CREATE DATABASE circuitplus DEFAULT CHARACTER SET utf8;

USE circuitplus;

CREATE TABLE `cp\_classification` (

`id` INT(32) UNSIGNED NOT NULL AUTO\_INCREMENT,

`classification\_id` INT(32) UNSIGNED NOT NULL,

`subclass\_id` INT(32) UNSIGNED DEFAULT 0,

`name` CHAR(36) NOT NULL,

PRIMARY KEY (`id`)

);

CREATE TABLE `cp\_circuit` (

`circuit\_id` INT(32) UNSIGNED NOT NULL AUTO\_INCREMENT,

`id` CHAR(36) NOT NULL UNIQUE,

`name` CHAR(255) NOT NULL,

`subclass\_id` INT(32) UNSIGNED NOT NULL,

`strain\_id` INT(32) UNSIGNED NOT NULL,

`input` VARCHAR(255) NULL,

`output` VARCHAR(255) NULL,

`description` TEXT NOT NULL,

`application` TEXT NULL,

`result` TEXT NULL,

`reference` TEXT NULL,

PRIMARY KEY (`circuit\_id`)

#KEY

);

CREATE TABLE `cp\_codingframe` (

`codingframe\_id` INT(32) UNSIGNED NOT NULL AUTO\_INCREMENT,

`state\_id` INT(32) UNSIGNED NOT NULL,

`input` VARCHAR(255) NULL,

`output` VARCHAR(255) NULL,

PRIMARY KEY (`codingframe\_id`)

);

CREATE TABLE `cp\_biobrick` (

`biobrick\_id` INT(32) UNSIGNED NOT NULL AUTO\_INCREMENT,

`name` CHAR(36) NOT NULL,

`dnaproperty\_id` INT(32) UNSIGNED NOT NULL,

#`expression\_id` INT(32) UNSIGNED NOT NULL,

`function` VARCHAR(255),

PRIMARY KEY (`biobrick\_id`)

);

#regulation\_type

# 0: substance -> substance

# 1: substance -> biobrick

# 2: biobrick -> substance (expression)

CREATE TABLE `cp\_regulation` (

`regulation\_id` INT(32) UNSIGNED NOT NULL AUTO\_INCREMENT,

`type` TINYINT(1) UNSIGNED NOT NULL DEFAULT 0,

`source\_id1` INT(32) UNSIGNED NOT NULL,

`source\_id2` INT(32) UNSIGNED NOT NULL,

`target\_id1` INT(32) UNSIGNED NOT NULL,

`target\_id2` INT(32) UNSIGNED NOT NULL,

`expression` INT(32) UNSIGNED DEFAULT 0,

`relation\_id` INT(32) UNSIGNED NOT NULL,

PRIMARY KEY (`regulation\_id`)

);

#relationship\_type

# 0: circuit -> codingframe

# 1: circuit -> plasmid

# 2: circuit -> regulation

# 3: codingframe -> biobrick

# 4: mindmap -> mindmap

# 5: mindmap -> circuit

# 6: circuit -> application

CREATE TABLE `cp\_relationship` (

`id` INT(32) UNSIGNED NOT NULL AUTO\_INCREMENT,

`type` SMALLINT(8) UNSIGNED NOT NULL,

`parent\_id` INT(32) UNSIGNED NOT NULL,

`child\_id` INT(32) UNSIGNED NOT NULL,

`order` INT(32) UNSIGNED NOT NULL,

PRIMARY KEY (`id`)

);

#term\_type

# 0: strain

# 1: plasmid

# 2: substance

# 3: dnaproperty

# 4: codingframe\_state

# 5: mindmap

# 6: application tag

CREATE TABLE `cp\_term` (

`term\_id` INT(32) UNSIGNED NOT NULL AUTO\_INCREMENT,

`type` SMALLINT(8) UNSIGNED NOT NULL,

`name` CHAR(255) NOT NULL,

PRIMARY KEY (`term\_id`)

);

);

Example:

USE circuitplus;

#classification

INSERT INTO `circuitplus`.`cp\_classification` (`classification\_id`, `subclass\_id`, `name`) VALUES ('1', '0', 'sensor');

INSERT INTO `circuitplus`.`cp\_classification` (`classification\_id`, `subclass\_id`, `name`) VALUES ('1', '1', 'light sensor');

#circuit

INSERT INTO `circuitplus`.`cp\_circuit` (`id`, `name`, `subclass\_id`, `strain\_id`, `input`, `output`, `description`, `application`, `result`, `reference`) VALUES ('CCt\_P130001', ' A light sensing circuit designed to photography', '1', '1', 'light-dark edge[red light+AHL]', 'Black Pigment', 'This circuit aimed at constructing a genetically encoded edge detection algorithm that programs an isogenic community of E.coli which can sense an image of light. The E.coli can identify the edge of the dark-light edges through a series of communication and as a result present the outcome of the computation visually. An engineered light sensor helps the bacteria to distinguish whether it’s in the dark or light surroundings. Several genetic logic gates in the cell can control the expression conditions that only cells that receive light stimulation as well as the diffusible signal can give a positive output.', 'Photography, biological printing light controlling edge system, light sensing, NOR gate.', 'this is a test.', 'Cell 137, 1272–1281');

#codingframe

INSERT INTO `circuitplus`.`cp\_codingframe` (`codingframe\_id`, `state\_id`, `input`, `output`) VALUES ('1', '2', '1.without light. 2.red light.', '1. AHL+cI+LuxR 2, LuxR');

INSERT INTO `circuitplus`.`cp\_codingframe` (`codingframe\_id`, `state\_id`, `input`, `output`) VALUES ('2', '3', '0', 'cph8 chimeric sensor kinase');

INSERT INTO `circuitplus`.`cp\_codingframe` (`codingframe\_id`, `state\_id`, `input`, `output`) VALUES ('3', '3', '0', 'heme oxygenase 1+phycocyanobilin:ferredoxin oxidoreductase');

#Biobrick

INSERT INTO `circuitplus`.`cp\_biobrick` (`biobrick\_id`, `name`, `dnaproperty\_id`, `function`) VALUES ('1', 'PompC', '4', 'Red light repressed promoter');

INSERT INTO `circuitplus`.`cp\_biobrick` (`biobrick\_id`, `name`, `dnaproperty\_id`, `function`) VALUES ('2', 'B0034', '5', 'strong ribosome binding site');

INSERT INTO `circuitplus`.`cp\_biobrick` (`biobrick\_id`, `name`, `dnaproperty\_id`, `function`) VALUES ('3', 'LuxI', '6', 'expresses AHL');

INSERT INTO `circuitplus`.`cp\_biobrick` (`biobrick\_id`, `name`, `dnaproperty\_id`, `function`) VALUES ('4', 'cI', '6', 'Transcriptional repressor');

INSERT INTO `circuitplus`.`cp\_biobrick` (`biobrick\_id`, `name`, `dnaproperty\_id`, `function`) VALUES ('5', 'B0015', '7', 'code terminator ');

INSERT INTO `circuitplus`.`cp\_biobrick` (`biobrick\_id`, `name`, `dnaproperty\_id`, `function`) VALUES ('6', 'R0040', '4', 'PLtet-O1 constitutive promoter in the absense of Tet repressor');

INSERT INTO `circuitplus`.`cp\_biobrick` (`biobrick\_id`, `name`, `dnaproperty\_id`, `function`) VALUES ('7', 'LuxR', '6', 'Transcription factor luxR');

INSERT INTO `circuitplus`.`cp\_biobrick` (`biobrick\_id`, `name`, `dnaproperty\_id`, `function`) VALUES ('8', 'Plux-lamda', '4', 'LuxR::AHL activated & cI repressed promoter');

INSERT INTO `circuitplus`.`cp\_biobrick` (`biobrick\_id`, `name`, `dnaproperty\_id`, `function`) VALUES ('9', 'LacZ', '6', 'b-galactosidase');

INSERT INTO `circuitplus`.`cp\_biobrick` (`biobrick\_id`, `name`, `dnaproperty\_id`, `function`) VALUES ('10', 'cph8', '6', 'cph8 chimeric sensor kinase');

INSERT INTO `circuitplus`.`cp\_biobrick` (`biobrick\_id`, `name`, `dnaproperty\_id`, `function`) VALUES ('11', 'ho1', '6', 'one precursor of chromophore phycocyanobilin');

INSERT INTO `circuitplus`.`cp\_biobrick` (`biobrick\_id`, `name`, `dnaproperty\_id`, `function`) VALUES ('12', 'pcyA', '6', 'one precursor of chromophore phycocyanobilin');

#Relationship

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('0', '1', '1', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('0', '1', '2', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('0', '1', '3', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '1', '1', '1');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '1', '2', '2');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '1', '3', '3');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '1', '2', '4');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '1', '4', '5');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '1', '5', '6');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '1', '6', '7');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '1', '2', '8');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '1', '7', '9');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '1', '5', '10');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '1', '8', '11');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '1', '2', '12');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '1', '9', '13');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '1', '5', '14');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '2', '6', '1');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '2', '2', '2');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '2', '10', '3');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '2', '5', '4');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '3', '6', '1');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '3', '2', '2');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '3', '11', '3');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '3', '2', '4');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '3', '12', '5');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('3', '3', '5', '6');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('6', '1', '8', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('6', '1', '9', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('6', '1', '10', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('6', '1', '11', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('1', '1', '12', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('1', '1', '13', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('1', '1', '14', '0');

#Term

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('1', '0', 'escherichia coli');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('2', '4', 'half-silent');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('3', '4', 'constitutive');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('4', '3', 'promoter');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('5', '3', 'RBS coding');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('6', '3', 'coding sequence');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('7', '3', 'terminator coding');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('8', '6', 'Photography');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('9', '6', 'biological printing light controlling edge system');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('10', '6', 'light sensing');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('11', '6', 'NOR gate');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('12', '1', 'pEDL3');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('13', '1', 'pPLPCB');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('14', '1', 'pCph8');

第二次添加

use circuitplus;

#cp\_regulation

# 0: substance -> substance

# 1: substance -> biobrick

# 2: biobrick -> substance (expression)

0的时候 relation\_id = 0 表示表达

1的时候 source\_id2 与 target\_id2 均为0 表示为物质 relation\_id=1 表示内源物质combine

Relation\_id=2表示 外源物质分解内源物质

2 的时候 Relation\_id=3 表示 activate, relation\_id=4表示 repressed.

INSERT INTO `circuitplus`.`cp\_regulation` (`regulation\_id`, `type`, `source\_id1`, `source\_id2`, `target\_id1`, `target\_id2`, `expression`, `relation\_id`) VALUES ('1', '2', '1', '3', '0', '0', '15', '0');

INSERT INTO `circuitplus`.`cp\_regulation` (`regulation\_id`, `type`, `source\_id1`, `source\_id2`, `target\_id1`, `target\_id2`, `expression`, `relation\_id`) VALUES ('2', '2', '1', '5', '0', '0', '16', '0');

INSERT INTO `circuitplus`.`cp\_regulation` (`regulation\_id`, `type`, `source\_id1`, `source\_id2`, `target\_id1`, `target\_id2`, `expression`, `relation\_id`) VALUES ('3', '2', '1', '9', '0', '0', '19', '0');

INSERT INTO `circuitplus`.`cp\_regulation` (`regulation\_id`, `type`, `source\_id1`, `source\_id2`, `target\_id1`, `target\_id2`, `expression`, `relation\_id`) VALUES ('4', '2', '1', '13', '0', '0', '25', '0');

INSERT INTO `circuitplus`.`cp\_regulation` (`regulation\_id`, `type`, `source\_id1`, `source\_id2`, `target\_id1`, `target\_id2`, `expression`, `relation\_id`) VALUES ('5', '2', '2', '3', '0', '0', '20', '0');

INSERT INTO `circuitplus`.`cp\_regulation` (`regulation\_id`, `type`, `source\_id1`, `source\_id2`, `target\_id1`, `target\_id2`, `expression`, `relation\_id`) VALUES ('6', '2', '3', '3', '0', '0', '17', '0');

INSERT INTO `circuitplus`.`cp\_regulation` (`regulation\_id`, `type`, `source\_id1`, `source\_id2`, `target\_id1`, `target\_id2`, `expression`, `relation\_id`) VALUES ('7', '2', '3', '5', '0', '0', '20', '0');

INSERT INTO `circuitplus`.`cp\_regulation` (`regulation\_id`, `type`, `source\_id1`, `source\_id2`, `target\_id1`, `target\_id2`, `expression`, `relation\_id`) VALUES ('8', '0', '20', '0', '18', '0', '23', '1');

INSERT INTO `circuitplus`.`cp\_regulation` (`regulation\_id`, `type`, `source\_id1`, `source\_id2`, `target\_id1`, `target\_id2`, `expression`, `relation\_id`) VALUES ('9', '0', '15', '0', '16', '0', '24', '1');

INSERT INTO `circuitplus`.`cp\_regulation` (`regulation\_id`, `type`, `source\_id1`, `source\_id2`, `target\_id1`, `target\_id2`, `expression`, `relation\_id`) VALUES ('10', '0', '17', '0', '15', '0', '21', '1');

INSERT INTO `circuitplus`.`cp\_regulation` (`regulation\_id`, `type`, `source\_id1`, `source\_id2`, `target\_id1`, `target\_id2`, `expression`, `relation\_id`) VALUES ('11', '0', '22', '0', '20', '0', '0', '2');

INSERT INTO `circuitplus`.`cp\_regulation` (`regulation\_id`, `type`, `source\_id1`, `source\_id2`, `target\_id1`, `target\_id2`, `expression`, `relation\_id`) VALUES ('12', '1', '24', '0', '1', '11', '0', '3');

INSERT INTO `circuitplus`.`cp\_regulation` (`regulation\_id`, `type`, `source\_id1`, `source\_id2`, `target\_id1`, `target\_id2`, `expression`, `relation\_id`) VALUES ('13', '1', '16', '0', '1', '11', '0', '4');

INSERT INTO `circuitplus`.`cp\_regulation` (`regulation\_id`, `type`, `source\_id1`, `source\_id2`, `target\_id1`, `target\_id2`, `expression`, `relation\_id`) VALUES ('14', '1', '23', '0', '1', '1', '0', '3');

#cp\_term

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('15', '2', 'AHL');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('16', '2', 'cI transcriptional repressor');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('17', '2', 'heme oxygenase 1');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('18', '2', 'phycocyanobilin:ferredoxin oxidoreductase');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('19', '2', 'LuxR transcription factor');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('20', '2', 'cph8 chimeric sensor kinase');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('21', '2', 'PCB');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('22', '2', 'red light');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('23', '2', 'PCB/cph8 complex');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('24', '2', 'AHL/LuxR complex');

INSERT INTO `circuitplus`.`cp\_term` (`term\_id`, `type`, `name`) VALUES ('25', '2', 'beta-galactosidase');

注释：

#cp\_relationship

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('2', '1', '1', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('2', '1', '2', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('2', '1', '3', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('2', '1', '4', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('2', '1', '5', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('2', '1', '6', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('2', '1', '7', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('2', '1', '8', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('2', '1', '9', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('2', '1', '10', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('2', '1', '11', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('2', '1', '12', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('2', '1', '13', '0');

INSERT INTO `circuitplus`.`cp\_relationship` (`type`, `parent\_id`, `child\_id`, `order`) VALUES ('2', '1', '14', '0');