Introduction

The LIFESPAN game is a game that predict the users lifespan. The program outputs questions about the users life style that the user must answer. The answers either shorten or lengthen their predetermined lifespan. At the end the user will be given a prediction on how long they will live. The user can also choose to input ‘1’ in order to learn the exact day of the week they will die.

Summary

Project size: 458 lines

The number of variables: 28

My project contains many concepts that we've learned during the course of the class. The project took me one week to design and complete. I feel like the project was moderately difficult, but I feel like I was thoroughly prepared by the course to complete this project. I was able implement all concepts required by the rubric. My 2nd project is more advanced than my first because of its use of arrays, functions, searching, its increased length, etc. I was also able to complete this project with little help from the SI's.

Description

The main point of the program is to utilize the 7 constructs, primitive data types, formatting, file I/O, as well as functions and arrays. This is done in the form of a game that predicts the users lifespan based on the information it retrieves about their lifestyle.

Variables

Type	Variable	Description
String	tiedwn;	This variable is used for input of the string "yes" or "no". This determines whether the player is married or not.
	job;	This variable is used for input of the string "yes" or "no". This determines whether the player is has a stressful job or not
	smoke;	This variable is used for input of the string" yes" or "no". This determines whether the player smokes or not.
	aches	this variables stores yes or no based on whether the user experiences the listed symptoms
	seatbelt	this variable stores yes or no based on the whethe the user uses a seatbelt or not
integer	players	This integer is used to determine how many games will be played.
	age	
	index	This variable is ued as a counter for several for loops.
	lifespan	This integer is used to determine as the default lifespan in the game. It is incremented and decremented based on how the user answers the questions
	count	This is another varible used to to count in for loops.
	games	this is another varible used to to count in for loops.
	t	used as counter for a do while loop
	calories	this variable stores the calorie intake of the user
	fastfood	this variable stores the users weekkly intake of fast food
	healthplan	this variable store 1 or 2 depending on whether the user has a healthcare plan or not
	plifespan, glifespan	these variables store the age of the users grandparents
float		
	height;	this variable stores the height of the user.
	avgpay	this variable stores the average pay within the last 10 years of the user.
	sum=0	this variable is used as an accumulator.
	pay	this variable stores the users salary
bool	bool married=true;	this variable stores a bolean value based on whether the user is married or not
Constant Variables	SALARY=10	This constant variable is used with the 1-d array 'pay' to retieve the users salaries over the last 10 years.
unsigned short	index=0	this variable is used as a counter for a for loop.
short	index=0;	this variable is used as a counter
array variables	char table[ROWS][COLS]	this variable used in a 2-d character based array
	float pay[SALARY]	this 1-d array is used to store the users salaries

C++ Constructs

Chapter	New Syntax and Keywords	Location
2	Equality Operators and relational Operators(==, !=, ||, &&)	if(job=="yes"&&job=="Yes")
	Output	cout<<"Do you work in a construction site, as law "<<endl;
	Primitive Data types (float, int , etc)	int players, age; string Deathday[5]; float pay[SALARY];bool married=true; unsigned short index=0;
		char table[ROWS][COLS]; short index=0;
		#include <iostream>
		#include <iomanip>
		#include <cstdlib>
		#include <ctime>
		#include <string>
		#include <fstream>
3	input (cin>>)	cin>>players;
	srand	srand(time(0));
	File I/O	fstream fil;, file.open("Deathday.txt",ios::in):,string Deathdays[5];
4	Logical Operators	if(tiedwn!="yes"&&tiedwn!="Yes")
	if/else statement	
		if(married){
		//for loop incrementer
		for(int index=0; index<2; index++)
		{
		++lifespan;
		}
		}
		else{
		//for loop decrementer
		for(int index=0; index<=3; index++)
		lifespan--;
		}
	Switch Stamtement	switch(healthplan)
		{ //for loop to increment lifespan variable
		case 1: for(unsigned short index=0; index<=15; index++)
		{
		lifespan++;
		}

Chapter	New Syntax and Key Words	Location
5	Increment operator	lifespan++, lifespan--,++ lifespan, i++,t++
	while loop	while (index<=5)
		{
		lifespan--;
		index++;
		}
	do while	the last block of code in main is a do -while statement that executes the random out put of a "Deathday"
	using loop to read datat from file	for(int i=0;i<5;i++){
		getline(file,Deathday[i]);
		}
	for loop	for(int index=0; index<=15; index++)
		{
		lifespan--;
		}
	keeping a running total	this is done throughout the program with the lifespan variable
6	functions	the entire program is made of functions for example(void junkfood(int &);)
	refernece variables	&lifespan
	defaulted arguments	void payAverage(float pay[], const int SALARY, int &lifespan) SALARY=10
	global variables	const int COLS=14;
	local variables	string job;
	passing values to a function	payAverage(pay, SALARY, lifespan);

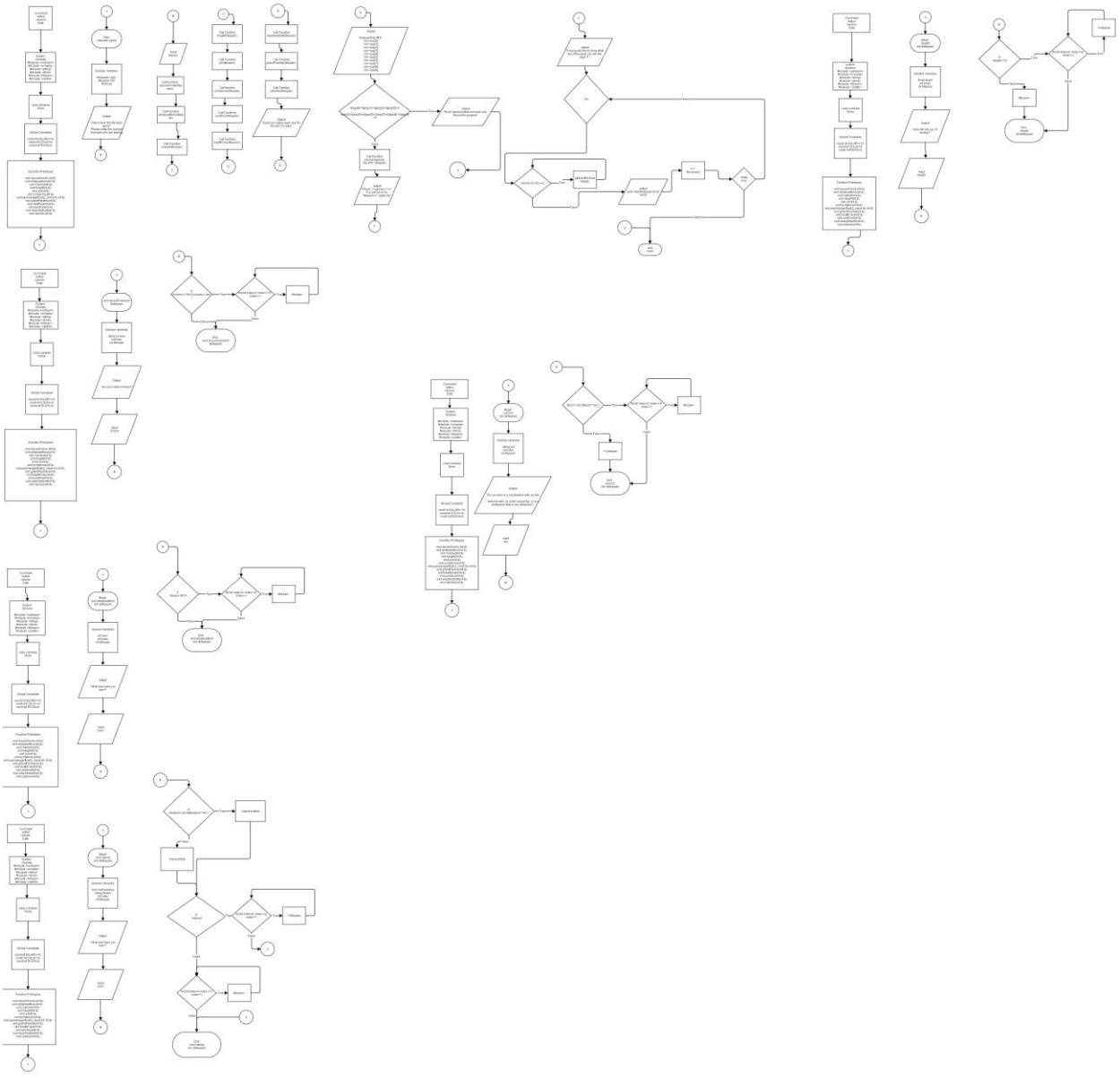
		cin>>pay[1];
		cin>>pay[2];
		cin>>pay[3];
		cin>>pay[4];
		cin>>pay[5];
		cin>>pay[6];
		cin>>pay[7];
		cin>>pay[8];
		cin>>pay[9];
		char table[ROWS][COLS]=
	two dimentional arrays	{ "HotFlashes", "Indigestion", "Soreness", "Insomnia","Depression", "ChestPains"};
	array searching	if(pay[0]<0||pay[1]<0||pay[2]<0||pay[3]<0
		||pay[4]<0||pay[5]<0||pay[6]<0||pay[7]<0||pay[8]<0||pay[9]<0)
		{cout<<"Error! Input positive numbers only. Rerun the program"<<endl;}
	using array as function arguments	void payAverage(float pay[], const int SALARY, int &lifespan)
		char table[ROWS][COLS]=
	array initialization	{ "HotFlashes", "Indigestion", "Soreness", "Insomnia","Depression", "ChestPains"};
		char table[ROWS][COLS]=
	string array	{ "HotFlashes", "Indigestion", "Soreness", "Insomnia","Depression", "ChestPains"};
	Printing array contents	cout<<table[0]<<" "<<table[1]<<" "<<table[2]<<" "<<table[3]<<" "<<table[4]<<" "<<table[5]
	passing values to a function	payAverage(pay, SALARY, lifespan);
7	single dimensional arrays	float pay[SALARY];
		cin>>pay[0];
		cin>>pay[1];
		cin>>pay[2];
		cin>>pay[3];
		cin>>pay[4];
		cin>>pay[5];
		cin>>pay[6];
		cin>>pay[7];
		cin>>pay[8];
		cin>>pay[9];
		char table[ROWS][COLS]=
	two dimentional arrays	{ "HotFlashes", "Indigestion", "Soreness", "Insomnia","Depression", "ChestPains"};
	array searching	if(pay[0]<0||pay[1]<0||pay[2]<0||pay[3]<0
		||pay[4]<0||pay[5]<0||pay[6]<0||pay[7]<0||pay[8]<0||pay[9]<0)
		{cout<<"Error! Input positive numbers only. Rerun the program"<<endl;}
	using array as function arguments	void payAverage(float pay[], const int SALARY, int &lifespan)
		char table[ROWS][COLS]=
	array initialization	{ "HotFlashes", "Indigestion", "Soreness", "Insomnia","Depression", "ChestPains"};
		char table[ROWS][COLS]=
	string array	{ "HotFlashes", "Indigestion", "Soreness", "Insomnia","Depression", "ChestPains"};
	Printing array contents	cout<<table[0]<<" "<<table[1]<<" "<<table[2]<<" "<<table[3]<<" "<<table[4]<<" "<<table[5]

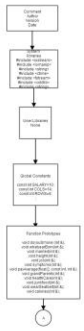
Pseudo Code

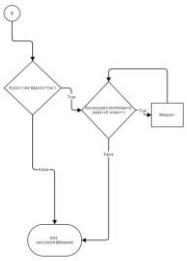
```
//Set random selection of lines from "Deathday" file

//Declare variables

//Simple output of text to show title and explain the game
//User input
//For loop that decides how many times
    //to run he game based on how many players there

//Simple output of who the current player is
//Calling all functions as well as sending and receiving the value of "lifespan"

//simple output to prompt user to input their salary over last decade

        //array variables to store the users salaries

  //This block Of code searches the array for negative numbers
        //It will output and error message if it finds one

//This block Of code searches the array for negative numbers
        //It will output and error message if it finds one

//Call the payAvergae function and send the array values as well as the
        //value of "lifespan"

//Function to determine whether user smokes or not and whether to decrement
//lifespan variable based on the information received
//Function to determine what year user was born whether to decrement
//or increment lifespan variable based on the information received
```

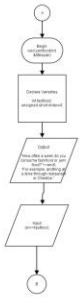
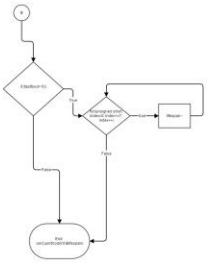
```
//Function to determine whether user is married or not and whether to decrement
//or increment lifespan variable based on the information received
//if else statement to determine whether to decrement or increment
    //lifespan variable
//Function to determine height and whether to decrement
//or increment lifespan variable based on the information received
//Function to determine whether user has a stressful job or not and whether to decrement
//lifespan variable based on the information received
//Function to determine if user wears a experiences listed symptoms and whether to decrement
//lifespan variable based on the information received
//Function to determine users pay average and whether to decrement
//lifespan variable based on the information received
//Function to determine how long users grandparents lived and whether to decrement
//lifespan variable based on the information received
//Function to determine if user has health care plan and whether to decrement
//or increment lifespan variable based on the information received
//Function to determine users junk food habits whether to decrement
//lifespan variable based on the information received
//Function to determine whether user wears a seat belt or not and whether to decrement
//or increment lifespan variable based on the information received
//Function to determine users daily calorie intake and whether to decrement
//lifespan variable based on the information received
```

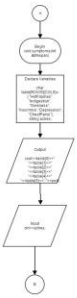
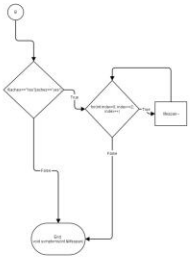
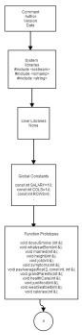
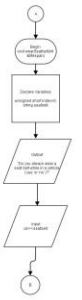
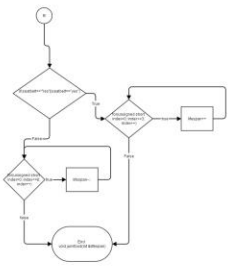
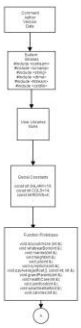
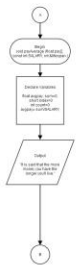
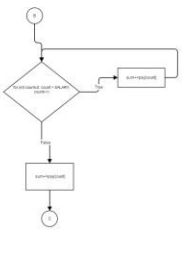
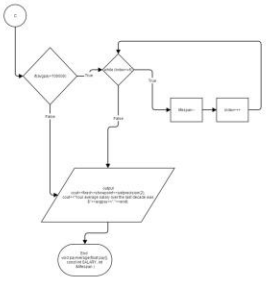
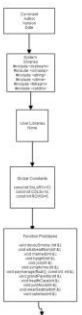
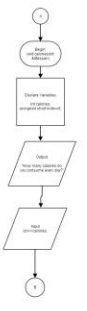
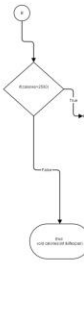
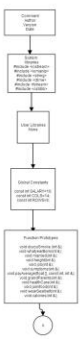
Flo-Charts

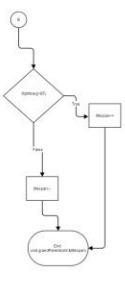
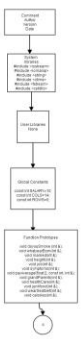
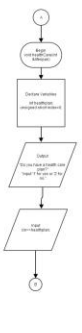
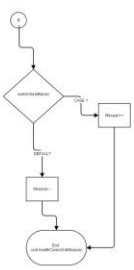






CODE

```
/* File:  Project 2
 * Author: Nnamdi Kalu
 * Created on July 27, 2014, 7:48 PM
 * Purpose: Second Project
 */

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

//Global Constants
const int SALARY=10;
const int COLS=14;
const int ROWS=6;
```

```
//Function Prototypes
void doyouSmoke (int &);
void whatyearBorn(int &);
void married(int &);
void height(int &);
void job(int &);
void symptoms(int &);
void payAverage(float [], const int, int &);
void grandParents(int &);
void healthCare(int &);
void junkfood(int &);
void wearSeatbelt(int &);
void calories(int &);
//Execution Begins here
int main(int argc, char** argv) {

    //Set random selection of lines from
"Deathday" file
    srand(time(0));
    fstream file;
    file.open("Deathday.txt",ios::in);
    string Deathday[5];
```

```
    //Declare variables
    int players, age, lifespan=100, t;


    //Simple output of text to show title and
explain the game
    cout<<"Welcome to the LIFESPAN
game!"<<endl;
    cout<<"This game is simple to play. You will
answer questions"<<endl;
    cout<<"about your lifestyle and in the
the"<<endl;
    cout<<"end you will be given a prediction of
how long you will live!"<<endl;
    cout<<"You will even be given a prediction of
the exact day on which"<<endl;
    cout<<"you will die. Input numbers or letters
when necessary."<<endl;
    cout<<"Questions that do not ask for number
input will require input of 'yes' or 'no'."<<endl;
    cout<<"Please enter the number of people who
are playing."<<endl;
    //User input
    cin>>players;
```

```
    cin.ignore();


    //For loop that decides how many times
    //to run he game based on how many players there are
    for (int games=0; games<players; games++)
    {
        //Simple output of who the current player is
        cout<<"PLAYER :"<<games+1<<endl;


        //Calling all functions as well as sending and receiving the value of "lifespan"
        doyouSmoke(lifespan);
        cout<<"  "<<endl;
        whatyearBorn(lifespan);
        cout<<"  "<<endl;
        married(lifespan);
        cout<<"  "<<endl;
        height(lifespan);
        cout<<"  "<<endl;
        job(lifespan);
        cout<<"  "<<endl;
```

```
symptoms(lifespan);
cout<<"  "<<endl;
junkfood(lifespan);
cout<<"  "<<endl;
healthCare(lifespan);
cout<<"  "<<endl;
wearSeatbelt(lifespan);
cout<<"  "<<endl;
grandParents(lifespan);
cout<<"  "<<endl;
calories(lifespan);
cout<<"  "<<endl;


//simple output to prompt user to input their salary over last decade
cout<<"Input your salary each year for the last 10 years"<<endl;


//array variables to store the users salaries
float pay[SALARY];
cin>>pay[0];
cin>>pay[1];
```

```
        cin>>pay[2];
        cin>>pay[3];
        cin>>pay[4];
        cin>>pay[5];
        cin>>pay[6];
        cin>>pay[7];
        cin>>pay[8];
        cin>>pay[9];

        //This block Of code searches the array for negative numbers
        //It will output and error message if it finds one
        if(pay[0]<0||pay[1]<0||pay[2]<0||pay[3]<0

||pay[4]<0||pay[5]<0||pay[6]<0||pay[7]<0||pay[8]<0||pay[9]<0)
        {cout<<"Error! Input positive numbers only. Rerun the program"<<endl;}
        //Call the payAvergae function and send the array values as well as the
        //value of "lifespan"
        payAverage(pay, SALARY, lifespan);
```

```
      //used to space out the output
     cout<<"  "<<endl;
     //output of the results from game
     cout<<"Player "<<games+1<<": You will live to be "<<lifespan<<" years old."<<endl;


    cout<<"  "<<endl;
    //Input prompt in order to randomly print line from "Deathday" file at end of game
    cout<<"If you would like to know what day of the week you will die, input '1'."<<endl;
    cin>>t;//input
    cin.ignore();
    //do while loop for displaying value from "Deathday"  file
    do{
    int random = rand()%5;
    for(int i=0;i<5;i++){
        getline(file,Deathday[i]);
    }
    //prints out random day of week, selected from a file,
    //that user will die
```

```
    cout<<Deathday[random]<<endl;
    //incrementer to end do-while loop
    t++;
    file.close();}
    while(t<2);
    }



    return 0;
}


//Function to determine whether user smokes or not and whether to decrement
//lifespan variable based on the information received
void doyouSmoke (int &lifespan)
{
    //declare variable
    string smoke;
    //user input prompt
    cout<<"Are you a daily smoker?"<<endl;
    //user input
```

```
    getline(cin,smoke);


    //if statement to determine whether to
decrement lifespan variable or not
    if(smoke=="Yes"||smoke=="yes")
        //for loop decrementer
        for(int index=0; index<=15; index++)
        {
            lifespan--;
        }


}


//Function to determine what year user was born
whether to decrement
//or increment lifespan variable based on the
information received
void whatyearBorn (int &lifespan)
{
    //declare variables
    int born;
    //user input prompt
    cout<<"What year were you born?"<<endl;
```

```
    //user input
    cin>>born;
    cin.ignore();

    //if statement to determine whether to
decrement lifespan variable or not
    if(born<1970)
        //for loop decrementer
        for(int index=0; index<=5; index++)
        {
            lifespan--;
        }

}

//Function to determine whether user is married
or not and whether to decrement
//or increment lifespan variable based on the
information received
void married(int &lifespan)
{
    //declare variables
    bool married=true;
```

```
    string tiedwn;
    //user input prompt
    cout<<"Are you Married?"<<endl;
    getline(cin,tiedwn);

    //if statement for returning boolean value to
married variable
    if(tiedwn!="yes"&&tiedwn!="Yes")
    {
        married=false;


    }

    //if else statement to determine whether to
decrement or increment
    //lifespan variable
    if(married){
        //for loop incrementer
        for(int index=0; index<2; index++)
        {
            ++lifespan;
        }
```

```
    }
    else{
        //for loop decrementer
         for(int index=0; index<=3; index++)
            lifespan--;
    }



}

//Function to determine height and whether to decrement
//or increment lifespan variable based on the information received
void height(int &lifespan)
{
   //declare variables
    float height;
    //user input prompt
    cout<<"How tall are you, in inches?"<<endl;
    //user input
    cin>>height;
```

```
    cin.ignore();
    //if else statement to determine whether ti
increment or decrement
    //lifespan variable or not
    if(height<70)
        //for loop incrementer
       for(int index=0; index<=2; index++)
          {
            ++lifespan;
          }
    else
        //decrementer
        lifespan--;



}


//Function to determine whether user has a
stressful job or not and whether to decrement
//lifespan variable based on the information
received
void job(int &lifespan)
{
```

```
    //declare variables
    string job;
    //user input prompt
    cout<<"Do you work in a construction site, as
law "<<endl;
    cout<< "enforcement, as a first responder, or
"<<endl;
    cout<< "in a profession that is very
stressful?"<<endl;
    //user input
    cin>>job;
    getline(cin,job);


    //if statement to determine whether job equals
yes
    if(job=="yes"&&job=="Yes")
        //for loop to decrement lifespan
       for(unsigned short index=0; index<=5;
index++)
          {
            lifespan--;
          }
```

```
}


//Function to determine if user wears a
experiences listed symptoms and whether to
decrement
//lifespan variable based on the information
received
void symptoms(int &lifespan)
{
    //declare variables
    string aches;


    //Two dimensional array to store characters
    char table[ROWS][COLS]=
    { "HotFlashes", "Indigestion", "Soreness",
"Insomnia","Depression", "ChestPains"};


    cout<<"  "<<endl;
    //array variables
    cout<<table[0]<<" "<<table[1]<<" "<<table[2]<<"
"<<table[3]<<" "<<table[4]<<"
"<<table[5]<<"."<<endl;
```

```
    cout<<"  "<<endl;
    //user input prompt
    cout<<"Do you experience any of the above symptoms on a daily or weekly basis?"<<endl;
    //user input
    getline(cin,aches);


    //if statement to determine whether to decrement lifespan variable
    if(aches=="Yes"||aches=="yes")
        //for loop to decrement lifespan
       for(int index=0; index<=2; index++)
          {
            lifespan--;
          }

}


//Function to determine users pay average and whether to decrement
//lifespan variable based on the information received
```

```
void payAverage(float pay[], const int SALARY,
int &lifespan )
{
   //declare variables
   float avgpay, sum=0;
   short index=0;

   //user input prompt
   cout<<"It is said that the more money you
have the longer you'll live."<<endl;
      //for loop for accumulation of users total
salary
   for (int count=0; count < SALARY; count++)
         sum+=pay[count];

      //declare variable
      avgpay= sum/SALARY;

      //if statement to determine whether lifespan
should be incremented or decremented
      if(avgpay<100000)
         //while loop to decrement lifespan
         while (index<=5)
```

```
        {
          lifespan--;
          index++;
        }
      //formatted output of the users salary
      cout<<fixed<<showpoint<<setprecision(2);
      cout<<"Your average salary over the last
decade was $"<<avgpay<<"."<<endl;
}


//Function to determine how long users
grandparents lived and whether to decrement
//lifespan variable based on the information
received
void grandParents(int &lifespan)
{
   //declare variables
   int plifespan, glifespan;
   //user input prompt
   cout<<"Input both ages your grandparents (on
your moms side)  have lived to."<<endl;
   //user input
   cin>>plifespan;
```

```
    cin>>glifespan;
    cin.ignore();

    int plifeavg= (plifespan+glifespan)/2;

    //if else statement to determine whether to
increment or decrement lifespan variable
    if(plifeavg<85)
       lifespan++;

    else
        lifespan--;




}

//Function to determine if user has health care
plan and whether to decrement
//or increment lifespan variable based on the
information received
void healthCare(int &lifespan)
{
```

```
    //declare variables
    int healthplan;


    //user input prompt
    cout<<"Do you have a health care
plan?"<<endl;
    cout<<"input '1' for yes or '2' for no."<<endl;
    //user input
    cin>>healthplan;


    //switch statement to determine whether
lifespan should incremented or decremented
    switch(healthplan)
    {          //for loop to increment lifespan variable
       case 1: for(unsigned short index=0;
index<=15; index++)
          {
            lifespan++;
          }


    default : for(unsigned short index=0;
index<=15; index++)
            //for loop to decrement lifespan
```

```
            lifespan--;
        }


}


//Function to determine users junk food habits whether to decrement
//lifespan variable based on the information received
void junkfood(int &lifespan)
{
    //declare variables
    int fastfood;
    //User input prompt
    cout<<"How often a week do you consume fast-food or junk food?"<<endl;
    cout<<"For example, anything at a drive through restaurant or Cheetos."<<endl;
   //user input
    cin>>fastfood;
    cin.ignore();
```

```
    //if statement that decides whether to
increment or decrement lifespan variable
    if (fastfood>10)
        //for loop decrementer
       for(unsigned short index=0; index<=7;
index++)
          {
            lifespan--;
          }



}


//Function to determine whether user wears a
seat belt or not and whether to decrement
//or increment lifespan variable based on the
information received
void wearSeatbelt(int &lifespan)
{
   //Declare variables
    string seatbelt;


    //User input prompt
```

```
    cout<<"Do you always wear a seat belt while in a vehicle ('yes' or 'no'.)?"<<endl;
    //user input
    cin>>seatbelt;
    cin.ignore();

    //if else statement for determining whether to increment or decrement lifespan variable
    if(seatbelt=="Yes"||seatbelt=="yes")
        //for loop incrementer
       for(unsigned short index=0; index<=3; index++)
          {
            lifespan++;
          }
    else
        //for loop decrementer
        for(unsigned short index=0; index<=8; index++)
          {
            lifespan--;
          }
```

```
}

//Function to determine users daily calorie intake and whether to decrement
//lifespan variable based on the information received
void calories(int &lifespan)
{
   //Declare variables
    int calories;
    cout<<"How many calories do you consume every day?"<<endl;
    cin>>calories;

    //If statement to determine whether lifespan
    //should decremented due to calorie intake
    if(calories>2500)
        //for loop decrementer
      for(unsigned short index=0; index<=3; index++)
          {
            lifespan--;
          }
```

}