**Phase III. c. Write SQL statements to create databases, tables and all other structures. Primary key and foreign keys must be defined as appropriate. Also specify data type and constraints for each attribute and in addition to specify the referential integrity.**

**CREATE SCHEMA dart**;

**CREATE TABLE** `dart`.`**person**` ( `person\_id` VARCHAR(4) NOT NULL, `f\_name` VARCHAR(45) NOT NULL, `m\_name` VARCHAR(45) NOT NULL, `l\_name` VARCHAR(45) NOT NULL, `gender` VARCHAR(1) NOT NULL, `dob` DATE NOT NULL, `street` VARCHAR(45) NOT NULL, `apt\_no` VARCHAR(5) NOT NULL, `zip\_code` VARCHAR(5) NOT NULL, **PRIMARY KEY** (`person\_id`));

**CREATE TABLE** `dart`.`**person\_phone**` ( `phn\_person\_id` VARCHAR(4) NOT NULL, `phone\_no` VARCHAR(10) NOT NULL, **PRIMARY KEY** (`phn\_person\_id`, `phone\_no`), **FOREIGN KEY** (`phn\_person\_id`) **REFERENCES** dart`.`person` (`person\_id`));

**CREATE TABLE** `dart`.`**zip\_code**` ( `zip\_code` VARCHAR(5) NOT NULL, `city` VARCHAR(45) NOT NULL, **PRIMARY KEY** (`zip\_code`));

**CREATE TABLE** `dart`.`a\_star\_passenger` ( `a\_star\_id` VARCHAR(5) NOT NULL, **PRIMARY KEY** `a\_star\_id`));

**CREATE TABLE** `dart`.`**employee**` ( `employee\_id` VARCHAR(5) NOT NULL, `emp\_person\_id` VARCHAR(5) NOT NULL, `emp\_a\_star\_id` VARCHAR(5) NULL, `start\_date` DATE NOT NULL, PRIMARY KEY (`employee\_id`, `emp\_person\_id`), **FOREIGN KEY** (`emp\_person\_id`) **REFERENCES** `dart`.`person` (`person\_id`), **FOREIGN KEY** (`emp\_a\_star\_id`) **REFERENCES** `dart`.`a\_star\_passenger` (‘a\_star\_id) );

**CREATE TABLE** `dart`.`**a\_class\_passenger**` ( `passenger\_id` VARCHAR(5) NOT NULL, `ac\_person\_id` VARCHAR(5) NOT NULL, `ac\_a\_star\_id` VARCHAR(45) NULL, **PRIMARY KEY** (`passenger\_id`, `ac\_person\_id`), **FOREIGN KEY** (`ac\_person\_id`) **REFERENCES** `dart`.`person` (`person\_id`), **FOREIGN KEY** (`ac\_a\_star\_id`) **REFERENCES** `dart`.`a\_star\_passenger` (`a\_star\_id`) );

**CREATE TABLE** `dart`.`**staff**`( `staff\_id` VARCHAR(5) NOT NULL, `s\_employee\_id` VARCHAR(5) NOT NULL, **PRIMARY KEY** (`staff\_id`, `s\_employee\_id`), **FOREIGN KEY** (`s\_employee\_id`) **REFERENCES** `dart`.`employee` (`employee\_id`));

**CREATE TABLE** `dart`.`**ticket\_checker**` ( `checker\_id` VARCHAR(5) NOT NULL, `tc\_bus\_no` VARCHAR(5) NOT NULL, `tc\_employee\_id` VARCHAR(5) NOT NULL, **PRIMARY KEY** (`checker\_id`, `tc\_bus\_no`, `tc\_employee\_id`), **FOREIGN KEY** (`tc\_employee\_id`) **REFERENCES** `dart`.`employee` (`employee\_id`), **FOREIGN KEY** (`tc\_bus\_no`) **REFERENCES** `dart`.`bus` (`license\_plate\_no`));

**CREATE TABLE** `dart`.`**bus\_driver**` ( `driver\_id` VARCHAR(5) NOT NULL, `d\_employee\_id` VARCHAR(5) NOT NULL, **PRIMARY KEY** (`driver\_id`, `d\_employee\_id`), **FOREIGN KEY** (`d\_employee\_id`) **REFERENCES** `dart`.`employee` (`employee\_id`));

**CREATE TABLE** `dart`.`**route**` ( `route\_id` VARCHAR(5) NOT NULL, **PRIMARY KEY** (`route\_id`));

**CREATE TABLE** `dart`.`**bus**` ( `license\_plate\_no` VARCHAR(7) NOT NULL, `bus\_no` VARCHAR(5) NOT NULL, `bus\_checker\_id` VARCHAR(5) NOT NULL, `bus\_route\_id` VARCHAR(5) NOT NULL, `no\_of\_seats` VARCHAR(5) NOT NULL, `bus\_type` VARCHAR(5) NOT NULL, **PRIMARY KEY** (`license\_plate\_no`, `bus\_no`), **FOREIGN KEY** (`bus\_checker\_id`) **REFERENCES** `dart`.`ticket\_checker` (`checker\_id`), **FOREIGN KEY** (`bus\_checker\_id`) **REFERENCES** `dart`.`ticket\_checker` (`checker\_id`));

**CREATE TABLE** `dart`.`**ticket**` ( `ticket\_id` VARCHAR(5) NOT NULL, `t\_checker\_id` VARCHAR(5) NOT NULL, `t\_bus\_no` VARCHAR(7) NOT NULL, `seat\_no` VARCHAR(2) NOT NULL, `start\_bus\_stop` VARCHAR(5) NOT NULL, `end\_bus\_stop` VARCHAR(5) NOT NULL, `price` INT NOT NULL, `date` DATE NOT NULL, **PRIMARY KEY** (`ticket\_id`, `t\_checker\_id`, `t\_bus\_no`), **FOREIGN KEY** (`t\_checker\_id`) **REFERENCES** `dart`.`ticket\_checker` (`checker\_id`), **FOREIGN KEY** (`t\_bus\_no`) **REFERENCES** `dart`.`bus` (`license\_plate\_no`), **FOREIGN KEY** (`start\_bus\_stop`) **REFERENCES** `dart`.`bus\_stop` (`stop\_no`), **FOREIGN KEY** (`end\_bus\_stop`) **REFERENCES** `dart`.`bus\_stop` (`stop\_no`));

**CREATE TABLE** `dart`.`**bus\_stop**` ( `stop\_no` VARCHAR(5) NOT NULL, `stop\_route\_id` VARCHAR(5) NULL, `location` VARCHAR(45) NULL, **PRIMARY KEY** (`stop\_no`), **FOREIGN KEY** (`stop\_route\_id`) **REFERENCES** `dart`.`route` (`route\_id`));

**CREATE TABLE** `dart`.`**timetable**` ( `tt\_id` VARCHAR(4) NOT NULL, `day` VARCHAR(3) NULL, `start\_time` TIME NULL, `end\_time` TIME NULL, `interval` INT NULL, **PRIMARY KEY** (`tt\_id`));

**CREATE TABLE** `dart`.`**payment\_details**` ( `payment\_id` VARCHAR(5) NOT NULL, `p\_ticket\_id` VARCHAR(5) NULL, `amount` DOUBLE NULL, **PRIMARY KEY** (`payment\_id`), **FOREIGN KEY** (`p\_ticket\_id`) **REFERENCES** `dart`.`ticket` (`ticket\_id`));

**CREATE TABLE** `dart`.`**follows**` ( `f\_bus\_no` VARCHAR(7) NOT NULL, `f\_tt\_id` VARCHAR(5) NOT NULL, PRIMARY KEY (`f\_bus\_no`, `f\_tt\_id`), **FOREIGN KEY** (`f\_tt\_id`) **REFERENCES** `dart`.`timetable` (`tt\_id`), **FOREIGN KEY** (`f\_bus\_no`) **REFERENCES** `dart`.`bus` (`license\_plate\_no`) );

**CREATE TABLE** `dart`.`**terminal**` ( `terminal\_id` VARCHAR(5) NOT NULL, `location` VARCHAR(45) NULL, **PRIMARY KEY** (`terminal\_id`));

**CREATE TABLE** `dart`.`**parks**` ( `p\_terminal\_id` VARCHAR(5) NOT NULL, `p\_bus\_no` VARCHAR(7) NOT NULL, `time` TIME NULL, `date` DATE NULL, `duration` INT NULL, **PRIMARY KEY** (`p\_terminal\_id`, `p\_bus\_no`), **FOREIGN KEY** (`p\_terminal\_id`) **REFERENCES** `dart`.`terminal` (`terminal\_id`), **FOREIGN KEY** (`p\_bus\_no`) **REFERENCES** `dart`.`bus` (`license\_plate\_no`));

**CREATE TABLE** `dart`.`**pass**` ( `pass\_id` VARCHAR(5) NOT NULL, `p\_a\_star\_id` VARCHAR(5) NOT NULL, `p\_checker\_id` VARCHAR(5) NOT NULL, `issue\_date` DATE NULL, `expiry\_date` DATE NULL, `price` VARCHAR(45) NULL, **PRIMARY KEY** (`pass\_id`, `p\_a\_star\_id`, `p\_checker\_id`), **FOREIGN KEY** (`p\_a\_star\_id`) **REFERENCES** `dart`.`a\_star\_passenger` (`a\_star\_id`), **FOREIGN KEY** (`p\_checker\_id`) **REFERENCES** `dart`.`ticket\_checker` (`checker\_id`) );

**CREATE TABLE** `dart`.`**sells**` ( `s\_staff\_id` VARCHAR(5) NOT NULL, `s\_ticket\_id` VARCHAR(5) NOT NULL, `s\_pass\_id` VARCHAR(5) NOT NULL, `date\_time` VARCHAR(45) NULL, **PRIMARY KEY** (`s\_staff\_id`, `s\_ticket\_id`, `s\_pass\_id`), **FOREIGN KEY** (`s\_ticket\_id`) **REFERENCES** `dart`.`ticket` (`ticket\_id`) **FOREIGN KEY** (`s\_pass\_id`) **REFERENCES** `dart`.`pass` (`pass\_id`), **FOREIGN KEY** (`s\_staff\_id`) **REFERENCES** `dart`.`staff` (`staff\_id`));

**CREATE TABLE** `dart`.`**buys**` ( `b\_passenger\_id` VARCHAR(5) NOT NULL, `b\_ticket\_id` VARCHAR(5) NOT NULL, `date\_time` VARCHAR(45) NULL, **PRIMARY KEY** (`b\_passenger\_id`, `b\_ticket\_id`), **FOREIGN KEY** (`b\_passenger\_id`) **REFERENCES** `dart`.`a\_class\_passenger` (`passenger\_id`), **FOREIGN KEY** (`b\_ticket\_id`) **REFERENCES** `dart`.`ticket` (`ticket\_id`));

**CREATE TABLE** `dart`.`**checks**` ( `c\_ticket\_id` VARCHAR(5) NOT NULL, `c\_checker\_id` VARCHAR(5) NOT NULL, `c\_pass\_id` VARCHAR(5) NOT NULL, **PRIMARY KEY** (`c\_ticket\_id`, `c\_checker\_id`, `c\_pass\_id`), **FOREIGN KEY** (`c\_ticket\_id`) **REFERENCES** `dart`.`ticket` (`ticket\_id`), **FOREIGN KEY** (`c\_checker\_id`) **REFERENCES** `dart`.`ticket\_checker` (`checker\_id`) **FOREIGN KEY** (`c\_pass\_id`) **REFERENCES** `dart`.`pass` (`pass\_id`));

**CREATE TABLE** `dart`.`**drives**` ( `d\_driver\_id` VARCHAR(5) NOT NULL, `d\_bus\_no` VARCHAR(7) NOT NULL, `date` DATE NULL, **PRIMARY KEY** (`d\_driver\_id`, `d\_bus\_no`), **FOREIGN KEY** (`d\_driver\_id`) **REFERENCES** `dart`.`bus\_driver` (`driver\_id`), **FOREIGN KEY** (`d\_bus\_no`) **REFERENCES** `dart`.`bus` (`license\_plate\_no`));

**CREATE TABLE** `dart`.`**guest**` ( `guest\_id` VARCHAR(5) NOT NULL, `a\_Star\_id` VARCHAR(5) NOT NULL, `f\_name` VARCHAR(45) NOT NULL, `m\_name` VARCHAR(45) NOT NULL, `l\_name` VARCHAR(45) NOT NULL, `street` VARCHAR(45) NOT NULL, `apt\_no` VARCHAR(5) NOT NULL, `zip\_code` VARCHAR(5) NOT NULL, **PRIMARY KEY** (`guest\_id`, `a\_Star\_id`), **FOREIGN KEY** (`a\_Star\_id`) **REFERENCES** `dart`.`a\_star\_passenger` (`a\_star\_id`) );

**CREATE TABLE** `dart`.`**travel\_card**` ( `card\_id` VARCHAR(5) NOT NULL, `card\_a\_star\_id` VARCHAR(5) NOT NULL, `issue\_date` DATE NOT NULL, `expiry\_date` DATE NOT NULL, **PRIMARY KEY** (`card\_id`, `card\_a\_star\_id`), **FOREIGN KEY** (`card\_a\_star\_id`) **REFERENCES** `dart`.`a\_star\_passenger` (`a\_star\_id`));

**CREATE TABLE** `dart`.`**guest\_phone**` ( `phn\_guest\_id` VARCHAR(5) NOT NULL, `phone\_no` VARCHAR(10) NOT NULL, PRIMARY KEY (`phn\_guest\_id`, `phone\_no`), **FOREIGN KEY** (`phn\_guest\_id`) **REFERENCES** `dart`.`guest` (`guest\_id`));

**CREATE TABLE** `dart`.`**promotional\_discount**` ( `promo\_id` VARCHAR(5) NOT NULL, `pd\_a\_star\_id` VARCHAR(5) NOT NULL, `pd\_card\_id` VARCHAR(5) NOT NULL, `day` VARCHAR(3) NULL, `discount\_percent` INT NULL, `description` VARCHAR(45) NULL, **PRIMARY KEY** (`promo\_id`, `pd\_a\_star\_id`, `pd\_card\_id`), **FOREIGN KEY** (`pd\_a\_star\_id`) **REFERENCES** `dart`.`a\_star\_passenger` (`a\_star\_id`), **FOREIGN KEY** (`pd\_card\_id`) **REFERENCES** `dart`.`travel\_card` (`card\_id`));

**CREATE TABLE** `dart`.`**contains**` ( `c\_card\_id` VARCHAR(5) NOT NULL, `c\_promo\_id` VARCHAR(5) NOT NULL, `c\_a\_star\_id` VARCHAR(5) NOT NULL, **PRIMARY KEY** (`c\_card\_id`, `c\_promo\_id`, `c\_a\_star\_id`), **FOREIGN KEY** (`c\_card\_id`) **REFERENCES** `dart`.`travel\_card` (`card\_id`), FOREIGN KEY (`c\_promo\_id`) **REFERENCES** `dart`.`promotional\_discount` (`promo\_id`), **FOREIGN KEY** (`c\_a\_star\_id`) **REFERENCES** `dart`.`a\_star\_passenger` (`a\_star\_id`));

**CREATE** TABLE `dart`.`**can\_have**` ( `ch\_pass\_id` VARCHAR(5) NOT NULL, `ch\_passenger\_id` VARCHAR(5) NOT NULL, `month` VARCHAR(10) NULL, **PRIMARY KEY** (`ch\_pass\_id`, `ch\_passenger\_id`), INDEX `fk\_can\_have\_2\_idx` (`ch\_passenger\_id` ASC) VISIBLE, CONSTRAINT `fk\_can\_have\_1` **FOREIGN KEY** (`ch\_pass\_id`) **REFERENCES** `dart`.`pass` (`pass\_id`), **FOREIGN KEY** (`ch\_passenger\_id`) **REFERENCES** `dart`.`a\_class\_passenger` (`passenger\_id`));

\*\*\*\*\*\*

CREATE DEFINER=`root`@`localhost` TRIGGER `person\_check\_before\_insert` BEFORE INSERT ON `person` FOR EACH ROW BEGIN

IF TIMESTAMPDIFF(YEAR, NEW.dob, CURDATE()) < 16 THEN

SIGNAL SQLSTATE '45000'

SET message\_text = 'Age of person must be greater than 16 years.';

ELSEIF NEW.person\_id REGEXP'^[P][0-9]{3}$' = 0 THEN

SIGNAL SQLSTATE '45000'

SET message\_text = 'PersonID must have format`PXXX`';

ELSEIF NEW.gender NOT IN ('Male', 'Female', 'Other') THEN

SIGNAL SQLSTATE '45000'

SET message\_text = 'Gender is not correct.';

END IF;

END

\*\*\*\*

CREATE DEFINER=`root`@`localhost` TRIGGER `person\_check\_after\_insert` AFTER INSERT ON `person` FOR EACH ROW BEGIN

IF TIMESTAMPDIFF(YEAR, NEW.dob, CURDATE()) > 16 THEN

UPDATE person SET age = TIMESTAMPDIFF(YEAR, NEW.dob, CURDATE());

END IF;

END

\*\*\*\*\*\*\*\*

CREATE DEFINER=`root`@`localhost` TRIGGER `person\_check\_before\_update` BEFORE UPDATE ON `person` FOR EACH ROW BEGIN

IF TIMESTAMPDIFF(YEAR, NEW.dob, CURDATE()) < 16 THEN

SIGNAL SQLSTATE '45000'

SET message\_text = 'Age of person must be greater than 16 years.';

ELSEIF NEW.person\_id REGEXP'^[P][0-9]{3}$' = 0 THEN

SIGNAL SQLSTATE '45000'

SET message\_text = 'PersonID must have format`PXXX`';

ELSEIF NEW.gender NOT IN ('Male', 'Female', 'Other') THEN

SIGNAL SQLSTATE '45000'

SET message\_text = 'Gender is not correct.';

END IF;

END

\*\*\*\*\*\*\*