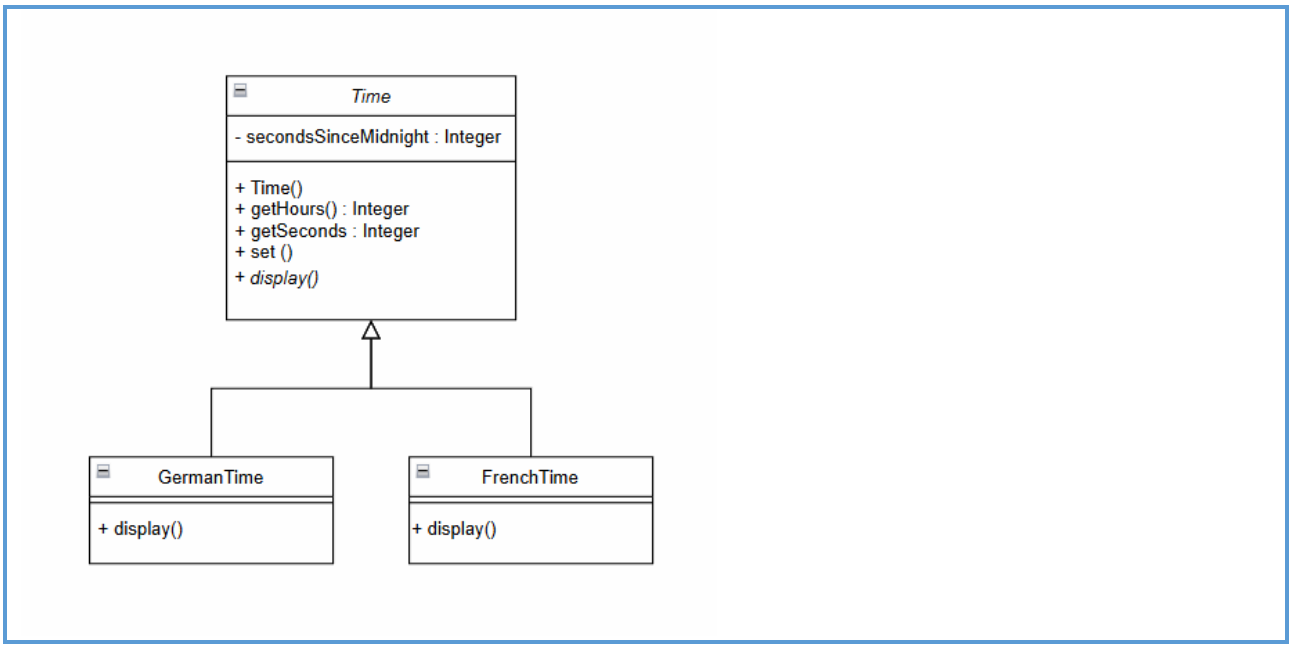
Chapter 3.0 Problem Set

Problem 3.0.1: Class Diagram from Code

Create a class diagram to match the following C++ code:

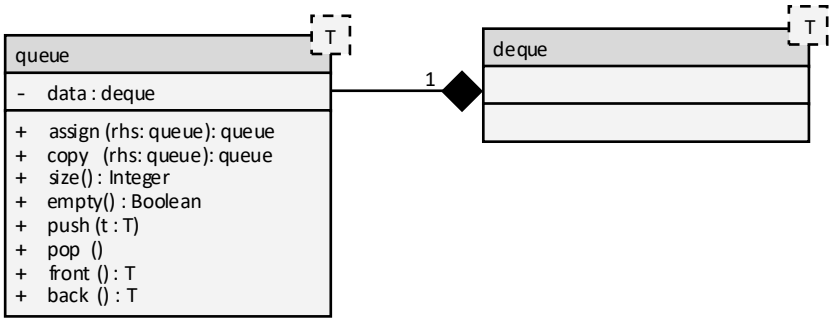
C++

```
class Time
{
   private:
      int secondsSinceMidnight;
   public:
      Time() : secondSinceMidnight(0) {}

      int getHours()   const;
      int getMinutes() const;
      int getSeconds() const;
      virtual void display() const;

      void set(int hours, int minutes = 0, int seconds = 0);
};

class GermanTime : public Time
{
   public:
      void display() const;
};

class FrenchTime : public Time
{
   public:
      void display() const;
};
```



Problem 3.0.2: Code from Class Diagram

In C++, write code to match the following class diagram:



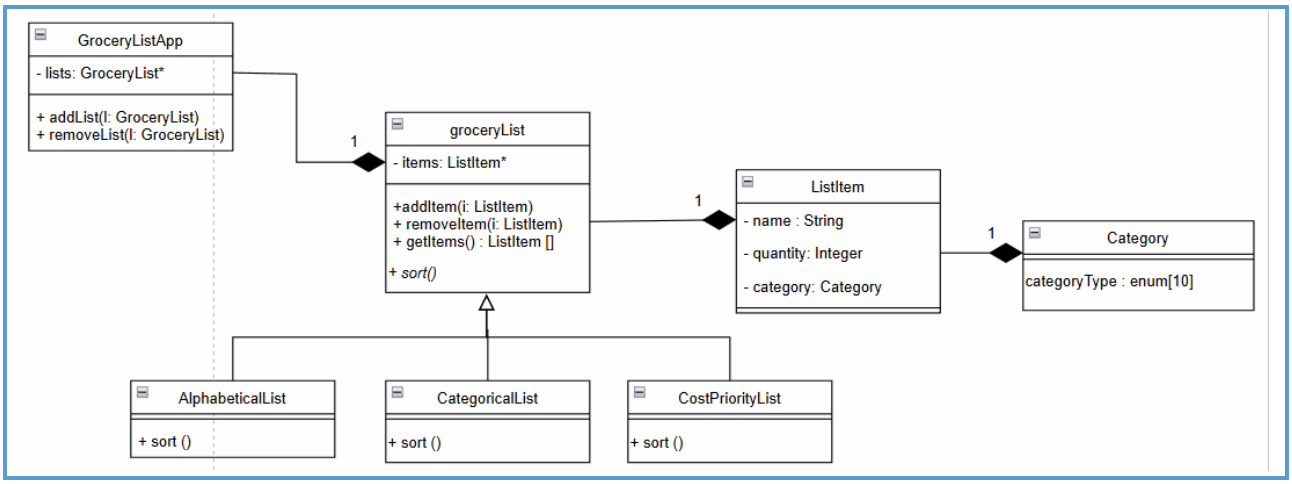
Note that you do not need to implement the methods and you can assume that the deque class already exists.

```
template <typename T>

class queue {

public:
   queue assign(queue rhs) const;
   queue copy(queue rhs) const;
   int size() const;
   bool empty() const;
   push(T t) const;
   pop() const;
   T front() const;
   T back() const;

private:
   deque data;
};


class deque {
   };
```

Problem 3.0.3: Grocery List Class Diagram

Create a class diagram to match the following problem definition:

> A grocery list application maintains a collection of grocery lists. Each grocery list can be one of three types: alphabetical list, categorical list, or cost-priority list. A list item consists of three components: the name, the quantity, and the category. The category is a class which consists of an enumeration of 10 categories.



Problem 3.0.4: Charts Class Diagram

Create a class diagram to match the following problem definition:

> A personal finance application has a chart feature. Each chart has a title and a collection of transactions to be displayed. There are several categories of charts: tables, bar graphs, pie charts, and line graphs. For table charts, there can be single-account transactions, category summaries, and by-month summaries. For bar graphs, there are income / spending histograms and account balance histograms. For pie charts, there are two flavors: income categories and spending categories. Finally, the line graphs will be two flavors: single account histogram, net worth histogram.