

CS4400 Database Project

GTPort

Phase II

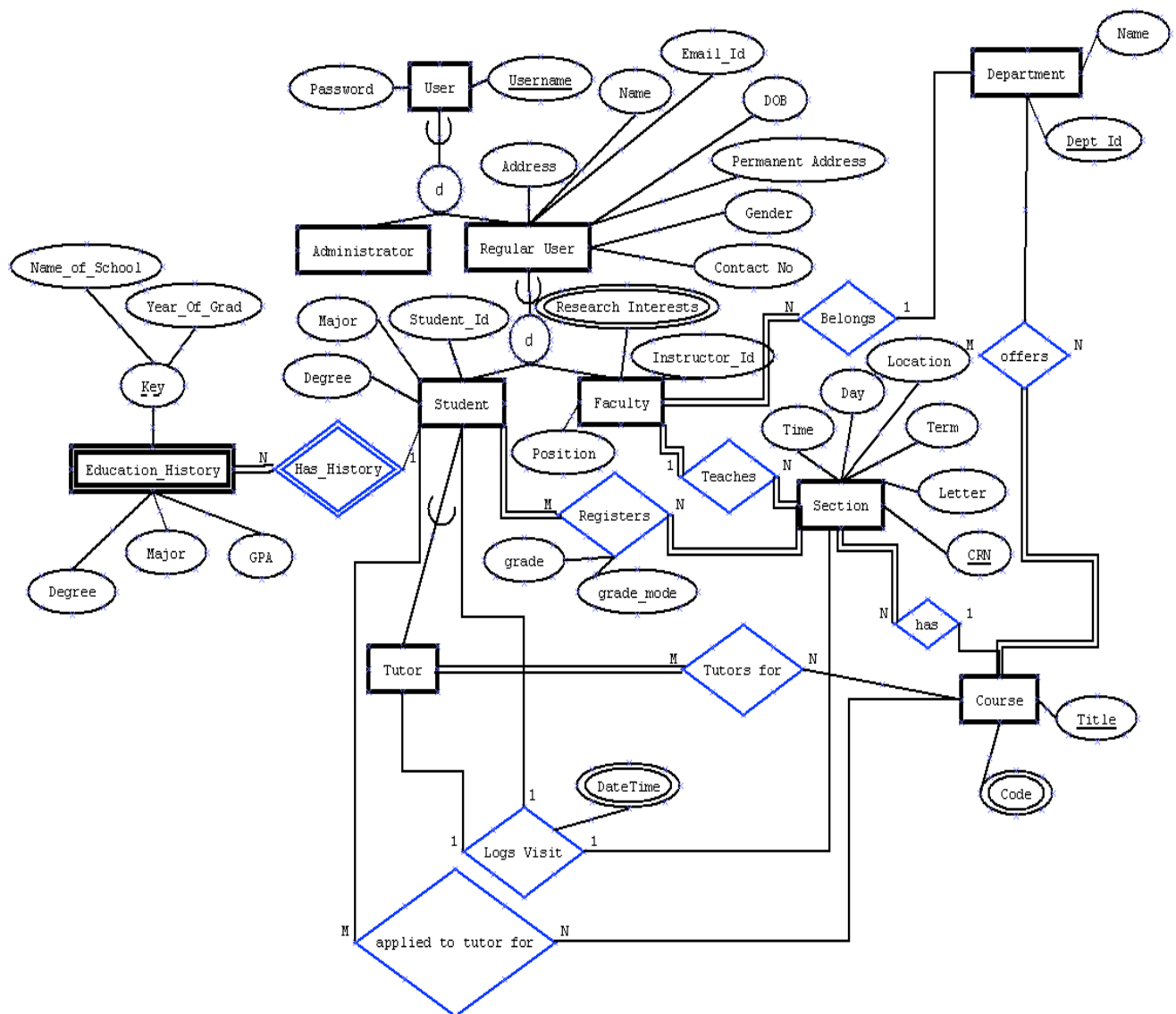
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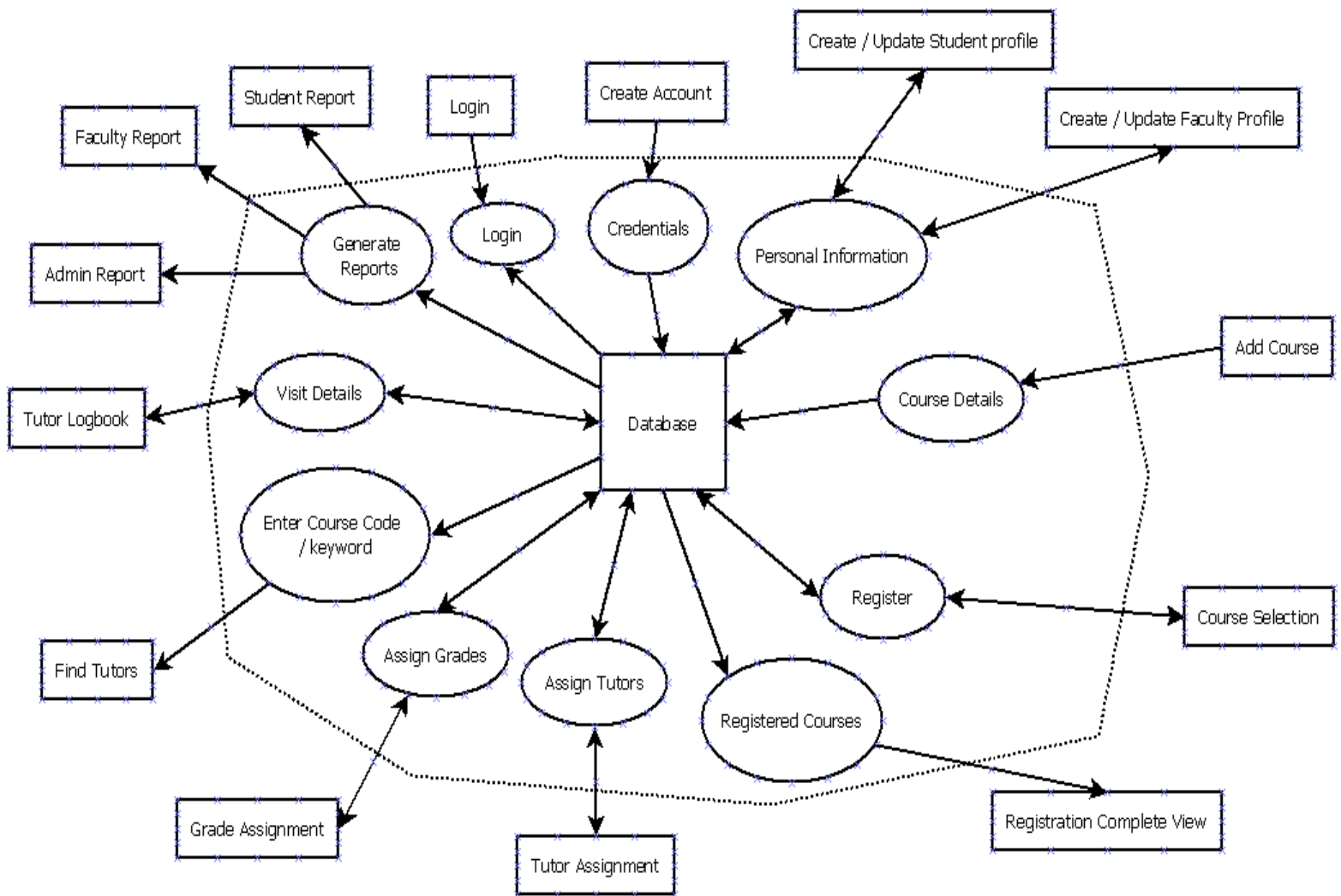
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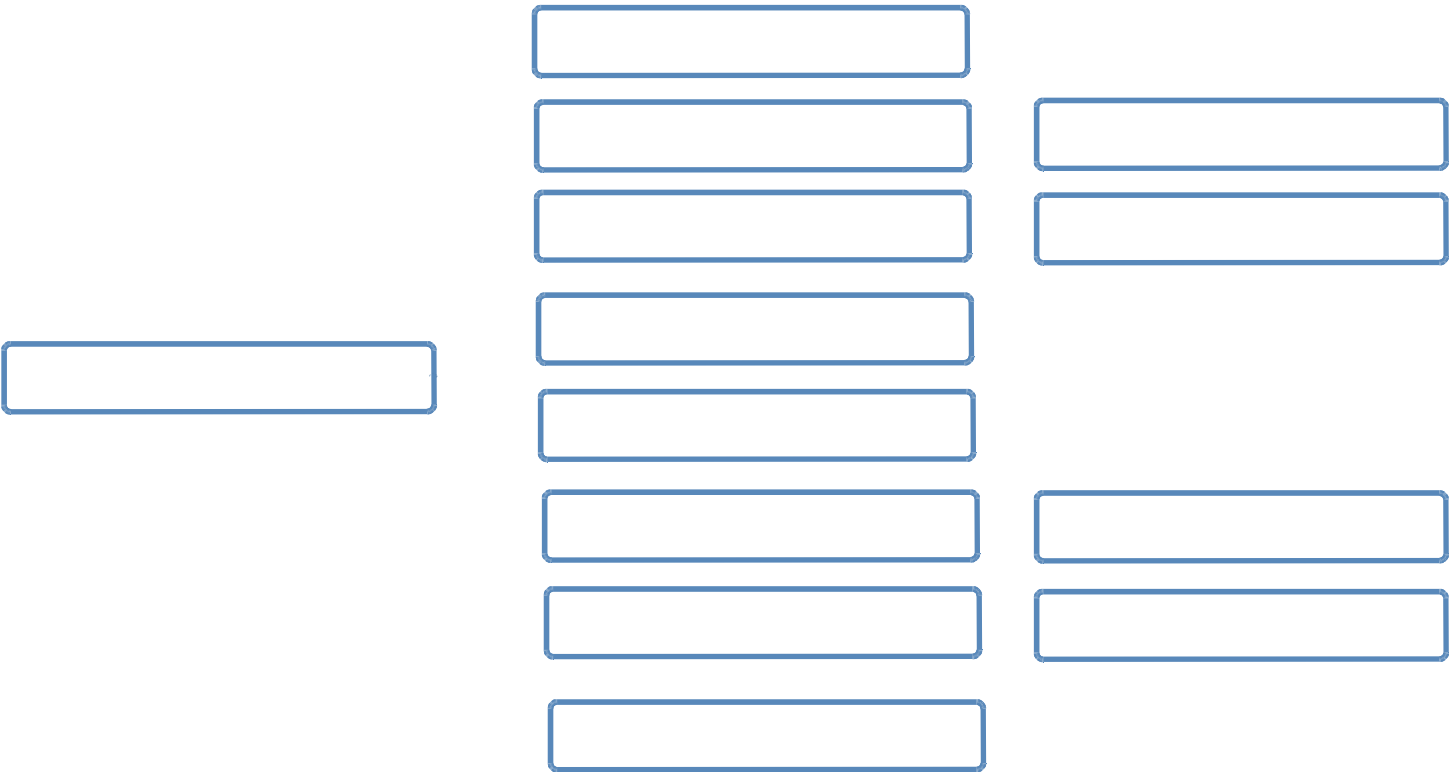
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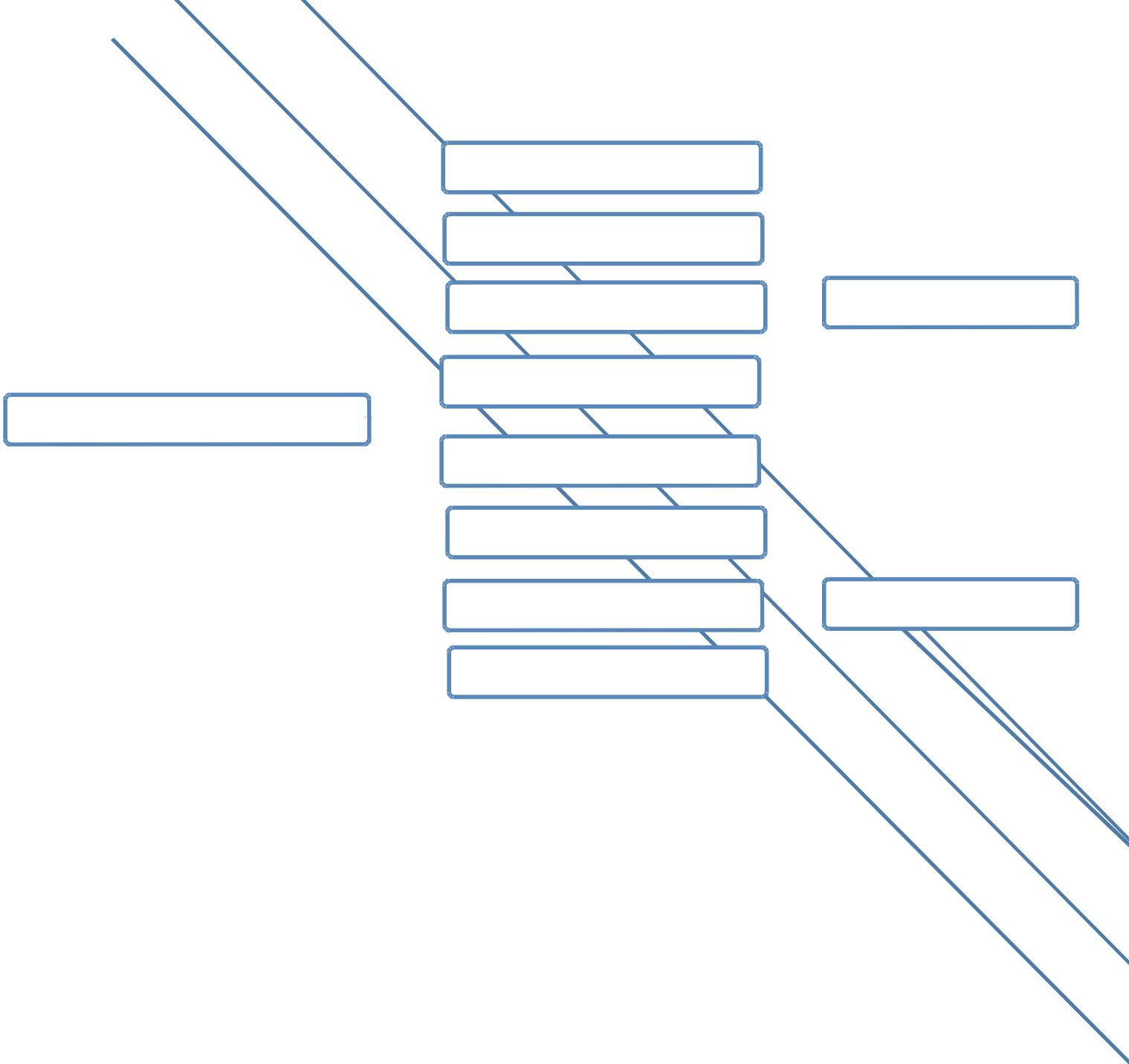


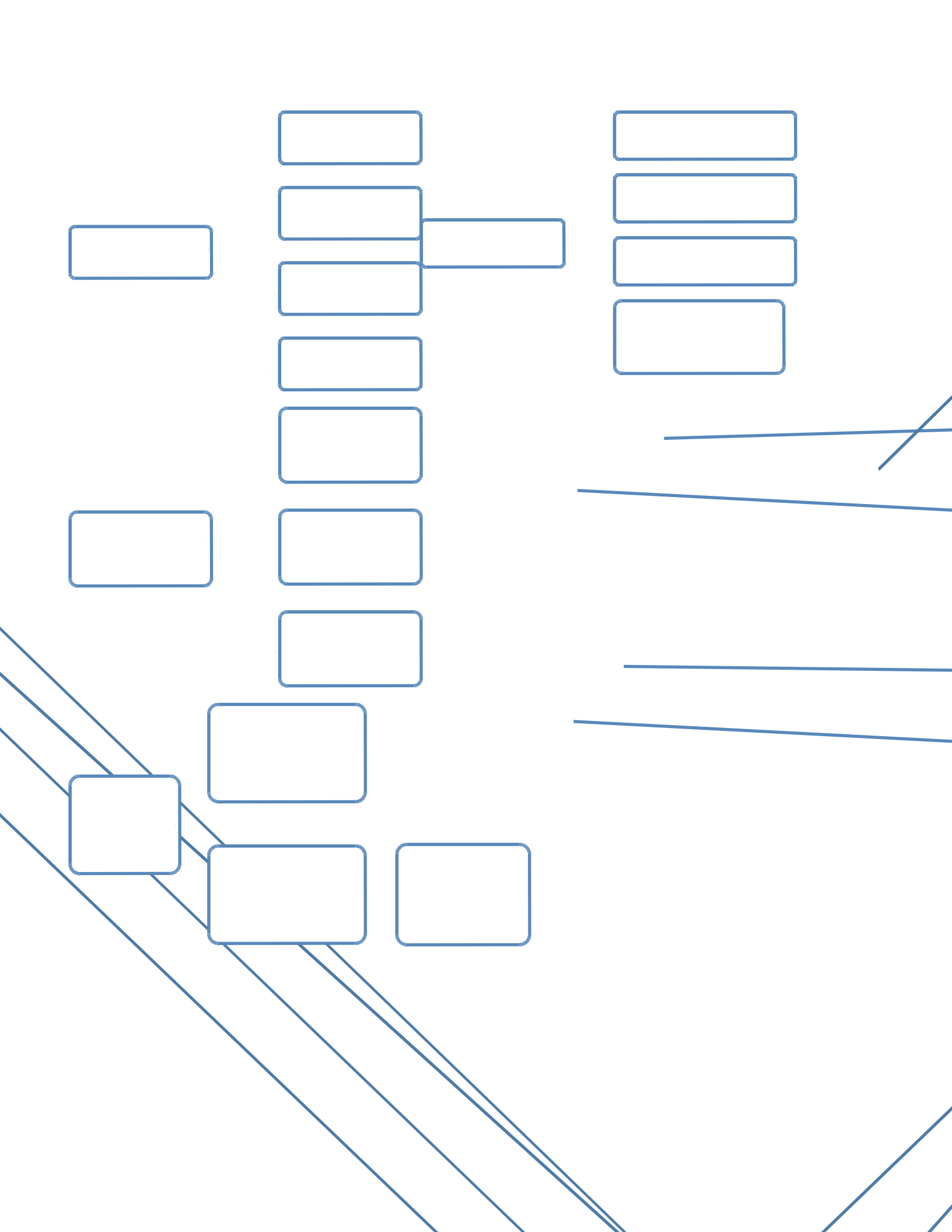
2. Information Flow Diagram

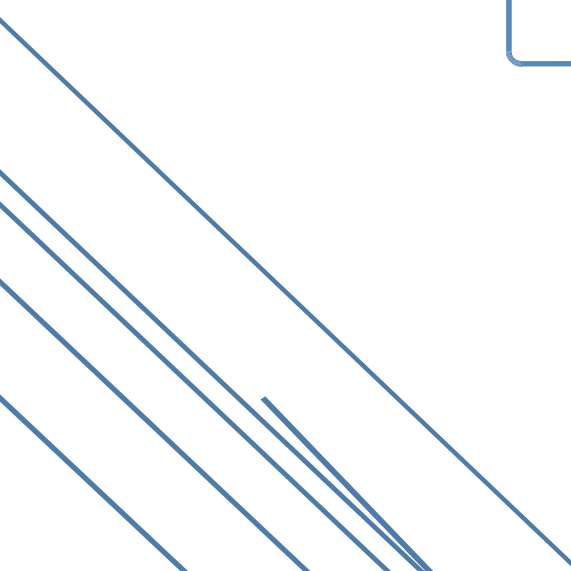


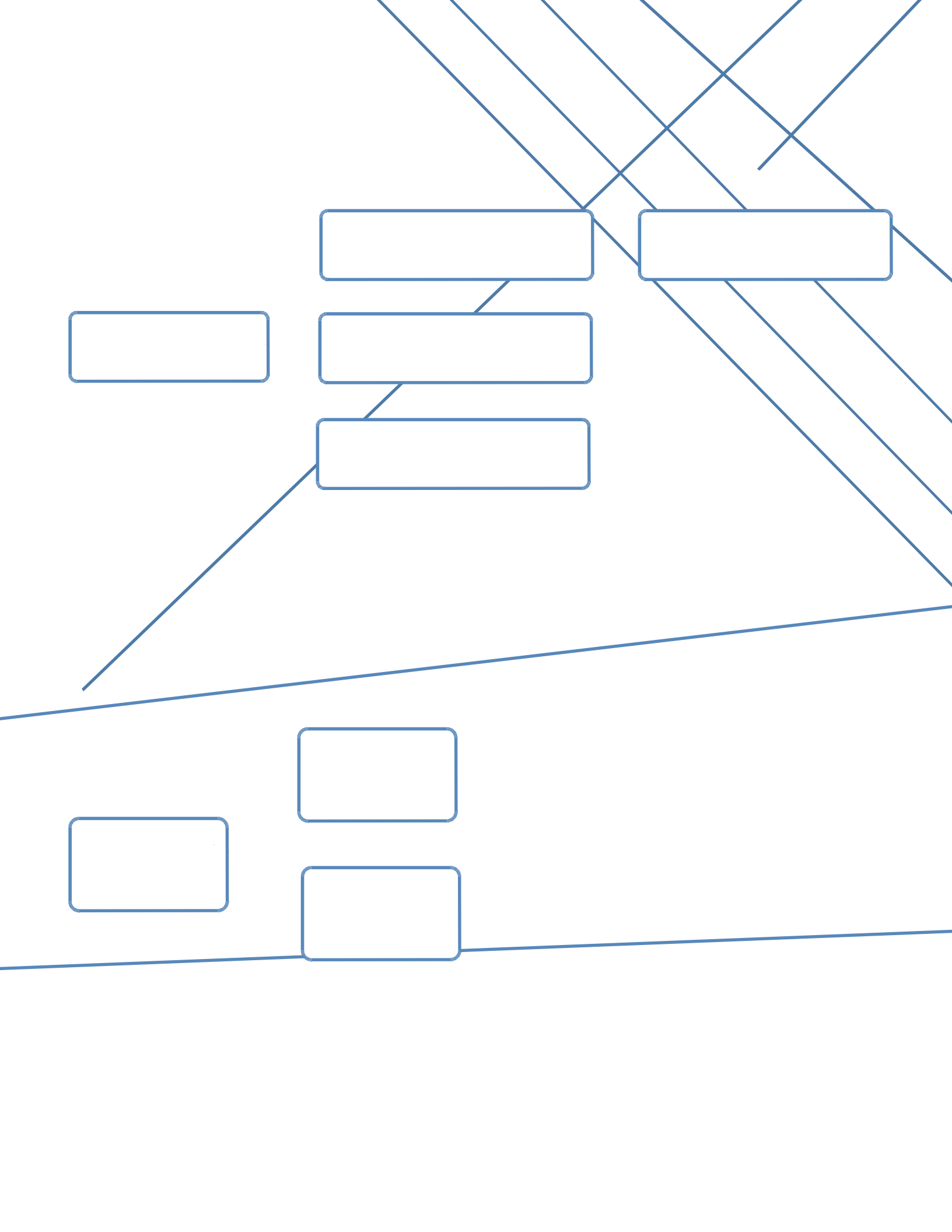
3. Task Decomposition Diagram

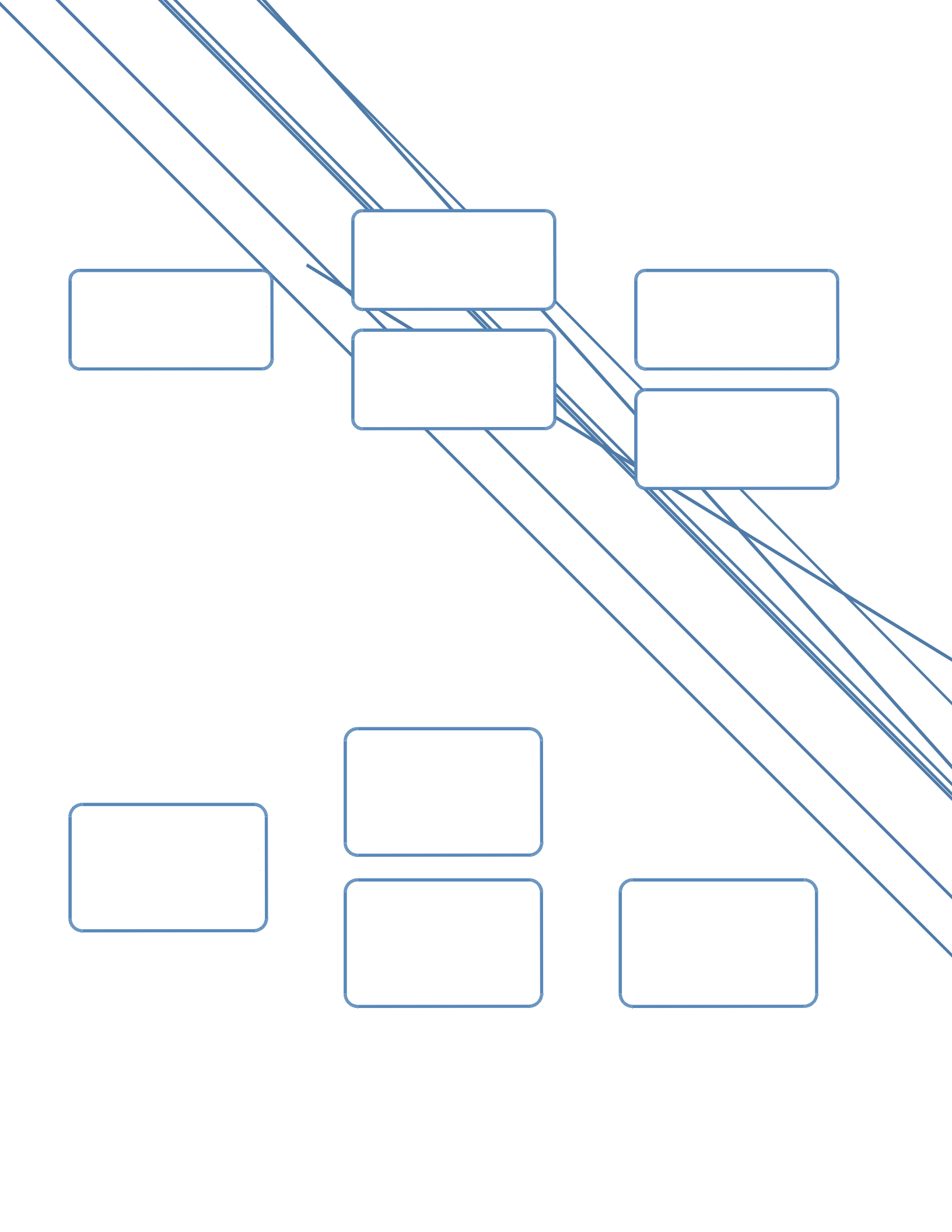












4. Relational Schema Diagram
User

<u>Username</u>	Password
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Administrator

Username

Regular_User

<u>Username</u>	Address	Name	Email_Id	DOB	Permanent_Address	Gender	Contact_No
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Student

<u>Username</u>	Student_Id	Major	Degree
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Education_History

<u>Username</u>	<u>Year_Of_Grad</u>	<u>Name_Of_School</u>	Major	Degree	GPA
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Tutor

Username

Department

<u>Dept_Id</u>	Name
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Faculty

<u>Username</u>	Instructor_Id	Position	Dept_Id
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Research_Interests

<u>Username</u>	<u>Interest</u>
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Course

Title

Code

<u>Title</u>	<u>Code</u>
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Section

<u>CRN</u>	<u>Term</u>	<u>Letter</u>	Location	Day	Time	Instructor_Username	Title
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Applied_To_Tutor_For

<u>Username</u>	<u>Title</u>
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Tutors_For

<u>Username</u>	<u>Title</u>
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Logs_Visit

<u>Student</u>	<u>Tutor</u>	<u>CRN</u>	<u>DateTime</u>
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			<u>e</u>
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Registers

<u>Username</u>	<u>CRN</u>	Grade	Grade_Mod e
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Department_Offers_Course

<u>Dept_Id</u>	<u>Title</u>
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5. Create Table statements

CREATE TABLE User

(Username VARCHAR(16) NOT NULL,
Password VARCHAR(16) NOT NULL,
PRIMARY KEY (Username));

CREATE TABLE Administrator

(Username VARCHAR(16) NOT NULL,
PRIMARY KEY (Username)
FOREIGN KEY (Username) REFERENCES User(Username),
ON DELETE CASCADE ON UPDATE CASCADE);

CREATE TABLE Regular_User

(Username VARCHAR(16) NOT NULL,
Address VARCHAR(30) NOT NULL,
Name VARCHAR(20) NOT NULL,
Email_Id VARCHAR(30) NOT NULL,
DOB DATE NOT NULL,
Permanent_Address VARCHAR(30) NOT NULL,
Gender CHAR(1) NOT NULL,
Contact_No INT NOT NULL,
PRIMARY KEY (Username),
UNIQUE (Email_Id),
FOREIGN KEY (Username) REFERENCES User(Username),
ON DELETE CASCADE ON UPDATE CASCADE);

CREATE TABLE Student

(Username VARCHAR(16) NOT NULL,
Student_Id INT NOT NULL AUTO_INCREMENT,
Major VARCHAR(33) NOT NULL,
Degree VARCHAR(4) NOT NULL,
PRIMARY KEY (Username),
UNIQUE (Student_Id),
FOREIGN KEY (Username) REFERENCES Regular_User(Username),
ON DELETE CASCADE ON UPDATE CASCADE);

```
CREATE TABLE Tutor
  (Username VARCHAR(16) NOT NULL,
  PRIMARY KEY (Username),
  FOREIGN KEY (Username) REFERENCES Student(Username),
  ON DELETE CASCADE ON UPDATE CASCADE);
```

```
CREATE TABLE Education_History
  (Username VARCHAR(16) NOT NULL,
  Year_Of_Grad INT NOT NULL,
  Name_Of_School VARCHAR(40) NOT NULL,
  Major VARCHAR(33) NOT NULL,
  Degree VARCHAR(4) NOT NULL,
  GPA DEC(2,1) NOT NULL,
  PRIMARY KEY (Username, Year_Of_Grad, Name_Of_School),
  FOREIGN KEY (Username) REFERENCES Student(Username),
  ON DELETE CASCADE ON UPDATE CASCADE);
```

```
CREATE TABLE Department
  (Dept_Id INT NOT NULL AUTO_INCREMENT,
  Name VARCHAR(33) NOT NULL,
  PRIMARY KEY (Dept_Id));
```

```
CREATE TABLE Faculty
  (Username VARCHAR(16) NOT NULL,
  Instructor_Id INT NOT NULL AUTO_INCREMENT,
  Position VARCHAR(19) NOT NULL,
  Dept_Id INT NOT NULL,
  PRIMARY KEY (Username),
  UNIQUE (Instructor_Id),
  FOREIGN KEY (Username) REFERENCES Regular_User(Username),
  ON DELETE CASCADE ON UPDATE CASCADE,
  FOREIGN KEY (Dept_Id) REFERENCES Department(Dept_Id),
  ON DELETE CASCADE ON UPDATE CASCADE);
```

```
CREATE TABLE Research_Interests
  (Username VARCHAR(16) NOT NULL,
  Interest VARCHAR(20) NOT NULL,
  PRIMARY KEY (Username, Interest),
  FOREIGN KEY (Username) REFERENCES Faculty(Username),
  ON DELETE CASCADE ON UPDATE CASCADE);
```

```
CREATE TABLE Course
  (Title VARCHAR(30) NOT NULL,
  PRIMARY KEY (Title));
```

```
CREATE TABLE CCode
    (Title VARCHAR(30) NOT NULL,
     Code VARCHAR(9) NOT NULL,
 PRIMARY KEY (Title, Code),
 FOREIGN KEY (Title) REFERENCES Course (Title),
  ON DELETE CASCADE ON UPDATE CASCADE);
```

```
CREATE TABLE Section
    (CRN INT NOT NULL AUTO_INCREMENT,
     Letter CHAR(1) NOT NULL,
     Term VARCHAR(6) NOT NULL,
     Building CHAR(4) NOTL NULL,
     Location VARCHAR(9) NOT NULL,
     Time VARCHAR(19) NOT NULL,
     Instructor_Username VARCHAR(16) NOT NULL,
     Title VARCHAR(30) NOT NULL,
 PRIMARY KEY (CRN),
 FOREIGN KEY (Instructor_Username) REFERENCES Faculty (Username),
  ON DELETE CASCADE ON UPDATE CASCADE);
 FOREIGN KEY (Title) REFERENCES Course (Title),
  ON DELETE CASCADE ON UPDATE CASCADE);
```

```
CREATE TABLE Applied_To_Tutor_For
    (Username VARCHAR(16) NOT NULL,
     Title VARCHAR(30) NOT NULL,
 PRIMARY KEY (Username, Title),
 FOREIGN KEY (Username) REFERENCES Student (Username),
  ON DELETE CASCADE ON UPDATE CASCADE,
 FOREIGN KEY (Title) REFERENCES Course (Title),
  ON DELETE CASCADE ON UPDATE CASCADE);
```

```
CREATE TABLE Logs_Visit
    (Tutor VARCHAR(16) NOT NULL,
     Student VARCHAR(16) NOT NULL,
     CRN INT NOT NULL,
     DateTime TIMESTAMP NOT NULL,
 PRIMARY KEY (Student, Tutor, CRN, DateTime),
 FOREIGN KEY (Student) REFERENCES Student (Username),
  ON DELETE CASCADE ON UPDATE CASCADE,
 FOREIGN KEY (Tutor) REFERENCES Tutor (Username),
  ON DELETE CASCADE ON UPDATE CASCADE,
 FOREIGN KEY (CRN) REFERENCES Section (CRN),
  ON DELETE CASCADE ON UPDATE CASCADE);
```

```
CREATE TABLE Tutors_For
  (Username VARCHAR(16) NOT NULL,
   Title     VARCHAR(30) NOT NULL,
 PRIMARY KEY (Username, Title),
 FOREIGN KEY (Username) REFERENCES Tutor(Username),
  ON DELETE CASCADE ON UPDATE CASCADE,
 FOREIGN KEY (Title) REFERENCES Course(Title),
  ON DELETE CASCADE ON UPDATE CASCADE);
```

```
CREATE TABLE Registers
  (Username VARCHAR(16) NOT NULL,
   Grade     CHAR(1),
  Grade_Mode VARCHAR(10) NOT NULL,
   CRN       INT NOT NULL,
 PRIMARY KEY (Username, CRN),
 FOREIGN KEY (Username) REFERENCES Student(Username),
  ON DELETE CASCADE ON UPDATE CASCADE,
 FOREIGN KEY (CRN) REFERENCES Section(CRN),
  ON DELETE CASCADE ON UPDATE CASCADE);
```

```
CREATE TABLE Department_Offers_Course
  (Dept_Id INT NOT NULL,
   Title    VARCHAR(30) NOT NULL,
 PRIMARY KEY (Dept_Id, Title, Code),
 FOREIGN KEY (Dept_Id) REFERENCES Department(Dept_Id),
  ON DELETE CASCADE ON UPDATE CASCADE,
 FOREIGN KEY (Title, Code) REFERENCES CCode(Title, Code),
  ON DELETE CASCADE ON UPDATE CASCADE);
```