Project 2

<Event Planner>

CIS-17A 42448

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Date: 6/6/201

Introduction

Title: Event Planner

The program uses structures to organize a planner for a month. The events are created to simulate a calendar which can be utilized. The user can use the program to create a monthly plan using menu navigation. The menu will display different events to which the user can input which day will have those events. There are many other functionality to the program which takes advantages of the class concept.

Summary

Project Size: about 1030 lines

Main source: 590 lines

Header and classes: 440 lines

The number of variables: 35+ variables

The number of methods: 10 methods

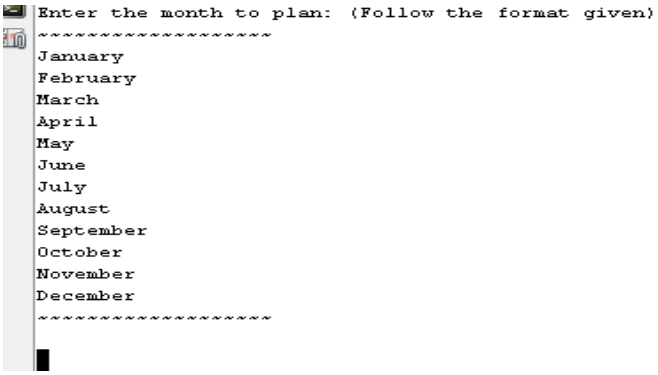
In the process of completing the project, abstract data type took a while to learn how to utilize. The amount of classes used in this project got hard to keep track, but when utilizing structures for planning the month and the event for the program was easy to implement. The classes made implementing different days of the month easy to figure out such as finding the day, finding the event by search and so on.

Description

The creation of the event planner was to use the class concept. Using the class concept made the program easier than if one were to create the program without it.

Input / Output

Most of the program is navigated using a menu system.



By looking at the figure above all one needs to do is follow the directions.

The menu says to enter the month to plan using the format given.

So the user could type: January

This will tell the program to make a monthly plan for January.

Pseudocode

Initialize

Do while loop until program is done

Display Menu

Choose 1 : Enter the events for each day manually

Choose 2: Randomize the amount of events for each type

Choose 3: Reset all data

~all variables 0 or “”

Choose 4: Type in Event type to get the days corresponding to it

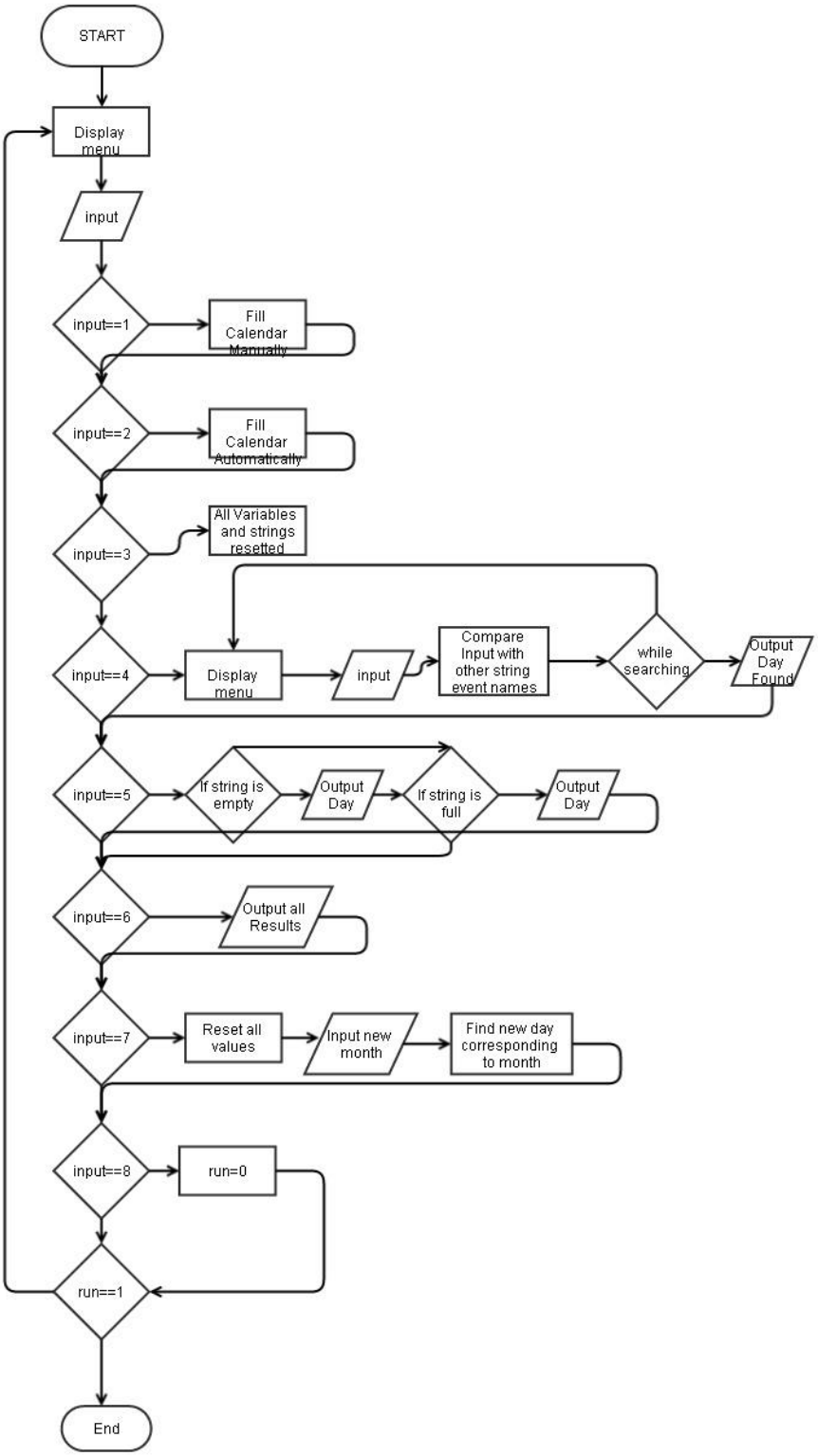
Choose 5: Find days which are open or free

Choose 6: Display Result of everything

Choose 7: Change the month

Choose 8: Exit

Flowchart


START
Display menu
input
input==1
Fill Calendar Manually
input==2
Fill Calendar Automatically
input==3
All Variables and strings resetted
input==4
Display menu
input
Compare Input with other string event names
while searching
Output Day Found
input==5
If string is empty
Output Day
If string is full
Output Day
input==6
Output all Results
input==7
Reset all values
Input new month
Find new day corresponding to month
input==8
run=0
run==1
End

Major Variables

Type	Variable Name	Description	Location
integer	finish	variables to check to end program	main
integer	amount	stores amount for each event	main
integer	choice1	Input for first menu	main
integer	choice2	input for second menu	main
integer	choice3	input for vacation operator menu	main
string	files	reads in file from text	main
integer	year	get year to see if there is a leapyear	main
string	trash	picks up string leftovers	main

Concepts

Concept	Variable Name	Description	Location
CH9 pointers	ptr	used to carry percentage values	main
CH10 strings	files	carry string from file	main
CH10 strings	name	carry a name	main
CH10 strings	da[i]	string array to carry event names	main
CH11 structures	menu	use to strong a single string "January"	main
CH12 File	files	reads in from file	main
CH13 Classes	Every class header Vacation	used to organize data from a month	In all Header files
CH14 Class Operators	operator++()	function which counts up vacation days	vacation.h
CH15 Mulitiple Inheritance	Event	Used to find total event #	event.h
CH16 Exceptions	no variables	to check if there is bad allocation memory	line 496 on main

Reference

Textbook

Power Point

In Class Examples

Program

```
/*
 * File:   main.cpp
 * Author: Andrew Kim
 * Created on June 2, 2014, 10:03 AM
 * CSC17A - Project 2
 * Calendar Organizer
 */

//System Libraries
#include <cstdlib>
#include <iostream>
#include <ctime>
#include <fstream>
#include <iomanip>
#include <new>
using namespace std;

//User-Defined Libraries
#include "Month.h"
#include "Event.h"
#include "Birthday.h"
#include "Groceries.h"
#include "Holidays.h"
#include "Vacation.h"
```

```
#include "Work.h"
#include "Calculate.h"
#include "Abstract.h"

//Function Prototypes
void findDays(string &,int &,int);

//Execution Begins Here
int main(int argc, char** argv) {
    //Declare Variables
    int days,finish=0,plan=0,choice1,choice2,choice3;
    int full=0;
    int year,leap;
    int check1=0,check2=0;
    //For Randomize Event for Calendar
    srand(static_cast<unsigned int>(time(0)));
    //Variables being used on repeat
    int amount[5]={0},day;
    string name,trash;
    //Use The classes in some way
    Birthday evb(amount[0]);
    Groceries evg(amount[1]);
    Holidays evh(amount[2]);
    Vacation evv(amount[3]);
    Work evw(amount[4]);
```

```
//Open File
fstream dataFile("file.txt", ios::in);
string files;
//Enter the Month
if(dataFile){
        getline(dataFile,files,'$');
        cout<<files<<endl;
    }
//Get the Year (For Leap Years)
cout<<"Enter the Year: ";
cin>>year;
//Calculate if Leap Year or Not
if(year%4==0){
    cout<<"Leap Year"<<endl;
    leap=1;
}
else{
    cout<<"Non-Leap year"<<endl;
    leap=0;
}
//Get the Month
cout<<"Enter the month to plan: (Follow the format given)"<<endl;
cout<<"~~~~~~~~~~~~~~~~~~~"<<endl;
cout<<"January"<<endl;
cout<<"February"<<endl;
```

```
cout<<"March"<<endl;
cout<<"April"<<endl;
cout<<"May"<<endl;
cout<<"June"<<endl;
cout<<"July"<<endl;
cout<<"August"<<endl;
cout<<"September"<<endl;
cout<<"October"<<endl;
cout<<"November"<<endl;
cout<<"December"<<endl;
cout<<"~~~~~~~~~~~~~~~~~~~"<<endl;
cout<<endl;
cin>>name;
getline(cin,trash);
//Find the days in the Month
findDays(name,days,leap);
//Construct the Month class
Month date(name,days);
//String array to carry event name
string da[date.getDays()];
do{
   cout<<endl;
   cout<<"~~Menu to add in Events~~~"<<endl;
   cout<<"First choose one of the first 2 options"<<endl;
   cout<<"1. Enter the Events"<<endl;
```

```
cout<<"2. Randomize Events for the Month"<<endl;
cout<<"3. Clear Data"<<endl;
cout<<"~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~"<<endl;
cout<<"~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~"<<endl;
cout<<"4. Search up Events to find out days"<<endl;
cout<<"5. Find days which are open"<<endl;
cout<<"6. Display Result of the Planner"<<endl;
cout<<"7. Change the month"<<endl;
cout<<"8. Press to exit"<<endl;
cin>>choice1;
if(choice1==1)check1=1;
//If went to choice 2 and coming back to choice 1
if(choice1==1&&check2==1){
    cout<<"Resetting Data"<<endl;
    //Reset everything
    for(int i=0;i<date.getDays();i++){
        da[i]="";
    }
    //Using pointers for the array to =0
    *(amount+0)=0;
    *(amount+1)=0;
    *(amount+2)=0;
    *(amount+3)=0;
    *(amount+4)=0;
    *(amount+5)=0;
```

```
    //Reset from Class
    evb.reset();
    evg.reset();
    evh.reset();
    evv.reset();
    evw.reset();
    full=0;
}
//If the Calendar is filled up
if(choice1==1&&full==1){
    cout<<"Sorry. Event Calendar is full"<<endl;
}
//If the Calendar isn't filled up
if(choice1==1&&full!=1){
    do{
        cout<<"~~Choose the Events to add into the Monthly Planner~~~"<<endl;
        cout<<"1. Birthday Events"<<endl;
        cout<<"2. Groceries"<<endl;
        cout<<"3. Holidays"<<endl;
        cout<<"4. Vacations"<<endl;
        cout<<"5. Work-Related"<<endl;
        cout<<"6. Back to main menu"<<endl;
        cin>>choice2;
        //Birthdays
        if(choice2==1){
```

```
    //Amount of Birthdays
    cout<<"How many Birthday events is there?"<<endl;
    cin>>amount[0];
    evb.setNumb(amount[0]);
    //Enter Day
    for(int i=0;i<amount[0];i++){
        cout<<"Which day is the Birthday event?"<<endl;
        cin>>day;
        //If the Day is filled do this
        if(da[day-1]!=""){
            do{
                cout<<"Event for this day is already filled"<<endl;
                cout<<"Please pick another day. ";
                cin>>day;
            }while(da[day-1]!="");
        }
        da[day-1]="Birthday Event";
    }
}
//Groceries
if(choice2==2){
    //Amount of Groceries
    cout<<"How many times do you buy groceries in a month?"<<endl;
    cin>>amount[1];
    evg.setNumb(amount[1]);
```

```
    for(int i=0;i<amount[1];i++){
        //Enter Day
        cout<<"Which day do you buy groceries?"<<endl;
        cin>>day;
        //If the Day is filled do this
        if(da[day-1]!=""){
            do{
                cout<<"Event for this day is already filled"<<endl;
                cout<<"Please pick another day. ";
                cin>>day;
            }while(da[day-1]!="");
        }
         da[day-1]="Groceries";
    }
}
//Holiday
if(choice2==3){
    //Amount of Holidays
    cout<<"How many holidays are there this month?"<<endl;
    cin>>amount[2];
    evh.setNumb(amount[2]);
    for(int i=0;i<amount[2];i++){
        //Enter Day
        cout<<"Which day is a holiday?"<<endl;
        cin>>day;
```

```
        //If the Day is filled do this
        if(da[day-1]!=""){
           do{
              cout<<"Event for this day is already filled"<<endl;
              cout<<"Please pick another day. ";
              cin>>day;
           }while(da[day-1]!="");
        }
        da[day-1]="Holiday";
    }
}
//Vacation
if(choice2==4){
    //Amount of Vacations
    cout<<"How many vacations do you have this month?"<<endl;
    cin>>amount[3];
    cout<<"Do you want to add another vacation day?"<<endl;
    cout<<"1. Yes"<<endl;
    cout<<"2. No"<<endl;
    cin>>choice3;
    if(choice3==1){
        evv.setNumb(amount[3]);
        evv.operator ++();
        amount[3]=amount[3]+evv.getAdd();
        evv.setNuma(amount[3]);
```

```
    }
    if(choice3==2){
        evv.setNumb(amount[3]);
    }
    for(int i=0;i<amount[3];i++){
        //Enter Day
        cout<<"Which day is your vacation?"<<endl;
        cin>>day;
        //If the Day is filled do this
        if(da[day-1]!=""){
            do{
                cout<<"Event for this day is already filled"<<endl;
                cout<<"Please pick another day. ";
                cin>>day;
            }while(da[day-1]!="");
        }
        da[day-1]="Vacation";
    }
}
//Work
if(choice2==5){
    //Amount of Work
    cout<<"How many work related days you have this month?"<<endl;
    cin>>amount[4];
    evw.setNumb(amount[4]);
```

```
            for(int i=0;i<amount[3];i++){
                //Enter Day
                cout<<"When do you have work related events?"<<endl;
                cin>>day;
                //If the Day is filled do this
                if(da[day-1]!=""){
                    do{
                        cout<<"Event for this day is already filled"<<endl;
                        cout<<"Please pick another day. ";
                        cin>>day;
                    }while(da[day-1]!="");
                }
                da[day-1]="Work-Related Event";
            }
        }
        if(choice2==6)plan=1;
    }while(plan==0);
}
//To make it easier
int tot;
int dah=date.getDays();
//If already made options 1
if(choice1==2)check2=1;
//If made option 1 and choice option 2 also
if(choice1==2&&check1==1){
```

```
    //Resets all data
    cout<<"Resetting Data"<<endl;
    //Reset everything
    for(int i=0;i<date.getDays();i++){
        da[i]="";
    }
    amount[0]=0;
    amount[1]=0;
    amount[2]=0;
    amount[3]=0;
    amount[4]=0;
    amount[5]=0;
    evb.reset();
    evg.reset();
    evh.reset();
    evv.reset();
    evw.reset();
    full=0;
}
//If choice option 2 and Calendar is filled up
if(choice1==2&&full==1){
    cout<<"Sorry. Event Calendar is full"<<endl;
}
//If choice option 2 and Calendar isn't filled up
if(choice1==2&&full!=1){
```

```
do{
   //Check to see if there are more events than days in the month
   cout<<"How many Birthdays in this month? :";
   cin>>amount[0];
   cout<<"How many times do you buy Groceries in a month: ";
   cin>>amount[1];
   cout<<"How many Holidays in this month: ";
   cin>>amount[2];
   cout<<"How many Vacation days do you have in this month: ";
   cin>>amount[3];
   cout<<"How many Work-related days do you have this month: ";
   cin>>amount[4];
   //Add the event amount
   tot=amount[0]+amount[1]+amount[2]+amount[3]+amount[4];
   if(tot>dah){
      cout<<"There are more events then days in the month"<<endl;
      cout<<"Re-Enter the amount"<<endl;
      cout<<endl;
   }
   if(tot==dah)full=1;
   //Exception
}while(tot>dah);
//Add Amount After the check
evb.setNumb(amount[0]);
evg.setNumb(amount[1]);
```

```
evh.setNumb(amount[2]);
evv.setNumb(amount[3]);
evw.setNumb(amount[4]);
//Randomize and put events into the days of the month
int a;
for(int i=0;i<amount[0];i++){
   a=rand()%dah+1;
   if(da[a-1]!=""){      //If not empty
      do{
         a=rand()%dah+1;
      }while(da[a-1]!="");
   }
   da[a-1]="Birthday Event";
}
int b;
for(int i=0;i<amount[1];i++){
   b=rand()%dah+1;
   if(da[b-1]!=""){      //If not empty
      do{
         b=rand()%dah+1;
      }while(da[b-1]!="");
   }
   da[b-1]="Groceries";
}
int c;
```

```
for(int i=0;i<amount[2];i++){
   c=rand()%dah+1;
   if(da[c-1]!=""){      //If not empty
      do{
         c=rand()%dah+1;
      }while(da[c-1]!="");
   }
   da[c-1]="Holiday";
}
int d;
for(int i=0;i<amount[3];i++){
   d=rand()%dah+1;
   if(da[d-1]!=""){      //If not empty
      do{
         d=rand()%dah+1;
      }while(da[d-1]!="");
   }
   da[d-1]="Vacation";
}
int e;
for(int i=0;i<amount[4];i++){
   e=rand()%dah+1;
   if(da[e-1]!=""){      //If not empty
      do{
         e=rand()%dah+1;
```

```
            }while(da[e-1]!="");
        }
        da[e-1]="Work Related";
    }
}
if(choice1==3){
    cout<<"Resetting all data"<<endl;
    //Reset everything
    for(int i=0;i<date.getDays();i++){
        da[i]="";
    }
    //Pointer
    *(amount+0)=0;
    *(amount+1)=0;
    *(amount+2)=0;
    *(amount+3)=0;
    *(amount+4)=0;
    *(amount+5)=0;
    //Reset from Class
    evb.reset();
    evg.reset();
    evh.reset();
    evv.reset();
    evw.reset();
    full=0;
```

```
    }
    cout<<endl;
    string search;
    //Search for Events and get days with those events
    if(choice1==4){
        cout<<"Enter which event you want to find the days for."<<endl;
        cout<<"Enter with the format of the following events below"<<endl;
        cout<<"~Event~"<<endl;
        cout<<"Birthday Event"<<endl;
        cout<<"Groceries"<<endl;
        cout<<"Holiday"<<endl;
        cout<<"Vacation"<<endl;
        cout<<"Work Related"<<endl;
        cout<<endl;
        cin.ignore();
        getline(cin,search);
        cout<<endl;
        //If The format for search is wrong
        if(search!="Birthday
Event"&&search!="Groceries"&&search!="Holiday"&&search!="Vacation"&&search!="Work
Related"){
            do{
                cout<<"The formating is wrong"<<endl;
                cout<<"Please type in the Events in the correct format"<<endl;
                cout<<"~Event~"<<endl;
                cout<<"Birthday Event"<<endl;
```

```
            cout<<"Groceries"<<endl;
            cout<<"Holiday"<<endl;
            cout<<"Vacation"<<endl;
            cout<<"Work Related"<<endl;
            cout<<endl;
            getline(cin,search);
            cout<<endl;
        }while(search!="Birthday Event"&&search!="Groceries"&&search!="Holiday"&&search!="Vacation"&&search!="Work Related");
    }
    //Search Event in the Array
    for(int i=0;i<date.getDays();i++){
        if(search==da[i]){
            cout<<"Found in Day "<<i+1<<endl;
        }
    }
    cout<<endl;
}

if(choice1==5){
    //Displays Free Days of the month
    cout<<"The following days are free"<<endl;
    for(int i=0;i<date.getDays();i++){
        if(da[i]==""){
            cout<<"Day "<<i+1<<endl;
```

```
        }
    }
    cout<<endl;
    //Displays Days with events in that month
    cout<<"The following days are not free"<<endl;
    for(int i=0;i<date.getDays();i++){
        if(da[i]!=""){
            cout<<"Day "<<i+1<<" is not free"<<endl;
        }
    }
    cout<<endl;
}
cout<<endl;
if(choice1==6){
    //Display Day # and Event corresponding to it
    for(int i=0;i<date.getDays();i++){
        cout<<date.getName()<<" "<<i+1<<": "<<da[i]<<endl;
    }
    cout<<endl;
    //Displays the # for each event
    cout<<"Birthday Events: "<<evb.getNub()<<endl;
    cout<<"Groceries: "<<evg.getNug()<<endl;
    cout<<"Holidays: "<<evh.getNuh()<<endl;
    cout<<"Vacation: "<<evv.getNuv()<<endl;
    cout<<"Work: "<<evw.getNuw()<<endl;
```

```
//Event Class to add up all Events happened
Event a(evb.getNub(),evg.getNug(),evh.getNuh(),evv.getNuv(),evw.getNuw());
//Adds all the events and displays the # for all events
a.addUp();
cout<<endl;
//Classes for Calculating Percentage
Calculate stuff(evb.getNub(),evg.getNug(),evh.getNuh(),evv.getNuv(),evw.getNuw());
//For Format and decimal places
cout<<setprecision(2)<<fixed<<endl;
//Use Dynamic Array
float *ptr;
//Check with try catch
try{
   ptr=new float[5];
}
catch(bad_alloc){
   cout<<"Insufficient memory"<<endl;
}
/*
cout<<"In One Month"<<endl;
cout<<"Percentage of Birthdays: %"<<stuff.getBP()*100<<endl;
cout<<"Percentage of Groceries: %"<<stuff.getGP()*100<<endl;
cout<<"Percentage of Holidays: %"<<stuff.getHP()*100<<endl;
cout<<"Percentage of Vacation: %"<<stuff.getVP()*100<<endl;
cout<<"Percentage of Work: %"<<stuff.getWP()*100<<endl;
```

```
    */
    //Shows percentage for each Event / Total Event
    ptr[0]=stuff.getBP()*100;
    ptr[1]=stuff.getGP()*100;
    ptr[2]=stuff.getHP()*100;
    ptr[3]=stuff.getVP()*100;
    ptr[4]=stuff.getWP()*100;
    cout<<"Percentage in order (Birthday, Groceries, Holidays, Vacation, Work"<<endl;
    for(int i=0;i<5;i++){
        cout<<"%"<<ptr[i]<<" ";
    }


    cout<<endl;
    cout<<"~~~Random Abstract Test~~~"<<endl;
    Abstract abs("Person",5); //Person A wants 5 days of vacation
    abs.seta(15);
    cout<<"Gets: "<<abs.getStuff()<<endl;
    //

    //Delete
    delete []ptr;
    cout<<endl;
}
if(choice1==7){
```

```
//Reset everything
for(int i=0;i<date.getDays();i++){
    da[i]="";
}
//Pointer to 0
*(amount+0)=0;
*(amount+1)=0;
*(amount+2)=0;
*(amount+3)=0;
*(amount+4)=0;
*(amount+5)=0;
//Reset from Class all to 0
evb.reset();
evg.reset();
evh.reset();
evv.reset();
evw.reset();
full=0;
//Changes the month by input
cout<<"Changing the Month"<<endl;
cout<<"Enter the month to plan: (Follow the format given)"<<endl;
cout<<"~~~~~~~~~~~~~~~~~~~"<<endl;
cout<<"January"<<endl;
cout<<"February"<<endl;
cout<<"March"<<endl;
```

```
            cout<<"April"<<endl;
            cout<<"May"<<endl;
            cout<<"June"<<endl;
            cout<<"July"<<endl;
            cout<<"August"<<endl;
            cout<<"September"<<endl;
            cout<<"October"<<endl;
            cout<<"November"<<endl;
            cout<<"December"<<endl;
            cout<<"~~~~~~~~~~~~~~~~~~~"<<endl;
            cout<<endl;
            cin>>name;
            getline(cin,trash);
            //Find the days in the Month
            findDays(name,days,leap);
            //Utilize the classes mutator functions
            date.setDays(days);
            date.setName(name);
        }
        if(choice1==8)finish=1;
    }while(finish==0);
    //Close the file
    dataFile.close();
    return 0;
}
```

```
void findDays(string &month,int &days,int leap){
   string
a[12]={"January","February","March","April","May","June","July","August","September","Oct
ober","November","December"};
   //Find the Days for that month

if(month=="January"||month=="March"||month=="May"||month=="July"||month=="August"||mo
nth=="October"||month=="December")days=31;
   if(month=="April"||month=="June"||month=="September"||month=="November")days=30;
   //28 days in non leap years
   if(month=="February"&&leap==0)days=28;
   if(month=="February"&&leap==1)days=29;
   //If Months are spelled wrong or in a different format

if(month!="January"&&month!="February"&&month!="March"&&month!="April"&&month!
="May"&&month!="June"&&month!="July"&&month!="August"

&&month!="September"&&month!="October"&&month!="November"&&month!="December
"){
      do{
         cout<<"Re-Enter Month (Ex. January, February, March)"<<endl;
         cin>>month;
         //Check if the months are spelled right, if not keep looping until it is

}while(month!="January"&&month!="February"&&month!="March"&&month!="April"&&m
onth!="May"&&month!="June"&&month!="July"

&&month!="August"&&month!="September"&&month!="October"&&month!="November"&
&month!="December");
```

```
        //Find the Days for that month


if(month=="January"||month=="March"||month=="May"||month=="July"||month=="August"||mo
nth=="October"||month=="December")days=31;

        if(month=="April"||month=="June"||month=="September"||month=="November")days=30;

        if(month=="February")days=28;

    }

}
```