Project Report on

SCHOOL MANAGEMENT SYSTEM

AT

CMC Limited

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Ahmedabad.

By

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Diploma in Computer Engineering Semester VIII

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Part III System Analysis, System Design

PREFACE

The project work automates school management system. In the system application is developed, Web based (thin client). The web application facilitates attendance recording, to view the status of student by their parents and to view reports by teachers.

Our solution of the timetable is very simple. In the high school considered for the project there are ten subjects for both grade nine and grade ten. Loads are assigned to each subject teacher and a code is given for each teacher-subject combination. A simple search technique has been used during allocation of each teacher-subject code to a time slot. A database has been used to enforce constraints and to store data.

System also facilitate grade reports which is managed by the teacher and can be view by student and parents later on. It allows parent, student and teacher to communicate internally. Management can display important notification on home page.

ACKNOWLEDGEMENTS

We would like to acknowledge the contribution of certain distinguished people, without their support and guidance this project work would not have been completed.

We take this opportunity to express my sincere thanks and deep sense of gratitude to my project guide **Prof. Prakash Patel** for his guidance and moral support during the course of preparation of this project report. I really thank him from the rock bottom of my heart for always being there with her extreme knowledge and kind nature.

We take this opportunity to thank all my friends and colleagues who started me out on the topic and provided extremely useful review feedback and for their all-time support and help in each and every aspect of the course of my project preparation. I am grateful to my college Institute of Diploma Studies, Nirma University for providing me all required stuff and good working environment.

Acknowledgements and thanks are also extended to all the authors whose articles have been referred to for the completion of this report.

Regards

Kishan B. Kotadiya(09DCE094)

PART I

1. PROJECT PROFILE

2. COMPANY PROFILE

3. ORGANIZATIONAL CHART

CHAPTER 1
PROJECT PROFILE

1.1   PROJECT PROFILE

Project Title:	School Management System
Project Category	Intranet Based Application
Objective of project	This software developed in order to helps teachers and student to communicate, share materials and schedule, it also helps to parents to keep track of student and management to give important notification to all.
Organization	CMC Limited
Front End	1. Apache tomcat 7.0 server 2. Eclipse j2ee editor
Back End	1. MySQL Database
Tools	1. Macromedia Dreamweaver 2. MqSql Workbench 3. Microsoft Office 2013
Developed By	Kishan Kotadiya (09dce094)
External Project- Guide	Prof. Prakash Patel
Internal Project Guide	

Submitted To	Computer Engineering Department, Institute of Diploma Studies, Nirma University.
Team Size	1 person
Time Duration	Entire 8th semester

User classes	Application Function Commonly Used	Major Interests
Administrator	• Add/Edit/Update/Delete system Users. • Emailing Facilities. • Manage roles. • Upload photos to gallery. • Manage site. • Manage courses. • Register Teacher. • Approve user.	• Easy user management • Restrict user access to some areas of the application • User friendly navigation • Standardized way to add users, profiles and documents
Student	• View schedule. • View attendance. • View grade Report. • View gallery. • Emailing Facilities. • Download study materials.	• View schedule, attendance and grade reports.

Teacher	- Manage schedule. - Manage attendance. - Manage grade report. - View gallery. - Emailing facilities. - Upload study materials.	Manage schedule, attendance and grade reports.
Parent	- View schedule. - View attendance. - View grade Report. - View gallery. - Emailing Facilities.	View schedule, attendance and grade reports.

CHAPTER 2

COMPANY PROFILE

2.1 COMPANY OVERVIEW

CMC Limited is a leading systems engineering and integration company in India, offering application design, development, testing services and asset-based solutions in niche segments through turnkey projects of national importance. CMC has also been expanding its service presence in international markets offering off-shoring advantages and delivering value through service level-based and project scope-based deliveries.

Since its inception on December 26, 1975, CMC has been a frontrunner in providing IT solutions and services. CMC was the first ever enterprise in India to set up a countrywide data network called INDONET - a computer network providing access to major cities in India, way back in 1985.

A subsidiary of Tata Consultancy Services Limited (**TCS** Ltd), one of the world's leading information technology consulting, services and business process outsourcing organizations, CMC Limited is a part of the US\$ 100.09 billion Tata Group, India's best known business conglomerate.

Today, CMC Limited, an ISO 9001:2000, certified and CMMI Level V accredited organization, is positioned as a premier IT solutions provider in the fast growing and competitive IT market. We execute large and complex turnkey projects, and have built, managed and supported our customers' IT systems across the value chain infrastructure, applications and business processes.

2.1.1 MISSION STATEMENT

As an innovative world class systems engineering and integration company, we shall provide sustainable, advanced technology solutions and services to our global customers, and in projects of national importance, maximizing value to our stakeholders and the communities we serve.

2.1.2 VISION

Global top 20 System engineering and integration company by 2020.

2.1.3 VALUES

We shall be vibrant organization where openness, teamwork, simplicity, responsibility and innovations are valued and promoted.

2.2 PRODUCT OFFERINGS

- eGovernance
- ecommerce
- Banking & Finance
- Insurance
- Mining
- Power & Utilities
- Shipping
- Transportation

2.3 INDUSTRY PRACTICES

- Banking & Financial Services
- Defense & Space
- Education & Training
- Government
- Hitech & Telecom
- Insurance
- MERU (Manufacturing Energy, Resource & Utilities)
- Retail & FMCG
- Shipping
- Transportation

2.4 SERVICE OFFERINGS

- Education & Training
- Embedded Product Development Services
- ERP
- Event Management
- Infrastructure Development
- IT-enabled Services
- Networking
- RIMS
- Software Development
- Systems & Hardware
- Systems Integration
- Systems Study & Design
- Turnkey Projects

2.5 Miscellaneous

- Alumni
- Brochures
- Current Openings
- Industry Forums
- Innovation @ CMC
- ITEC/SCAAP Scholarship Plan
- Job Enabled Programme
- Key Differentiators
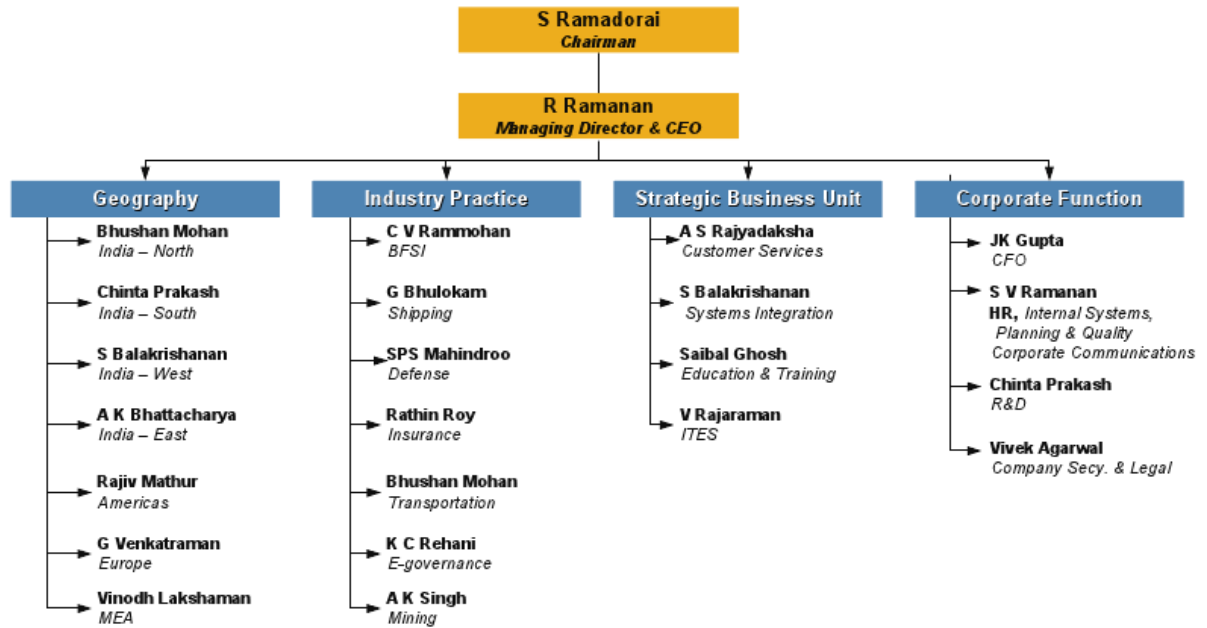- Our Capability Framework
- Product Enquiry

2.6 COMPANY WEBSITE

- For more detailed profile and products and services visit our website ***www.cmcltd.com*** .

Chapter 3
Organizational Chart

3.1 Organizational Chart

[Fig 3.1 Organizational Chart]

PART II

4.

INTRODUCTION TO

DEVELOPMENT TOOLS

&

TECHNOLOGY

Chapter 4

**Introduction to development
Tools and hardware**

4.1 WHAT IS J2EE?

Short for *Java 2 Platform Enterprise Edition*. J2EE is a platform-independent, Java-centric environment from Sun for developing, building and deploying Web-based enterprise applications online. The J2EE platform consists of a set of services, APIs, and protocols that provide the functionality for developing multitier, Web-based applications.

Some of the key features and services of J2EE:
- At the client tier, J2EE supports pure HTML, as well as Java applets or applications. It relies on Java Server Pages and servlet code to create HTML or other formatted data for the client.
- Enterprise JavaBeans (EJBs) provide another layer where the platform's logic is stored. An EJB server provides functions such as threading, concurrency, security and memory management. These services are transparent to the author.
- Java Database Connectivity (JDBC), which is the Java equivalent to ODBC, is the standard interface for Java databases.
- The Java servlet API enhances consistency for developers without requiring graphical user interface.

4.2 WHY J2EE AS PLATFORM?

J2EE may not be the perfect choice for developing enterprise applications. You should consider other alternatives before deciding to use J2EE. Some advantages of using J2EE for enterprise applications are listed below:

• Low level services are already implemented

An enterprise application needs to implement very complex services to be successful. Some of those services are transaction and state management, resource pooling and multi-threading. J2EE architecture separates those low level services from the application logic. Since all those services are implemented by applications servers, you can save a lot of time if you need those services.

• J2EE is well documented and understood

J2EE is developed by a consortium formed by several major companies in the industry. For more information on this consortium you can search for "Java Community Process" (see links section)

• J2EE is a standardized and reliable software architecture

Using standardized and reliable software architecture in your development will most likely decrease your future costs and ensure longevity of your applications.

• J2EE gives you a lot of flexibility

Once you develop your application with J2EE, you can deploy it wherever you need to. You can deploy your application to any application server with small changes.

• APIs used in J2EE are well documented.

Several APIs are used to implement low level details of enterprise applications. Since those APIs are already written and well documented, this will save you a lot of time.

4.3 LIST OF TOOLS AND TECHNOLOGIES USED TO BUILD SCHOOL MANAGEMENT SYSTEM

4.3.1 SOFTWARE RESOURCES (SERVER SIDE):

- JRE 7
- JDK 1.7
- Tomcat server 7.
- MySql Database
- Eclipse juno.
- Macromedia Dreamweaver

4.4.2 SOFTWARE RESOURCES (CLIENT SIDE):

- Windows 7 64 bit
- JavaScript and css3 enabled browser like latest version of Mozilla.

4.4.3 HARDWARE RESOURCES (SERVER SIDE):

- Intel Xeon 2.4 GHz or Higher
- 16 GB RAM
- 2 TB Hard Disk
- 2*1 GB LAN Card

4.4.4 HARDWARE RESOURCES (CLIENT SIDE):

- 1 GB RAM
- 120 GB or more HDD
- LAN Card

PART III

5. SYSTEM ANALYSIS

6. SYSTEM DESIGN

CHAPTER 5
SYSTEM ANALYSIS

5.1   ABOUT THE PRESENT SYSTEM

To help promote students achievement and success, schools must have access to complete, accurate, and timely information about students. One of the benefits of automated SMS is that the student record system will simplify retrieval of required information and is a great instrument for school improvement by taking measures from the information acquired. Despite the use of automated school management system, the schools are using paper based documentation system for performing various tasks and the school administrators apply their knowledge of hit and miss approach in scheduling classes and courses (preparing the timetable) which wastes manpower and much time unnecessarily that does not utilize the current technology.

Report cards are produced by the home-room teachers. Attendance of students is recorded by the home-room teachers. In order to control absentees and know the number of days that a student has been absent from the school during the school days the attendance officer has to collect the attendance slips from the corresponding homeroom teachers and compile it which is also a time taking process. In addition to that retrieving records of students who have graduated couple of years ago has been a difficult task and the manual system also has difficulty of producing different reports which are required by the stakeholders such as teachers and administrators.

Teachers may want to associate a student with his parent or emergency persons for disciplinary measures which need searching of the students record in the record office. It has been difficult to search a record from thousands of such records and observed that students can take any person claiming that he/she is their parent or emergency person which creates problem in control of students. School Management System also allows parents to stay informed about student progress in school, student attendance and schedules.

Due to the inefficiency of the current manual system, the need arises to automate SMS in order to efficiently handle students' attendance, to produce transcript, report cards and the various reports satisfying users and customers and to produce timetable which can schedule courses for teachers and classes of students.

5.2 REQUIREMENTS OF NEW SYSTEM

5.2.1 USER REQUIREMENTS

- Register a student.
- Record attendance of students.
- Generate various reports.
- Generate timetable.
- Generate Schedule.
- Parent interaction.
- Sharing of study materials.
- Internal email facilities.
- Search students and teachers facility.
- Picture gallery.
- News and Updates.

5.2.2 SYSTEM REQUIREMENTS

Security requirements are important factors in this system as classified data will be stored in the database. User validation will be done during login to insure that the user is valid and that the user only has access to his or her permission data. General users will only have access through the user interface.

The system will have consistent interface formats and button sets for all forms in the application, will have a form based interface for all data entry and viewing formats, and will generate reports that are formatted in a table and that should look like the existing manual report formats for user friendliness.

The system will be easily maintained by the developer or other authorized trained person and it shall respond as fast as possible in generating report and producing the timetable.

5.3 FEASIBILITY STUDY

A feasibility study is undertaken to determine the possibility or portability of either improving the existing system or developing a completely new system. It helps to determine an overview of the problem and to get rough assessment of whether feasible solution exists. This is essential to avoid committing large resources to a project and then repent on it later.

5.3.1 SCOPES OF FEASIBILITY STUDY

- Technical Feasibility
- Economical Feasibility
- Operational Feasibility

5.3.1.1 TECHNICAL FEASIBILITY

CMC Limited has enough equipment, software and personnel to complete our system so that our system is technically feasible, Reliable and Time saving and finally working.

5.3.1.2 ECONOMICAL FEASIBILITY

This phase is mainly concern with cost. As there is no existing system, our system will be regularly used. So it will be beneficial at financial point of view to organization.

5.3.1.3 OPERATIONAL FEASIBILITY

- This last phase decides that whether new system is fully feasible or not.
- This system also contains resistance from user that will underline the application benefits.
- It also provides the security and is also user friendly so that any employee can understand and can contribute for well-being of system.
- In this way our system is operationally feasible and worthy for its existence.

5.4 OBJECTIVE

The general and specific objectives of the project are described below:

5.4.1 GENERAL OBJECTIVE

The general objective of the project is to automate the SMS.

5.4.2 SPECIFIC OBJECTIVES

In order to attain the general objective, the following list of specific objectives is set:

- To facilitate attendance record keeping.
- To share materials and school updates.
- To facilitate various report generation.
- To search specific student and teacher details.
- To generate grade reports.
- To allow teachers, parents and students to view.
- To produce a timetable.

CHAPTER 6
SYSTEM DESIGN

6.1 SYSTEM FLOWCHART

6.1.1 BASICS OF SYSTEM FLOWCHART

A system flowchart is a concrete, physical model that documents, in an easily visualized, graphical form, the system's discrete physical components (its programs, procedures, files, reports, screens, etc.).

A system flowchart is a valuable presentation aid because it shows how the system's major components fit together and interact. In effect, it serves as a system roadmap. During the information gathering stage, a system flowchart is an excellent tool for summarizing a great deal of technical information about the existing system. A system flowchart can also be used to map a hardware system.

System flowcharts are valuable as project planning and project management aids. Using the system flowchart as a guide, discrete units of work (such as writing a program or installing a new printer) can be identified, cost estimated, and scheduled. On large projects, the components suggest how the work might be divided into subsystems.

Historically, some analysts used system flowcharts to help develop job control language specifications. For example, IBM's System/370 job control language requires an EXEC statement for each program and a DD statement for each device or file linked to each program. Consequently, each program symbol on the system flowchart represents an EXEC statement and each file or peripheral device symbol linked to a program by a flow line implies a need for one DD statement. Working backward, preparing a system flowchart from a JCL listing is good way to identify a program's linkages.

A system flowchart's symbols represent *physical* components, and the mere act of drawing one implies a physical decision. Consequently, system flowcharts are poor analysis tools because the appropriate time for making physical decisions is *after* analysis has been completed.
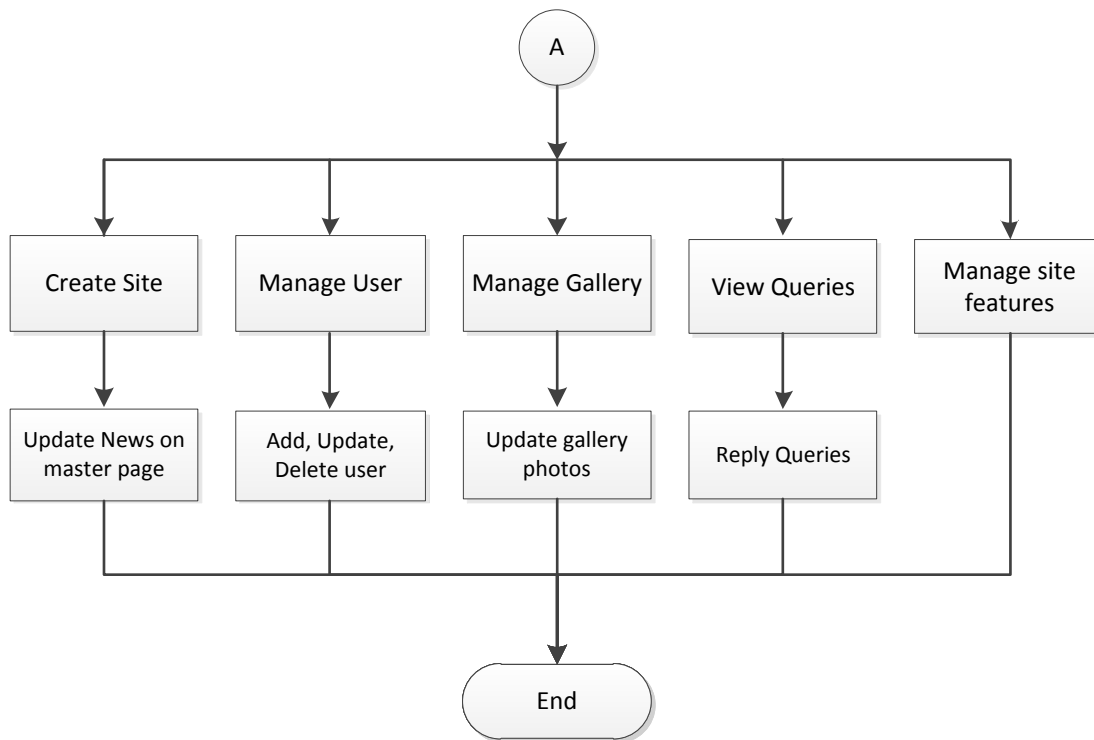
6.1.2 SYSTEM FLOWCHART OF THE SYSTEM

A graphical representation of a system in which data provided by a source document are converted into final documents.
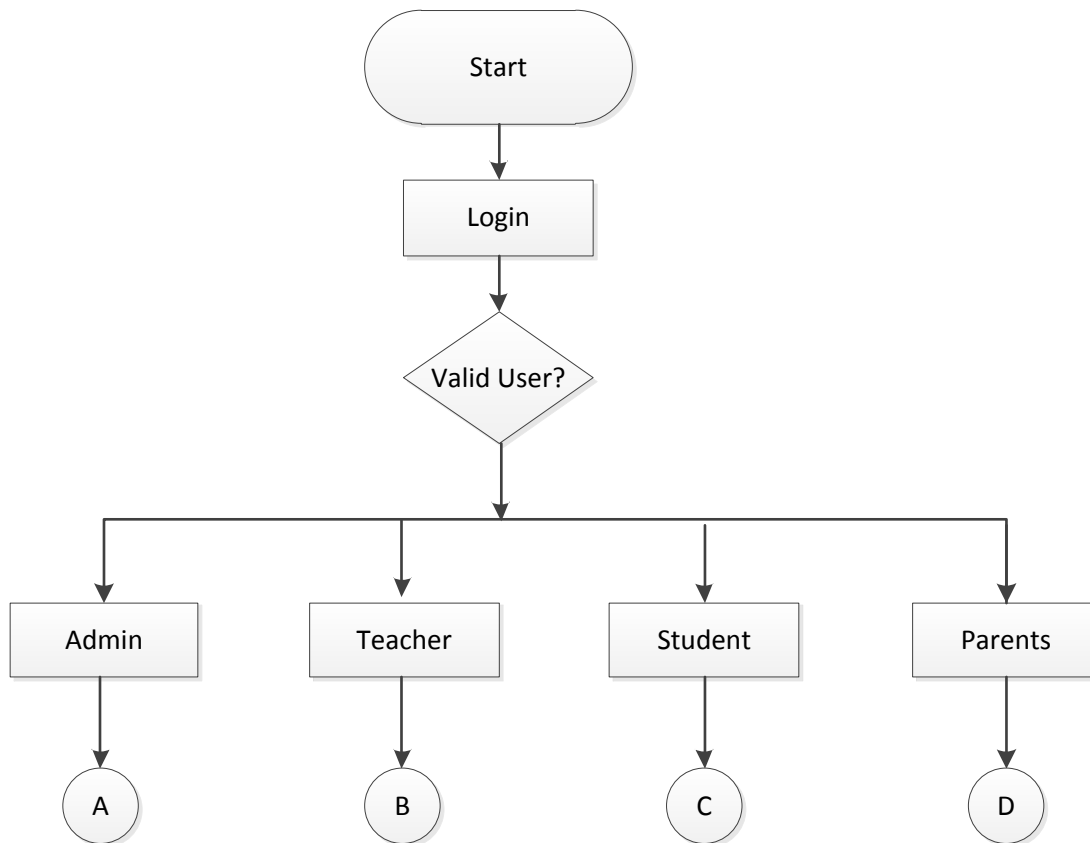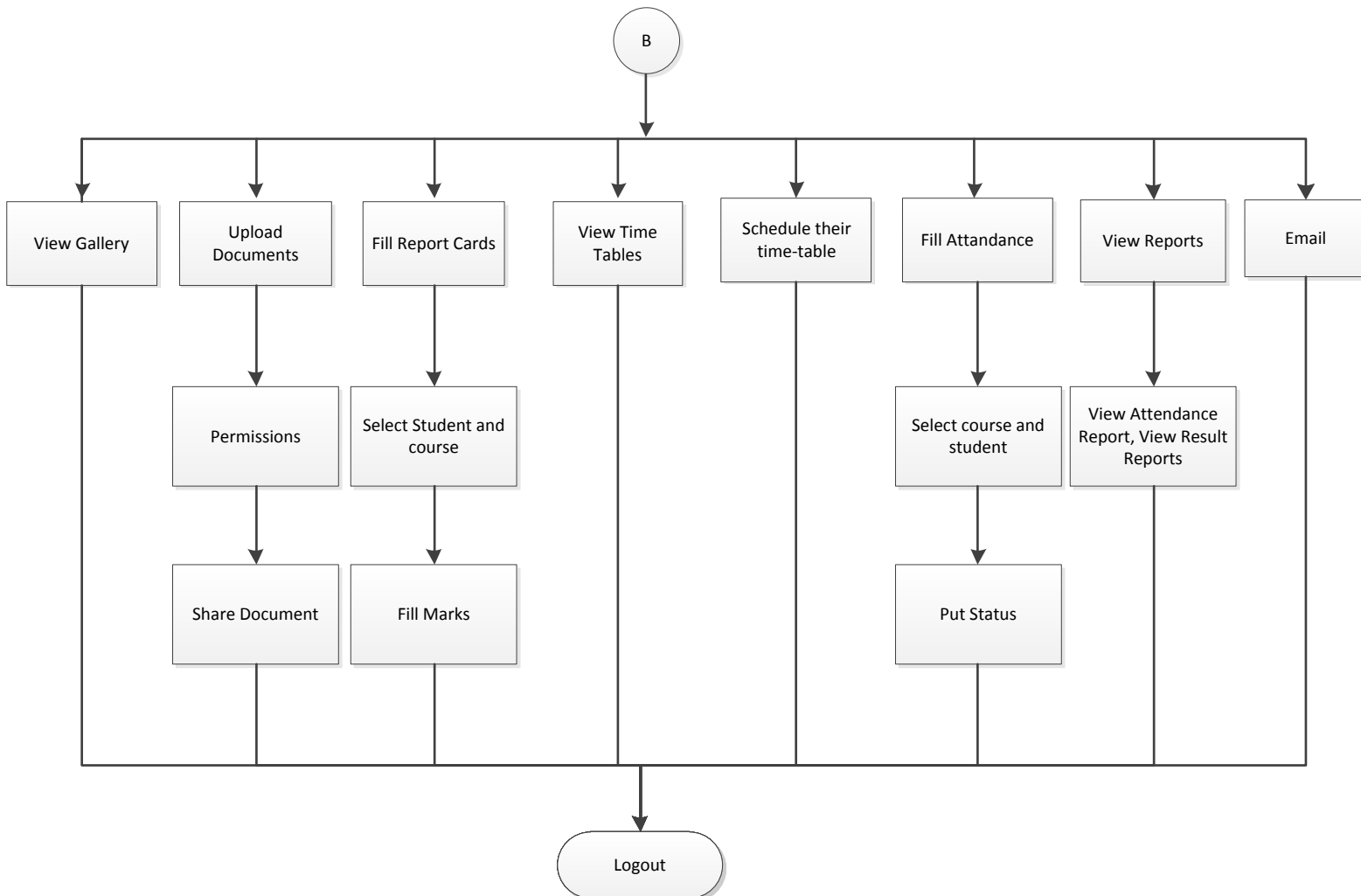

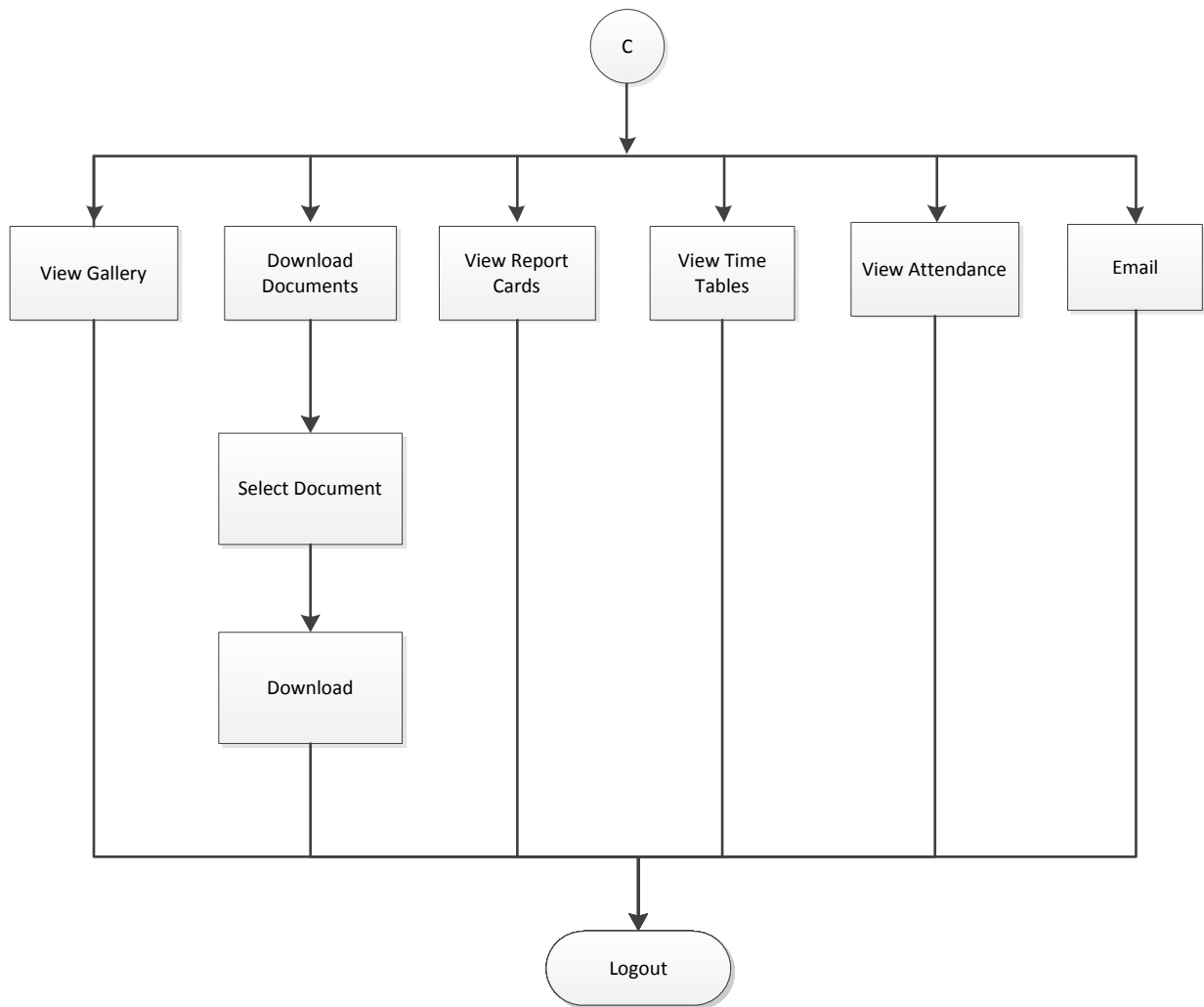[Fig. 6.1 System Flow chart]
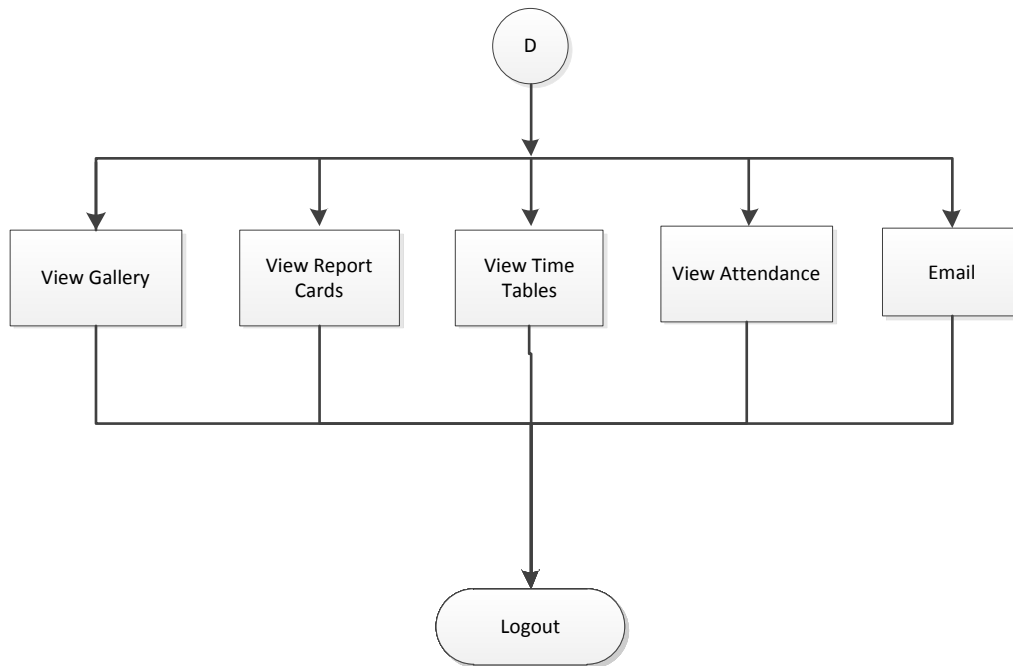
ADMIN FLOWCHART

[Fig. 6.2 System Flow chart for admin]

TEACHER FLOWCHART

[Fig. 6.3 System Flow chart for teacher]

STUDENT FLOWCHART

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[Fig. 6.4 System Flow chart for student]

PARENTS FLOWCHART

[Fig. 6.5 System Flow chart for parent]

6.2 SYSTEM USE-CASES
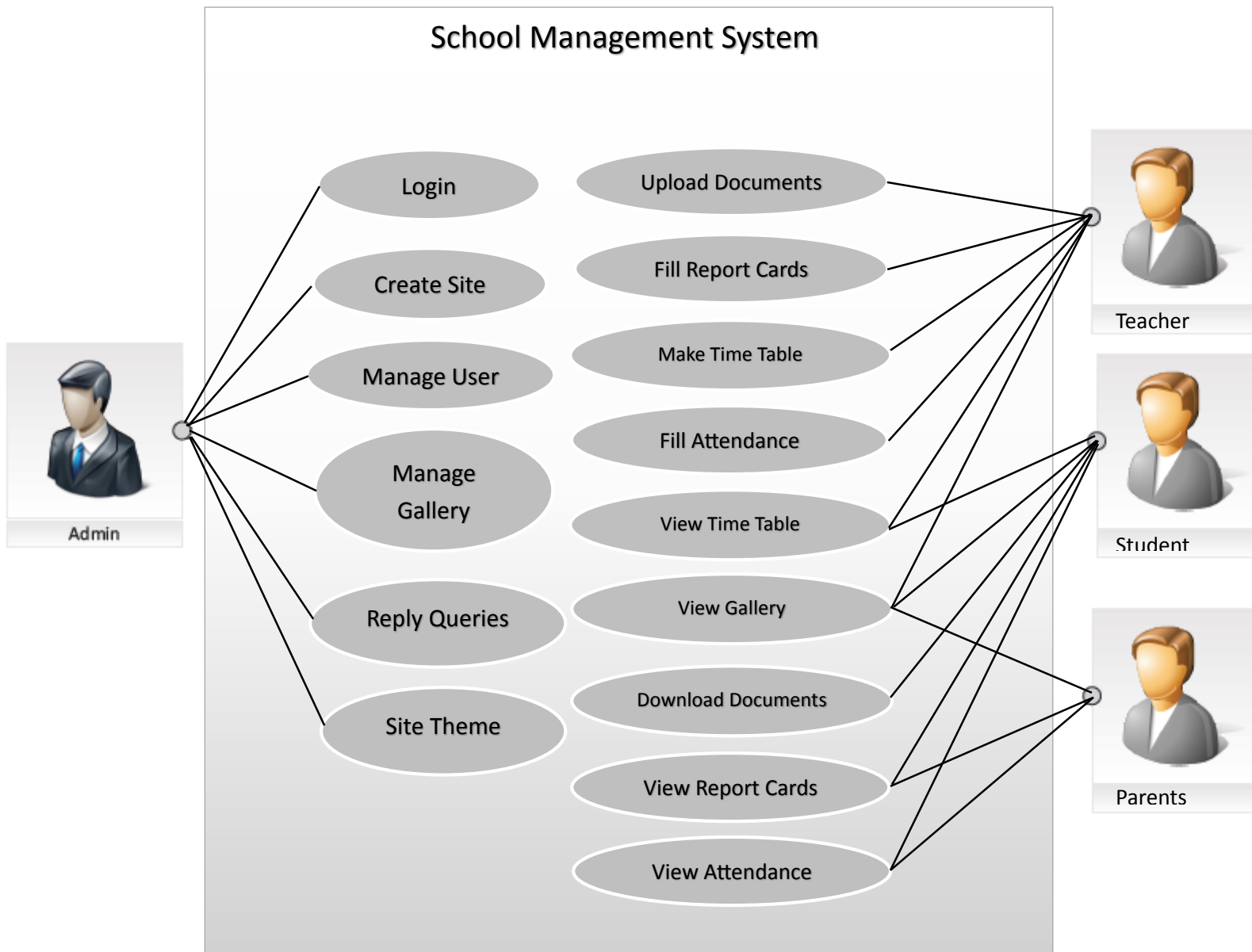
6.2.1 BASIC OF SYSTEM USE-CASE

The use case model provides detailed information about the behaviors of the system or application that you are developing. It contains use case diagrams and activity diagrams that describe how users interact with the system.

The use case model identifies the requirements of the system in terms of the functionality that must exist to achieve the goals set out by the user or to solve a problem identified by the user. Uses cases describe the major behaviors that you identify in the requirements and describe the value that the results give the users; they do not describe how the system operates internally. Actors are the users of the system and represent the different roles that people and other systems play when they interact with the system.

Use case diagrams depict the relationships between the uses cases and actors and activity diagrams to describe the flow of objects and control in each identified behavior.
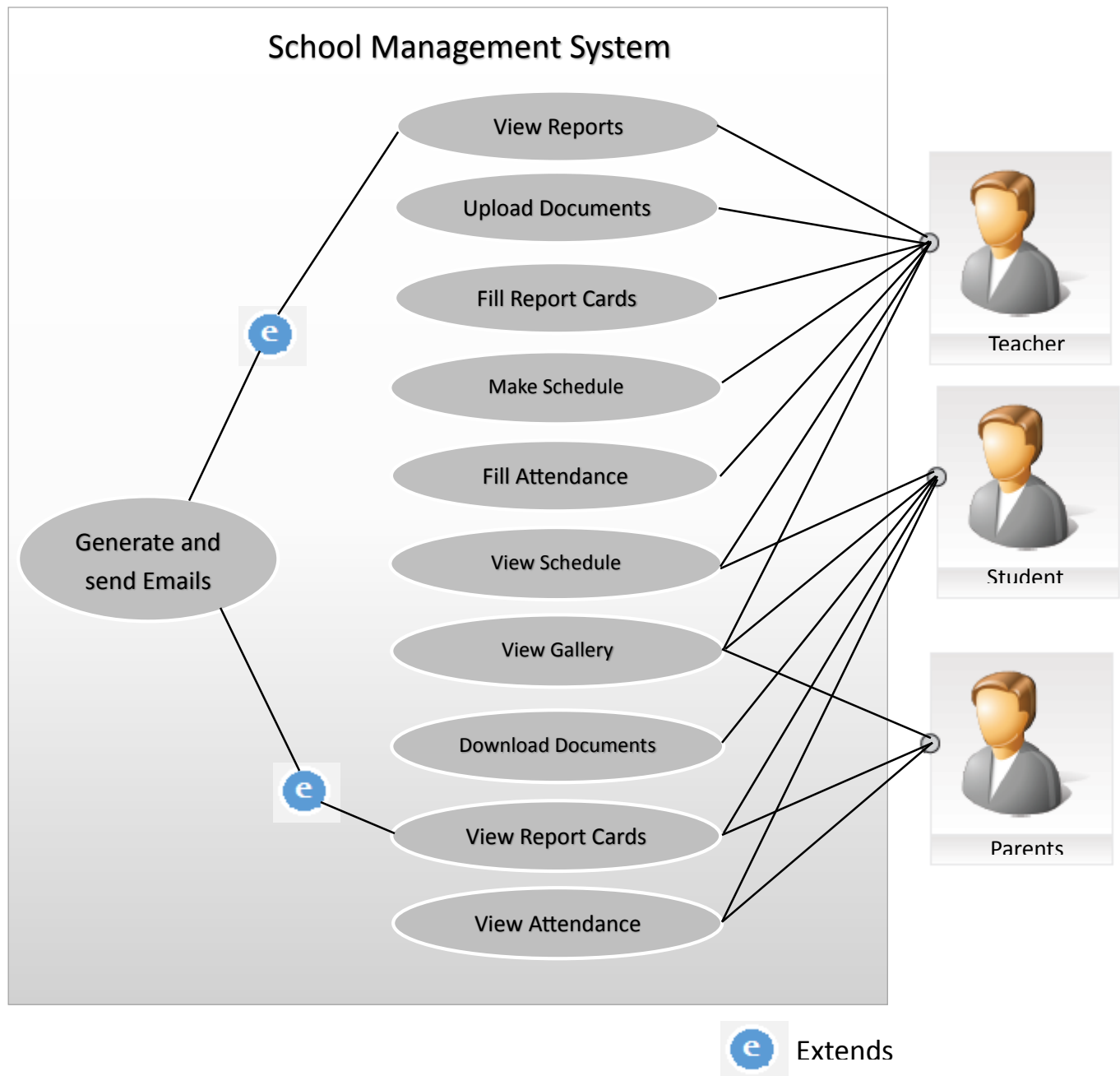
6.2.2 SYSTEM USE CASE OF THE SYSTEM

An analysis model that identifies the actors who can interact with a system to accomplish valuable goals and the various use cases that each actor will perform.

[Fig. 6.6 System use case]

ADMINISTRATOR USE-CASE
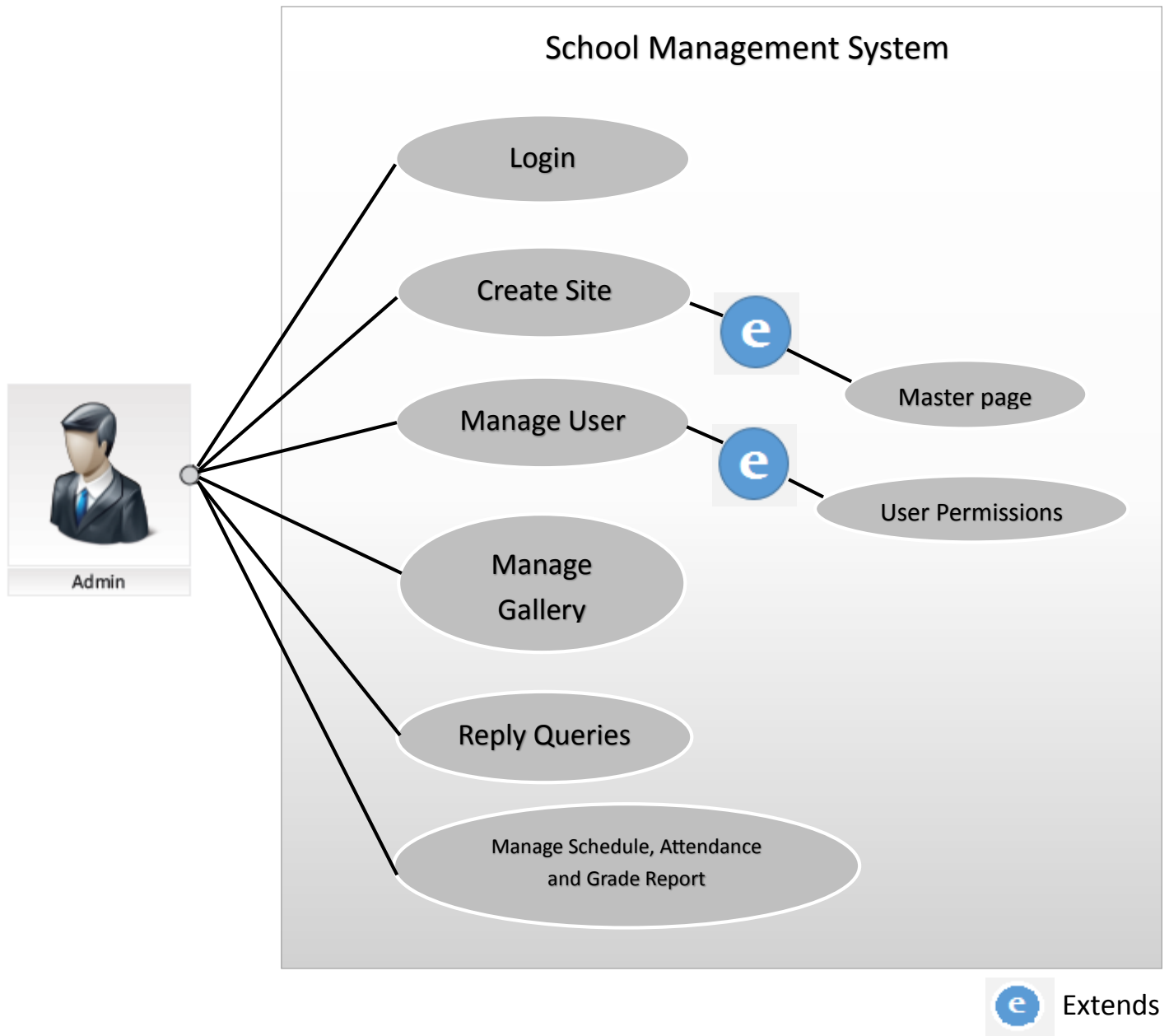
[Fig. 6.7 Administrator use case]

MEMBER USE-CASE

[Fig. 6.8 System member use case]

6.3 ENTITY RELATIONSHIP DIAGRAM

6.3.1 BASICS OF ENTITY RELATIONSHIP DIAGRAM

Entity–relationship model (ER model) in software engineering is an abstract way to describe a database. This article refers to the techniques proposed in Peter Chen's 1976 paper. However, variants of the idea existed previously, and have been devised subsequently such as super type and subtype data entities and commonality relationships

An ER model is an abstract way to describe a database. Describing a database usually starts with a relational database, which stores data in tables. Some of the data in these tables point to data in other tables - for instance, your entry in the database could point to several entries for each of the phone numbers that are yours. The ER model would say that you are an entity, and each phone number is an entity, and the relationship between you and the phone numbers is 'has a phone number'. Diagrams created to design these entities and relationships are called entity–relationship diagrams or ER diagrams.

6.3.2 ENTITY RELATIONSHIP DIAGRAM OF THE SYSTEM
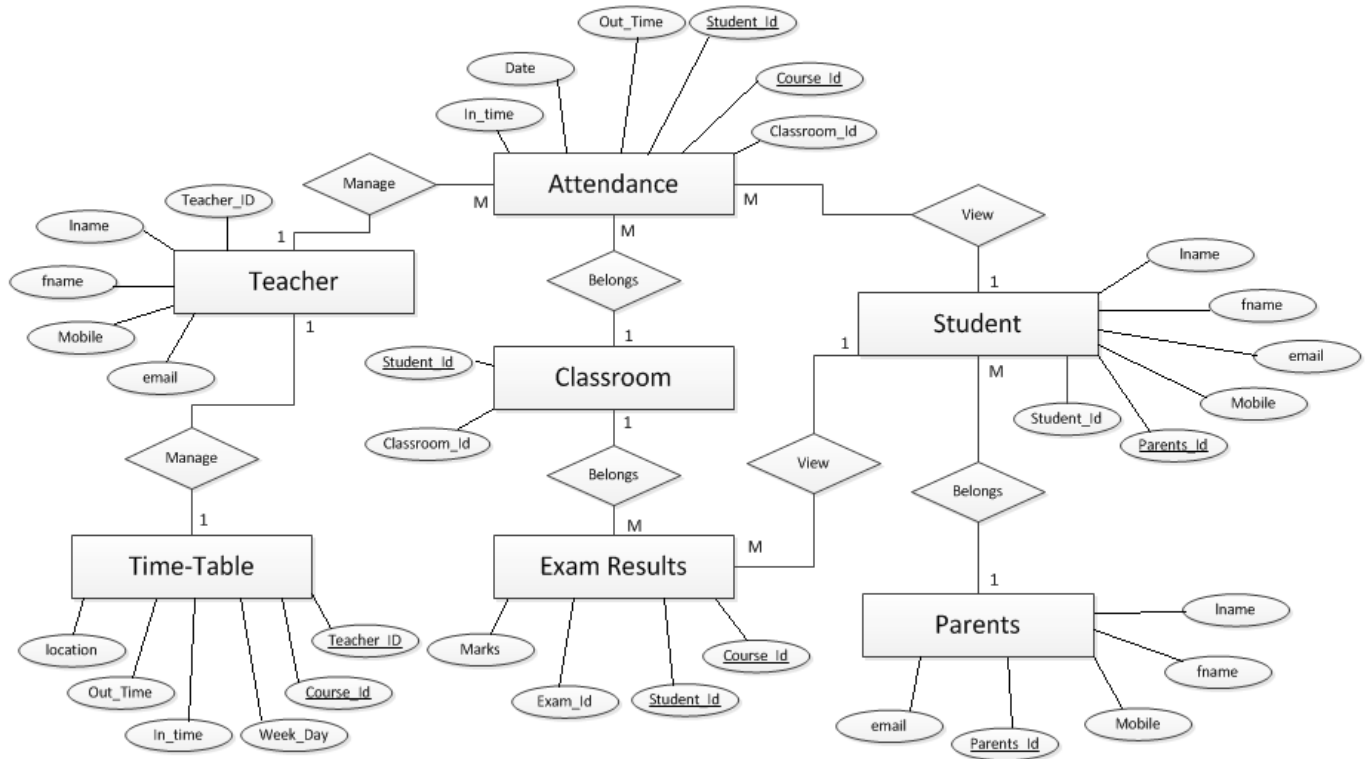
[Fig. 6.9 System Entity Relationship Diagram]

6.4 DATA FLOW DIAGRAM

6.4.1 BASICS OF DATA FLOW DIAGRAM

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system, modeling its process aspects. Often they are a preliminary step used to create an overview of the system which can later be elaborated. DFDs can also be used for the visualization of data processing (structured design).

A DFD shows what kinds of information will be input to and output from the system, where the data will come from and go to, and where the data will be stored. It does not show information about the timing of processes, or information about whether processes will operate in sequence or in parallel (which is shown on a flowchart).

This context-level DFD is next "exploded", to produce a Level 1 DFD that shows some of the detail of the system being modeled. The Level 1 DFD shows how the system is divided into sub-systems (processes), each of which deals with one or more of the data flows to or from an external agent, and which together provide all of the functionality of the system as a whole. It also identifies internal data stores that must be present in order for the system to do its job, and shows the flow of data between the various parts of the system.

Data flow diagrams were proposed by Larry Constantine, the original developer of structured design, based on Martin and Estrin's "data flow graph" model of computation.

Data flow diagrams are one of the three essential perspectives of the structured-systems analysis and design method SSADM. The sponsor of a project and the end users will need to be briefed and consulted throughout all stages of a system's evolution. With a data flow diagram, users are able to visualize how the system will operate, what the system will accomplish, and how the system will be implemented. The old system's dataflow diagrams can be drawn up and compared with the new system's data flow diagrams to draw comparisons to implement a more efficient system. Data flow diagrams can be used to provide the end user with a physical idea of where the data they input ultimately has an effect upon the structure.
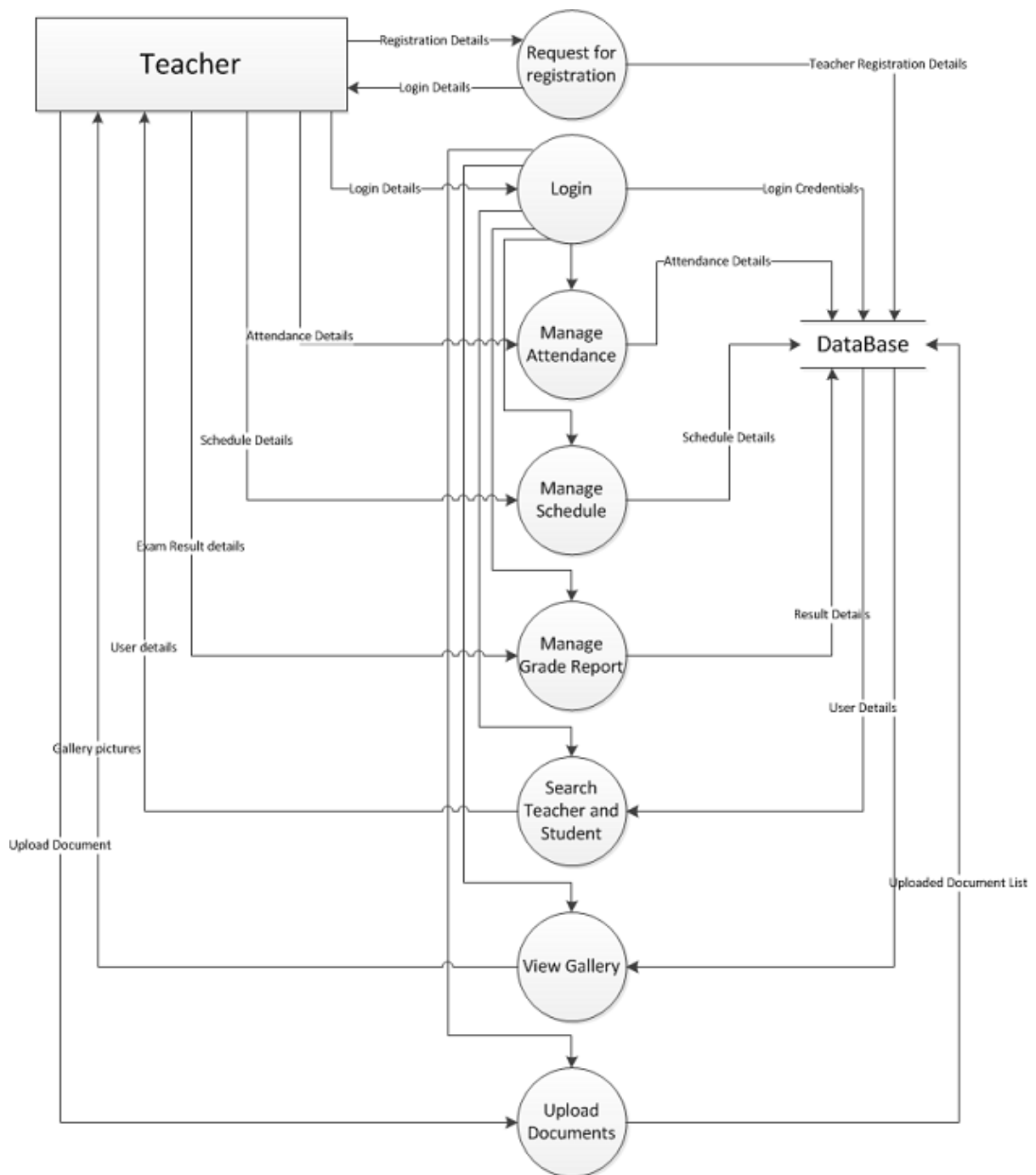
6.4.2 CONTEXT LEVEL DIAGRAM
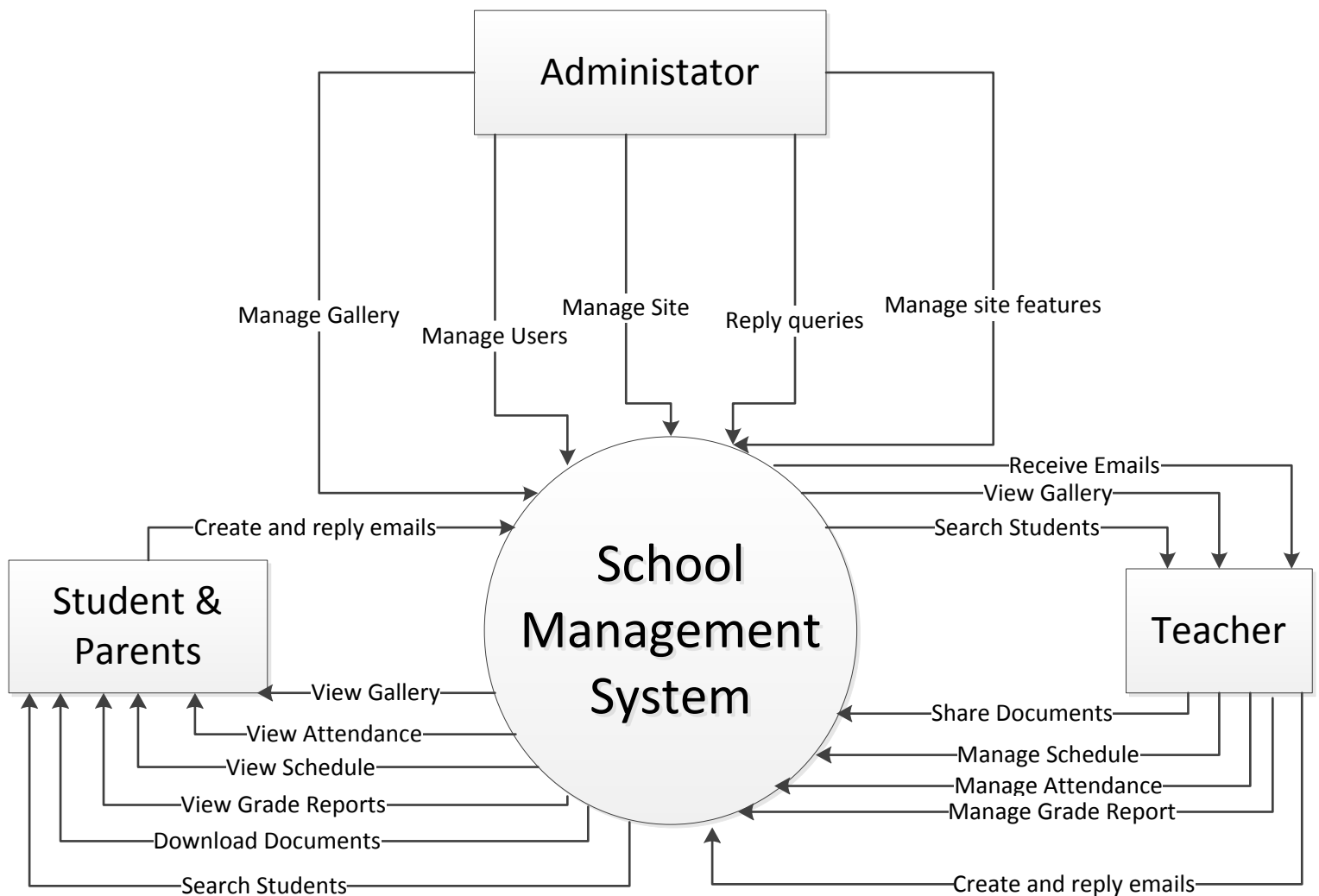
[Fig. 6.10 System context level DFD]

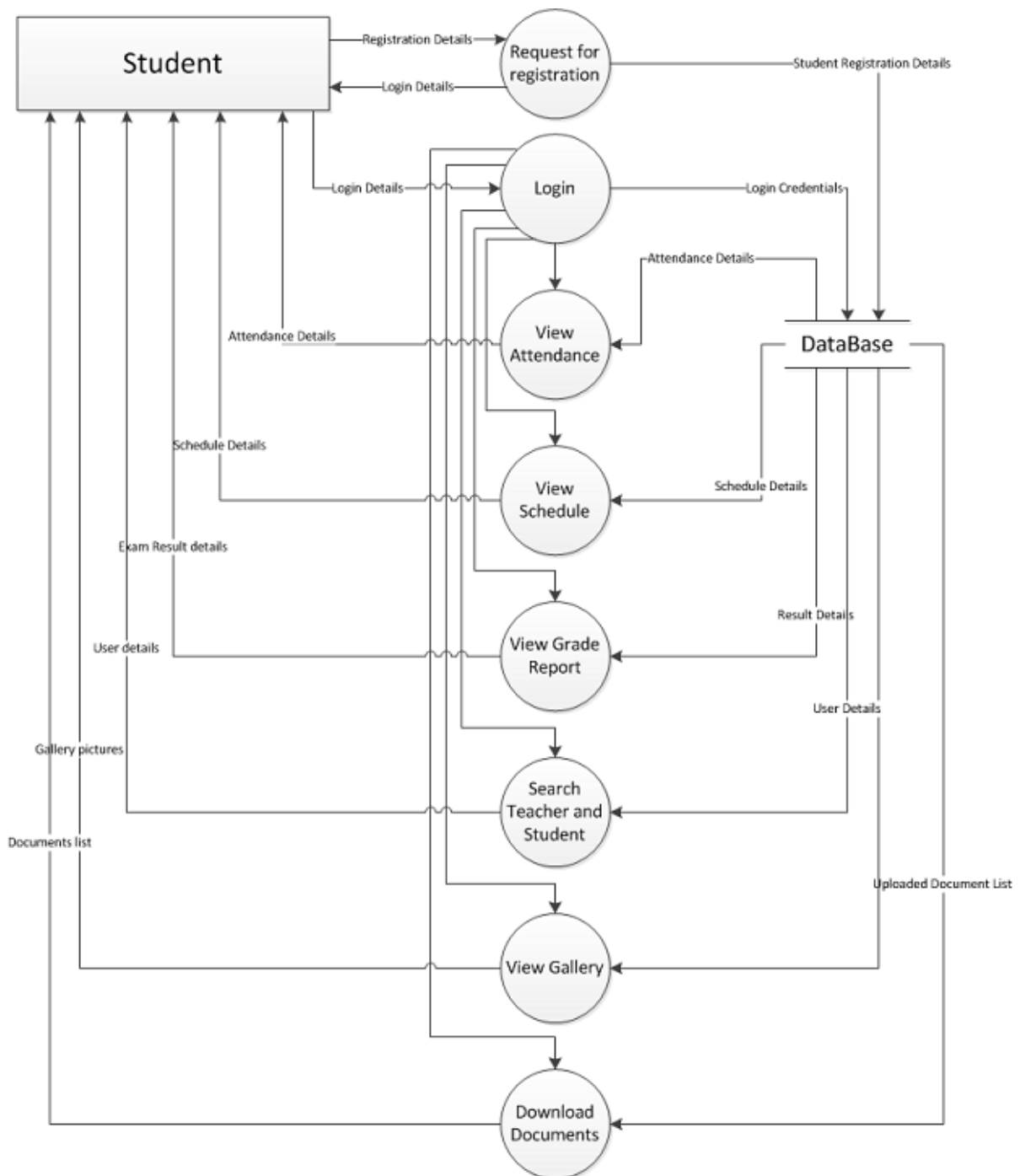## 6.4.3 LEVEL-1 DFD (ADMIN PROCESSES)
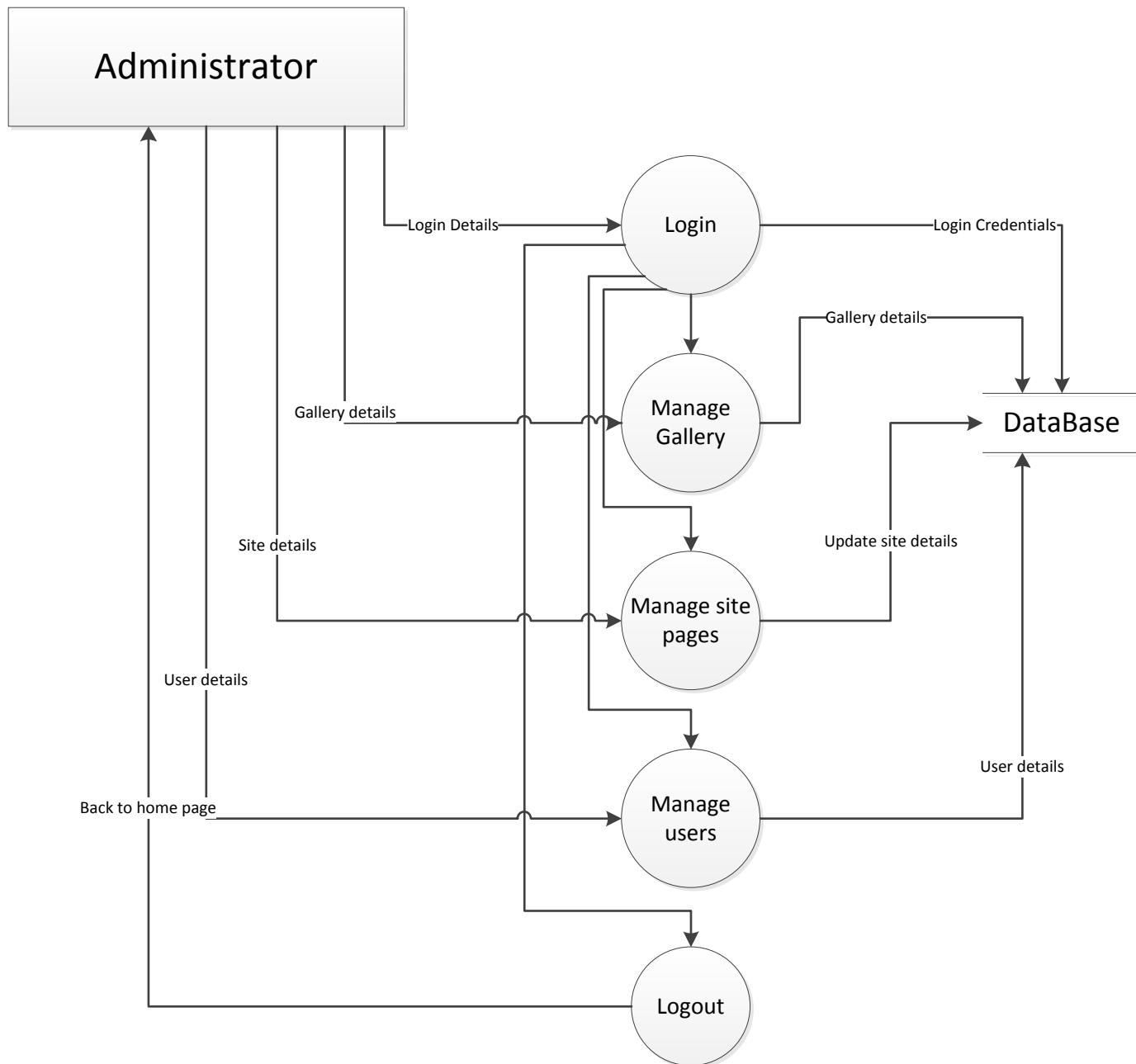
[Fig. 6.11 DFD for Admin processes]

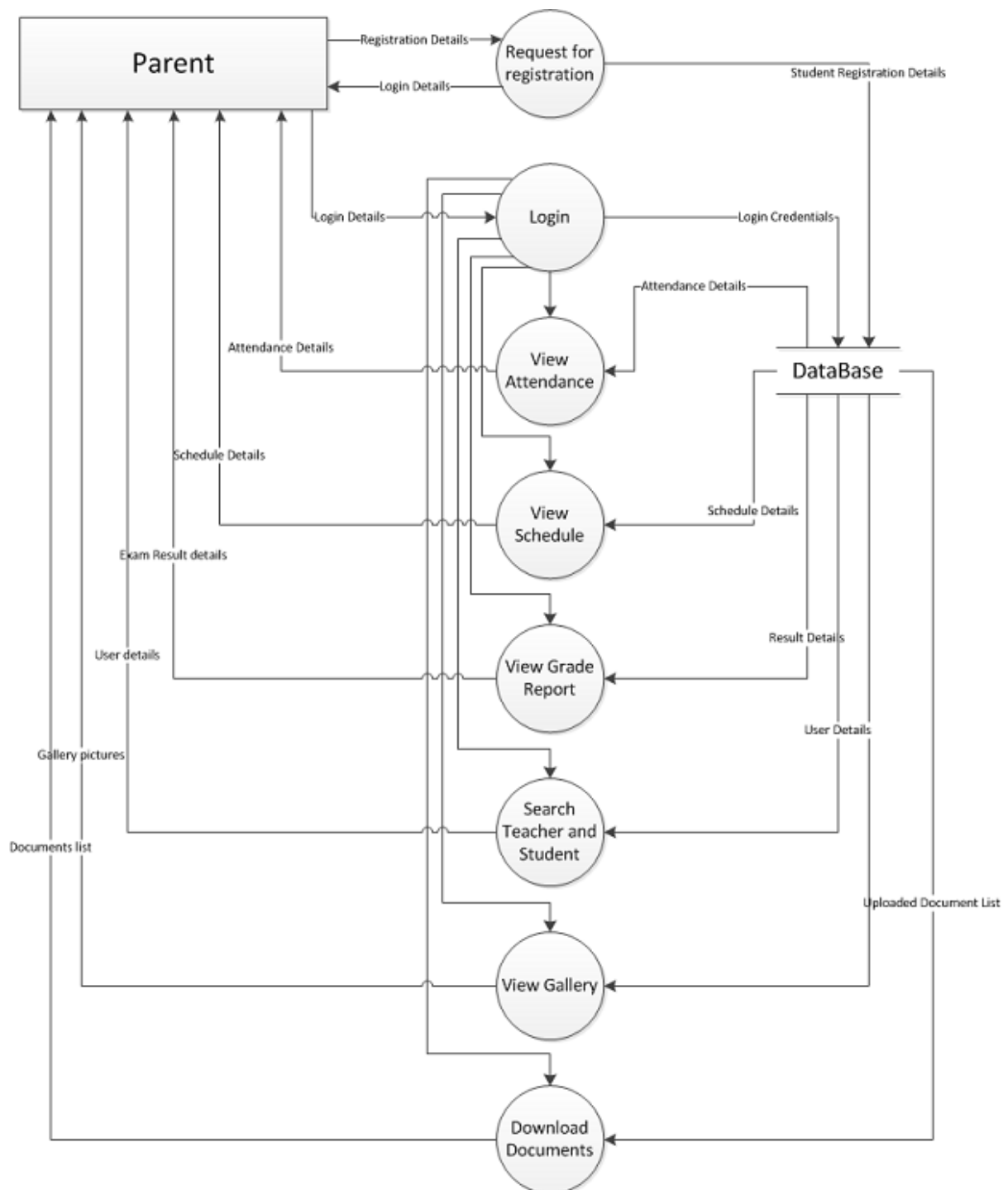## 6.4.4 LEVEL-1 DFD (TEACHER PROCESSES)

[Fig. 6.12 DFD for Teacher processes]

6.4.5 LEVEL-1 DFD (STUDENT PROCESSES)

[Fig. 6.13 DFD for Student processes]

6.4.6 LEVEL-1 DFD (PARENT PROCESSES)

[Fig. 6.14 DFD for Parent processes]
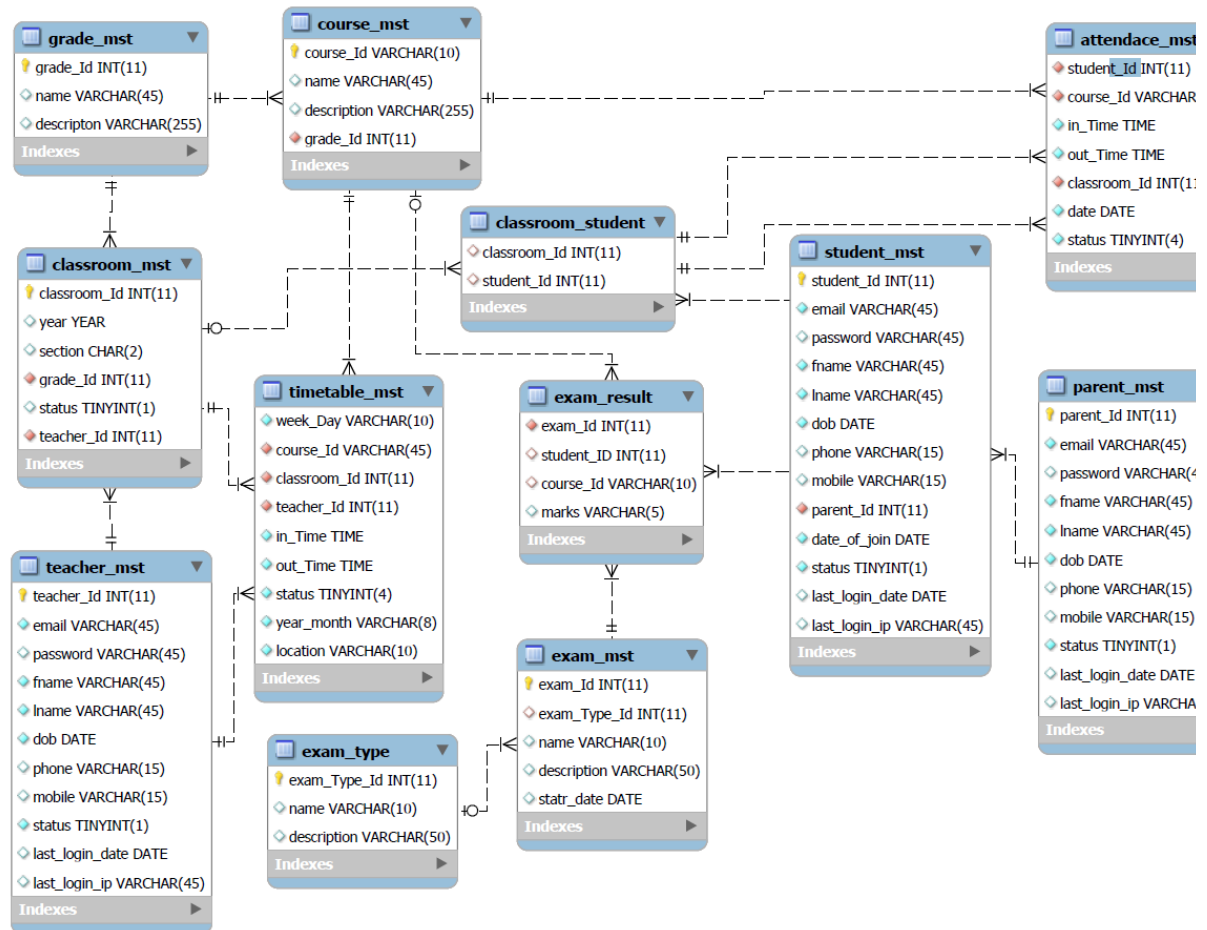
6.5 DATA DICTIONARY

6.5.1 BASICS OF DATA DICTIONARY

A data dictionary, or metadata repository, as defined in the IBM Dictionary of Computing, is a "centralized repository of information about data such as meaning, relationships to other data, origin, usage, and format." The term may have one of several closely related meanings pertaining to databases and database management systems (DBMS):

- a document describing a database or collection of databases
- an integral component of a DBMS that is required to determine its structure
- a piece of middleware that extends or supplants the native data dictionary of a DBMS

The term **data dictionary** and **data repository** are used to indicate a more general software utility than a catalogue. A **catalogue** is closely coupled with the DBMS software. It provides the information stored in it to the user and the DBA, but it is mainly accessed by the various software modules of the DBMS itself, such as DDL and DML compilers, the query optimizer, the transaction processor, report generators, and the constraint enforcer. On the other hand, a **data dictionary** is a data structure that stores metadata, i.e., (structured) data about data. The software package for a stand-alone data dictionary or data repository may interact with the software modules of the DBMS, but it is mainly used by the designers, users and administrators of a computer system for information resource management. These systems are used to maintain information on system hardware and software configuration, documentation, application and users as well as other information relevant to system administration.

6.5.2 DATA DICTIONARY OF THE SYSTEM

[Fig. 6.15 Data Dictionary of the system]