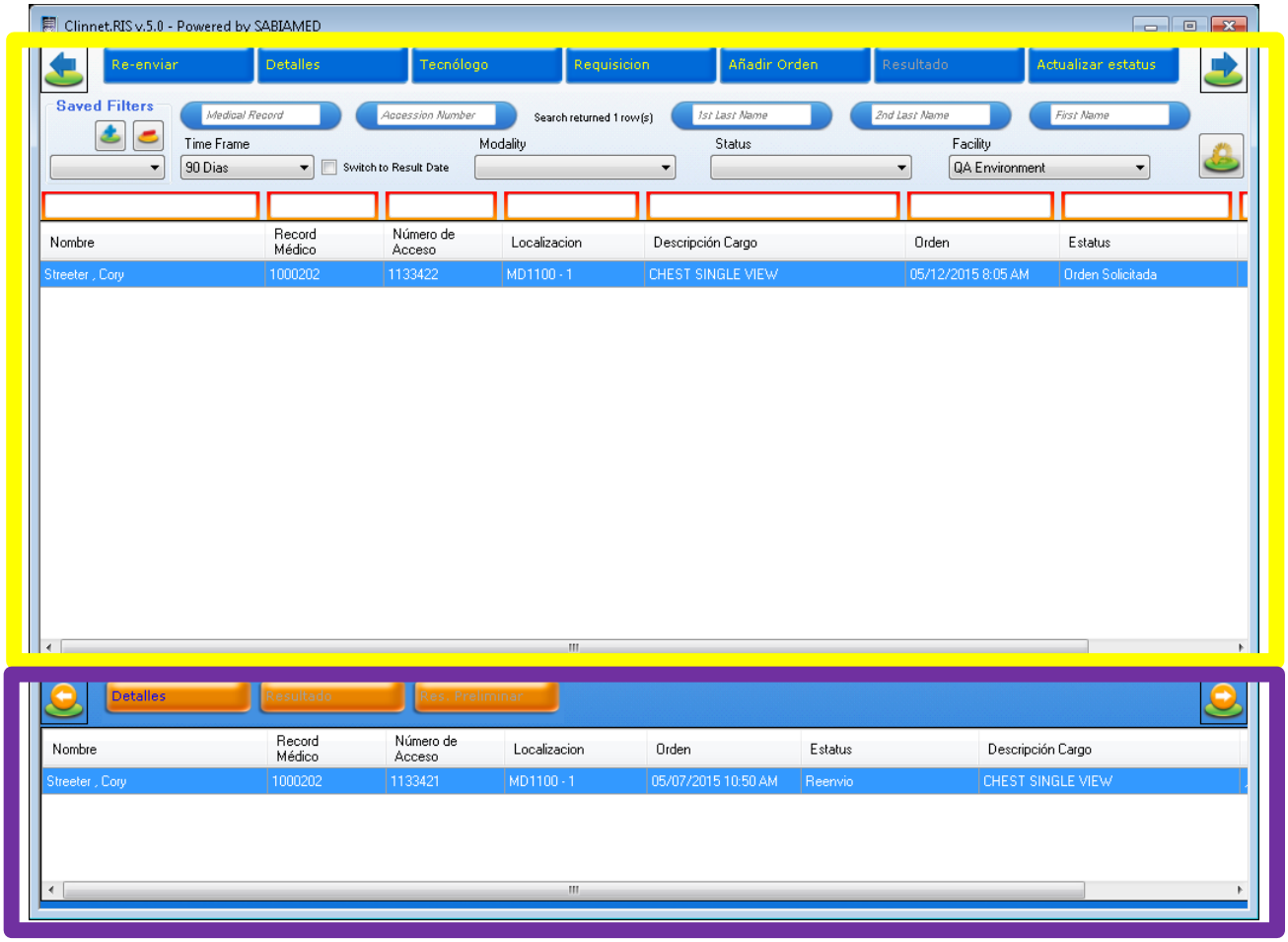


Figure 1: Radiology Module Main Screen

The radiology module is one of the newest to join CliNet application. It has an essential and attractive look as shown in Figure 1. The yellow rectangle is the main grid for system configuration. The grid can be divided in columns as user requires. The user can set columns sequence as desire and sorting preferences. Also, the radiology module provides a filter box for each column by default. The purple square represent the secondary grid and can be configured as main grid. On the top of these grids there is a set of buttons, blue for grid one and orange for grid two. This buttons represent the actions (services) of the radiology module and can be configured by as user require. Moreover, there four dropdown menus that allows the users to filter the work list on the grid white area.

Radiology Master Requirement

The radiology module is characterized by been configurable, it has a normalize database structure with a consistence tables names notation. ClinNet database has by default tables that define radiology concepts. Those tables have a notation starting by “Sys” (system) follow by “Rad” (radiology) “SysRad”. The system tables provide data for others radiology tables. These tables have a notation “Mst” (master) and can be modified without affecting system tables or data. Also, the configuration can be made for a particular user or a group of users.

In order to provide a tool for the user that can configure radiology module, we have to get across all system database tables and feed master tables.

Database connection:

ClinNet use Microsoft SQL Server 2012 for database services. Therefore, the radiology master will point to same database in order to be used and get data.

Connection string:

- Provider = SQLOLEDB.1
- Persist Security Info = False
- UID = clinnet
- Initial Catalog = Sphyx_6_4_3_Client
- Data Source = 192.168.1.33\sql2012

ClinNet radiology module database tables:

Table 1 User Configuration Database Tables

Table Name	Description
MstPhysician	Table to configure radiologist and other physicians in facility
MstUser	Table to configure user in facility
SysRadGroup	Table where group are defined
MstRadGroupByUser	Table where assigned user to a group
MstRadiologyModulePhysicians	Table where radiologist id is provide for reference

Table 2 Actions Configuration (Blue Buttons)

Table Name	Description
SysRadAction	Table that has action definitions, dll paths and stored procedures
SysRadActionByLanguage	Table that has action description in Spanish and English
MstRadActionByRadGroup	Table to set actions by group
MstRadActionByUser	Table to set actions by user

Table 3 Columns Configuration Database Tables

Table Name	Description
SysRadColumns	Table where all available are define
SysRadColumnByLanguage	Table where columns descriptions are available in Spanish and English
MstRadColumnsByRadGroup	Table where columns are set by groups
MstRadColumnsByRadUser	Table where columns are set by user
MstRadDefaultSortingByRadGroup	Table to specify column will sort the work list by group
MstRadDefaultSortingByRadGroup	Table to specify column will sort the work list by user
SysRadRowColor	Table that has the colors for different rad order status on the work list

Table 4 Time Frame Filter Database Tables

Table Name	Description
SysRadTimeFrame	Table where available times are define
SysRadTimeFrameByLanguage	Table where has time frame description in English or Spanish
MstRadTimeFrameByRadGroup	Table where time frame is configured by groups
MstRadTimeFrameByRadUser	Table where time frame is configured by user

Table 5 Radiology Departments Configuration Database Tables

Table Name	Description
MstRadDeptByRadGroup	Table where departments are configured by groups
MstRadDeptByUser	Table where departments are configured by user

Table 6 Modalities (Sub department) Filter Configuration Database Tables

Table Name	Description
MstRadSubDeptByRadGroup	Table where sub departments are configured by groups
MstRadSubDeptByUser	Table where sub departments are configured by user

Table 7 Status Filter Configuration Database Tables

Table Name	Description
SysRadStatus	Table that contains the procedures status available.
SysRadStatusByAction	Table where next status is define after an action has been executed.
SysRadStatusByLanguage	Table where the status are defined in English and Spanish
MstRadStatusByRadGroup	Table where the status are configured by groups
MstRadStatusByUser	Table where the status are configured by user

Table 8 Cancelation Reason Configuration Database Tables

Table Name	Description
MstRadiologyCancelReasons	Table where reasons to cancel a procedure are defined

Table 9 Postpone Reasons Configuration Database Tables

Table Name	Description
MstRadiologyPostpones	Table where reasons to postpone a procedure are defined

Table 10 Facility Info Configuration Database Tables

Table Name	Description
MstRadFacilityGeneralInfo	Table where facility is configured

Design and Implementation

The radiology master application was designed to satisfy ClinNet radiology module custom configurations. The radiology module can be configured by user or group of users. Each user or group of users can choose which columns, actions, and filters will appear on radiology module main screen as shown in Figure 1. The radiology master application provides user interface with radiology database tables, in order to insert, select, and update data to the radiology tables described in the previous section.

Implementation

In the following section the prototype of the radiology master application is described.

Figure 2: Radiology Master Main Screen

Figure 2 shows a menu option for the user to configure radiology module for a particular user or group of users. Also, the reason for postpone or cancel a radiology order is defined.

Configuration by User

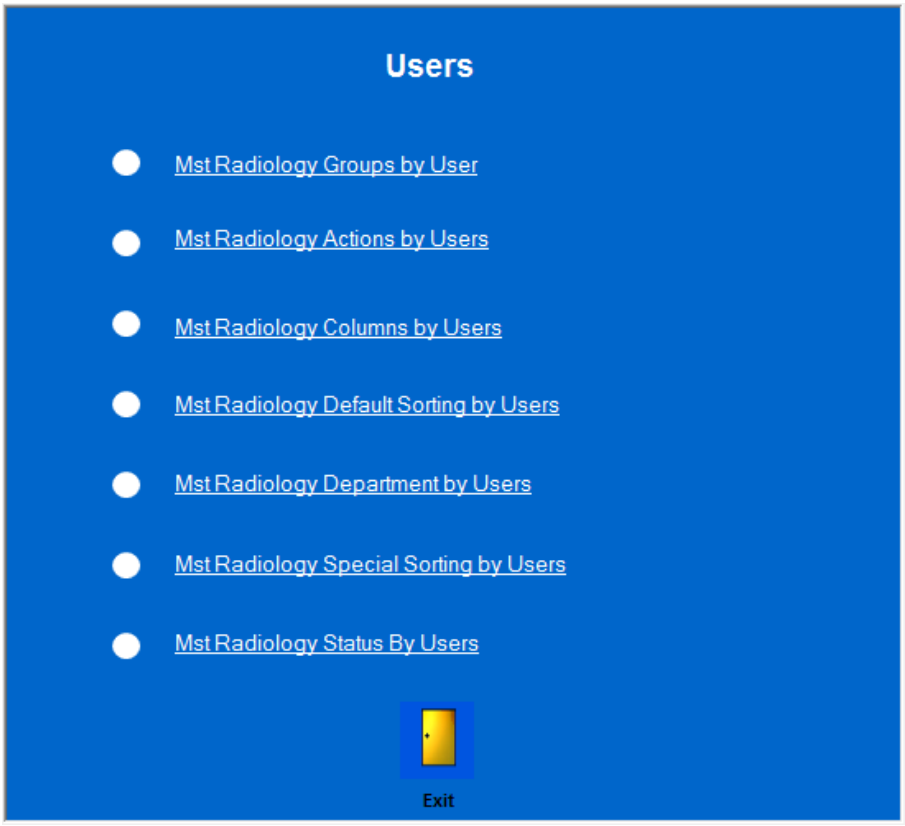


Figure 3: Configuration by Users

Figure 3 shows a menu options where the user can choose to configure the radiology module main screen attributes; actions, columns, sorting and status.

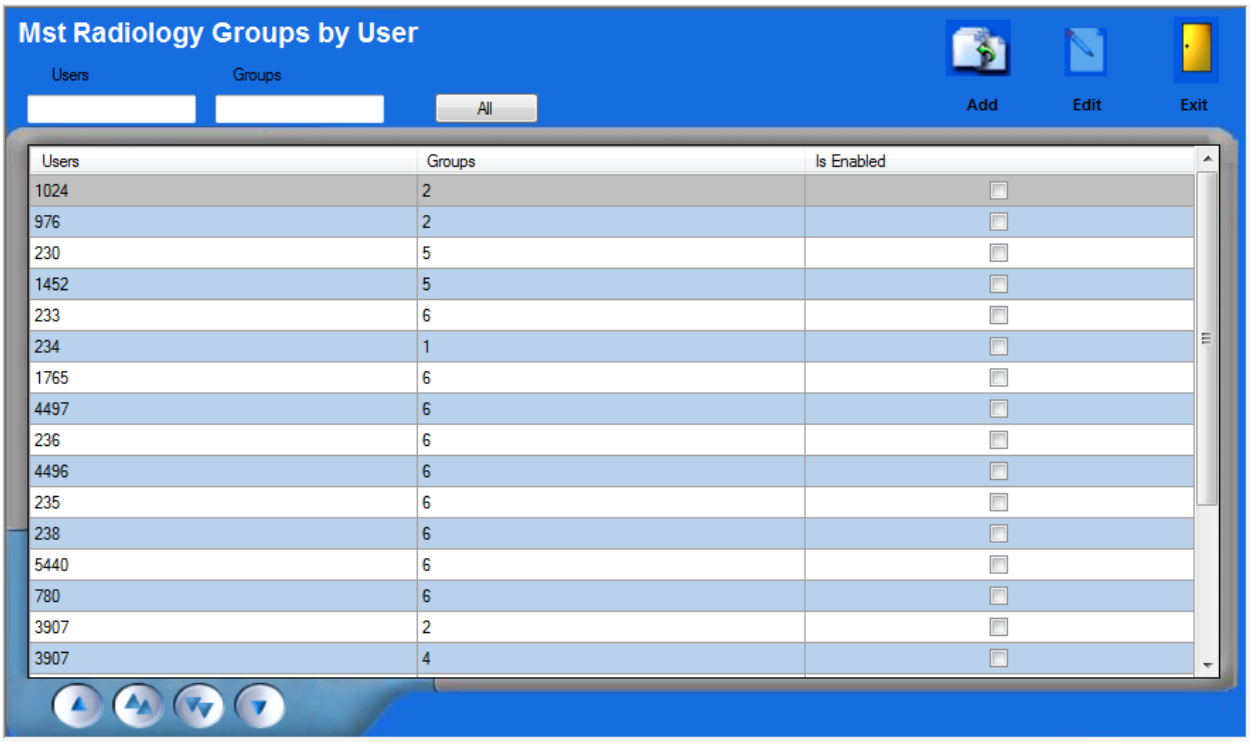


Figure 4: Radiology Groups by User

Figure 4 shows the list of radiology module users configured on radiology tables. It shows the id where radiology module user and group belong.

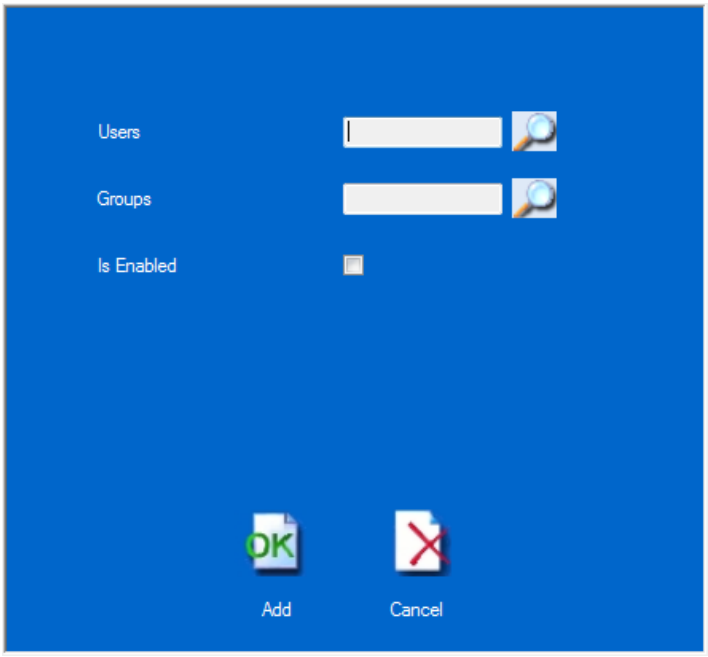


Figure 5: Assign User to a Group

In Figure 5 the radiology master user can type the user or group id. If the user does not know the id, the loupe icon can be pressed to search for users or group id on database.

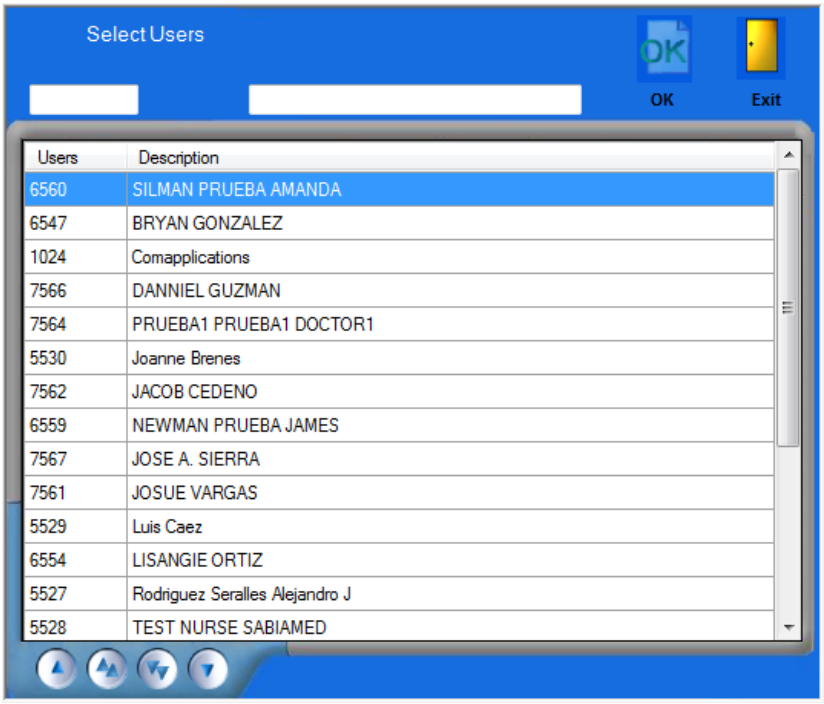


Figure 6: List of Available Users

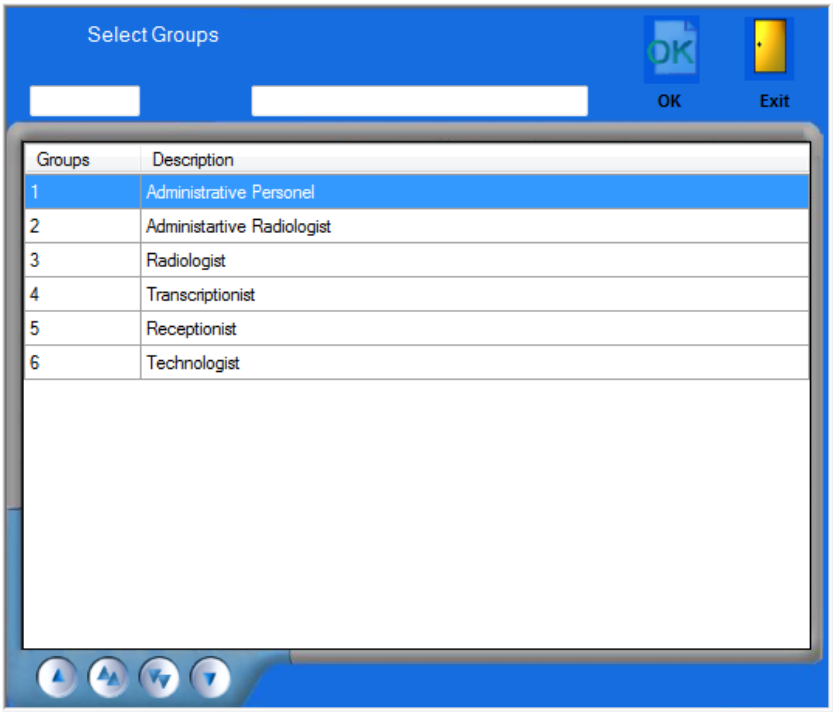
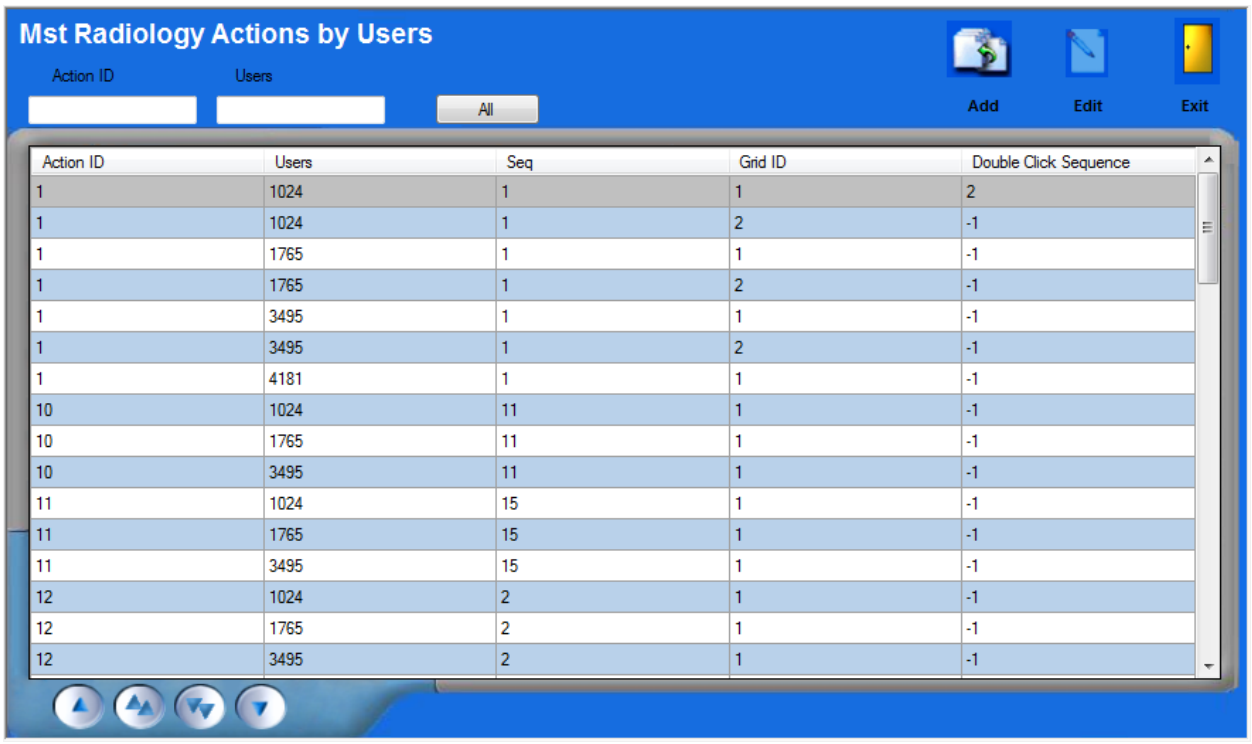


Figure 7: List of Available Groups

Actions by users



Action ID	Users	Seq	Grid ID	Double Click Sequence
1	1024	1	1	2
1	1024	1	2	-1
1	1765	1	1	-1
1	1765	1	2	-1
1	3495	1	1	-1
1	3495	1	2	-1
1	4181	1	1	-1
10	1024	11	1	-1
10	1765	11	1	-1
10	3495	11	1	-1
11	1024	15	1	-1
11	1765	15	1	-1
11	3495	15	1	-1
12	1024	2	1	-1
12	1765	2	1	-1
12	3495	2	1	-1

Figure 8: Radiology Actions by User

The picture above lists the actions configured for radiology module users. The first column identifies the present action id assigned to a particular user of the radiology module which is defined in the second column. The “seq” column, order the action (Figure 1 blue buttons) in sequence for radiology module main screen. The “Grid ID” column specifies the grid where the actions will be available.

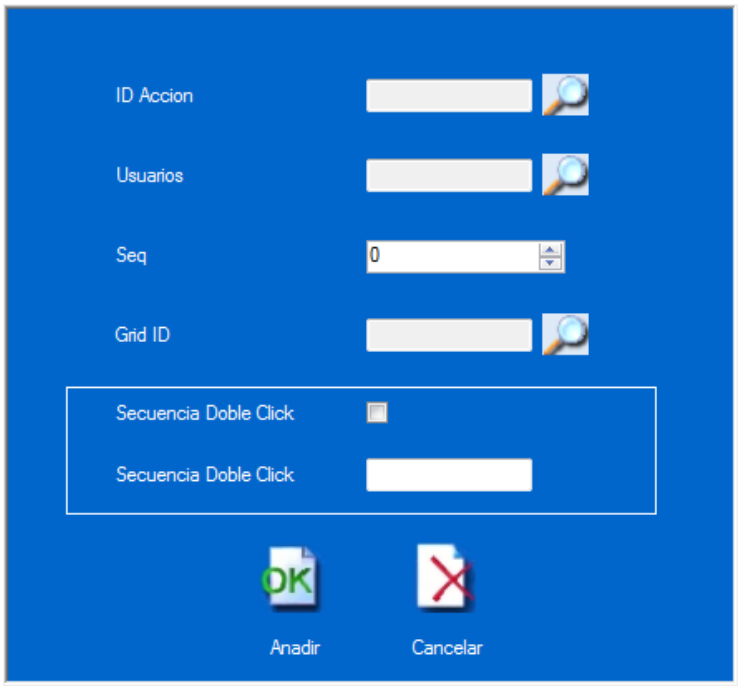


Figure 9: Action Configuration Radiology Master Screen

In Figure 9 the radiology master user can type the action, user, and grid id. If the user does not know the id, the loupe icons can be pressed to search for action, user, and grid id on database.

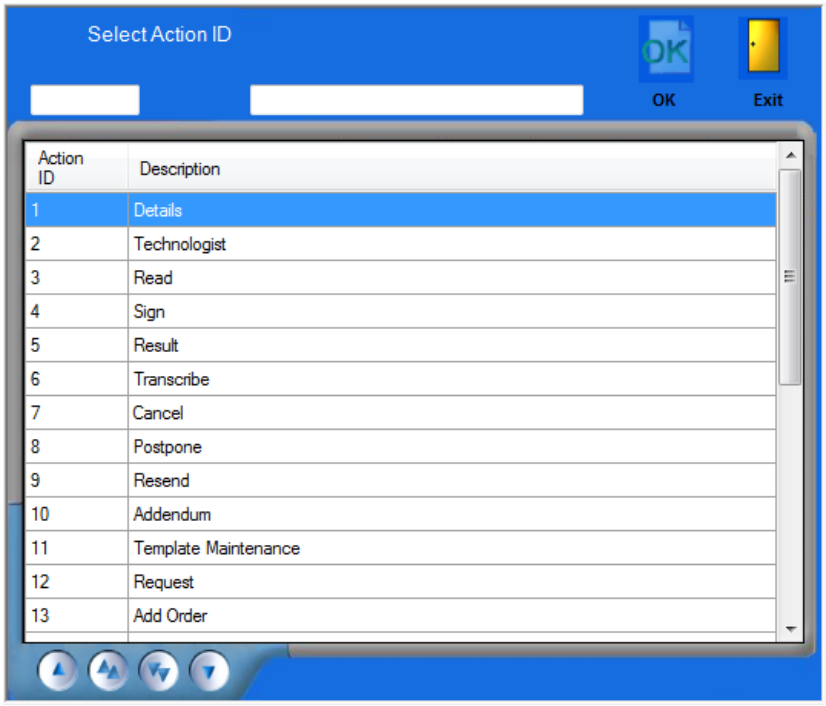


Figure 10: Action List

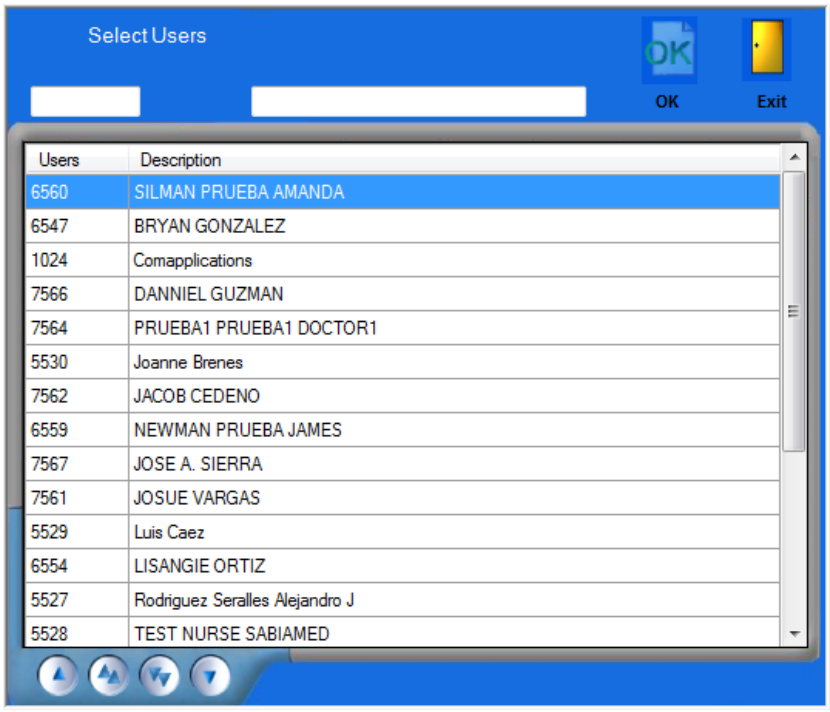


Figure 11: List of Users

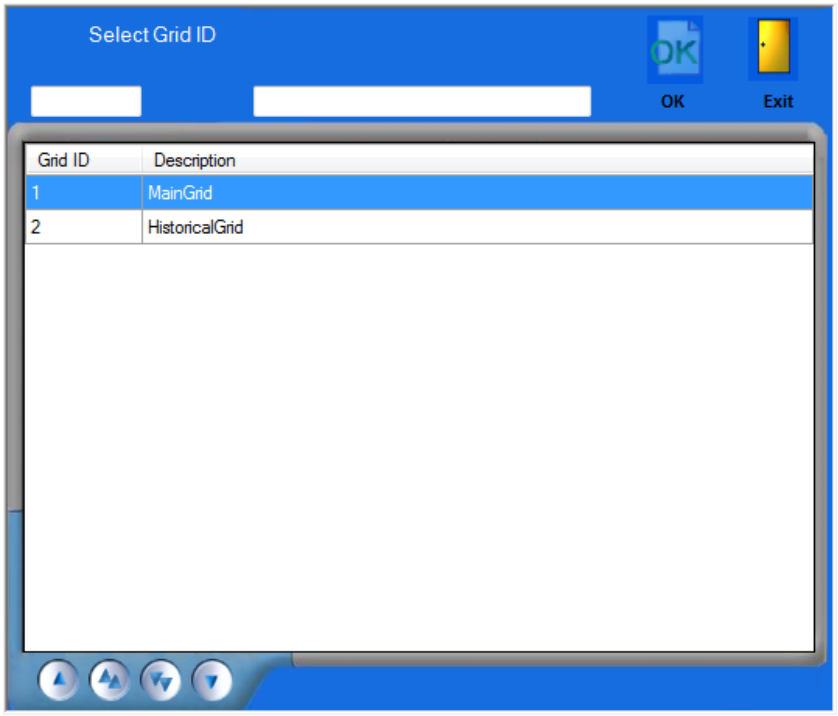
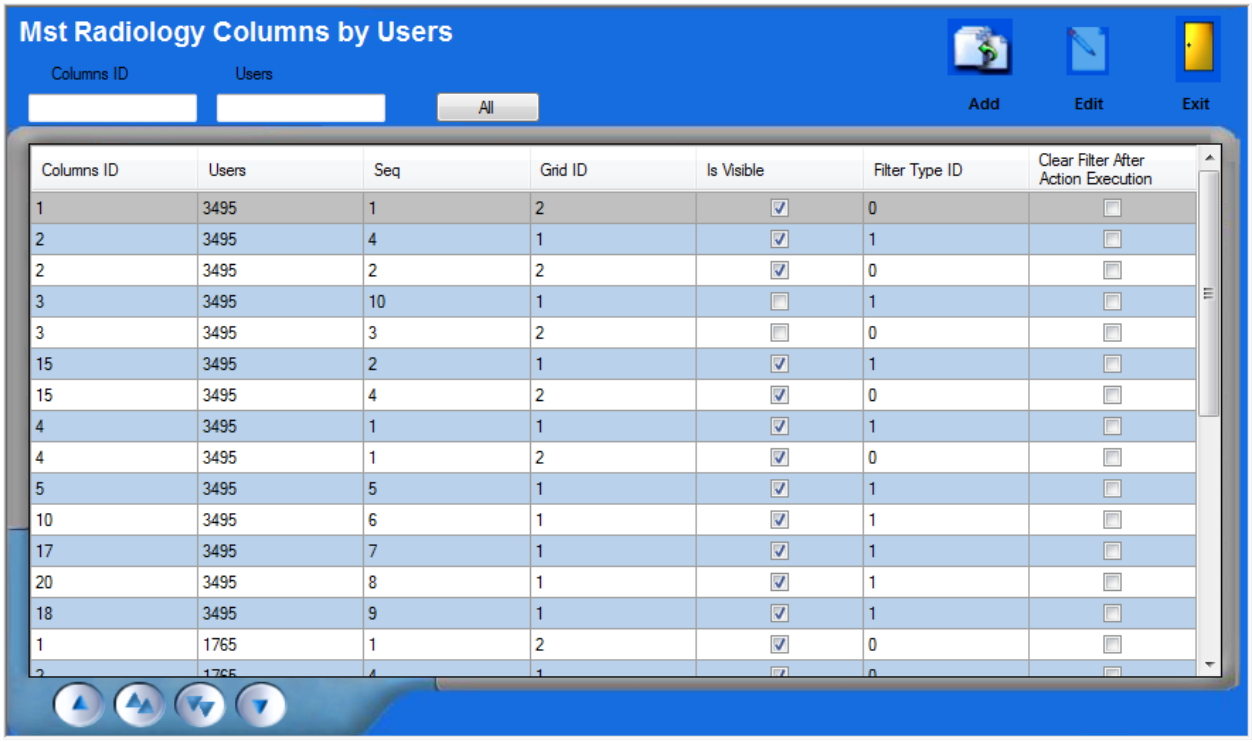


Figure 12: List of Grid

Columns by users



Columns ID	Users	Seq	Grid ID	Is Visible	Filter Type ID	Clear Filter After Action Execution
1	3495	1	2	☑	0	☐
2	3495	4	1	☑	1	☐
2	3495	2	2	☑	0	☐
3	3495	10	1	☐	1	☐
3	3495	3	2	☐	0	☐
15	3495	2	1	☑	1	☐
15	3495	4	2	☑	0	☐
4	3495	1	1	☑	1	☐
4	3495	1	2	☑	0	☐
5	3495	5	1	☑	1	☐
10	3495	6	1	☑	1	☐
17	3495	7	1	☑	1	☐
20	3495	8	1	☑	1	☐
18	3495	9	1	☑	1	☐
1	1765	1	2	☑	0	☐

Figure: 13 Radiology Columns by Users

The picture above lists the columns configured for radiology module users. The first column identifies the present column id assigned to a particular user of the radiology module which is defined in the second column. The "seq" column, order the action (Figure 1 blue buttons) in sequence for radiology module main screen. The "Grid ID" column specifies the grid where the actions will be available. The "Filter Type ID" specifies which filter the column will have.

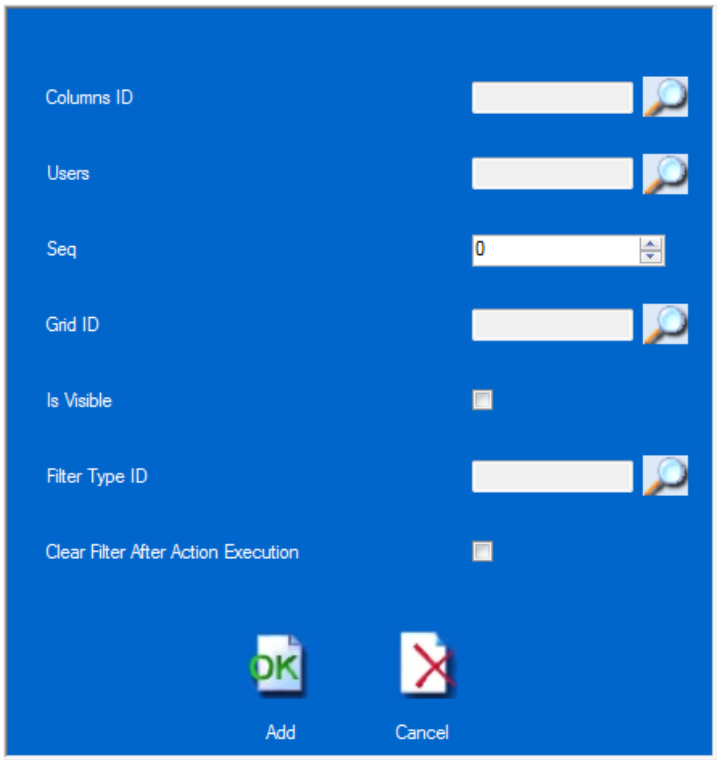


Figure 14: Column Configuration Radiology Master Screen

In Figure 14 the radiology master user can type the column, user, and grid id. If the user does not know the id, the loupe icons can be pressed to search for column, user, and grid id on database.

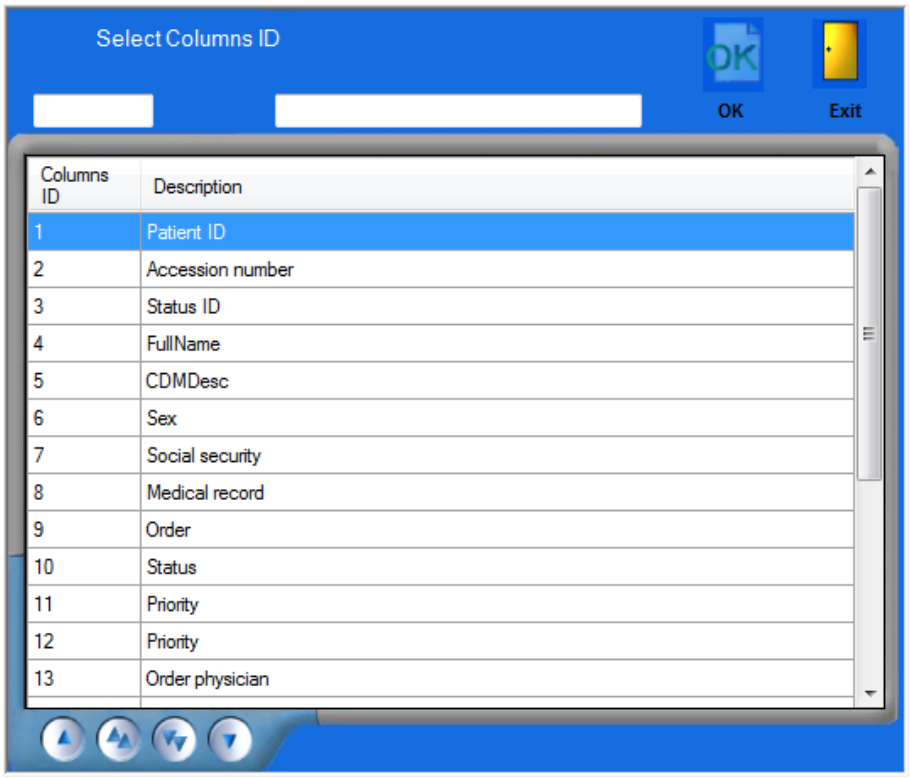


Figure 15: Columns List

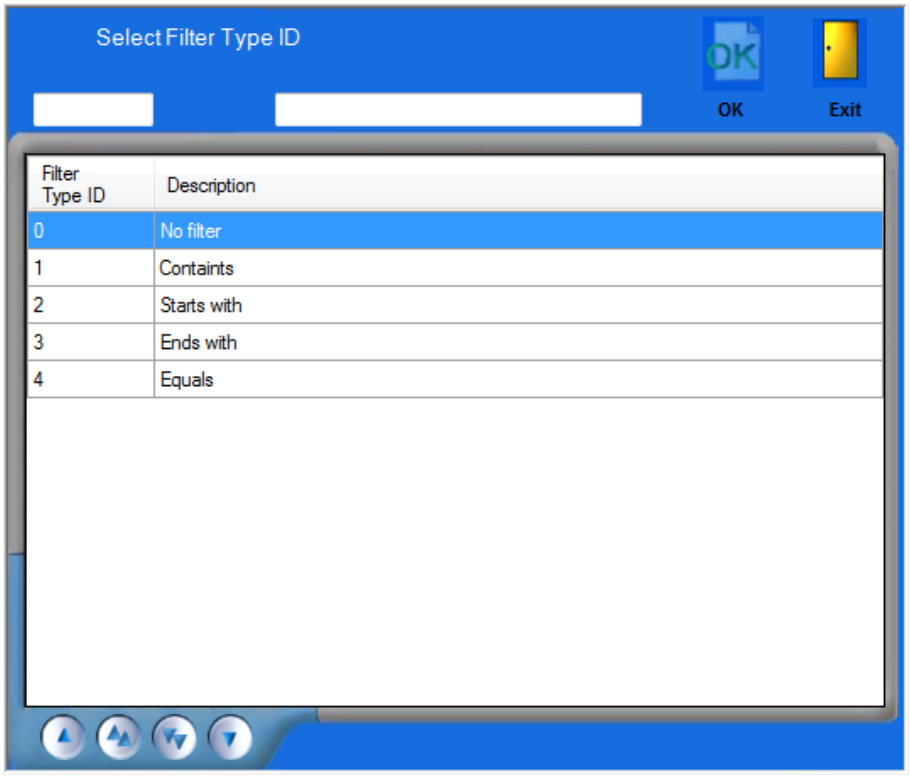


Figure 16: Filter Type List

Default sorting by users

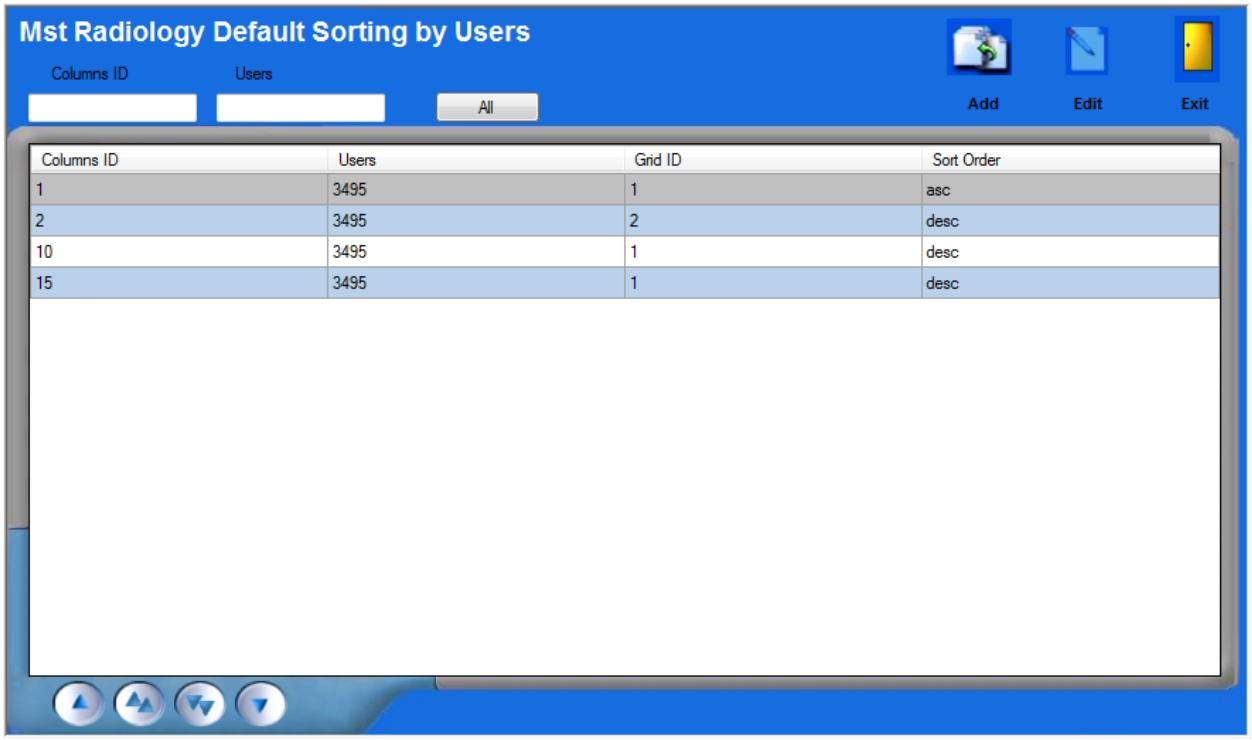


Figure 17: Default Column Sorting

The picture above lists the columns default sorting configured for radiology module users. The first column identifies the present column id assigned to a particular user of the radiology module which is defined in the second column. The "Grid ID" column specifies the grid where the columns will be available. The "Sort Order" column specifies which sort will have the column, "asc" (ascendant) or "desc" (descendant) respectively.

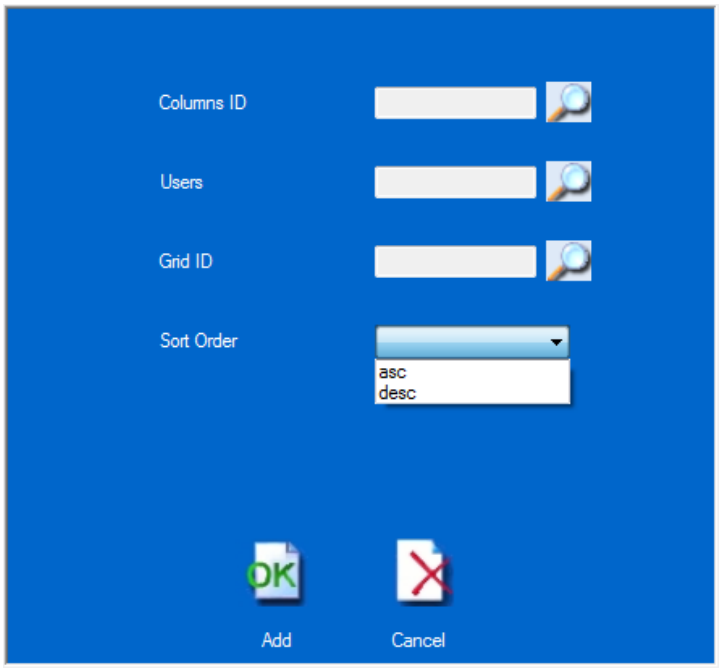


Figure 18: Default Column Sort Configuration Radiology Master Screen

In Figure 18 the radiology master user can type the column, user, and grid id. Also, sort order can be selected. If the user does not know the id, the loupe icons can be pressed to search for column, user, and grid id on database.

Department by users

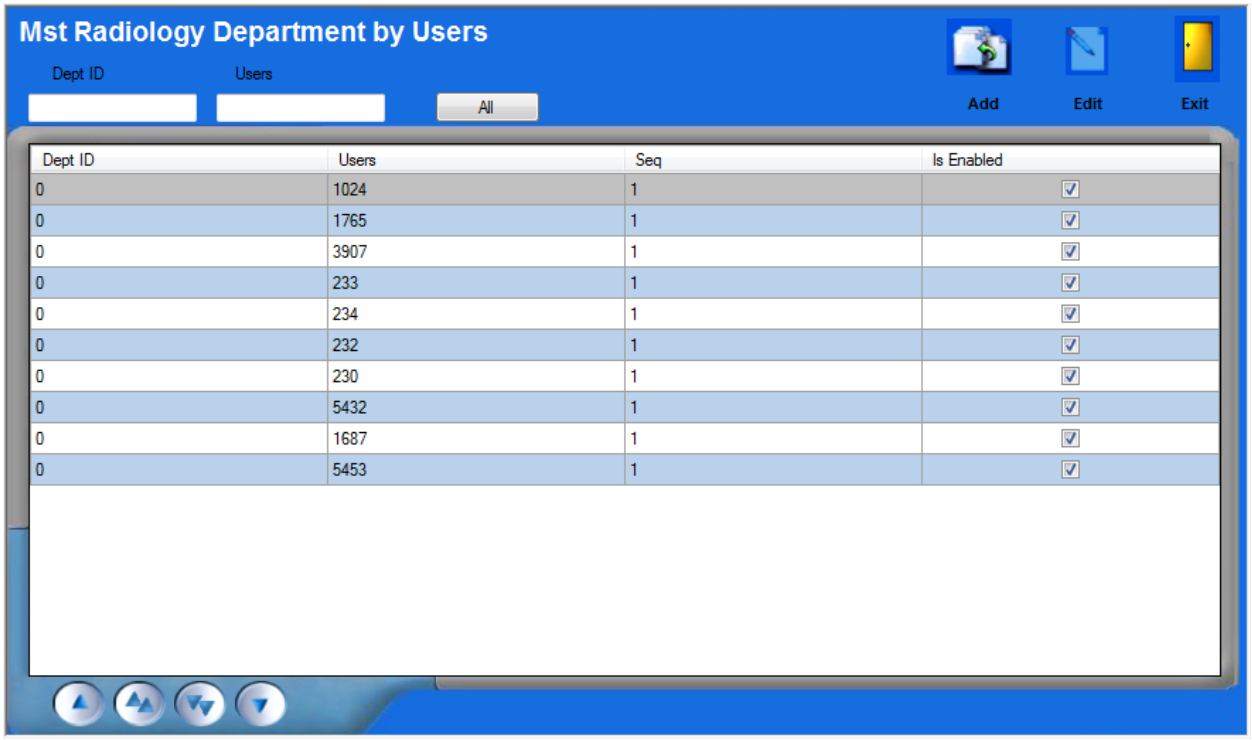


Figure 19: Department by User

The picture above lists the department configured for radiology module users. The first column identifies the present department id assigned to a particular user of the radiology module which is defined in the second column.

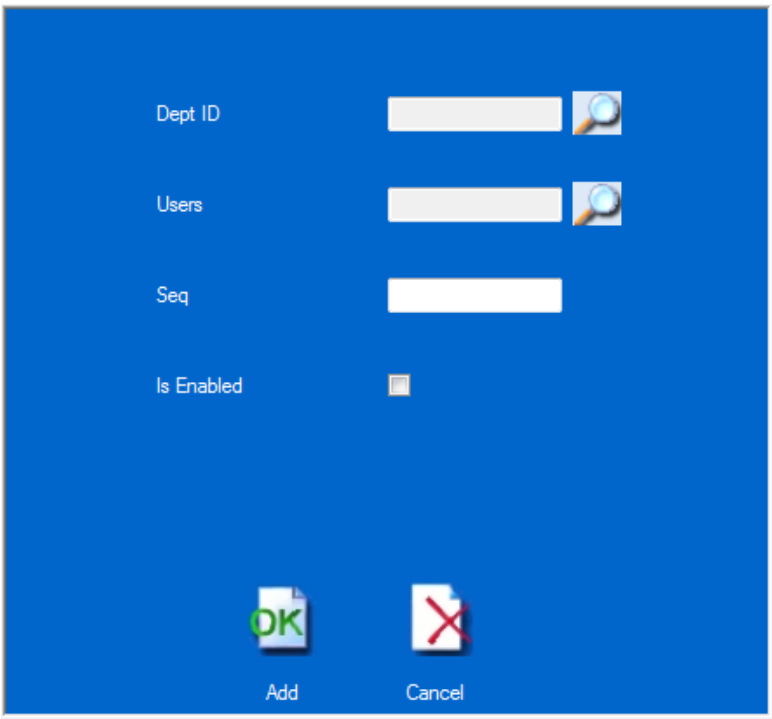


Figure 20: Department by User Configuration Radiology Master Screen

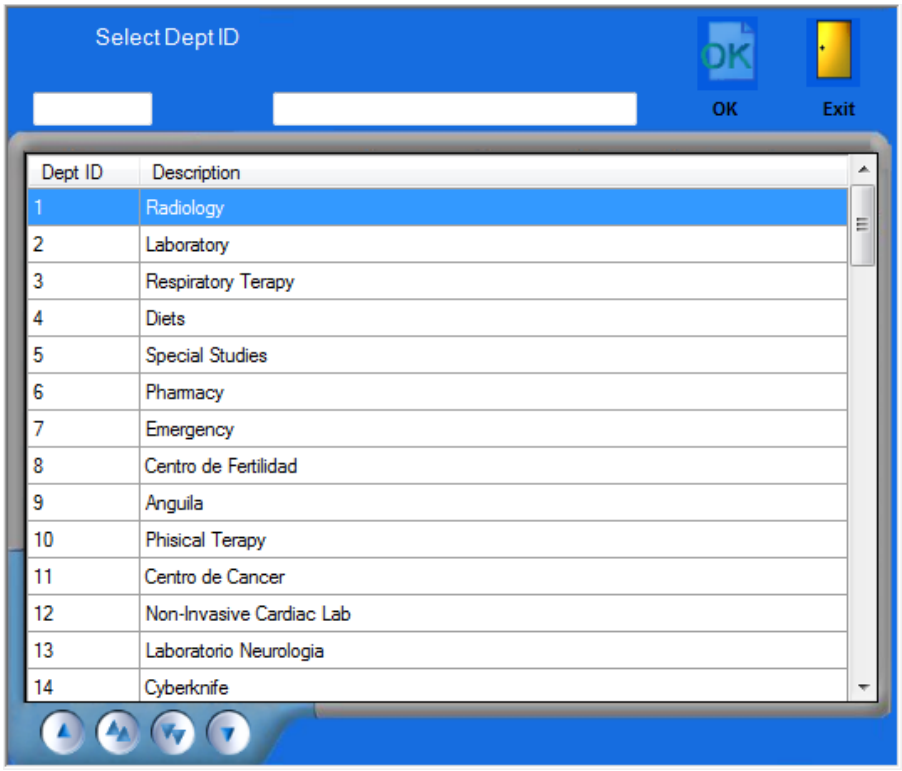
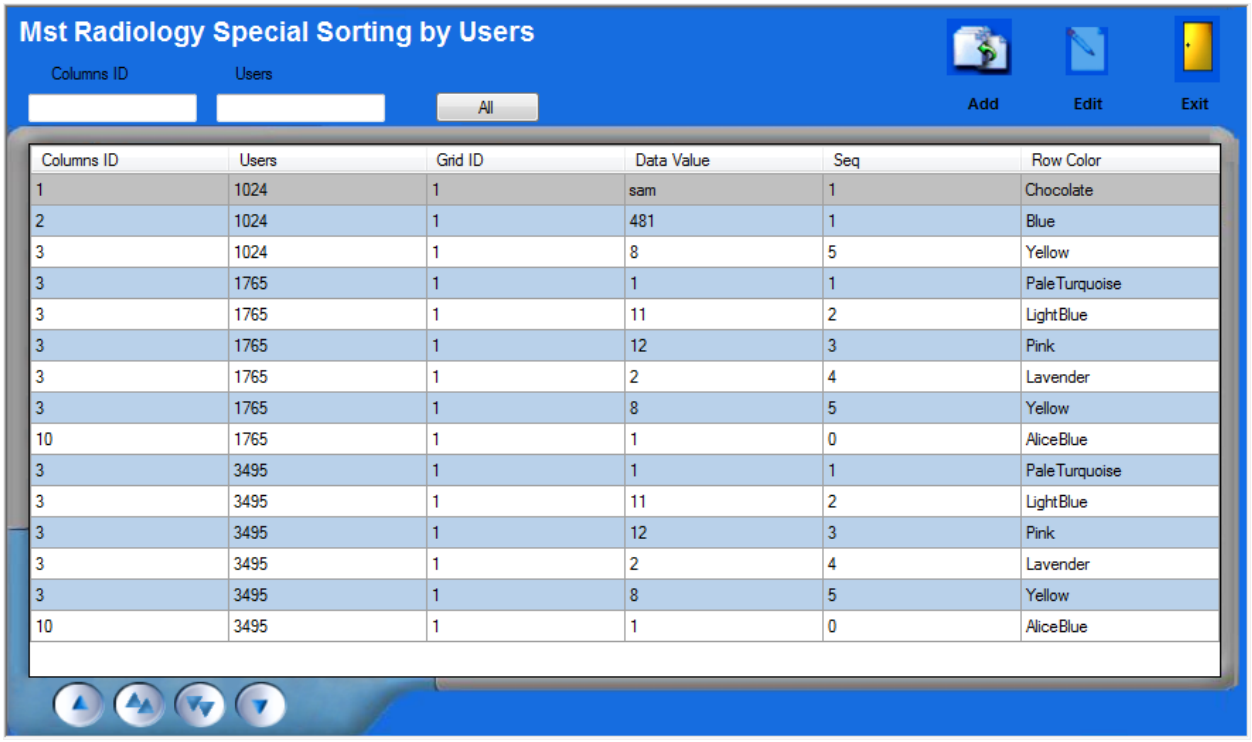


Figure 21: List of Department

Especial sorting by users



Columns ID	Users	Grid ID	Data Value	Seq	Row Color
1	1024	1	sam	1	Chocolate
2	1024	1	481	1	Blue
3	1024	1	8	5	Yellow
3	1765	1	1	1	PaleTurquoise
3	1765	1	11	2	LightBlue
3	1765	1	12	3	Pink
3	1765	1	2	4	Lavender
3	1765	1	8	5	Yellow
10	1765	1	1	0	AliceBlue
3	3495	1	1	1	PaleTurquoise
3	3495	1	11	2	LightBlue
3	3495	1	12	3	Pink
3	3495	1	2	4	Lavender
3	3495	1	8	5	Yellow
10	3495	1	1	0	AliceBlue

Figure 22: Special Sorting by User

The picture above lists the special sorting configured for radiology module users. The first column identifies the present column id assigned to a particular user of the radiology module which is defined in the second column. The "Grid ID" column specifies the grid where the special sort will apply. The "Data Value" column shows the name of the special sorting created. The "Row Color" shows which color the special sorting on radiology module main screen (Figure 1) will have.

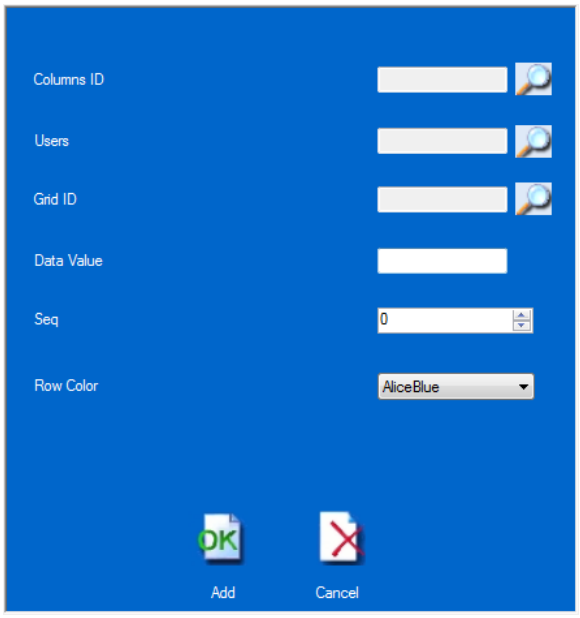


Figure 23: Special Sorting Configuration Radilogy Master Screen

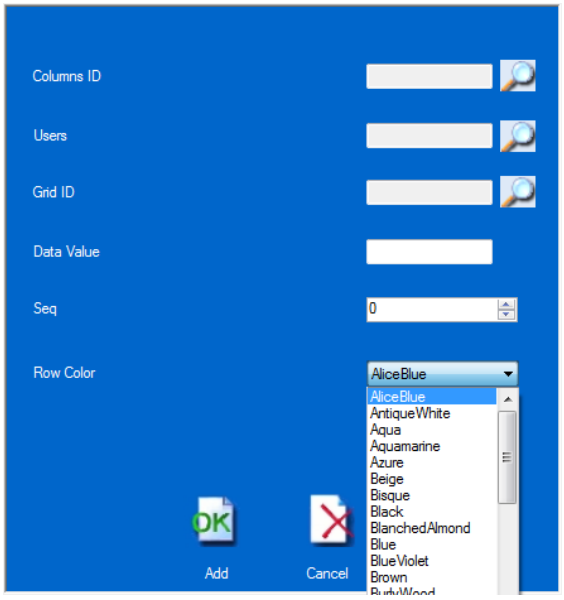


Figure 24: List of Row Colors

Configuration by Groups

In previous section the radiology module configuration by user was described using the radiology master application interface. The configuration of the radiology module by groups is the same as user but, instead of users the system provides groups. See Figure 7 for list of groups.

Conclusion

ClinNet radiology module required an exhausting configuration by database. The main purpose of this work was to develop an application to make user-friendly and simpler radiology module configuration. The developed application “Radiology Master” provide a user interface to configure the radiology module by user or group. For each one, the developed application provides configuration for radiology module requirements. Also, the developed application reduced the configuration time significantly. From now on, ClinNet has a tool to configure radiology module faster which will increased the user satisfaction.