Programing Project 3

Program design document – Griffin Quarles

Problem definition

The goal of this project is to enable students to practice programming templates. You will write a template C++ class called "GenericRecord" and a main( ) function that uses the class.

Problem analysis

The final totals will be displayed in the following tabular form.

Buildings

Identifier Description Value

Hello Buld One 25.00000

Computers

Identifier Description Value

1 Comp One 255.00000

2 Comp Two 278.00000

Furniture

Identifier Description Value

15 Couch 15.20000

The program asks the user how many buildings then computers and then furniture they want to input data for then loops that many times inputting data.

The program will then output organized data in tabular form.

Data Structure Design

The program will be organized into a class called GenericRecord. The data member of the class will be a template Type and contain 2 methods, being accessor and mutator functions.

Class diagram:

GenericRecord

record: A template data member

+getRecord()

+setRecord()

Algorithm Design

The first task to be preformed is to read 3 integers from the user asking how many Buildings, Computers, and Furniture they want to input. Then create dynamic arrays based on those numbers and loop over them and input a Identifier, Description, and Value. All of which types depend on which struct is used.

Function main

1. Declare vars
2. Ask for number of array size
3. Make dynamic arrays
4. Loop over asking for input inserting into arrays
5. Display Data
6. Delete arrays
7. Exit

Function getNum

1. Try and get a double from the user
2. If Fail enter a loop
   1. Output error and ask for a double
3. Return that double

Function getString

1. Try and get a string e from the user
2. If Fail enter a loop
   1. Output error and ask for a string
3. Return that string

Function GenericRecord<Type>::setRecord

1. Set record

Function GenericRecord<Type>::getRecord

1. Return record

Implementation

The program was developed in the Linux programming environment. The GNU g++ compiler was used to produce executable files.

The program will only accept numbers as input and will output an error when the user has inputted something incorrect.

Here is sample input and output:

How many buildings: 1

How many Computers: 2

How many Furniture: 1

Enter description of building 1: Buld One

Enter identifier of building 1: Hello

Enter value of building 1: 25

Enter description of computer 1: Comp One

Enter identifier of computer 1: 1

Enter value of computer 1: 255

Enter description of computer 2: Comp Two

Enter identifier of computer 2: 2

Enter value of computer 2: 278

Enter description of furniture 1: Couch

Enter identifier of furniture 1: 15

Enter value of furniture 1: 15.20 2

Buildings

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Identifier Description Value

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