HealthProfile C++ Program

An Assignment

By

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UNIFIED MODELING LANGUAGE (UML) CLASS DIAGRAM

[Place your UML Class Diagram here]

SOURCE CODES

HealthProfile.h

```
/*
* HealthProfile.h
* HealthProfile class definition. This file represents HealthProfile's
  public
* interface without revealing implementations of HealthProfile's member
  function,
* which are defined in HealthProfile.cpp
*
* Stub file for Programming Assignment #2
*
* Name: Enang, Emmanuel Eta
* Matric No: 14/095244039
* Department: Computer Science
*
*/

#include <string>       //uses C++ string class
using namespace std;

class HealthProfile           //HealthProfile class definition
{

public:
      HealthProfile( string, string, string, int, int, int, int, double, int, int, int
      );
      int getAge();
      double getBMI();
      int getMaximumHeartRate();
      double getTargetHeartRate();
      void getInformation();

      int setAge(string);
      int getAge(string);
      double setBMI(string);
      double getBMI(string);
      int getMaximumHeartRate(string);
      int getMaximumHEartRate();

private:
      string firstName;             // variable to hold firstName
      string lastName;              // variable to hold lastName
      string gender;                      // variable to hold gender
      int month;                    // variable to hold integer
      int day;                      // variable to hold day
      int year;                     // variable to hold year
      double height;                // variable to hold height
      int weight;                   // variable to hold weight
      int age;                      // variable to hold age

}; //end class HealthProfile
```

HealthProfile.cpp

```
/*
 * HealthProfile.cpp
 * HealthProfile member-function definitions. This file contains
 * implementations of the member functions prototyped in HealthProfile.h
 *
 * Stub file for Programming Assignment #2
 *
 * Name:        [ Enang, Emmanuel Eta ]
 * Matric No:   [ 14/095244039 ]
 * Department:  [ Computer Science ]
 *
 */

#include <iostream>
#include <string>           // uses C++ string class
#include <math.h>           // uses C++ math class
#include <iomanip>          // used iomanip class to format output text
#include "HealthProfile.h"  // include definition of class HealthProfile
using namespace std;

// constructor initializes patient information
HealthProfile::HealthProfile( string firstName, string lastName, string gender, int month,
                                    int day, int year, int weight, double height, int
currentDay,
                                    int currentMonth, int currentYear)
{
    setFirstName(firstName); // call set function to initialize firstName
    setLastName(lastName); // call set function to initialize lastName
    setGender(gender); // call set function to initialize gender
    setMonth(month); // call set function to initialize month
    setDay(day); // call set function to initialize day
    setYear(year); // call set function to initialize year
    setWeight( weight); // call set function to initialize weight
    setHeight(height); // call set function to initialize height
    setAge(currentDay, currentMonth, currentYear);//call set function to calculate age
}

// function to print object information
void HealthProfile::getInformation()
{
    cout << "\n\nHEALTH PROFILE FOR - " << getFirstName() << " " << getLastName() << endl;
    cout << "First Name: " << setw(17) << getFirstName() << endl;
    cout << "Last Name: " << setw(19) << getLastName() << endl;
    cout << "Gender: " << setw(20) << getGender() << endl;
    cout << "Date of Birth:"<<setw(10) <<getDay() <<"/" <<getMonth() <<"/" <<getYear() <<endl;
    cout << "Weight (in kilograms): " << setw(3) << getWeight() << endl;
    cout << "Height (in meters): " << setw(10) << getHeight() << endl;
    cout << "Age: " << setw(21) << getAge() << " year(s)" << endl;
    cout << "Body Mass Index (BMI): " << setw(8) << getBMI() << endl;
    cout << "Maximum Heart Rate: " << setw(7) << getMaximumHeartRate() << endl;
    cout << "Target Heart Rate: " << setw(11) << getTargetHeartRate() << endl;
    cout << "\nBMI VALUES CHART" << endl;
    cout << "Underweight:   less than 18.5" << endl;
    cout << "Normal:        between 18.5 and 24.9" << endl;
    cout << "Overweight:    between 25 and 29.9" << endl;
    cout << "Obese:         30 or greater" << endl;
}
```

```
// implementation details for functions in HealthProfileStub.h

void HealthProfile::setFirstName(string firstName) {
    HealthProfile::firstName = firstName;
}

void HealthProfile::setLastName(string lastName) {
    HealthProfile::lastName = lastName;
}

void HealthProfile::setGender(string gender) {
    HealthProfile::gender = gender;
}

void HealthProfile::setDay(int day) {
    HealthProfile::day = day;
}

void HealthProfile::setMonth(int month) {
    HealthProfile::month = month;
}

void HealthProfile::setYear(int year) {
    HealthProfile::year = year;
}

void HealthProfile::setWeight(int weight) {
    HealthProfile::weight = weight;
}

void HealthProfile::setHeight(double height) {
    HealthProfile::height = height;
}

void HealthProfile::setAge(int currentDay, int currentMonth, int currentYear) {
    if (currentYear > HealthProfile::height) {
        if (currentMonth > HealthProfile::month) {
            if (currentDay > HealthProfile::day) {
                HealthProfile::age = currentYear - HealthProfile::year;
            } else {
                HealthProfile::age = currentYear - HealthProfile::year - 1;
            }
        } else {
            HealthProfile::age = currentYear - HealthProfile::year - 2;
        }
    } else {
        HealthProfile::age = 0;
    }
}

string HealthProfile::getFirstName() {
    return firstName;
}

string HealthProfile::getLastName() {
    return lastName;
}
```

```
string HealthProfile::getGender() {
    return gender;
}

int HealthProfile::getDay() {
    return day;
}

int HealthProfile::getMonth() {
    return month;
}

int HealthProfile::getYear() {
    return year;
}

int HealthProfile::getWeight() {
    return weight;
}

double HealthProfile::getHeight() {
    return height;
}

int HealthProfile::getAge() {
    return age;
}

double HealthProfile::getBMI() {
    return weight / (pow(height, 2));
}

int HealthProfile::getMaximumHeartRate() {
    return 220 - age;
}

double HealthProfile::getTargetHeartRate() {
return 0.5 * HealthProfile::getMaximumHeartRate();
}

double HealthProfile::getMinTargetHeartRate() {
    return 0.5 * HealthProfile::getMaximumHeartRate();
}

double HealthProfile::getMaxTargetHeartRate() {
    return 0.85 * HealthProfile::getMaximumHeartRate();
}
```

main.cpp

```
/*
* main.cpp
* HealthProfile program. this file represents HealthProfile's public
* interface without revealing implementation of HealthProfile's member function,
* which are defined in HealthProfile.cpp
*
* Stub file for Programming Assignment #2
*
* Name: Enang, Emmanuel Eta
* Matric No: 14/095244039
* Department: Computer Science
*
*/

#include <iostream>
#include <string>
#include "HealthProfile.h"
using namespace std;

int main()
{
	//variable declaration
	string firstName;
	string lastName;
	string gender;
	int month;
	int day;
	int year;
	double height;
	int weight;
	int currentDay;
	int currentMonth;
	int currentYear;
	int usersAge;

	//prompt for patients information
	cout << "Welcome to our program to computerize healthcare records\n";
	cout << "Please fill-in your informations as requested. Thank you\n";
	cout << "\nKindly enter todays day, month and year using numeric representations
	only\n";
	cout << "e.g. 3, 5, 2015 indicating 3rd of May, 2015, else software will
	break\";

	cout << "First Name:"; // displays title First Name of the patient
	cin >> firstName; // input the first name of the patient

	cout << "Last Name:"; // displays title last name of the patient
	cin >> lastName; // input the last name of the patient

	cout << "Gender:"; // displays title  for gender (either male or female)
	cin >> gender; // input gender of patient

	cout << "height(in inches):"; // displays title height of patient
	cin >> height; // input the height of patient
```

```
cout << "weight(in pounds):"; // displays title weight of patient
cin >> weight; // input the weight of patient

//variable declaration
int birthYear;

cout << "Date of Birth" <<endl;
cout << "Month:"; // displays title date of birth
cin >> month;

cout << "Day:" ; // displays title date of birth
cin >> day;

cout << "Year:"; // displays title date of birth
cin >> birthYear;

cout<< "Current Date" <<endl;
cout << "currentMonth:";
cin >> currentMonth;

cout << "currentDay:";
cin >> currentDay;

cout << "currentYear:";
cin >> currentYear;

usersAge = currentYear - birthYear;

cout << "Age = "<<usersAge <<endl;

string mystr;
cout << "maximumHeartrate" <<endl;

//variable declaration
int ageInyears;
int maximumHeartrate;
int targetHeartrate;

cout << "user age in years:";// alerts patient for user age in years
cin >> ageInyears;

maximumHeartrate= 220-ageInyears;// calculates the maximum heart rate
getline (cin, mystr);

cout << "target heart rate:";
cin >> targetHeartrate;

cout << "maximumHeartrate:";// displays title maximum heart rate
cin >>maximumHeartrate;

targetHeartrate=50%-85% maximumHeartrate;// gets the target heart rate of the
patient
getline (cin, mystr);

cout << "BMI values" <<endl;
cout << "underweight: less than 18.5" <<endl;
cout << "normal: between 18.5 and 24.9" <<endl;
cout << "overweight: between 25 and 29.9" << endl;
```

```
	cout << "obese: 30 or greater" <<endl;

	//variable declaration
	int BMI;

	cout << "BMI";
	cout << "Enter your weight(Kg)";
	cin >> weight;

	cout <<"Enter your height(m)" ;
	cin >>height;

	BMI= weight / height * height;

	if (BMI <= 18.5)
	cout << "Then you are underweight";
	else
	if ((BMI > 18.5) && (BMI < 24.9))
	cout << "Your weight is normal";
	else
	if ((BMI > 25) && (BMI <29.9))
	cout << "You are obese";
	else
	cout << "You are obese";
}
```

PROGRAM OUTPUT