System Analysis

SCHOOL DATABASE

Group Members

1. SENG CHETRA
2. PUN MENGLY
3. PHAT CHETRA
4. TRY SORTA

INTRODUCTION

So far, we've only looked at all the important aspects needed to build our database. With our system analysis, we were able to virtualize and fully understand what our database look like and how it should be. Our team's next mission is to make our system analysis a reality. We'll starting by creating tables for our database. Then we'll include all the essential constraints to create a relational database. Lastly, our team will insert our tested data into the database in order to examine our system.

CREATING TABLES

We'll begin by creating a database called **school_management_system** using a simple create query:

```
CREATE DATABASE school_management_system;
```

After our database has been created. We're ready to add more tables into it. As a reminder, we had 9 tables that should be included inside our database. We'll start by creating them one at time using separated query based on our system analysis.

1. Creating **parents** table:
```
CREATE TABLE parents(
        parent_id INT NOT NULL IDENTITY(1000001, 1),
        father_name VARCHAR(25),
        mother_name VARCHAR(25),
        parent_phone VARCHAR(10),
        parent_address VARCHAR(100)

);
```

2. Creating **teachers** table:
```
CREATE TABLE teachers(
        teach_id INT NOT NULL IDENTITY(1000001, 1),
        teach_name VARCHAR(25) NOT NULL,
        teach_gender CHAR(1),
        teach_bd DATE NOT NULL,
        teach_phone VARCHAR(10) NOT NULL,
        teach_address VARCHAR(100),
        teach_status BIT NOT NULL
);
```

3. Creating **enrollments** table:
```
CREATE TABLE enrollments(
        enroll_id INT NOT NULL IDENTITY(1, 1),
        enroll_date DATETIME NOT NULL,
        stu_id INT NOT NULL,
        course_id INT NOT NULL
);
```

4. Creating **students** table:
```sql
CREATE TABLE students(
        stu_id INT NOT NULL IDENTITY(1000001, 1),
        stu_name VARCHAR(25) NOT NULL,
        stu_gender CHAR NULL,
        stu_bd DATE NOT NULL,
        stu_phone VARCHAR(10),
        stu_address VARCHAR(100),
        stu_class CHAR(4) NOT NULL,
        stu_year SMALLINT NOT NULL,
        stu_status BIT NOT NULL,
        parent_id INT NOT NULL);
```

5. Creating **courses** table:
```sql
CREATE TABLE courses(
        course_id INT NOT NULL IDENTITY(1, 1),
        course_name VARCHAR(25) NOT NULL,
        course_dur TINYINT NOT NULL,
        course_des VARCHAR(100)
);
```

6. Creating **subjects** table:
```sql
CREATE TABLE subjects(
        sub_id INT NOT NULL IDENTITY(1, 1),
        sub_name VARCHAR(25) NOT NULL,
        sub_credit TINYINT NOT NULL,
        sub_startdate DATE NOT NULL,
        sub_enddate DATE NOT NULL,
        course_id INT NOT NULL
);
```

7. Creating **attendances** table:
```sql
CREATE TABLE attendances(
        att_id INT NOT NULL IDENTITY(1, 1),
        att_date DATETIME NOT NULL,
        att_status BIT NOT NULL,
        att_remark VARCHAR(25),
        stu_id INT NOT NULL);
```

8. Creating **grades** table:
```sql
CREATE TABLE grades(
        grade_id INT NOT NULL IDENTITY(1, 1),
        grade_score TINYINT NOT NULL,
        grade_year SMALLINT NOT NULL,
        grade_semester TINYINT NOT NULL,
        sub_id INT NOT NULL
);
```

9. Creating **instructors** table:
```sql
CREATE TABLE instructors(
        instruc_id INT NOT NULL IDENTITY(1, 1),
        sub_id INT NOT NULL,
        teach_id INT NOT NULL
);
```

ADDING CONTRAINTS

Up to this point, we've just created the necessary tables for our database, but we haven't added any constraints to any column in the table. We believe it's better to add constraints in a separate part for better organization and readability. Our goal is to deliver a clear and effective message in order to avoid and save the readers from all kind of confusions and misunderstandings. That's the reason why we decided to add constraints for each table separately in `ALTER TABLE` instead of adding them at the time the tables were created, and we hope this will help readers understand as much as we want it to be.

1. ## DEFINING PRIMARY KEYS

We'll be adding index to our primary key constraints in order to improve our database speed when searching or retrieving data and to save up space, we'll add them at the same in a single `ALTER TABLE`.

- Adding primary key and index for **students** table:
```
ALTER TABLE students WITH NOCHECK
ADD CONSTRAINT PK_students PRIMARY KEY CLUSTERED (stu_id);
```

- Adding primary key and index for **attendances** table:
```
ALTER TABLE attendances WITH NOCHECK
ADD CONSTRAINT PK_attendances PRIMARY KEY CLUSTERED (att_id);
```

- Adding primary key and index for **courses** table:
```
ALTER TABLE courses WITH NOCHECK
ADD CONSTRAINT PK_courses PRIMARY KEY CLUSTERED (course_id);
```

- Adding primary key and index for **enrollments** table:
```
ALTER TABLE enrollments WITH NOCHECK
ADD CONSTRAINT PK_enrollments PRIMARY KEY CLUSTERED (enroll_id);
```

- Adding primary key and index for **grades** table:
```
ALTER TABLE grades WITH NOCHECK
ADD CONSTRAINT PK_grades PRIMARY KEY CLUSTERED (grade_id);
```

- Adding primary key and index for **instructors** table:
```
ALTER TABLE instructors WITH NOCHECK
ADD CONSTRAINT PK_instructors PRIMARY KEY CLUSTERED (instruc_id);
```

- Adding primary key and index for **parents** table:
```
ALTER TABLE parents WITH NOCHECK
ADD CONSTRAINT PK_parents PRIMARY KEY CLUSTERED (parent_id);
```

- Adding primary key and index for **subjects** table:
```
ALTER TABLE subjects WITH NOCHECK
ADD CONSTRAINT PK_subjects PRIMARY KEY CLUSTERED (sub_id);
```

- Adding primary key and index for **teachers** table:
```
ALTER TABLE teachers WITH NOCHECK
ADD CONSTRAINT PK_teachers PRIMARY KEY CLUSTERED (teach_id);
```

2. DEFINING FOREIGN KEYS

Just like we did when we added primary keys to our tables, we'll be adding non-clustered index in a single query.

- Adding foreign key and index to **students** table:

```sql
ALTER TABLE students
ADD CONSTRAINT FK_students_parents FOREIGN KEY (parent_id)
        REFERENCES parents (parent_id) ON DELETE NO ACTION;
CREATE NONCLUSTERED INDEX IX_students_parent_id
ON students (parent_id);
```

- Adding foreign key and index to **attendances** table:

```sql
ALTER TABLE attendances
ADD CONSTRAINT FK_attendances_students FOREIGN KEY (stu_id)
        REFERENCES students (stu_id) ON DELETE NO ACTION;
CREATE NONCLUSTERED INDEX IX_attendances_stu_id
ON attendances (stu_id);
```

- Adding foreign key and index to **enrollments** table:

```sql
ALTER TABLE enrollments
ADD CONSTRAINT FK_enrollments_students FOREIGN KEY (stu_id)
                REFERENCES students (stu_id) ON DELETE NO ACTION,
        CONSTRAINT FK_enrollments_courses FOREIGN KEY (course_id)
                REFERENCES courses (course_id) ON DELETE NO ACTION;
CREATE NONCLUSTERED INDEX IX_enrollments_sub_id_course_id
ON enrollments (stu_id, course_id);
```

- Adding foreign key and index to **subjects** table:

```sql
ALTER TABLE subjects
ADD CONSTRAINT FK_subjects_courses FOREIGN KEY (course_id)
        REFERENCES courses (course_id) ON DELETE NO ACTION;
CREATE NONCLUSTERED INDEX IX_subjects_course_id
ON subjects (course_id);
```

- Adding foreign key and index to **grades** table:

```sql
ALTER TABLE grades
ADD CONSTRAINT FK_grades_subjects FOREIGN KEY (sub_id)
        REFERENCES subjects (sub_id) ON DELETE NO ACTION;
CREATE NONCLUSTERED INDEX IX_grade_sub_id
ON grades (sub_id);
```

- Adding foreign key and index to **instructors** table:

```sql
ALTER TABLE instructors
ADD CONSTRAINT FK_instructors_subjects FOREIGN KEY (sub_id)
                REFERENCES subjects (sub_id) ON DELETE NO ACTION,
        CONSTRAINT FK_instructors_teachers FOREIGN KEY (teach_id)
                REFERENCES teachers (teach_id) ON DELETE NO ACTION;
CREATE NONCLUSTERED INDEX IX_instructors_sub_id_teach_id
ON instructors (sub_id, teach_id);
```

INSERTING DATA

In system analysis, we created some data for testing. For this part, we'll be adding them in our tables with each table containing 20 rows of data. Because adding all the insert queries in one place takes a lot of space and looks complicated. To improve readability, our team thinks it's best for them to stay in separate pages. We'll add those queries to the appendix and includes the hyperlinks to each page to make it easy for reader to follow through and at the same time, make things look cleaned and organized.

1. Inserting data into **courses** table
2. Inserting data into **parents** table
3. Inserting data into **students** table
4. Inserting data into **attendances** table
5. Inserting data into **enrollments** table
6. Inserting data into **subjects** table
7. Inserting data into **grades** table
8. Inserting data into **teachers** table
9. Inserting data into **instructors** table

CONCLUSION

In summary, we've created our database called **school_management_system.** We also added primary key and foreign key constraints as well as inserting some data into each table. We've built everything from scratch and now what's left is just testing. Our team have put all of our best efforts to optimized our database as much as possible.

However, implementing our database isn't the end of the journey, many features still need to be added in the future to extend its capabilities. There're always rooms for improvements, and there're always rooms for optimizations in our database.

Appendix

```sql
INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Information Technology', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Mathematic', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('English Literature', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Khmer Literature', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Physics', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('International Relation', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Tourism', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Business', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Management', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Chemistry', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Biology', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Environment Science', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Sociology', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Psychology', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Accounting', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Linguistics', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Information Engineering', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Philosophy', 4, NULL);

INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Geography', 4, NULL);
```

```sql
INSERT INTO courses(course_name, course_dur, course_des)
VALUES ('Photography', 4, NULL);
```

```sql
INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Chan Sopheak', 'So Lina', '0979869751', 'Phnom Penh');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Sorn Dara', 'Heng Dalin', '098964512', 'Kampot');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Toch Vannut', 'Sok Sreynit', '0978732324', 'Kampong Cham');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Ly Mengleang', 'Heng Sevmei', '098786898', 'Phnom Penh');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Eng Davith', 'Soth Kaknika', '098246679', 'Phnom Penh');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Som Narith', 'Van Dina', '086836497', 'Phnom Penh');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Vuth Oudom', 'Chan Sreyneang', '0976828690', 'Phnom Penh');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Vann Din', 'Chhang Lyly', '0972342423', 'Kampot');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Chhun Davit', 'Heng Reaksmey', '087123741', 'Kampong Thom');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Hort Ratana', 'Ear Hengly', '083479713', 'Kampong Cham');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Lun Kimheng', 'Lay Dary', '012372342', 'Phnom Penh');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Kan Chetra', 'Sim Sina', '092414144', 'Phnom Penh');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Choun Visal', 'Srang Lika', '098213445', 'Phnom Penh');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Seng Vibol', 'Heng Menghorn', '099761334', 'Kampong Cham');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Try Kimseng', 'Ly Yanet', '012243432', 'Phnom Penh');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Hun Davin', 'Si Sreytoch', '098348934', 'Phnom Penh');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Van Henglong', 'Sreang Sreylin', '095634223', 'Phnom Penh');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('An Vandet', 'Leng Sinat', '076435623', 'Phnom Penh');

INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Tha Darith', 'Ly Kunthea', '0971343134', 'Phnom Penh');
```

```sql
INSERT INTO parents(father_name, mother_name, parent_phone, parent_address)
VALUES ('Sorn Vannak', 'Pich Monita', '099112345', 'Phnom Penh');
```

```sql
INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Bo Phanit', 'M', '1999-01-09', '097123456', 'Phnom Penh', 'B107', 2, 1,
1000006);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Pal Bora', 'M', '2000-02-08', '070133456', 'Battambang', 'B107', 2, 1,
1000010);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Nget Sayha', 'M', '2001-03-07', '097143456', 'Phnom Penh', 'B107', 2, 1,
1000005);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Mut Tola', 'M', '2000-04-06', '077153456', 'Phnom Penh', 'B107', 2, 1,
1000004);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Srey Lin', 'F', '2000-05-05', '097163456', 'Takeo', 'B107', 2, 1,
1000001);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Ma Brosa', 'F', '2000-06-04', '092173456', 'Phnom Penh', 'B107', 2, 1,
1000020);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Reach Bot', 'M', '2000-07-03', '097183456', 'Battambang', 'B107', 2, 1,
1000002);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Kao Kanha', 'F', '2000-08-27', '012193456', 'Phnom Penh', 'B107', 2, 1,
1000003);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('So Polin', 'M', '2000-09-01', '088103456', 'Phnom Penh', 'B107', 2, 1,
1000015);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('So Visal', 'M', '2000-10-11', '097123416', 'Battambang', 'B107', 2, 1,
1000011);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Meas Kakda', 'M', '1998-11-20', '097123426', 'Phnom Penh', 'B107', 2, 1,
1000014);
```

```sql
INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Sin Sophea', 'F', '2000-12-12', '016123436', 'Phnom Penh', 'B107', 2, 1,
1000013);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Ly Ta', 'F', '2001-01-01', '097123446', 'Phnom Penh', 'B107', 2, 1,
1000012);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Seam Sothy', 'M', '2001-02-02', '093123466', 'Phnom Penh', 'B107', 2, 1,
1000018);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Thean Long', 'M', '2001-03-03', '097123476', 'Takeo', 'B107', 2, 1,
1000009);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Mao Sola', 'M', '2001-04-14', '010123486', 'Phnom Penh', 'B107', 2, 1,
1000017);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Vi Lady', 'F', '2001-05-05', '097123496', 'Phnom Penh', 'B107', 2, 1,
1000007);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Sen Mesa', 'M', '2001-07-18', '097123406', 'Battambang', 'B107', 2, 1,
1000016);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Ma Sudan', 'F', '2001-04-14', '096123457', 'Phnom Penh', 'B107', 2, 1,
1000008);

INSERT INTO students(stu_name, stu_gender, stu_bd, stu_phone, stu_address,
stu_class, stu_year, stu_status, parent_id)
VALUES ('Nhom China', 'M', '2001-05-24', '097123458', 'Phnom Penh', 'B107', 2, 1,
1000019);
```

```sql
INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, NULL, 1000001);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, NULL, 1000002);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, NULL, 1000003);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, NULL, 1000004);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 0, 'Permission', 1000005);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, NULL, 1000006);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 0, NULL, 1000007);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 0, NULL, 1000008);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, NULL, 1000009);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, NULL, 1000010);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, NULL, 1000011);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, NULL, 1000012);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, NULL, 1000013);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 0, 'Permission', 1000014);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, NULL, 1000015);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, NULL, 1000016);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, NULL, 1000017);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, NULL, 1000018);

INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, 'Late', 1000019);
```

```sql
INSERT INTO attendances(att_date, att_status, att_remark, stu_id)
VALUES ('2020-12-24 17:00:00', 1, 'Late', 1000020);
```

```sql
INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-09-25', 1, 1000001);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-09-26', 1, 1000002);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-09-25', 1, 1000003);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-09-26', 1, 1000004);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-09-28', 1, 1000005);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-09-28', 1, 1000006);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-09-28', 1, 1000007);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-10-01', 1, 1000008);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-10-03', 1, 1000009);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-10-06', 1, 1000010);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-10-06', 1, 1000011);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-10-07', 1, 1000012);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-10-10', 1, 1000013);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-10-12', 1, 1000014);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-10-13', 1, 1000015);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-10-13', 1, 1000016);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-10-17', 1, 1000017);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-10-18', 1, 1000018);

INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-10-25', 1, 1000019);
```

```sql
INSERT INTO enrollments(enroll_date, course_id, stu_id)
VALUES ('2019-11-01', 1, 1000020);
```

```sql
INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('C Programming 1', 25, '2019-11-06', '2020-03-05', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('Fundamental Computer 1', 25, '2019-11-09', '2020-03-04', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('Mathematics 1', 25, '2019-11-07', '2020-03-05', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('Electronic 1', 25, '2019-11-07', '2020-03-07', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('21st Century', 25, '2019-11-06', '2020-03-04', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('English for Computer 1', 25, '2019-11-08', '2020-03-08', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('C Programming 2', 25, '2020-07-28', '2020-11-03', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('Fundamental Computer 2', 25, '2020-07-27', '2020-11-02', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('Electronic 2', 25, '2020-07-30', '2020-11-05', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('Khmer civilization', 25, '2020-07-29', '2020-11-04', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('History', 25, '2020-07-27', '2020-11-02', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('Mathematic 2', 25, '2020-07-28', '2020-11-03', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('English 2', 25, '2020-07-27', '2020-11-06', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('Database System 1', 25, '2020-12-24', '2021-04-22', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('C++ Programming 1', 25, '2020-12-24', '2021-04-22', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('Computer Architecture 1', 25, '2020-12-21', '2021-04-19', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('Data structure 1', 25, '2020-12-23', '2021-04-21', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('Data communication 1', 25, '2020-12-21', '2021-04-19', 1);

INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('English 3', 25, '2020-12-22', '2021-04-20', 1);
```

```sql
INSERT INTO subjects(sub_name, sub_credit, sub_startdate, sub_enddate, course_id)
VALUES ('Statistic Math 1', 25, '2019-11-06', '2020-03-05', 2);
```

```
INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (90, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (73, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (92, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (86, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (95, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (81, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (82, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (74, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (81, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (96, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (88, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (90, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (87, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (70, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (90, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (87, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (92, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (73, 2, 1, 14);

INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (85, 2, 1, 14);
```

```sql
INSERT INTO grades(grade_score, grade_year, grade_semester, sub_id)
VALUES (90, 2, 1, 14);
```

```sql
INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Hun Sroy', 'M', '1988-01-28', '010251699', 'Phnom Penh', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Kan Leang', 'M', '1979-02-19', '016125899', 'Kampong Cham', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('So Pheak', 'M', '1995-03-13', '092888799', 'Phnom Penh', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Thea Srun', 'M', '1978-04-18', '08828899', 'Battambang', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Vy Thida', 'F', '1981-05-06', '011231892', 'Banteay Meanchey', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Dy Mangky', 'M', '1988-06-09', '012888859', 'Phnom Penh', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Chan Dara', 'M', '1985-02-12', '012356865', 'Phnom Penh', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Chhom Davit', 'M', '1987-12-30', '015522525', 'Phnom Penh', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Thy Danuth', 'M', '1991-08-12', '012250654', 'Prey Veng', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Kong Lida', 'F', '1973-05-01', '015580425', 'Phnom Penh', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Long Rathana', 'M', '1899-02-20', '011522501', 'Phnom Penh', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Lin Darith', 'M', '1990-02-20', '010020302', 'Phnom Penh', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Kin Dina', 'F', '1994-04-30', '098474521', 'Phnom Penh', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Lin Naroth', 'M', '1994-12-06', '098461521', 'Phnom Penh', 1);
```

```sql
INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Yin Vanuth', 'M', '1989-04-04', '012580656', 'Kampong Cham', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Dy Rotha', 'F', '1991-02-06', '093543524', 'Phnom Penh', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Yuth Chivon', 'M', '1978-08-25', '012823871', 'Takav', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Hong Vitou', 'M', '1987-12-30', '016557854', 'Battambang', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Chea Davin', 'M', '1977-04-11', '012542487', 'Phnom Penh', 1);

INSERT INTO teachers(teach_name, teach_gender, teach_bd, teach_phone,
teach_address, teach_status)
VALUES ('Chak Riya', 'F', '1992-12-05', '092518792', 'Phnom Penh', 1);
```

```sql
INSERT INTO instructors(teach_id, sub_id)
VALUES (1000006, 14);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000007, 14);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000008, 14);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000003, 15);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000002, 15);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000004, 16);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000005, 16);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000001, 15);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000017, 17);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000018, 18);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000019, 18);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000015, 17);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000014, 19);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000013, 19);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000016, 17);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000009, 16);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000020, 18);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000012, 19);

INSERT INTO instructors(teach_id, sub_id)
VALUES (1000010, 1);
```

```sql
INSERT INTO instructors(teach_id, sub_id)
VALUES (1000011, 1);
```