

Министерство образования Республики Беларусь
Учреждение образования
БЕЛОРУССКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ
ИНФОРМАТИКИ И РАДИОЭЛЕКТРОНИКИ

Факультет компьютерных систем и сетей
Кафедра программного обеспечения информационных технологий
Дисциплина: Базы данных (БД)

ОТЧЕТ
по лабораторной работе №5

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Проверил:

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Минск 2021

Настройка прав доступа

	Администратор	Преподаватель	Обучающийся	Гость
edit_history	CRUD	CR	CR	-
news	CRUD	R	R	R
answer	CRUD	R	CR	-
task	CRUD	CRUD	R	-
message	CRUD	CRUD	CRUD	-
user	CRUD	RU	RU	C
user_type	CRUD	R	R	-
comment	CRUD	CRUD	CRUD	-
gradebook	CRUD	CRUD	R	-
m2m_user_group	CRUD	R	R	-
class	CRUD	R	R	-
group	CRUD	R	R	-
m2m_class_material	CRUD	CRUD	R	-
schedule	CRUD	RU	R	-
course	CRUD	R	R	R
material	CRUD	CRUD	R	-
place	CRUD	R	R	-
course_level	CRUD	R	R	R
course_name	CRUD	R	R	R

SQL-код настройки прав доступа

-- Remove roles if they already exist:

```
DROP USER IF EXISTS 'admin'@'localhost';
DROP USER IF EXISTS 'teacher'@'localhost';
DROP USER IF EXISTS 'learner'@'localhost';
DROP USER IF EXISTS 'guest'@'localhost';
```

-- Creating roles:

```
CREATE USER 'admin'@'localhost' IDENTIFIED BY 'admin';
CREATE USER 'teacher'@'localhost' IDENTIFIED BY 'teacher';
CREATE USER 'learner'@'localhost' IDENTIFIED BY 'learner';
CREATE USER 'guest'@'localhost' IDENTIFIED BY 'guest';
```

-- Administrator role permissions:

```
GRANT ALL PRIVILEGES ON * TO 'admin'@'localhost';
```

-- Teacher role permissions:

```
GRANT USER SELECT ON `user_type` TO 'teacher'@'localhost';
```

```

GRANT USER INSERT, SELECT ON `edit_history` TO 'teacher'@'localhost';
GRANT USER SELECT ON `news` TO 'teacher'@'localhost';
GRANT USER SELECT ON `answer` TO 'teacher'@'localhost';
GRANT USER INSERT, SELECT, UPDATE, DELETE ON `comment` TO 'teacher'@'localhost';
GRANT USER INSERT, SELECT, UPDATE, DELETE ON `task` TO 'teacher'@'localhost';
GRANT USER INSERT, SELECT, UPDATE, DELETE ON `message` TO 'teacher'@'localhost';
GRANT USER SELECT, UPDATE ON `user` TO 'teacher'@'localhost';
GRANT USER INSERT, SELECT, UPDATE, DELETE ON `gradebook` TO 'teacher'@'localhost';
GRANT USER SELECT ON `m2m_user_group` TO 'teacher'@'localhost';
GRANT USER SELECT ON `group` TO 'teacher'@'localhost';
GRANT USER SELECT ON `class` TO 'teacher'@'localhost';
GRANT USER SELECT ON `course` TO 'teacher'@'localhost';
GRANT USER SELECT ON `course_level` TO 'teacher'@'localhost';
GRANT USER SELECT ON `course_name` TO 'teacher'@'localhost';
GRANT USER INSERT, SELECT, UPDATE, DELETE ON `m2m_class_material` TO 'teacher'@'localhost';
GRANT USER INSERT, SELECT, UPDATE, DELETE ON `material` TO 'teacher'@'localhost';
GRANT USER SELECT, UPDATE(`sch_file_path`) ON `schedule` TO 'teacher'@'localhost';
GRANT USER SELECT ON `place` TO 'teacher'@'localhost';

```

-- User role permissions:

```

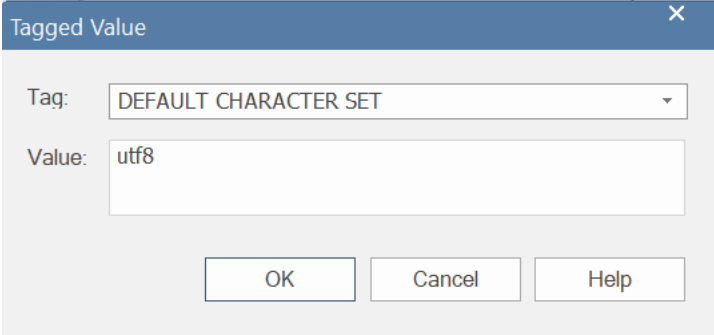
GRANT USER SELECT ON `user_type` TO 'learner'@'localhost';
GRANT USER INSERT, SELECT ON `edit_history` TO 'learner'@'localhost';
GRANT USER SELECT ON `news` TO 'learner'@'localhost';
GRANT USER INSERT, SELECT ON `answer` TO 'learner'@'localhost';
GRANT USER INSERT, SELECT, UPDATE, DELETE ON `comment` TO 'learner'@'localhost';
GRANT USER SELECT ON `task` TO 'learner'@'localhost';
GRANT USER INSERT, SELECT, UPDATE, DELETE ON `message` TO 'learner'@'localhost';
GRANT USER SELECT, UPDATE ON `user` TO 'learner'@'localhost';
GRANT USER SELECT ON `gradebook` TO 'learner'@'localhost';
GRANT USER SELECT ON `m2m_user_group` TO 'learner'@'localhost';
GRANT USER SELECT ON `group` TO 'learner'@'localhost';
GRANT USER SELECT ON `class` TO 'learner'@'localhost';
GRANT USER SELECT ON `course` TO 'learner'@'localhost';
GRANT USER SELECT ON `course_level` TO 'learner'@'localhost';
GRANT USER SELECT ON `course_name` TO 'learner'@'localhost';
GRANT USER SELECT ON `m2m_class_material` TO 'learner'@'localhost';

```

```
GRANT USER SELECT ON `material` TO 'learner'@'localhost';
GRANT USER SELECT ON `schedule` TO 'learner'@'localhost';
GRANT USER SELECT ON `place` TO 'learner'@'localhost';

-- Guest role permissions:
GRANT USER SELECT ON `news` TO 'guest'@'localhost';
GRANT USER INSERT ON `user` TO 'guest'@'localhost';
GRANT USER SELECT ON `course` TO 'guest'@'localhost';
GRANT USER SELECT ON `course_level` TO 'guest'@'localhost';
GRANT USER SELECT ON `course_name` TO 'guest'@'localhost';
```

Настройка кодировки



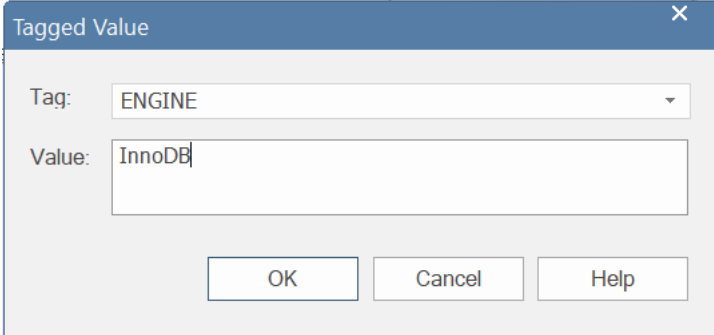
Tagged Value

Tag: DEFAULT CHARACTER SET

Value: utf8

OK Cancel Help

Настройка метода доступа



Tagged Value

Tag: ENGINE

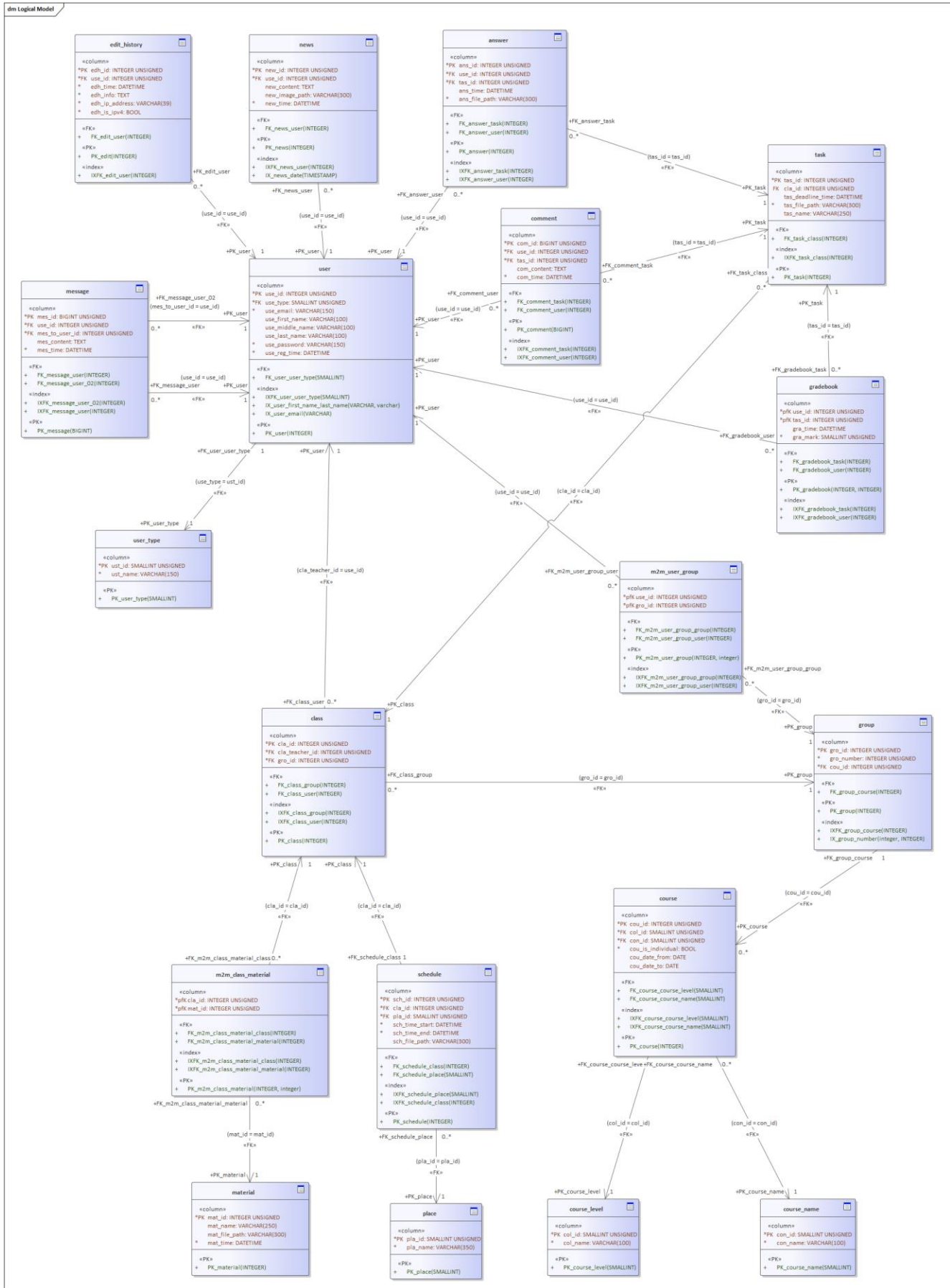
Value: InnoDB

OK Cancel Help

Добавление индексов

Все необходимые индексы были уже добавлены.

Схема базы данных



SQL-код базы данных:

```
/* ----- */
/*  Generated by Enterprise Architect Version 15.0      */
/*  Created On : 15-Apr-2021 11:37:38 PM                */
/*  DBMS       : MySql                                */
/* ----- */

SET FOREIGN_KEY_CHECKS=0
;
/* Drop Tables */

DROP TABLE IF EXISTS `answer` CASCADE
;

DROP TABLE IF EXISTS `class` CASCADE
;

DROP TABLE IF EXISTS `comment` CASCADE
;

DROP TABLE IF EXISTS `course` CASCADE
;

DROP TABLE IF EXISTS `course_level` CASCADE
;

DROP TABLE IF EXISTS `course_name` CASCADE
;

DROP TABLE IF EXISTS `edit_history` CASCADE
;

DROP TABLE IF EXISTS `gradebook` CASCADE
;

DROP TABLE IF EXISTS `group` CASCADE
;

DROP TABLE IF EXISTS `m2m_class_material` CASCADE
;

DROP TABLE IF EXISTS `m2m_user_group` CASCADE
;

DROP TABLE IF EXISTS `material` CASCADE
```

```

;

DROP TABLE IF EXISTS `message` CASCADE
;

DROP TABLE IF EXISTS `news` CASCADE
;

DROP TABLE IF EXISTS `place` CASCADE
;

DROP TABLE IF EXISTS `schedule` CASCADE
;

DROP TABLE IF EXISTS `task` CASCADE
;

DROP TABLE IF EXISTS `user` CASCADE
;

DROP TABLE IF EXISTS `user_type` CASCADE
;

/* Create Tables */

CREATE TABLE `answer`
(
    `ans_id` INT UNSIGNED NOT NULL AUTO_INCREMENT,
    `use_id` INT UNSIGNED NOT NULL,
    `tas_id` INT UNSIGNED NOT NULL,
    `ans_time` DATETIME NULL,
    `ans_file_path` VARCHAR(300) NOT NULL COMMENT 'The path to the file with the
answer',
    CONSTRAINT `PK_answer` PRIMARY KEY (`ans_id` ASC)
)
COLLATE utf8_general_ci
;

CREATE TABLE `class`
(
    `cla_id` INT UNSIGNED NOT NULL AUTO_INCREMENT,
    `cla_teacher_id` INT UNSIGNED NOT NULL,
    `gro_id` INT UNSIGNED NOT NULL,
    CONSTRAINT `PK_class` PRIMARY KEY (`cla_id` ASC)
)

```

```
)  
COLLATE utf8_general_ci
```

```
;
```

```
CREATE TABLE `comment`  
(  
    `com_id` BIGINT UNSIGNED NOT NULL AUTO_INCREMENT,  
    `use_id` INT UNSIGNED NOT NULL,  
    `tas_id` INT UNSIGNED NOT NULL,  
    `com_content` TEXT NULL,  
    `com_time` DATETIME NOT NULL,  
    CONSTRAINT `PK_comment` PRIMARY KEY (`com_id` ASC)  
)  
COLLATE utf8_general_ci
```

```
;
```

```
CREATE TABLE `course`  
(  
    `cou_id` INT UNSIGNED NOT NULL AUTO_INCREMENT,  
    `col_id` SMALLINT UNSIGNED NOT NULL,  
    `con_id` SMALLINT UNSIGNED NOT NULL,  
    `cou_is_individual` BOOL NOT NULL COMMENT 'Flag that indicates whether the co  
urse is individual or group',  
    `cou_date_from` DATE NULL,  
    `cou_date_to` DATE NULL,  
    CONSTRAINT `PK_course` PRIMARY KEY (`cou_id` ASC)  
)  
COLLATE utf8_general_ci
```

```
;
```

```
CREATE TABLE `course_level`  
(  
    `col_id` SMALLINT UNSIGNED NOT NULL,  
    `col_name` VARCHAR(100) NOT NULL,  
    CONSTRAINT `PK_course_level` PRIMARY KEY (`col_id` ASC)  
)  
COLLATE utf8_general_ci
```

```
;
```

```
CREATE TABLE `course_name`  
(
```



```

        `con_id` SMALLINT UNSIGNED NOT NULL,
        `con_name` VARCHAR(100) NOT NULL,
        CONSTRAINT `PK_course_name` PRIMARY KEY (`con_id` ASC)
    )
    COLLATE utf8_general_ci
;

CREATE TABLE `edit_history`
(
    `edh_id` INT UNSIGNED NOT NULL AUTO_INCREMENT,
    `use_id` INT UNSIGNED NOT NULL,
    `edh_time` DATETIME NOT NULL,
    `edh_info` TEXT NOT NULL COMMENT 'Change information is stored in JSON format',
    `edh_ip_address` VARCHAR(39) NOT NULL COMMENT 'It stores either an ipv4 address or an ipv6 address',
    `edh_is_ipv4` BOOL NOT NULL COMMENT 'A flag that indicates whether the address is stored in ipv4 format or in ipv6 format',
    CONSTRAINT `PK_edit` PRIMARY KEY (`edh_id` ASC)
)
    COLLATE utf8_general_ci
;

CREATE TABLE `gradebook`
(
    `use_id` INT UNSIGNED NOT NULL,
    `tas_id` INT UNSIGNED NOT NULL,
    `gra_time` DATETIME NULL,
    `gra_mark` SMALLINT UNSIGNED NOT NULL,
    CONSTRAINT `PK_gradebook` PRIMARY KEY (`use_id` ASC, `tas_id` ASC)
)
    COLLATE utf8_general_ci
;

CREATE TABLE `group`
(
    `gro_id` INT UNSIGNED NOT NULL AUTO_INCREMENT,
    `gro_number` INT UNSIGNED NOT NULL,
    `cou_id` INT UNSIGNED NOT NULL,
    CONSTRAINT `PK_group` PRIMARY KEY (`gro_id` ASC)
)
    COLLATE utf8_general_ci

```

;

```
CREATE TABLE `m2m_class_material`  
(  
    `cla_id` INT UNSIGNED NOT NULL,  
    `mat_id` INT UNSIGNED NOT NULL,  
    CONSTRAINT `PK_m2m_class_material` PRIMARY KEY (`cla_id` ASC, `mat_id` ASC)  
)  
COLLATE utf8_general_ci
```

;

```
CREATE TABLE `m2m_user_group`  
(  
    `use_id` INT UNSIGNED NOT NULL,  
    `gro_id` INT UNSIGNED NOT NULL,  
    CONSTRAINT `PK_m2m_user_group` PRIMARY KEY (`gro_id` ASC, `use_id` ASC)  
)  
COLLATE utf8_general_ci
```

;

```
CREATE TABLE `material`  
(  
    `mat_id` INT UNSIGNED NOT NULL AUTO_INCREMENT,  
    `mat_name` VARCHAR(250) NULL,  
    `mat_file_path` VARCHAR(300) NULL COMMENT 'File path with material',  
    `mat_time` DATETIME NOT NULL,  
    CONSTRAINT `PK_material` PRIMARY KEY (`mat_id` ASC)  
)  
COLLATE utf8_general_ci
```

;

```
CREATE TABLE `message`  
(  
    `mes_id` BIGINT UNSIGNED NOT NULL AUTO_INCREMENT,  
    `use_id` INT UNSIGNED NOT NULL,  
    `mes_to_user_id` INT UNSIGNED NOT NULL COMMENT 'The id of the user to whom the  
message is intended is stored here',  
    `mes_content` TEXT NULL,  
    `mes_time` DATETIME NOT NULL,  
    CONSTRAINT `PK_message` PRIMARY KEY (`mes_id` ASC)  
)
```

```
COLLATE utf8_general_ci
```

```
;
```

```
CREATE TABLE `news`
```

```
(
```

```
    `new_id` INT UNSIGNED NOT NULL AUTO_INCREMENT,
```

```
    `use_id` INT UNSIGNED NOT NULL,
```

```
    `new_content` TEXT NULL,
```

```
    `new_image_path` VARCHAR(300) NULL COMMENT 'The path to the picture',
```

```
    `new_time` DATETIME NOT NULL,
```

```
    CONSTRAINT `PK_news` PRIMARY KEY (`new_id` ASC)
```

```
)
```

```
COLLATE utf8_general_ci
```

```
;
```

```
CREATE TABLE `place`
```

```
(
```

```
    `pla_id` SMALLINT UNSIGNED NOT NULL,
```

```
    `pla_name` VARCHAR(350) NOT NULL COMMENT 'Name of the venue',
```

```
    CONSTRAINT `PK_place` PRIMARY KEY (`pla_id` ASC)
```

```
)
```

```
COLLATE utf8_general_ci
```

```
;
```

```
CREATE TABLE `schedule`
```

```
(
```

```
    `sch_id` INT UNSIGNED NOT NULL AUTO_INCREMENT,
```

```
    `cla_id` INT UNSIGNED NOT NULL,
```

```
    `pla_id` SMALLINT UNSIGNED NOT NULL,
```

```
    `sch_time_start` DATETIME NOT NULL,
```

```
    `sch_time_end` DATETIME NOT NULL,
```

```
    `sch_file_path` VARCHAR(300) NULL COMMENT 'Path to a file with additional information for the lesson',
```

```
    CONSTRAINT `PK_schedule` PRIMARY KEY (`sch_id` ASC)
```

```
)
```

```
COLLATE utf8_general_ci
```

```
;
```

```
CREATE TABLE `task`
```

```
(
```

```
    `tas_id` INT UNSIGNED NOT NULL AUTO_INCREMENT,
```

```

        `cla_id` INT UNSIGNED NULL,
        `tas_deadline_time` DATETIME NULL COMMENT 'Time until which you can send a re
sponse to the assignment',
        `tas_file_path` VARCHAR(300) NOT NULL COMMENT 'The path to the task file',
        `tas_name` VARCHAR(250) NULL,
        CONSTRAINT `PK_task` PRIMARY KEY (`tas_id` ASC)
    )
    COLLATE utf8_general_ci
;

```

```

CREATE TABLE `user`
(
    `use_id` INT UNSIGNED NOT NULL AUTO_INCREMENT,
    `use_type` SMALLINT UNSIGNED NOT NULL,
    `use_email` VARCHAR(150) NOT NULL,
    `use_first_name` VARCHAR(100) NULL,
    `use_middle_name` VARCHAR(100) NULL,
    `use_last_name` VARCHAR(100) NULL,
    `use_password` VARCHAR(150) NOT NULL,
    `use_reg_time` DATETIME NOT NULL,
    CONSTRAINT `PK_user` PRIMARY KEY (`use_id` ASC)
)
    COLLATE utf8_general_ci
;

```

```

CREATE TABLE `user_type`
(
    `ust_id` SMALLINT UNSIGNED NOT NULL AUTO_INCREMENT,
    `ust_name` VARCHAR(150) NOT NULL,
    CONSTRAINT `PK_user_type` PRIMARY KEY (`ust_id` ASC)
)
    COLLATE utf8_general_ci
;

```

/* Create Primary Keys, Indexes, Uniques, Checks */

```

ALTER TABLE `answer`
    ADD INDEX `IXFK_answer_task` (`tas_id` ASC)
;

```

```

ALTER TABLE `answer`
    ADD INDEX `IXFK_answer_user` (`use_id` ASC)
;

```

;

```
ALTER TABLE `class`  
  ADD INDEX `IXFK_class_group` (`gro_id` ASC)
```

;

```
ALTER TABLE `class`  
  ADD INDEX `IXFK_class_user` (`cla_teacher_id` ASC)
```

;

```
ALTER TABLE `comment`  
  ADD INDEX `IXFK_comment_task` (`tas_id` ASC)
```

;

```
ALTER TABLE `comment`  
  ADD INDEX `IXFK_comment_user` (`use_id` ASC)
```

;

```
ALTER TABLE `course`  
  ADD INDEX `IXFK_course_course_level` (`col_id` ASC)
```

;

```
ALTER TABLE `course`  
  ADD INDEX `IXFK_course_course_name` (`con_id` ASC)
```

;

```
ALTER TABLE `edit_history`  
  ADD INDEX `IXFK_edit_user` (`use_id` ASC)
```

;

```
ALTER TABLE `gradebook`  
  ADD INDEX `IXFK_gradebook_task` (`tas_id` ASC)
```

;

```
ALTER TABLE `gradebook`  
  ADD INDEX `IXFK_gradebook_user` (`use_id` ASC)
```

;

```
ALTER TABLE `group`  
  ADD INDEX `IXFK_group_course` (`cou_id` ASC)
```

;

```
ALTER TABLE `group`  
  ADD INDEX `IX_group_number` (`gro_number` ASC, `cou_id` ASC)
```

;

```
ALTER TABLE `m2m_class_material`  
  ADD INDEX `IXFK_m2m_class_material_class` (`cla_id` ASC)  
;  
  
ALTER TABLE `m2m_class_material`  
  ADD INDEX `IXFK_m2m_class_material_material` (`mat_id` ASC)  
;  
  
ALTER TABLE `m2m_user_group`  
  ADD INDEX `IXFK_m2m_user_group_group` (`gro_id` ASC)  
;  
  
ALTER TABLE `m2m_user_group`  
  ADD INDEX `IXFK_m2m_user_group_user` (`use_id` ASC)  
;  
  
ALTER TABLE `message`  
  ADD INDEX `IXFK_message_user_02` (`mes_to_user_id` ASC)  
;  
  
ALTER TABLE `message`  
  ADD INDEX `IXFK_message_user` (`use_id` ASC)  
;  
  
ALTER TABLE `news`  
  ADD INDEX `IXFK_news_user` (`use_id` ASC)  
;  
  
ALTER TABLE `news`  
  ADD INDEX `IX_news_date` (`new_time` ASC)  
;  
  
ALTER TABLE `schedule`  
  ADD INDEX `IXFK_schedule_place` (`pla_id` ASC)  
;  
  
ALTER TABLE `schedule`  
  ADD INDEX `IXFK_schedule_class` (`cla_id` ASC)  
;  
  
ALTER TABLE `task`  
  ADD INDEX `IXFK_task_class` (`cla_id` ASC)  
;
```

```
ALTER TABLE `user`  
  ADD INDEX `IXFK_user_user_type` (`use_type` ASC)  
;
```

```
ALTER TABLE `user`  
  ADD INDEX `IX_user_first_name_last_name` (`use_first_name` ASC, `use_last_name`  
ASC)  
;
```

```
ALTER TABLE `user`  
  ADD INDEX `IX_user_email` (`use_email` ASC)  
;
```

```
/* Create Foreign Key Constraints */
```

```
ALTER TABLE `answer`  
  ADD CONSTRAINT `FK_answer_task`  
    FOREIGN KEY (`tas_id`) REFERENCES `task` (`tas_id`) ON DELETE No Action ON UP  
DATE No Action  
;
```

```
ALTER TABLE `answer`  
  ADD CONSTRAINT `FK_answer_user`  
    FOREIGN KEY (`use_id`) REFERENCES `user` (`use_id`) ON DELETE No Action ON UP  
DATE No Action  
;
```

```
ALTER TABLE `class`  
  ADD CONSTRAINT `FK_class_group`  
    FOREIGN KEY (`gro_id`) REFERENCES `group` (`gro_id`) ON DELETE No Action ON U  
PDATE No Action  
;
```

```
ALTER TABLE `class`  
  ADD CONSTRAINT `FK_class_user`  
    FOREIGN KEY (`cla_teacher_id`) REFERENCES `user` (`use_id`) ON DELETE No Acti  
on ON UPDATE No Action  
;
```

```
ALTER TABLE `comment`  
  ADD CONSTRAINT `FK_comment_task`  
    FOREIGN KEY (`tas_id`) REFERENCES `task` (`tas_id`) ON DELETE No Action ON UP  
DATE No Action  
;
```

```
ALTER TABLE `comment`  
  ADD CONSTRAINT `FK_comment_user`  
    FOREIGN KEY (`use_id`) REFERENCES `user` (`use_id`) ON DELETE No Action ON UP  
DATE No Action  
;
```

```
ALTER TABLE `course`  
  ADD CONSTRAINT `FK_course_course_level`  
    FOREIGN KEY (`col_id`) REFERENCES `course_level` (`col_id`) ON DELETE No Acti  
on ON UPDATE No Action  
;
```

```
ALTER TABLE `course`  
  ADD CONSTRAINT `FK_course_course_name`  
    FOREIGN KEY (`con_id`) REFERENCES `course_name` (`con_id`) ON DELETE No Actio  
n ON UPDATE No Action  
;
```

```
ALTER TABLE `edit_history`  
  ADD CONSTRAINT `FK_edit_user`  
    FOREIGN KEY (`use_id`) REFERENCES `user` (`use_id`) ON DELETE No Action ON UP  
DATE No Action  
;
```

```
ALTER TABLE `gradebook`  
  ADD CONSTRAINT `FK_gradebook_task`  
    FOREIGN KEY (`tas_id`) REFERENCES `task` (`tas_id`) ON DELETE No Action ON UP  
DATE No Action  
;
```

```
ALTER TABLE `gradebook`  
  ADD CONSTRAINT `FK_gradebook_user`  
    FOREIGN KEY (`use_id`) REFERENCES `user` (`use_id`) ON DELETE No Action ON UP  
DATE No Action  
;
```

```
ALTER TABLE `group`  
  ADD CONSTRAINT `FK_group_course`  
    FOREIGN KEY (`cou_id`) REFERENCES `course` (`cou_id`) ON DELETE No Action ON  
UPDATE No Action  
;
```

```
ALTER TABLE `m2m_class_material`  
  ADD CONSTRAINT `FK_m2m_class_material_class`
```



```
    FOREIGN KEY (`cla_id`) REFERENCES `class` (`cla_id`) ON DELETE No Action ON U  
PDATE No Action  
;
```

```
ALTER TABLE `m2m_class_material`  
  ADD CONSTRAINT `FK_m2m_class_material_material`  
    FOREIGN KEY (`mat_id`) REFERENCES `material` (`mat_id`) ON DELETE No Action O  
N UPDATE No Action  
;
```

```
ALTER TABLE `m2m_user_group`  
  ADD CONSTRAINT `FK_m2m_user_group_group`  
    FOREIGN KEY (`gro_id`) REFERENCES `group` (`gro_id`) ON DELETE No Action ON U  
PDATE No Action  
;
```

```
ALTER TABLE `m2m_user_group`  
  ADD CONSTRAINT `FK_m2m_user_group_user`  
    FOREIGN KEY (`use_id`) REFERENCES `user` (`use_id`) ON DELETE No Action ON UP  
DATE No Action  
;
```

```
ALTER TABLE `message`  
  ADD CONSTRAINT `FK_message_user`  
    FOREIGN KEY (`use_id`) REFERENCES `user` (`use_id`) ON DELETE No Action ON UP  
DATE No Action  
;
```

```
ALTER TABLE `message`  
  ADD CONSTRAINT `FK_message_user_02`  
    FOREIGN KEY (`mes_to_user_id`) REFERENCES `user` (`use_id`) ON DELETE Restric  
t ON UPDATE Restrict  
;
```

```
ALTER TABLE `news`  
  ADD CONSTRAINT `FK_news_user`  
    FOREIGN KEY (`use_id`) REFERENCES `user` (`use_id`) ON DELETE No Action ON UP  
DATE No Action  
;
```

```
ALTER TABLE `schedule`  
  ADD CONSTRAINT `FK_schedule_class`  
    FOREIGN KEY (`cla_id`) REFERENCES `class` (`cla_id`) ON DELETE No Action ON U  
PDATE No Action  
;
```

```
ALTER TABLE `schedule`  
  ADD CONSTRAINT `FK_schedule_place`  
    FOREIGN KEY (`pla_id`) REFERENCES `place` (`pla_id`) ON DELETE No Action ON U  
PDATE No Action  
;
```

```
ALTER TABLE `task`  
  ADD CONSTRAINT `FK_task_class`  
    FOREIGN KEY (`cla_id`) REFERENCES `class` (`cla_id`) ON DELETE No Action ON U  
PDATE No Action  
;
```

```
ALTER TABLE `user`  
  ADD CONSTRAINT `FK_user_user_type`  
    FOREIGN KEY (`use_type`) REFERENCES `user_type` (`ust_id`) ON DELETE Restrict  
ON UPDATE Restrict  
;
```

```
SET FOREIGN_KEY_CHECKS=1  
;
```