CSE 230 Problem Set 03

# Problem 20.1: Institution Class

Create a class diagram from the following Kotlin code:



A picture containing text, screenshot, font, line

Description automatically generated

# Problem 20.2: Time Class

Convert the following class diagram into C++.



class Time {

public:

void initialize();

virtual void display();

void set(int hour, int minute, int second);

int difference(Time rhs);

int getHour();

int getMinute();

int getSecond();

private:

enum timeFormat {};

void convertToMinuteSinceMidnight(int hour, int minute, int second);

protected:

int minutesSinceMidnight;

};

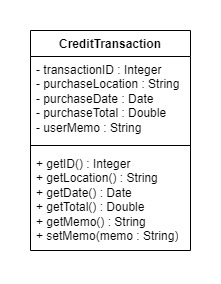
# Problem 20.3: Transaction

Create a class diagram matching the following scenario:

A credit card transaction is a single instance of a credit card purchase. This transaction class will be used in a credit card class where an array of transactions will be stored. The credit card class will display the complete collection of transactions in a register, will sum up the various transactions to compute a balance, and will filter the transactions matching a certain criterion.

Each transaction will contain the attributes you may find on your credit card statement. Look at your statement this month to see what those attributes are and how they are depicted.

A picture containing text, screenshot, receipt, font

Description automatically generated

I made some changes just because it felt like cardOwner and cardNumber would be variables of the CreditCard class. A single CreditTransaction probably doesn’t need to keep track of that extra info, but I am interested to see what you think!

# Problem 20.4: Score

Create a class diagram matching the following scenario:

A video game contains a score class. This class will represent the score the current player has earned at a given moment in the game. The score will need to draw itself in the upper left-hand corner of the screen. The leaderboard class will need to be able to request the score at the end of the game so I can see if the current game ranks among the best played.

The score will constantly be updated as the game progresses. Every second of gameplay, 1 point is added to the score. If the player makes it through a checkpoint, then 20 points are added. If the player hits a wall, then 5 points are deducted. If the player hits an obstacle other than the wall, then 50 points are deducted.

A picture containing text, screenshot, font, line

Description automatically generated

# Problem 20.5: Recipe Item

Create a class diagram matching the following scenario:

A recipe program contains a collection of recipes. Each recipe consists of a collection of recipe items. Your class will represent a single recipe item.

Each recipe item will contain the attributes you may find on your favorite recipe.

Hint: Look at your favorite recipe or look at a recipe on the internet to see what those attributes are and how they are depicted.

A screen shot of a recipe item

Description automatically generated with medium confidence

I think we would want the variables to be private and then have public methods that get them or set them. What did the teacher say about this part of the assignment? Is the recipe item a single ingredient, or a single step in the recipe? Do you know?