



SIM5202 ADVANCED SOFTWARE ENGINEERING

FACULTY OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

“SOFTWARE DESIGN DOCUMENT”

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1. INTRODUCTION

1.1 Purpose

This project is conducted in order to manage all of the projects that are defined in the research center. All personnel are registered by the administrator with this application using the pannel in order to assign projects and define the department where they should start the project. Therefore the administrator can estimate the duration of the projects based on the personnel information such as working experiences and teaching experiences and also calculate the amount of salary for each personnel.

1.2 Intended Audience and Reading Suggestions

This requirement document expected to be read by the following audience:

- Developers: will read this document in order to refer before developing the system
- Users: will check whether all they need inside the system is identified in this document
- System Analysts: to analyze the requirement for the development

1.3 Project Scope

The scopes of this system are as follows:

This system allows the IT administrator to:

- Insert personnel, projects and department's information.
- Assign projects to personnel.
- Ranking the personnel.
- Estimation and calculation the duration of a project.
- Insert personnel information such as personnel ID, Name, Type of personnel (researcher or Apprentice), teaching experience, number of publications, working experience, salary and others.
- Insert department's information such as name, maximum number of required staff, address, field of research and etc.
- Insert project's information such as project ID, Project Start Date, duration of project and others.

This system allows the Research Center Manager (RCM) to:

- View overall report of list of personnel in each department, a list of projects in each department, list of personnel which participated in each project.
- View report of salary for each personnel in each department.
- View the estimation of the duration of projects
- View the report of the ranking the personnel in department and projects which are assigned to personnel

1.4 Reference

Project Management in The Research Center (SRS)

1.5 Design Constraints

The constraints in design and implementation phase can be instead as follows:

- Access to the application
 - The It administrator and RCM need to install the application on their own system and accessing to the application is not available everywhere
- Security consideration
 - Username and password are not used in this application.
- Corporate / regulatory policies
 - The change of workflow in administration will be affected.
- Specific technologies, tools and database to be used
 - Oracle is needed in developer workstation for database development and administration that enables to perform daily tasks efficiently and accurately.

2. SYSTEM OVERVIEW

Project Management in the Research Center is considered as a improved system in context of project Management Development. This system will be basically developed in order to improve the managing of personnel,department,project registered by IT administration and RCM. Figure 1 show the component (external system) and user who will be involve in the system.

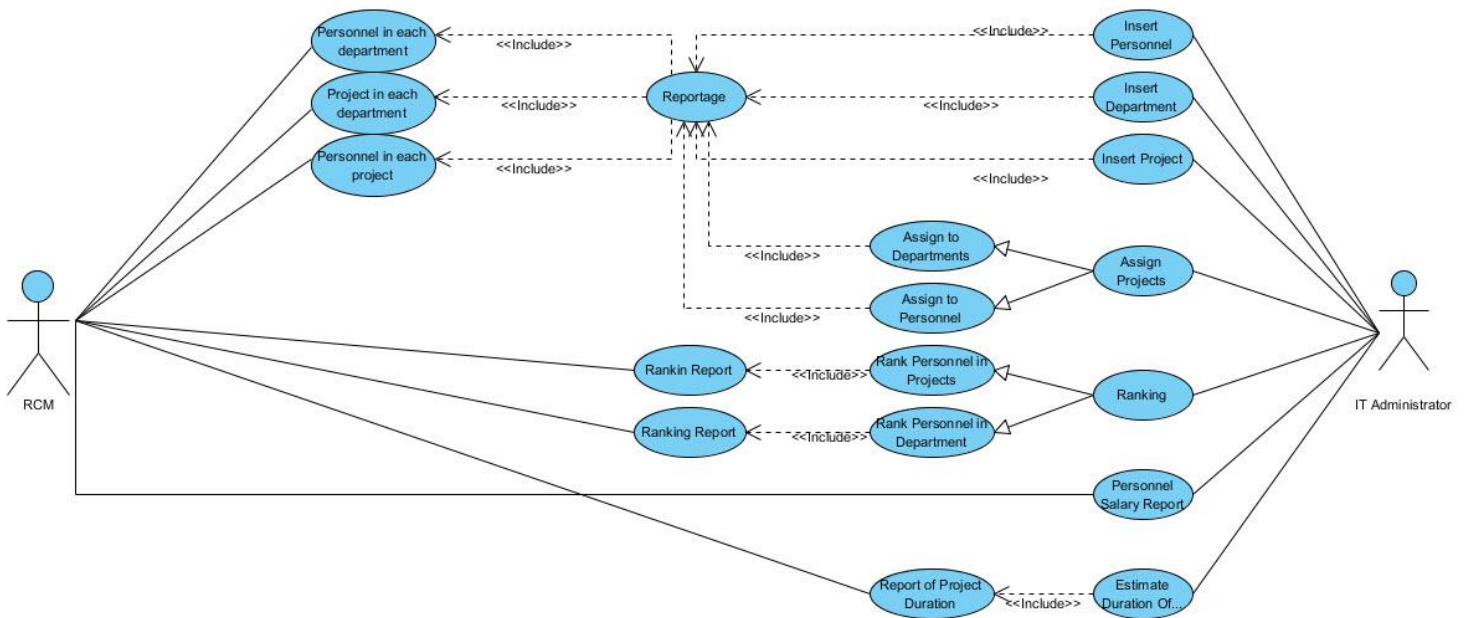


Figure 1: Overall Use Case Diagram

3. DETAIL DESIGN

This section will provide a detail description and design of every use cases available in the system. From the use cases we derive flow of event and the sequence diagram. Use cases and flow of event refer to SRS.

3.1 Sequence Diagram

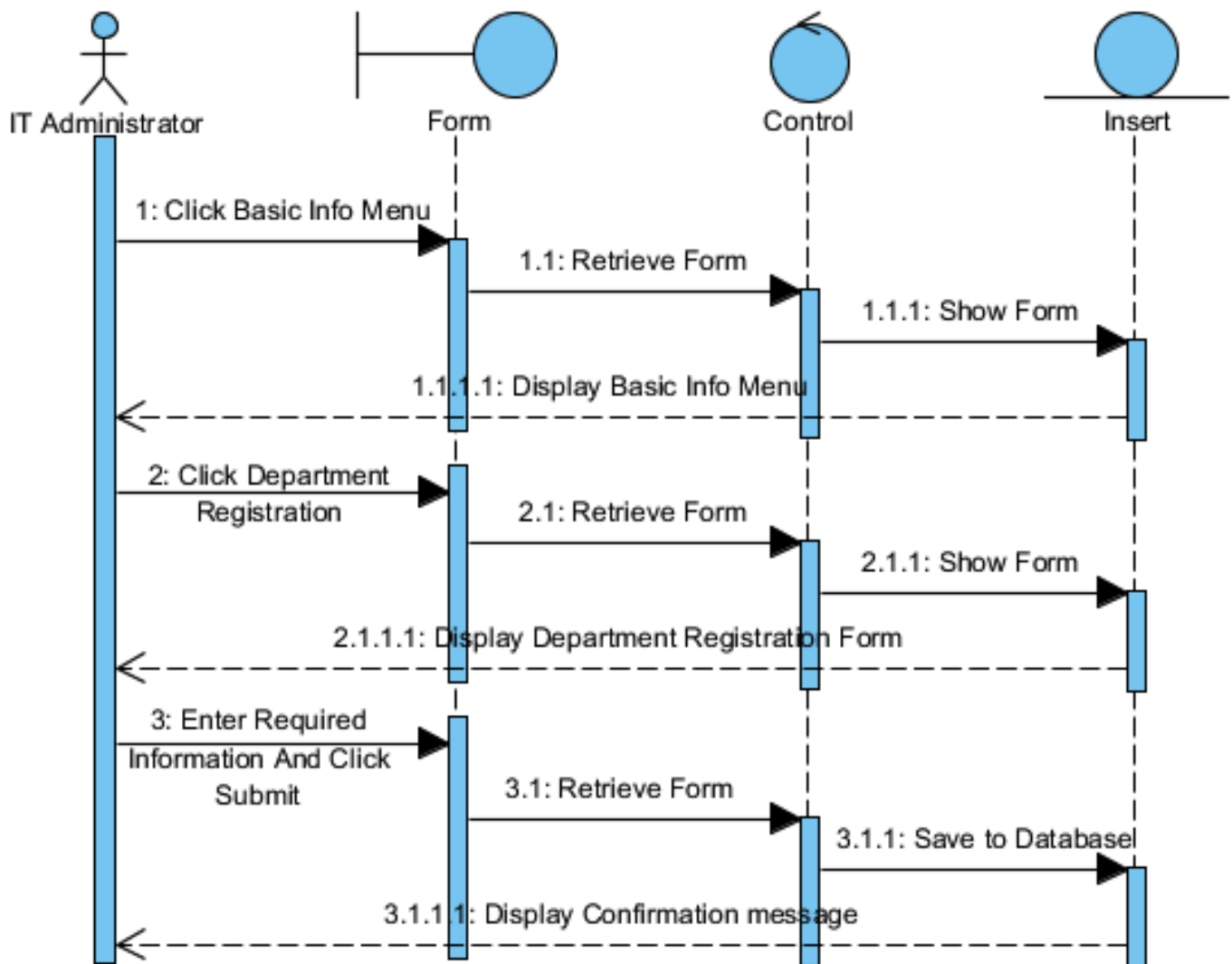


Figure 2: Sequence Diagram for Insert Department.

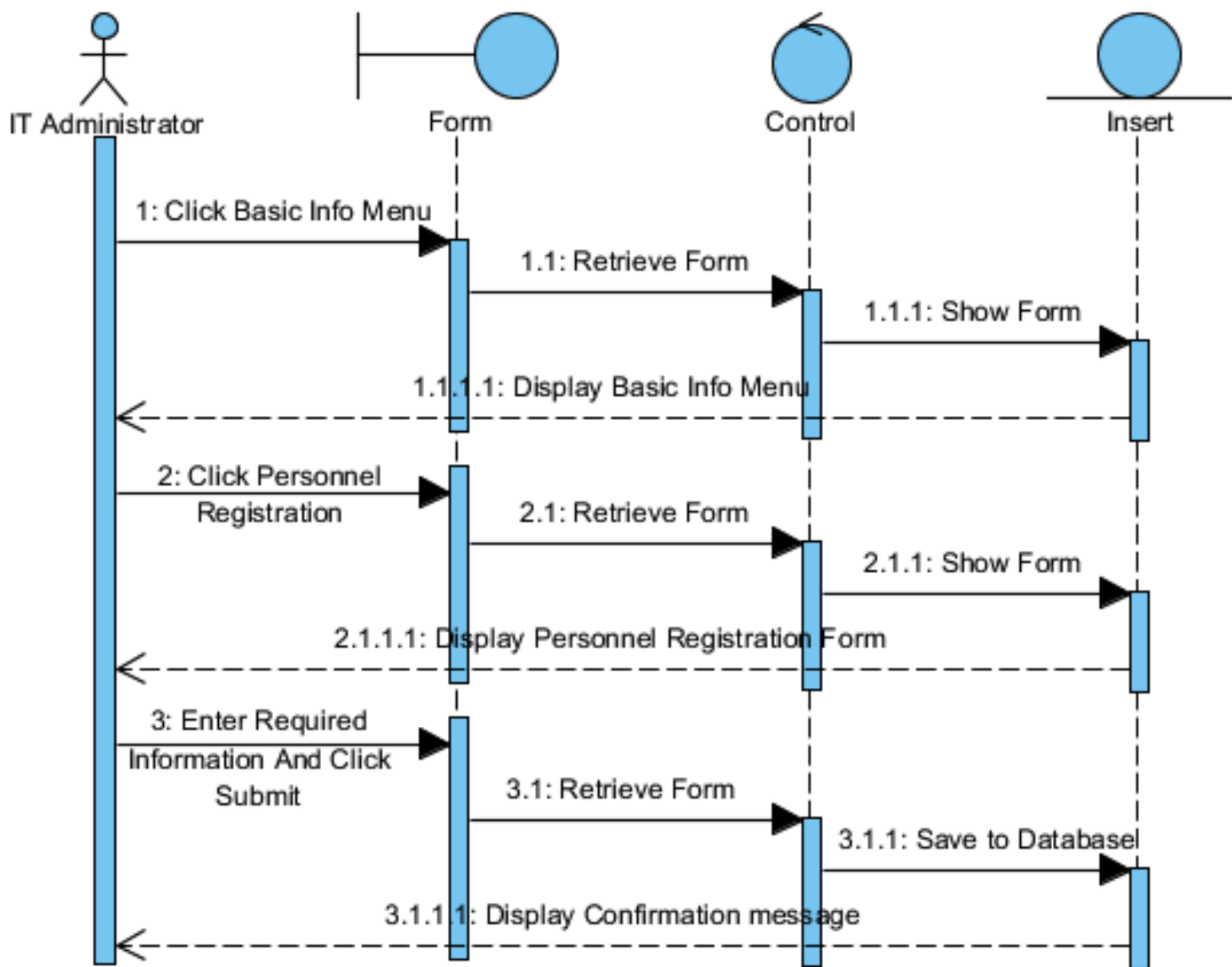


Figure 3: Sequence Diagram for Insert Personnel.

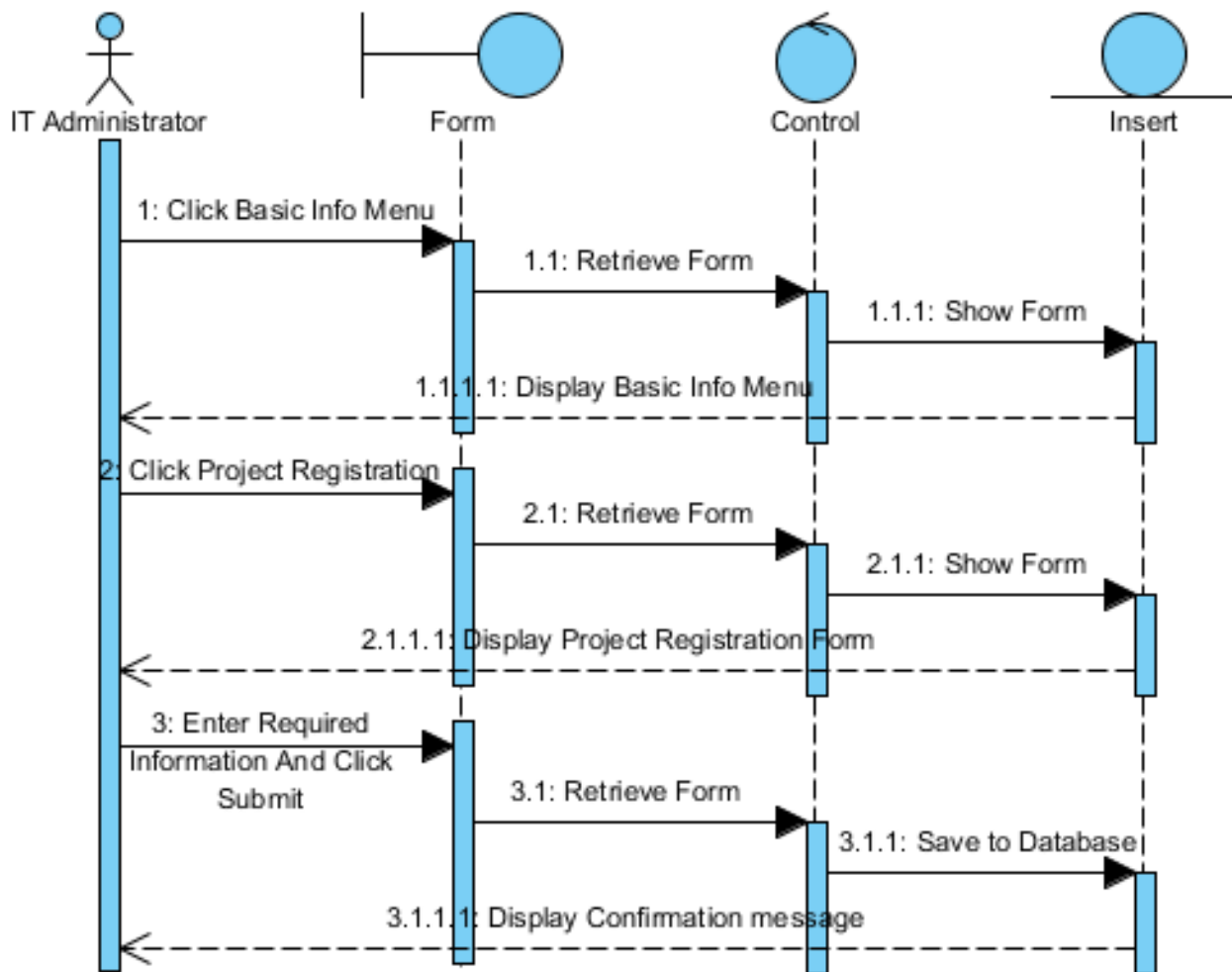


Figure 4: Sequence Diagram for Insert Project.

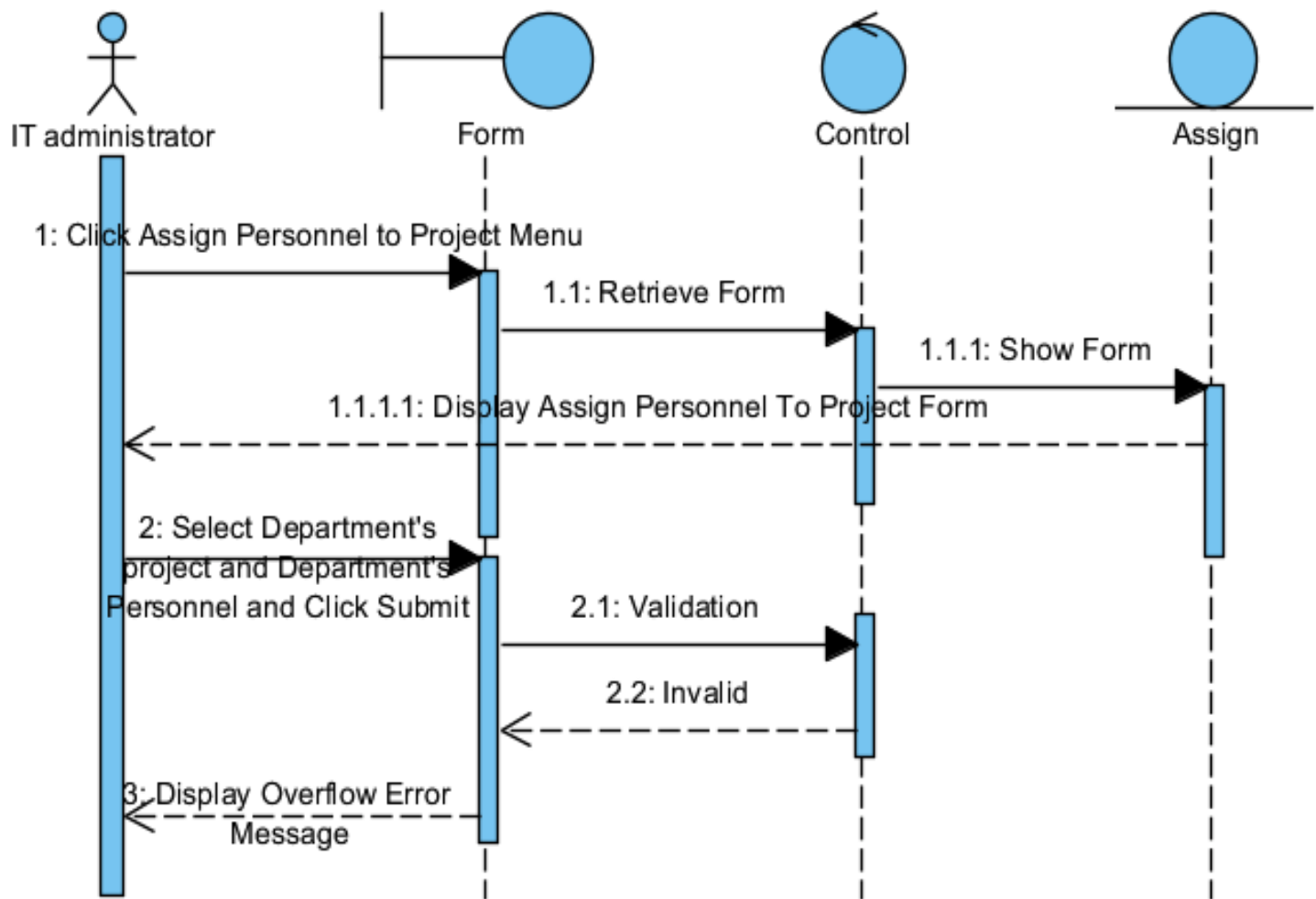


Figure 5: Sequence Diagram for Assign Personnel to Project And its Error.

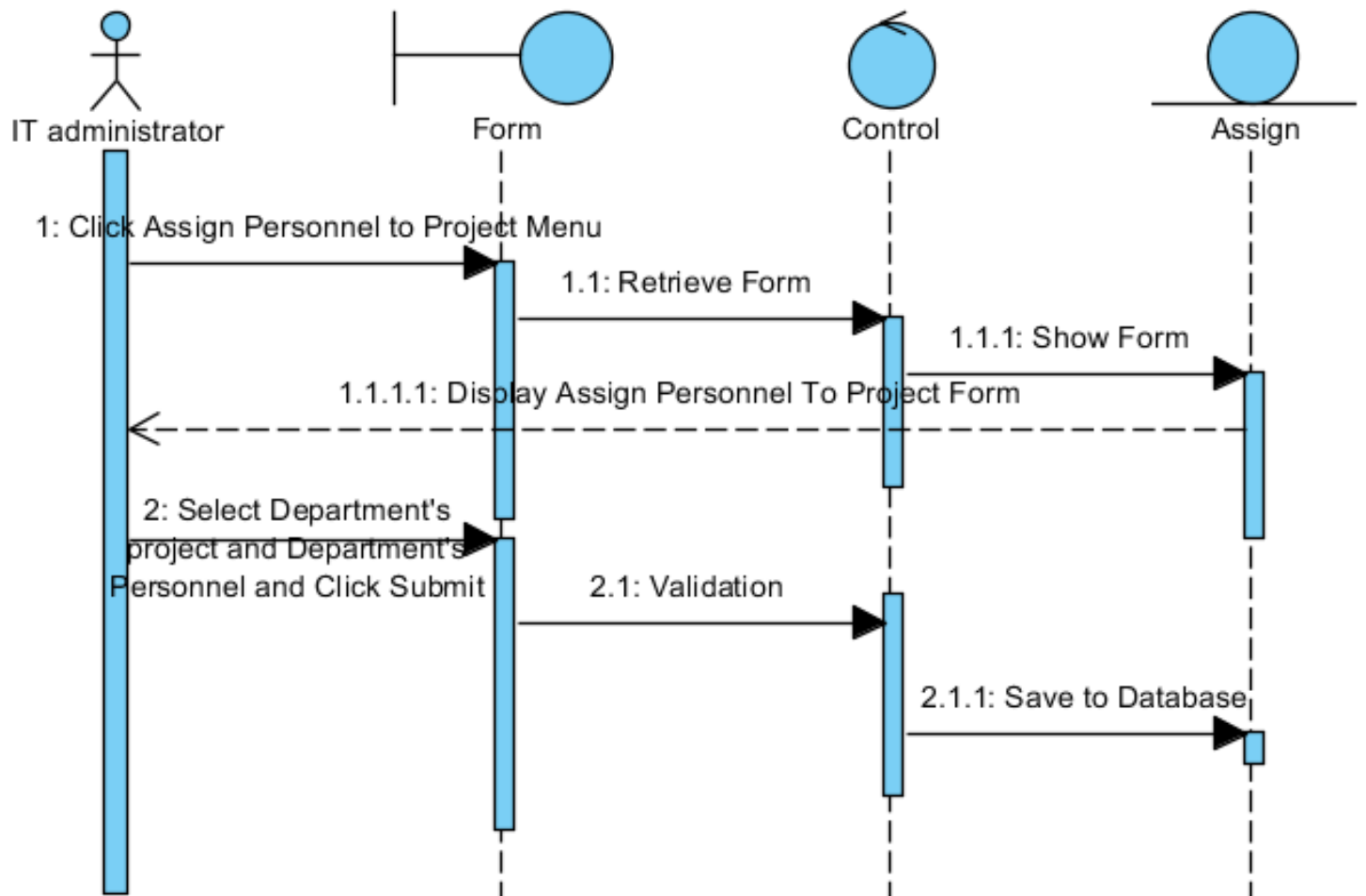


Figure 6: Sequence Diagram for Assign Personnel to Project .

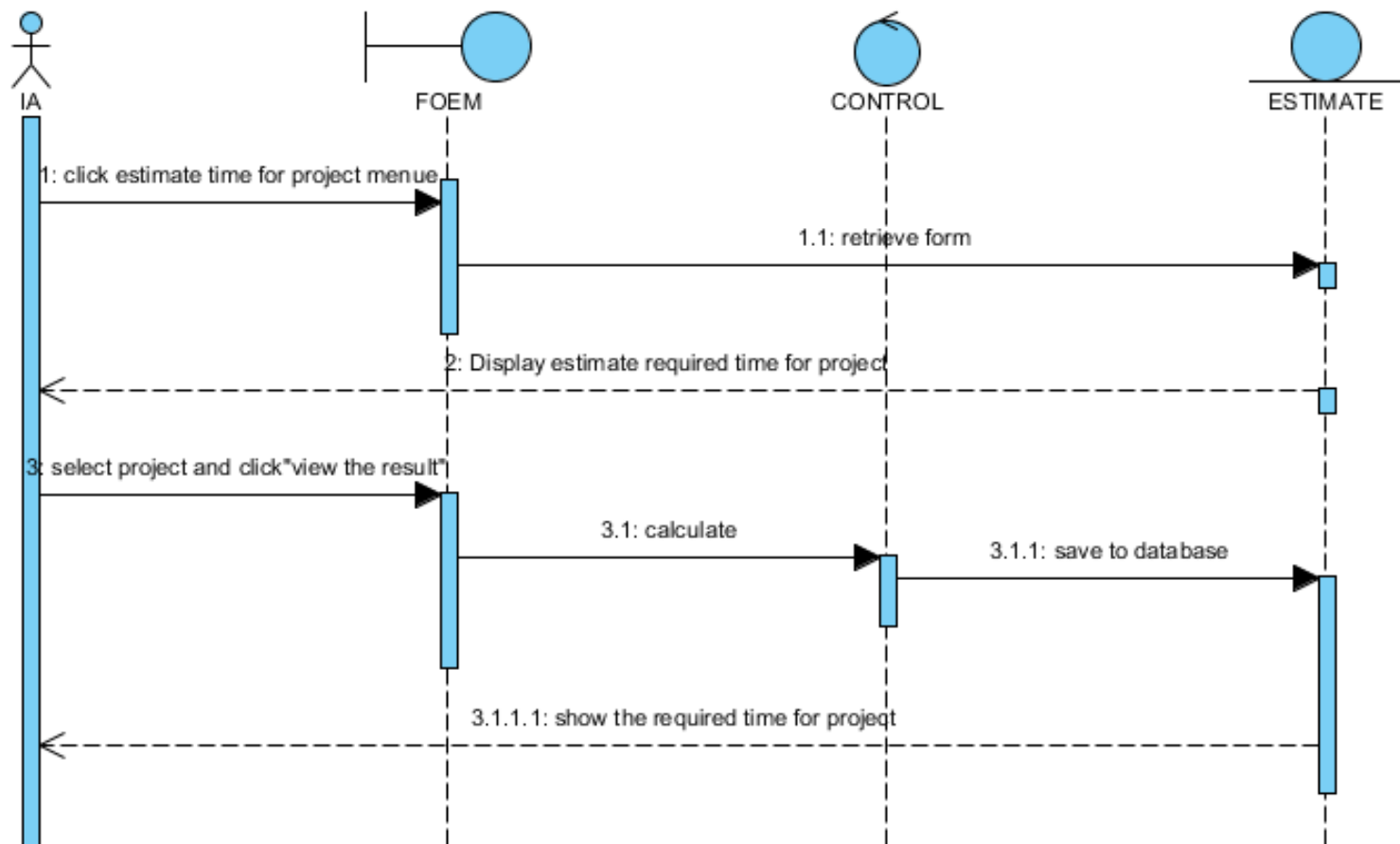


Figure 7: Sequence Diagram for Estimate Required Time For Projects.

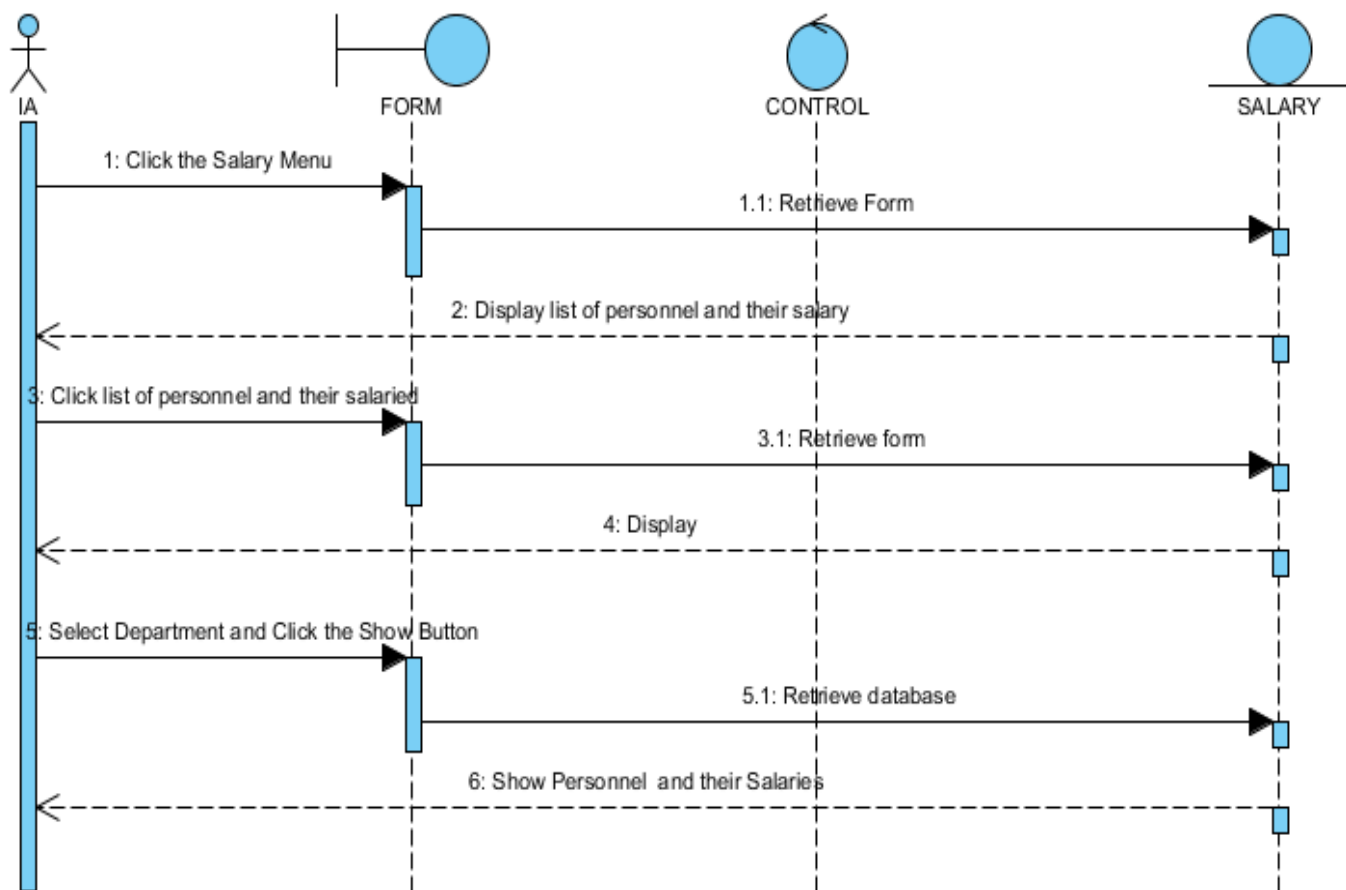


Figure 8: Sequence Diagram for Showing Personnel's Salary.

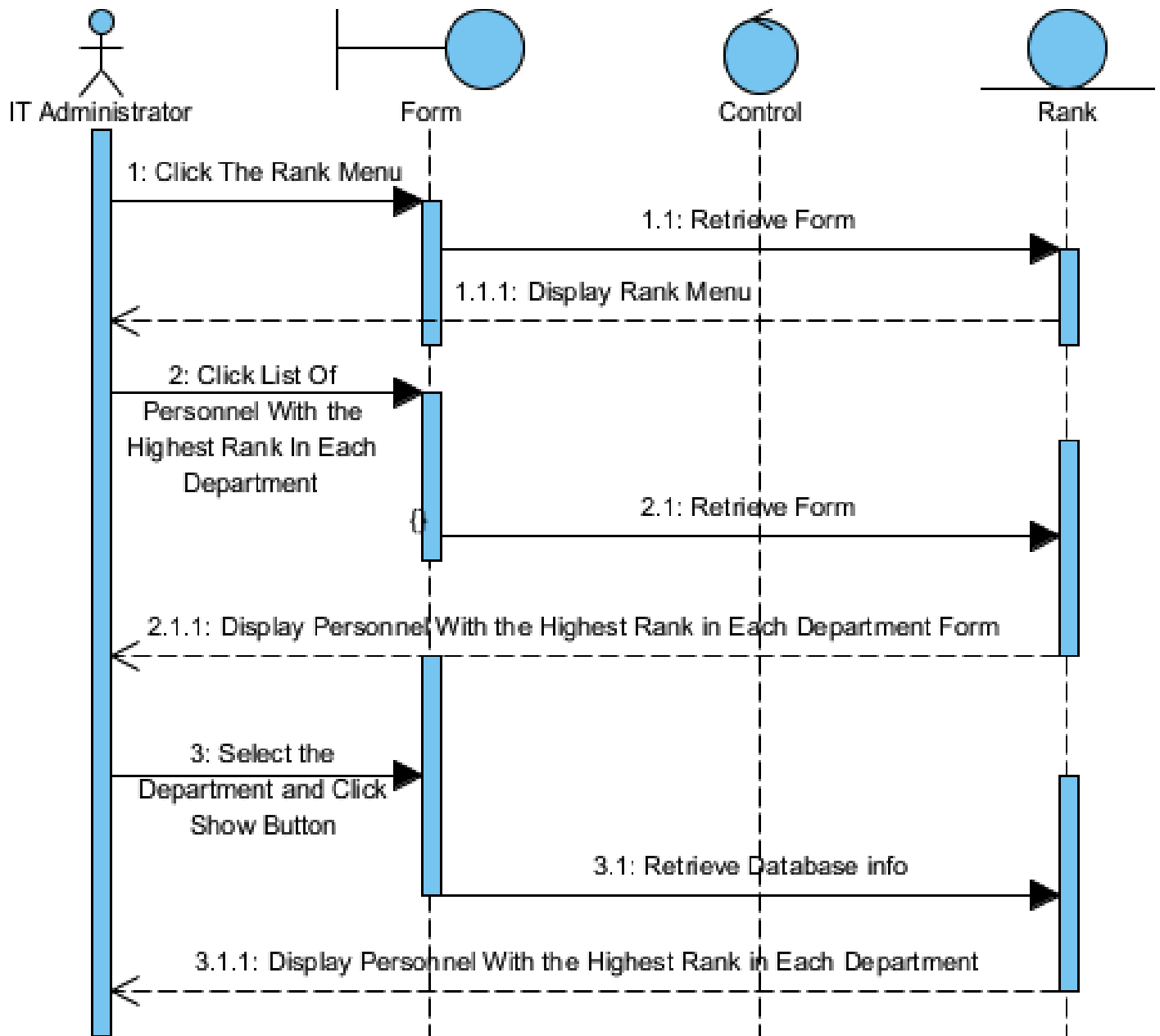


Figure 9: Sequence Diagram for Showing Personnel With The Highest Rank in each Department.

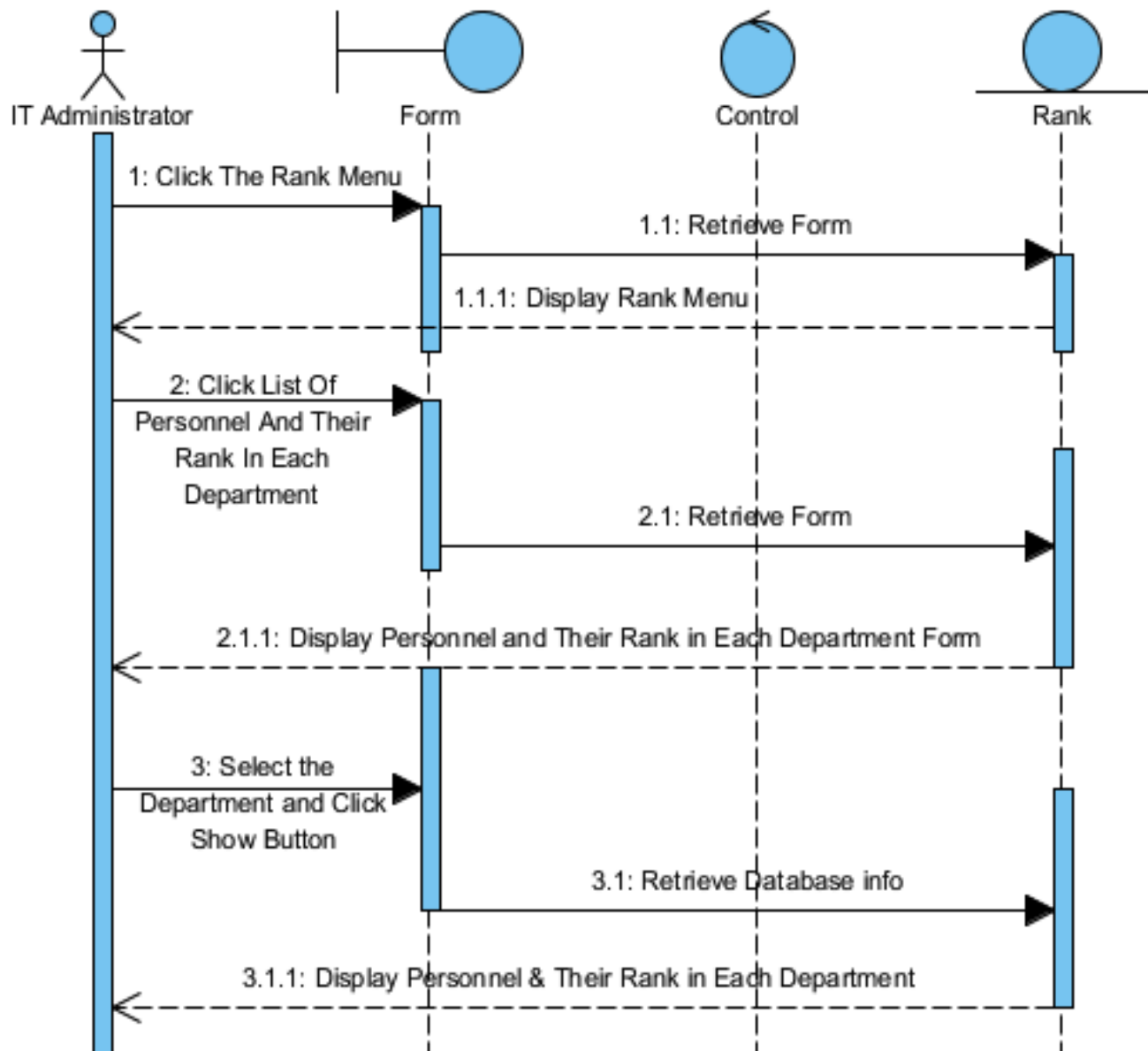


Figure 10: Sequence Diagram for Showing Personnel And Their Rank in each Department.

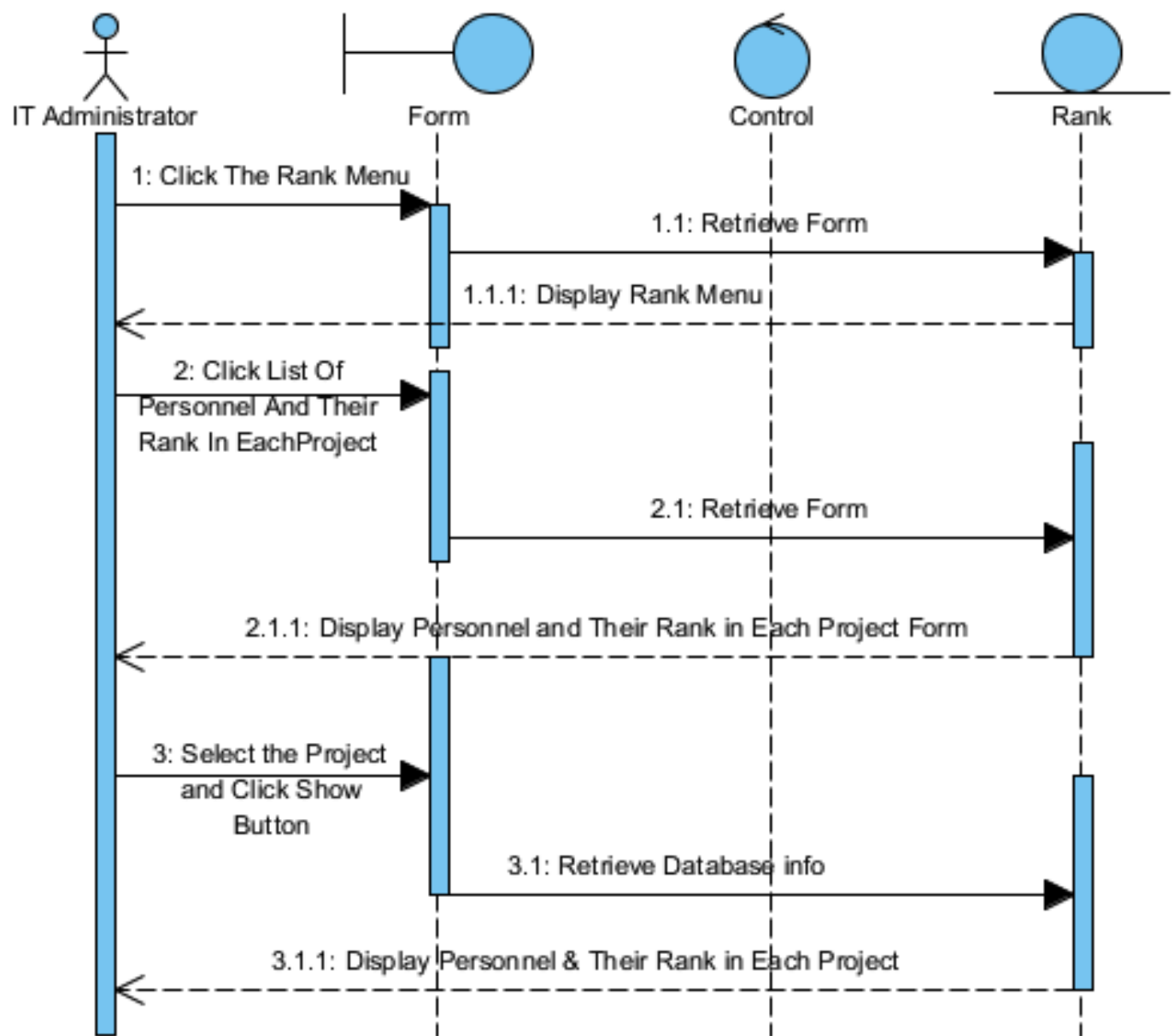


Figure 11: Sequence Diagram for Showing Personnel And Their Rank in each Project.

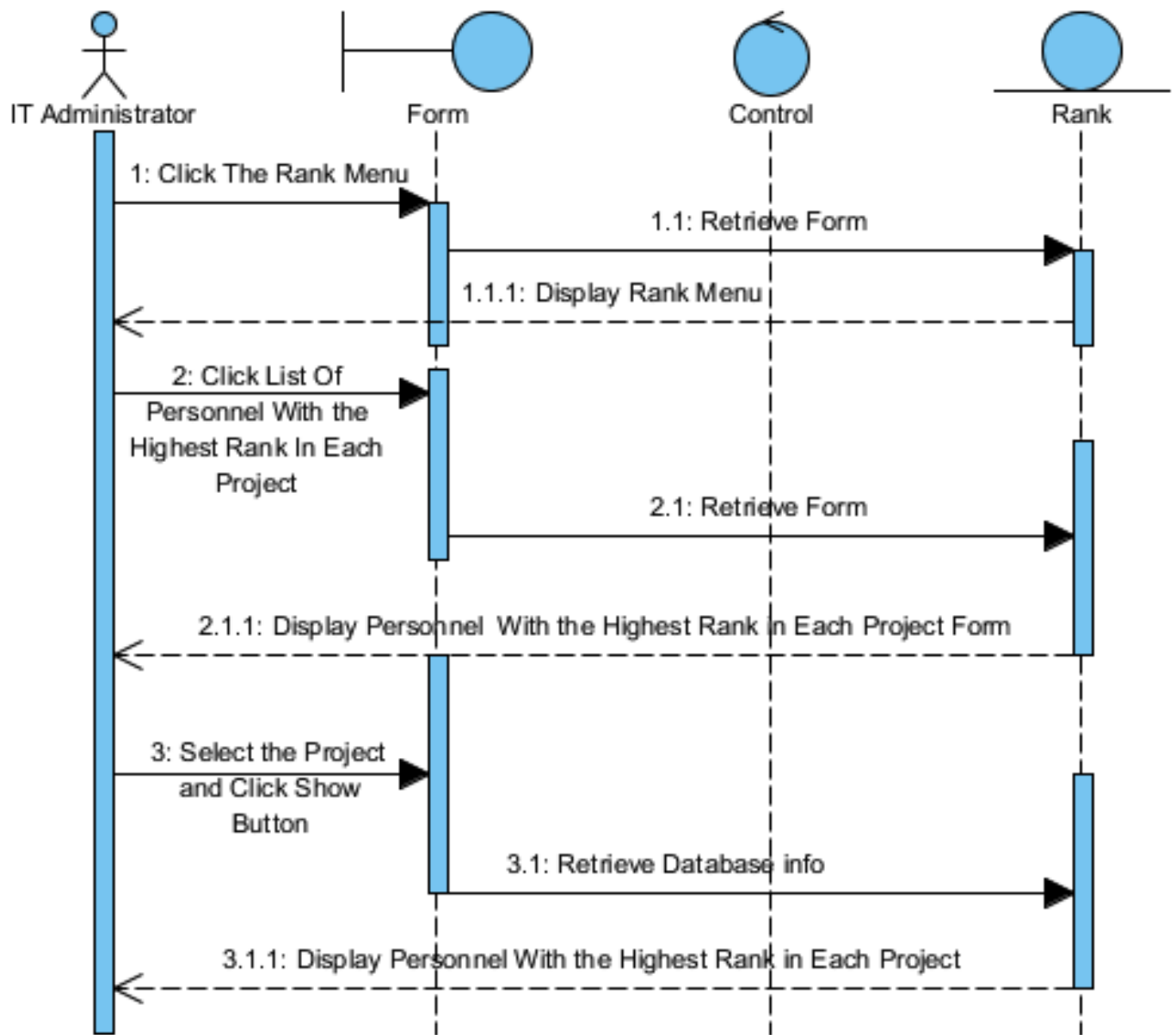


Figure 12: Sequence Diagram for Showing Personnel With The Highest Rank in each Project.

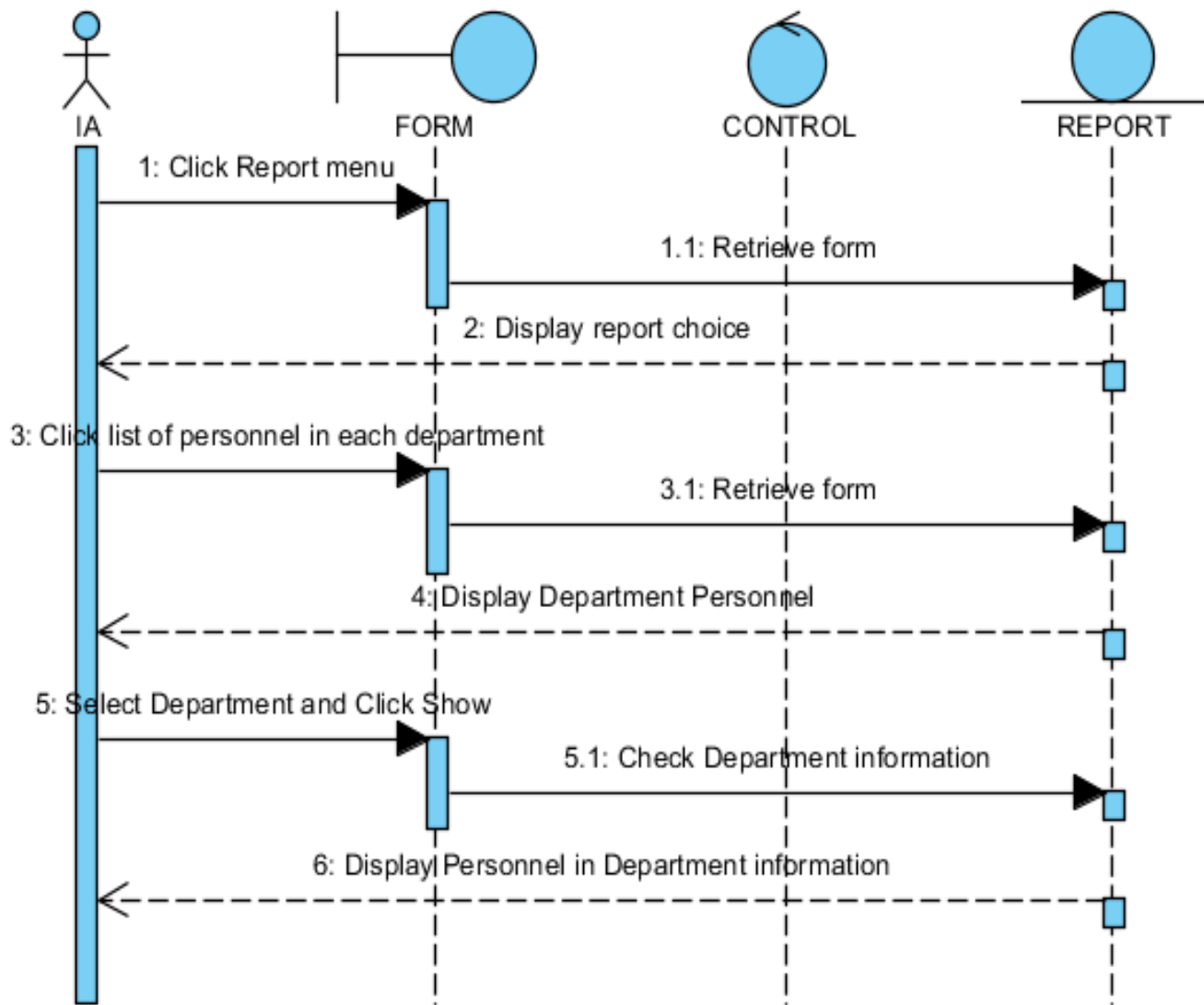


Figure 13: Sequence Diagram to Report list of Personnel in each Department.

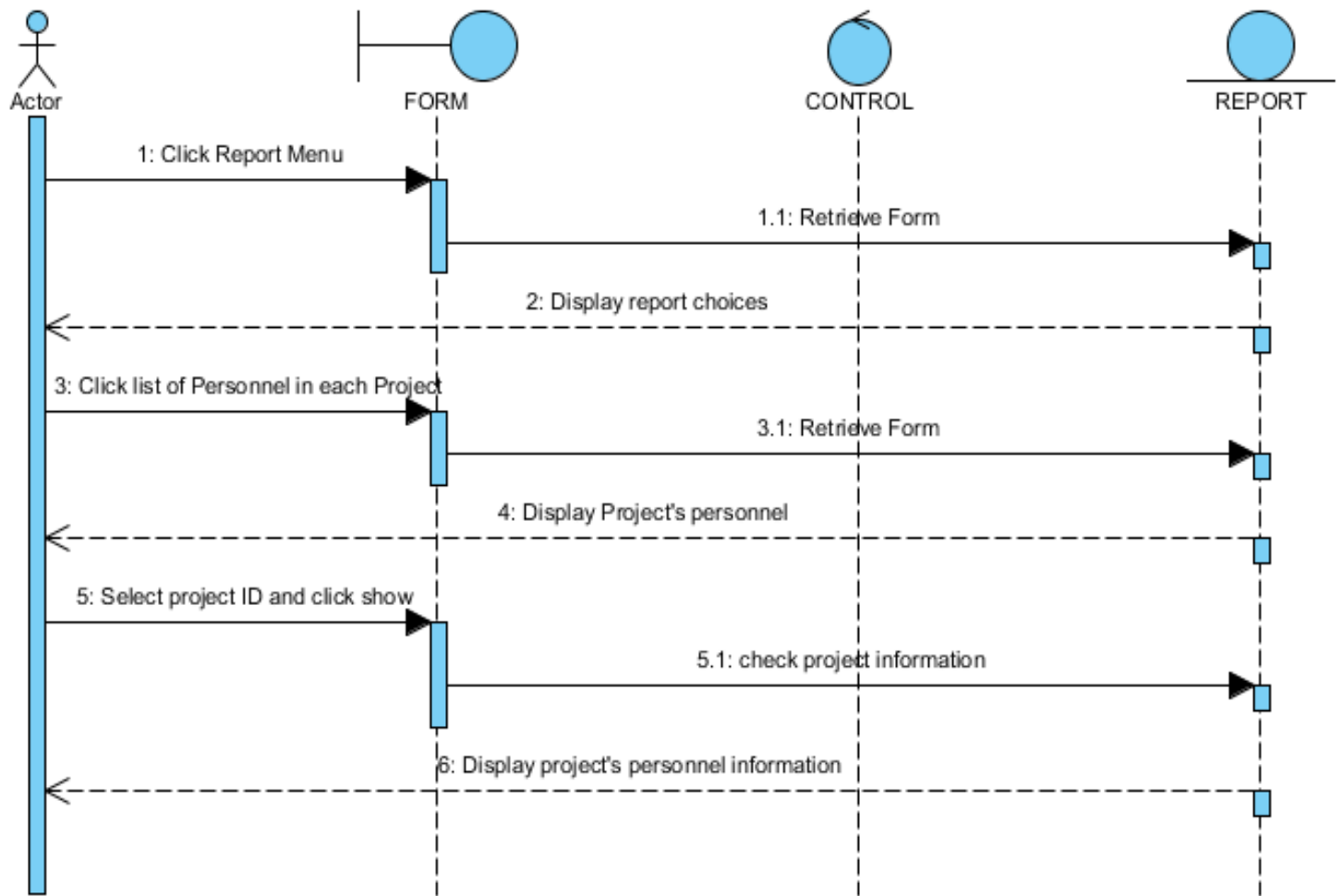


Figure 14: Sequence Diagram to Report list of Personnel in each Project.

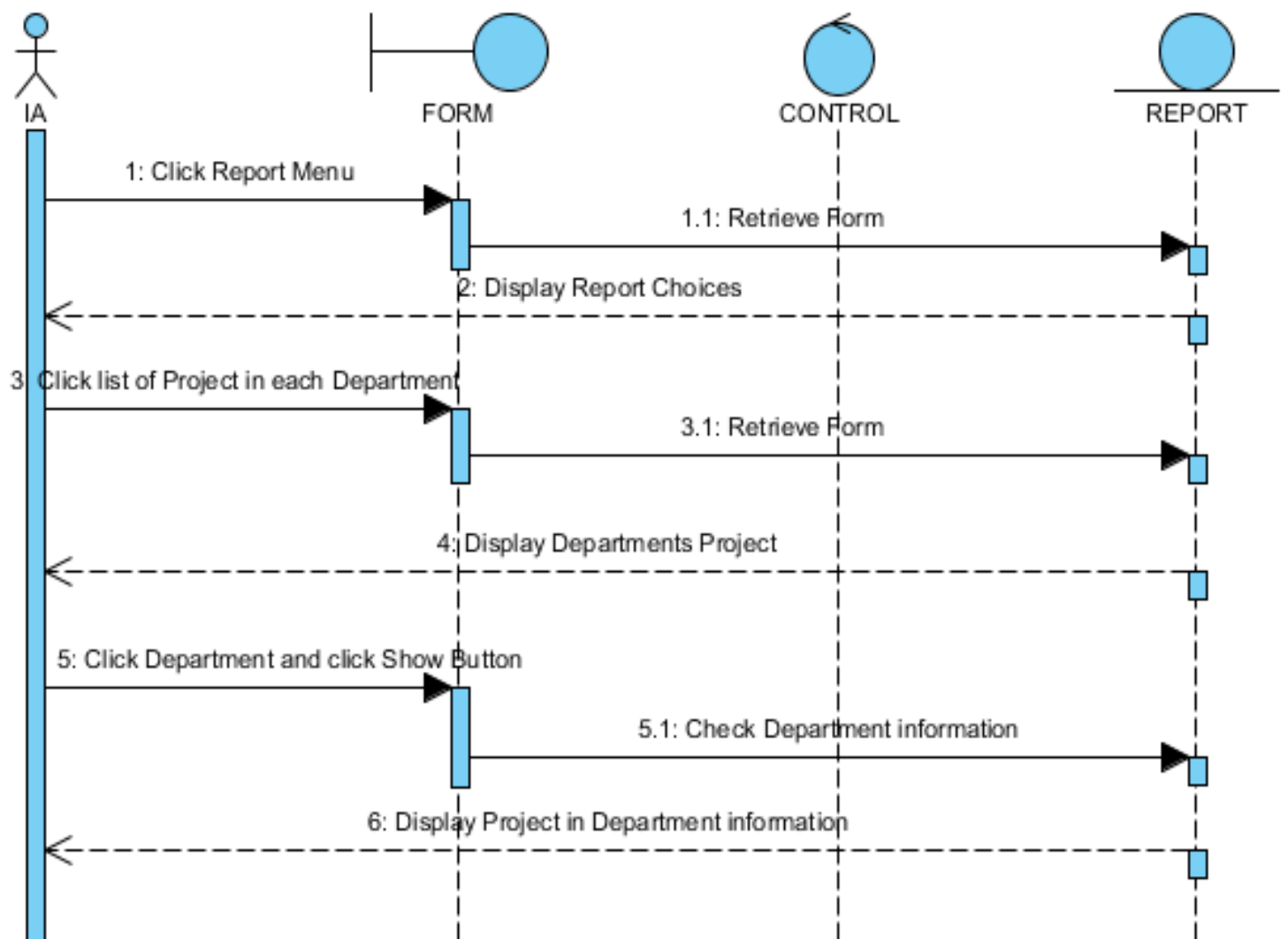


Figure 15: Sequence Diagram to Report list of Project in each Department.

3.2 Activity Diagram

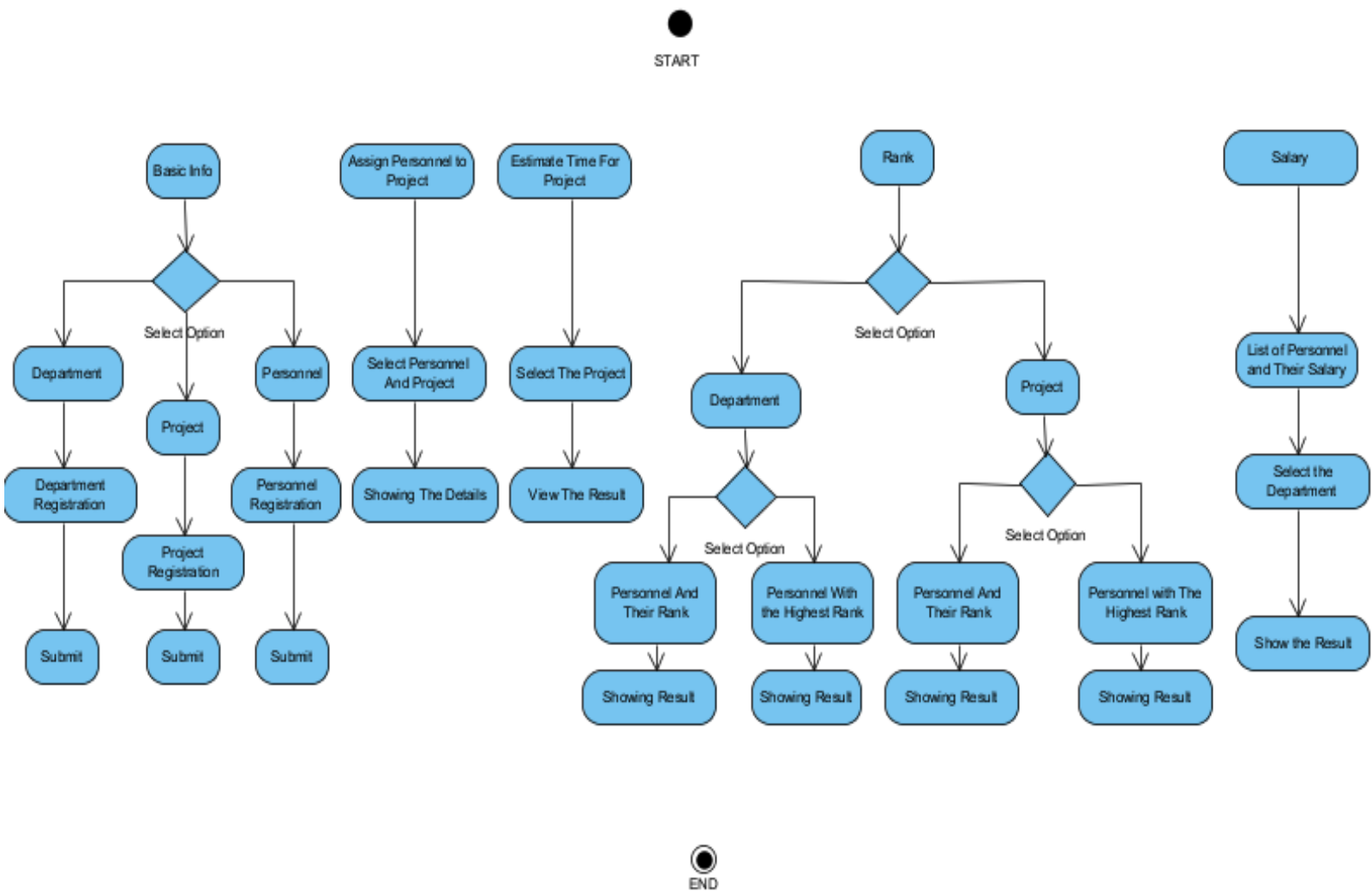


Figure 16: Activity Diagram for IT Administrator

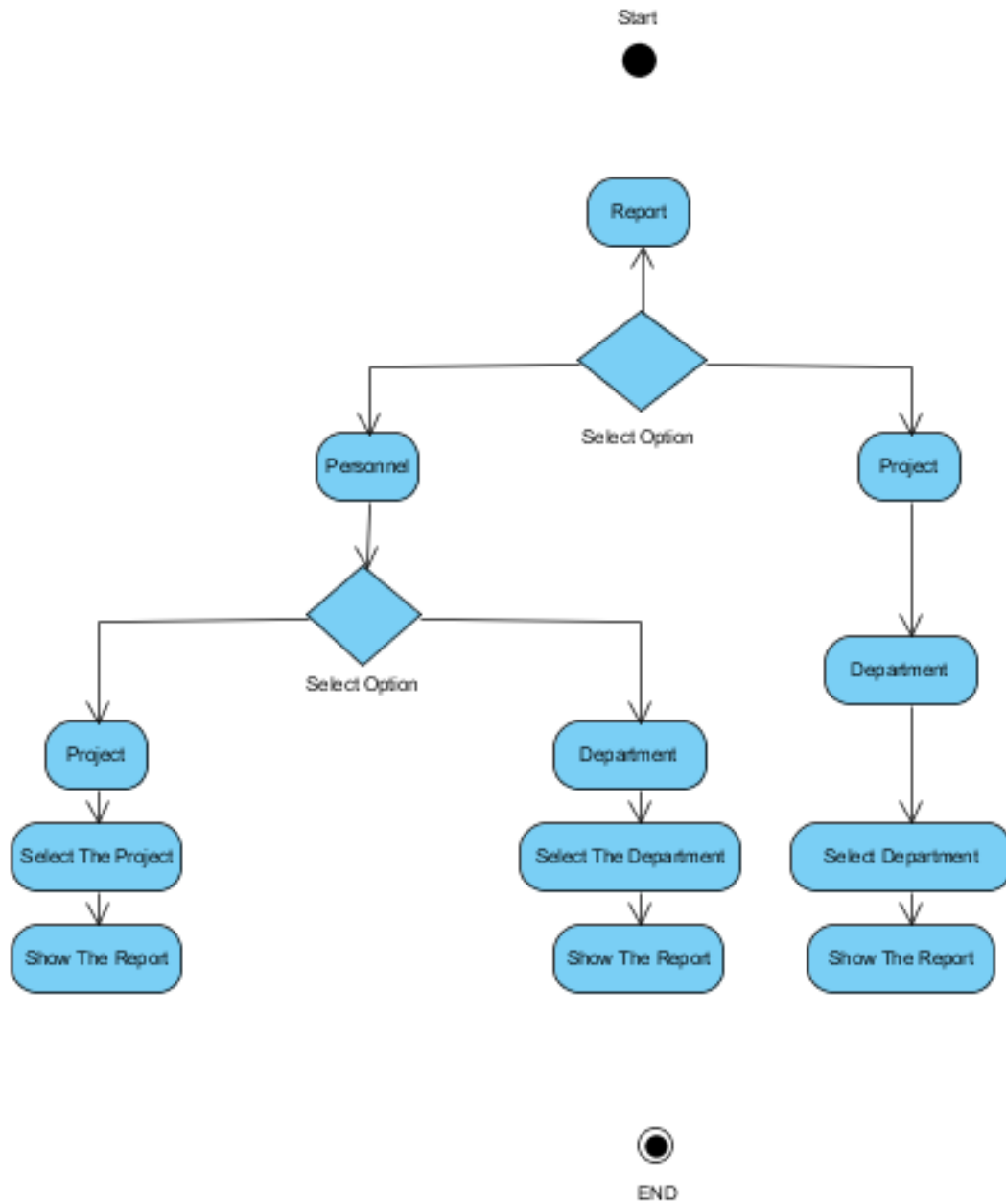


Figure 17: Activity Diagram for RCM

4. DATA DESIGN

4.1 Database Description

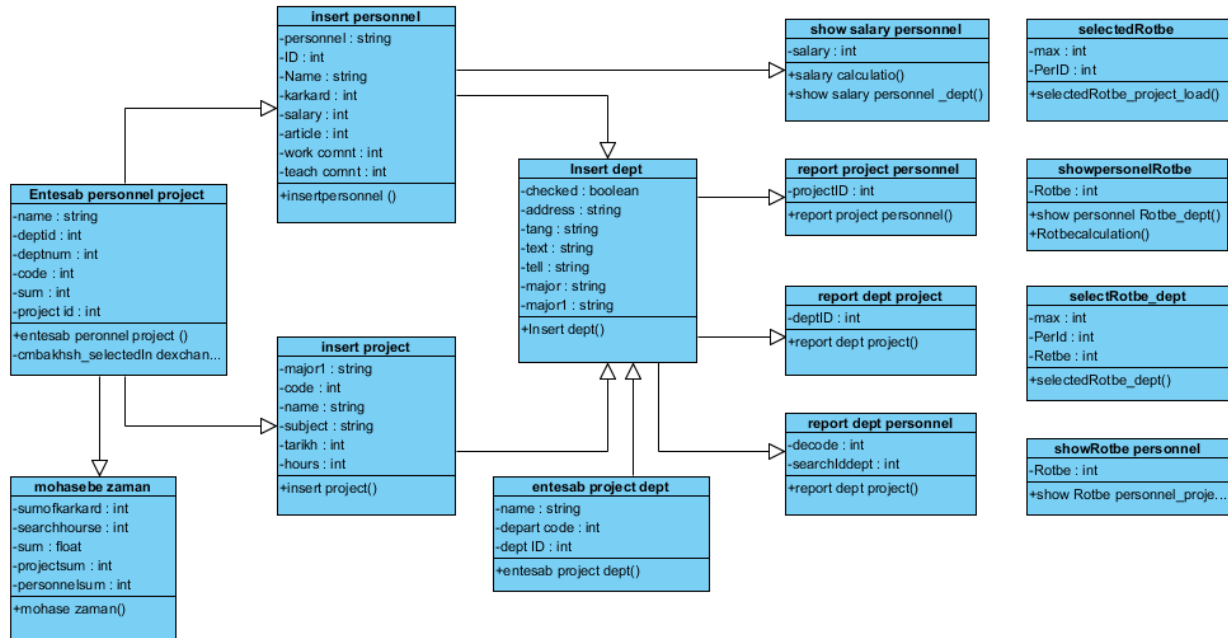


Figure 18: Project Management in The Research Center Class Diagram

Project Management in The Research Center class diagram consists of a group of classes and interfaces reflecting important entities of the business domain of the system being modeled, and the relationships between these classes and interfaces. There are 14 classes involve in this diagram, which are Insert Personnel, Insert Department, Insert Project, Entesab Personnel Project, Entesab project dept, Mohasebe zaman, Show Salary Personnel, Report project personnel, Report dept Project, Report dept Personnel, ShowtedRotbeh, ShowPersonnel Rotbe, SelectRotbe dept, ShowRotbePersonnel.

4.2 Data Dictionary

Data dictionary is a description of attribute for each storage.

Object	Method	Attribute
Entesab personnel project	entesab personnel project() cmbakhsh_selectedIn dexchanged()	name deptid deptnum code sum projected
Entesab project dept	Entsab project dept	Name Dept code Dept id
Insert Dept	Insert dept()	Checked Tag Text Address Tell Major Major1
Insert Personnel	Insert personnel()	Personnel Id Name Karkard Salary Article Work count Teach count
Insert Project	Insert project()	Major1

		Code Name Subject Tarikh Hours
Mohasebe zaman	Mohasezaman()	Sum of karkard Search hours Sum Project sum Personnel sum
Report dept personnel	Report dept personnel ()	Dcode Search id dept
Report dept project	Report dept project()	Dept id
Report project personnel	Report project personnel()	Project id
selectRotbe	selectRotbe_dept	Max Per id Retbe
selectRotbe	selectRotbe_project() selectRotbe_project_load()	Max Per id
Show personnel Rotbe	Show personnel Rotbe_dept() Rotbecalculation()	Rotbe
Show Rotbe personnel	Show Rotbe personnel_project()	Rotbe
Show salary personnel	Show salary personnel_dept() Salary calculation()	Salary

Table 1.0: Data Dictionary for Project Management in The Research Center

4.2.1. Data Dictionary for Entesab personnel project

Entesab personnel project = assign personnel to projects

Deptnum=DepartmentNumber

Code=Project code

Sum=number of personnel in project

project id= project id

4.2.2. Data Dictionary for entesab project dept

name= name

dept code= department code

dept id= department id

4.2.3. Data Dictionary for insert department

personnel= personnel

name=name

id=id

karkard=number of working hourse

salary= salary

work count=number of working experience

4.2.4. Data Dictionary for report dept personnel

Decode=department code

Search id dept= department id for search

4.2.5. Data Dictionary for report dept project

Dept id=department id

4.2.6. Data Dictionary for report project personnel

Project id= project id

4.2.7. Data Dictionary for select rotbe

Max=highest rank

Per id= personnel id

Rotbe=rank

4.2.8. Data Dictionary for show personnel rotbe

Rotbe=rank

4.2.9. Data Dictionary for show rotbe personnel

Rotbe=rank

4.2.10. Data Dictionary for show salary personnel

Salary=salary