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Programming Systems

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Program #1 Design write-up

The first programming assignment was very difficult in that it had to be approached in a different way than the programming approach we had ever done in CS163. The first program in CS202 is object-oriented programming. Understanding class is very important for object-oriented programming. When creating a class, rather than simply making it for an object, give a class special job and form a relationship between class and class. When this approach is used, the program as a whole becomes simpler and more efficient. This is the purpose of object-oriented programming. The first program is for people affected by wildfires. If the person is damaged by wildfires, the person cannot live life again without the help of others. The house may be burned, there may be no food to eat, or there may be no clothes to change. The first program can register donations for these people for home, food, clothing, etc. and those who need them can use the program to search for available items. Program #1 should be an object-oriented program that will support emergency relief efforts. We want to allow easy cataloging of donations dropped off or made available and then allow those in need to browse what is available; to make this useful, we will want to keep a history of what people have searched for. To manage the scope of this project, the following are the minimum requirements: First, support three different types of relief efforts, one of which needs to be housing. The other two types can be of my design. Ideas could be supplies, food, clothing, and many more. Second, at least one of the types supported needs to support the notion of an expiration date. Third, at least one of the types supported should interact with another class type. The main point of this assignment is to make the development simpler through the use of OO techniques. First of all, my three relief effort classes are housing, food, and clothing. And what these three things have in common is that these are all relief items, so the base class of these classes is relief item. Because the structure is one base class and three subclasses, it satisfies the requirements for single inheritance. And because food class has to deal with information about expiration date, I made date class and decided to make it "has a " relationship" rather than sub class of food class. Because the expiration date is only a part of the food information, not the food itself. So, we call this relationship a "has a" relationship. The data member of the relief item class is char \* name. Because housing, food, and clothing all has its name, so it is designated as data member of base class. Only those that are not common should be data members of sub class. So, the data member of housing is the information about the address, the data member of food is the information about the expiration date, and the data member of clothing will be the type of clothing. And the data of three sub classes will be stored in a circular linked list data structure. In other words, it will be a list of three things: the housing circular linked list, the food circular linked list, and the clothing circular linked list. And finally, users should be able to search, and search records should be formed in a linear linked list data structure. And when the program displays the search record, the order of the browsing history should be shown in the order of the most searched. Therefore, there should be information about frequency. For these operations, I created LLL class and CLL class and decided to establish "has a" relationship with node class. At the moment, the design was done in this structure and it is not clear whether it is accurate design. The design may change a little as I go through trial and error while doing the program.