Chapter 6

Database Design

6.1 Introduction

Digitalization of data requires databases. The general theme behind a database is to handle information as an integrated whole. A database is a collection of interrelated data stored with minimum redundancy to serve many users quickly and efficiently. The general objectives is to make information access easy, quick, inexpensive and flexible for the user. Rajshahi Education Board requires database with several tables for the result processing system. Information of one data table can be used with another for combining the result.

6.2 Database for result processing system

To generate the results of the exams JSC, SSC, HSC several information are required. We need to know personal information about the students, the registration information like registration no, roll no, type of exam, exam year etc. Another table is required about the evaluated scripts of the students. For secrecy issue binary coded script no. is used. The marks and grade of the scrips are kept in script table. There is a requirement a relation table to know which script goes to which student. From the information above, we can create the result and store them in a table named result.

Hence, database contains four tables for processing the results of the students. They are -

- STUDENT INFORMATION
- STUDENT EXAMINATION INFORMATION
- SCRIPT
- RESULT

The table STUDENT INFO contains all personal and educational information of the students. It contains name, father's name, mother's name, address, registration no, roll no, level of education, examination year etc. When these kinds of information are required this table is accessed.

The table STUDENT EXAMINATION INFO contains the student identity with corresponding script number. For script evaluation student's personal information are not given for fairness. Hence this table is very much required for mapping.

The table SCRIP contains the evaluated grade and marks of each script. Here script no. is a 31 bits binary number. Also, it contains the examiner code for checking which examiner has evaluated the script.

The table RESULT contains the marksheet of each student. When results are published data is accessed from this table. The relationship between the tables are given in the Entity relationship diagram (fig 7.1).

6.2.1 Entity relationship diagram Entity relationship(ER) diagram of a database, shows how tables are related to each other. We get a brief idea about the database from ER diagram.

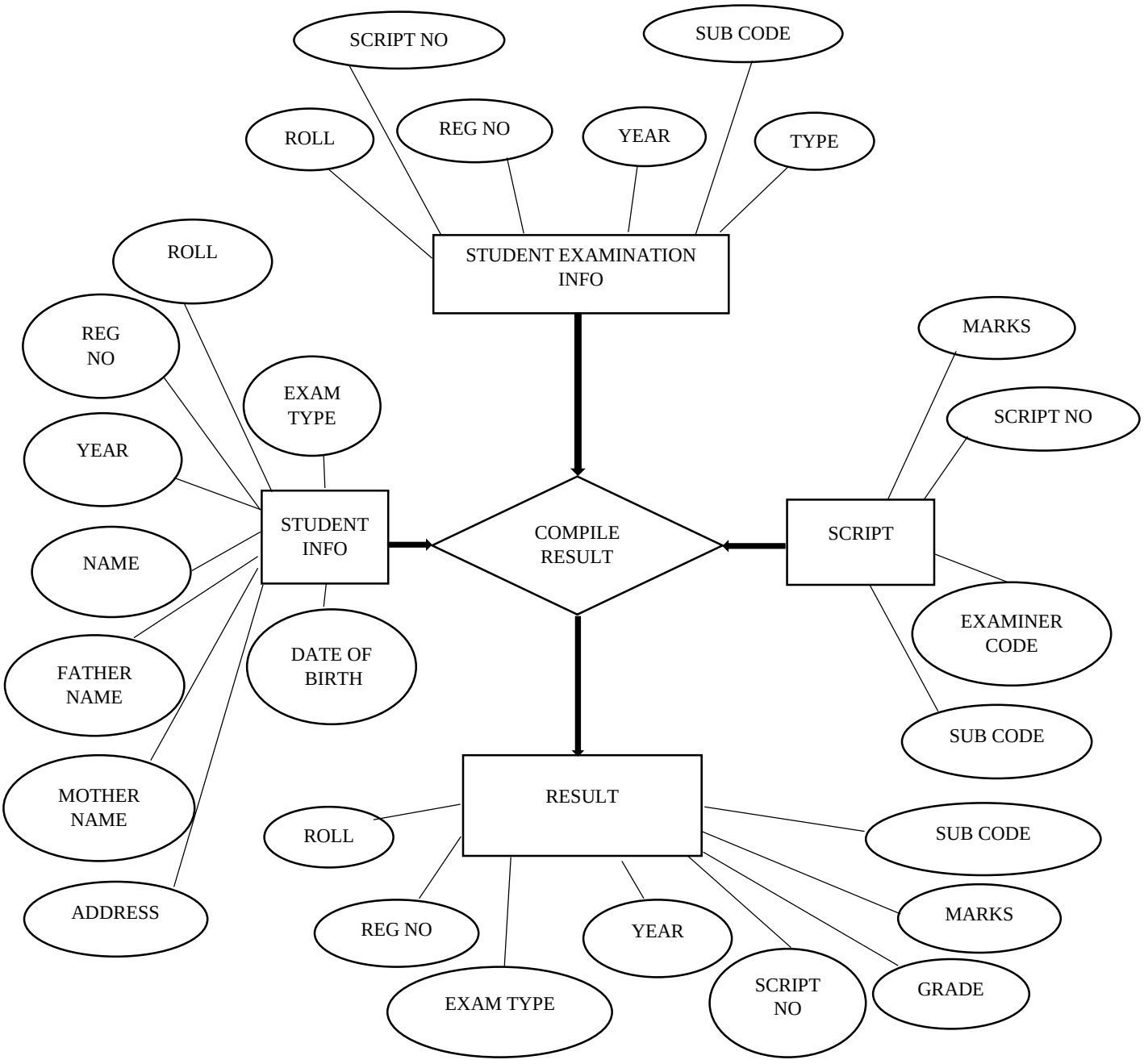

Figure 6.1 Entity Relationship diagram of result processing system.

6.2.2 Structure of tables

The structure of each table of the database are shown in Figure 6.2, 6.3, 6.4, 6.5.

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	ROLL	varchar(8)			No	None		Change Drop Primary Unique I
2	REGISTRATION_NO	varchar(8)			No	None		Change Drop Primary Unique I
3	EXAM_TYPE	varchar(5)			No	None		Change Drop Primary Unique I
4	EXAM_YEAR	int(11)			No	None		Change Drop Primary Unique I
5	NAME	varchar(30)			No	None		Change Drop Primary Unique I
6	FATHER_NAME	varchar(30)			No	None		Change Drop Primary Unique I
7	MOTHER_NAME	varchar(30)			No	None		Change Drop Primary Unique I
8	DISTRICT	varchar(20)			No	None		Change Drop Primary Unique I
9	THANA	varchar(20)			No	None		Change Drop Primary Unique I
10	POST_CODE	int(11)			No	None		Change Drop Primary Unique I
11	ADDRESS	varchar(100)			No	None		Change Drop Primary Unique I
12	DATE_OF_BIRTH	date			No	None		Change Drop Primary Unique I

Figure 6.2 Structrue of STUDENT INFO table

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	ROLL	varchar(8)			No	None		Change Drop Primary Unique
2	REGISTRATION_NO	varchar(8)			No	None		Change Drop Primary Unique
3	EXAM_TYPE	varchar(5)			No	None		Change Drop Primary Unique
4	YEAR	int(11)			No	None		Change Drop Primary Unique
5	SCRIPT_CODE	bit(31)			No	None		Change Drop Primary Unique
6	SUBJECT_CODE	int(11)			No	None		Change Drop Primary Unique

Figure 6.3 Structrue of STUDENT EXAMINATION INFO table

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	SCRIPT_CODE	bit(31)			No	None		Change Drop Primary Unique
2	EXAMINER_CODE	varchar(6)			No	None		Change Drop Primary Unique
3	SUBJECT_CODE	int(11)			No	None		Change Drop Primary Unique
4	MARKS	int(11)			No	None		Change Drop Primary Unique

Figure 6.4 Structrue of SCRIPT table

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	ROLL	varchar(8)			No	None		Change Drop Primary Unique
2	REGISTRATION_NO	varchar(8)			No	None		Change Drop Primary Unique
3	EXAM_TYPE	varchar(5)			No	None		Change Drop Primary Unique
4	YEAR	int(11)			No	None		Change Drop Primary Unique
5	SCRIPT_CODE	bit(31)			No	None		Change Drop Primary Unique
6	SUBJECT_CODE	int(11)			No	None		Change Drop Primary Unique
7	MARKS	int(11)			No	None		Change Drop Primary Unique
8	GRADE	varchar(2)			No	None		Change Drop Primary Unique

Figure 6.5 Structrue of RESULT table

6.3 Conclusion

The four tables of the database remove the redundancy of data. Such as, students address is not an important information of grade sheet. It is also not necessary to see every attribute for finding a specific information. Hence this type of relational database design makes the use of space, efficient. Also, the query time for searching an information is reduced as specific information can be searched at specific table.