Lab 2 Quiz

I need a calculator which could process + * - / %. I need to enter my first number, then I select an operator, then I will enter my second number. The program should calculate the result and prints it. After printing result, the program should ask me whether I want to continue calculating other numbers. If I enter ‘n’ the program should terminate itself or continue otherwise.

Sample Scenarios:

Please enter your first number: 5
Please enter your operator: +
Please enter your second number: 3
Result is: 8.
Do you want to continue: y
Please enter your first number: 7
Please enter your operator: %
Please enter your second number: 2
Result is: 1
Do you want to continue: y
Please enter your first number: 1
Please enter your operator: *
Please enter your second number: 9
Result is: 9
Do you want to continue: n
```c
#include <stdio.h>

int main(void)
{
    /*
    firstNumber : represents our first input number
    secondNumber : represents our second input number
    result : represents our result after we complete our operation
    */
    int firstNumber = 0, secondNumber = 0, result = 0;

    /*
    myOperator : represents the operation we will apply to our first number and second number.
    Ex : If our operation is + then we operate firstNumber + secondNumber
    */
    char myOperator = '+';
    /*
    if the user enter y the program continues,
    otherwise the program terminate itself.
    userInput variable is used to continue the program or terminate the program.
    */
    char userInput = 'y';

    do
    {
        /* First we take the first number as an input from user */
        printf("Enter first number: ");
        scanf("%d", &firstNumber);

        /* Then we take the operator as an input from user */
        printf("Enter an operator: ");
        scanf(" %c", &myOperator);

        /* Then we take the second number as an input from user */
        printf("Enter second number: ");
        scanf("%d", &secondNumber);

        /* we find our operation result with respect to the our operator */
        switch (myOperator)
        {
            /*
            if the user wants to do an addition process, we add our first number to the second number and assign the addition result to our variable.
            */
            case '+':
                result = firstNumber + secondNumber;
                break;
            case '-':
                result = firstNumber - secondNumber;
                break;
        }
    }
    while (userInput == 'y');
}
```
```c
    case '/':
        result = firstNumber / secondNumber;
        break;
    case '*':
        result = firstNumber * secondNumber;
        break;
    case '%':
        result = firstNumber % secondNumber;
        break;
}

/* After we calculate our operation result, we print the result to screen */
printf("Result is: %d\n", result);

/* We ask to user if he or she wants to continue */
printf("Do you want to continue: ");
scanf(" %c", &userInput);

/*
   if the user enters 'y', the program continues,
   terminates otherwise.
*/
while(userInput == 'y');

return(0);
```
An instructor wants to calculate his students' grades by software. The course has two midterms, one final and one project. A student’s grade is calculated by:

1. midterm * %20 + 2.midterm * %20 + Project * % 25 + Final * 35;

The program should ask the instructor the grades for two midterms, project, and final. Then it should calculate the student’s grade and print it. After calculating the term grade, the program should ask whether if the instructor wants to continue calculating other students’ grades. If the instructor enters ‘n’ the program should terminate itself or continue otherwise.

Sample Scenarios:

Please enter 1.midterm grade : 70
Please enter 2.midterm grade : 85
Please enter project grade : 60
Please enter final grade : 60

Student’s grade : 67
Do you want to continue? : y

Please enter 1.midterm grade : 50
Please enter 2.midterm grade : 30
Please enter project grade : 68
Please enter final grade : 40

Student’s grade : 47
Do you want to continue? : n
#include <stdio.h>

int main(void)
{
    /*
    We create four variables to hold the datas of the midterm
    grades, the project grade and the final grade
    */
    int midterm1 = 0, midterm2 = 0, project = 0, final = 0;

    /*
    After we take all the grades from user, we will calculate the
    term grade of the student. We hold the student's term grade in our grade
    variable.
    */
    double grade = 0.0;

    /*
    if the user enter 'y' the program continues, otherwise the program terminate itself.
    userInput validable is used to continue the program or terminate the program.
    */
    char userInput = 'y';

    do
    {
        /*
        We take all midterms, project and final grade from user.
        */
        printf("Enter first midterm: ");
        scanf("%d", &midterm1);

        printf("Enter second midterm: ");
        scanf("%d", &midterm2);

        printf("Enter project: ");
        scanf("%d", &project);

        printf("Enter final: ");
        scanf("%d", &final);

        /*
        We calculate term grade by using our formula.
        */
        grade = midterm1 * 0.2 + midterm2 * 0.2 + project * 0.25 +
        final * 0.35;

        printf("grade is: %lf", grade);

        /* We ask to user if he or she wants to continue */
        printf("Do you want to continue: ");
        scanf("%c", &userInput);
    }
if the user enters y, the program continues, 
terminates otherwise.

while (userInput == 'y');

return(0);
A banker wants to calculate the total pays of capitals by a software. We assume that total payment is calculated by;

\[
\text{Total payment} = \text{capital} + \text{capital} \times \left(\frac{\text{interest}}{100}\right) \times 12 - \text{process cost} - \text{tax}
\]

The program should ask the banker the capital, interest, process cost and the tax. Then it should calculate the total pay and print it. After calculating the total pay, the program should ask whether if the banker wants to continue calculating other payments. If the banker enters ‘n’ the program should terminate itself or continue otherwise.

Sample Scenarios:

Please enter capital : 7000
Please enter interest : 2
Please enter process cost : 200
Please enter tax : 500
Total Payment : 7980
Do you want to continue? : y

Please enter capital : 4500
Please enter interest : 4
Please enter process cost : 400
Please enter tax : 150
Total Payment : 6110
Do you want to continue? : n
```c
#include <stdio.h>

int main(void)
{
    /*
    We create four variables to hold the data of the capital, interest, process cost and tax.
    We suppose that our payment formula is:
    capital + capital * (interest / 100) * 12 - process cost - tax
    */
    int capital = 0, interest = 0, processCost = 0, tax = 0;

    /*
    After we calculate total payment, we assign this payment to our variable called payment.
    */
    double payment = 0.0;

    /*
    if the user enters y the program continues, otherwise the program terminate itself.
    userInput variable is used to continue the program or terminate the program.
    */
    char userInput = 'y';

    do
    {
        /*
        We take all necessary data from user. These data are;
        capital, interest, process cost and tax.
        */
        printf("Enter capital: ");
        scanf("%d", &capital);

        printf("Enter interest: ");
        scanf("%d", &interest);

        printf("Enter processCost: ");
        scanf("%d", &processCost);

        printf("Enter tax: ");
        scanf("%d", &tax);

        /* After we take all necessary data from user, we calculate total payment */
        payment = capital + ((capital * interest * 12) / 100) - processCost - tax;

        /* After the calculation is completed we print total payment to the screen */
        printf("Payment is: %lf", payment);
    }
    while (userInput == 'y');
}
```
/* We ask to user if he or she wants to continue */

printf("Do you want to continue: ");
scanf(" %c", &userInput);
/*
   if the user enters y, the program continues,
   terminates otherwise.
*/

} while(userInput == 'y');

return(0);
}
According to the rules of government, males can be retired when they are 65 and females can be retired when they are 60. Write a C program which calculates the time left in years for a person to be retired. First, the program should take the birth year of a person. Then it should take the person’s gender and prints the years left to be retired. After printing the result, the program should ask whether if the user wants to continue calculating. If the user enters ‘n’ the program should terminate itself or continue otherwise.

Sample Scenarios:

Please enter the birth year of the person : 1983
Please enter the gender of the person (m:male , f:female) : m
Years left to be retired : 38
Do you want to continue: y

Please enter the birth year of the person : 1975
Please enter the gender of the person (m:male , f:female) : f
Years left to be retired : 25
Do you want to continue: y

Please enter the birth year of the person : 1945
Please enter the gender of the person (m:male , f:female) : f
Years left to be retired : The person should be retired.
Do you want to continue: n
```c
#include <stdio.h>

int main(void)
{
    /*
    First we take a birth year from user.
    We use birthYear variable to hold the birth year.
    */
    int birthYear = 0;

    /*
    Since we are in the year of 2010,
    2010 - birth year gives us the age of the person.
    We use ageOfPerson variable to hold the age of person
    */
    int ageOfPerson = 0;

    /*
    if the person is male then he can be retired when he will be 65
    if the person is female then she can be retired when he will be 60.
    
    yearsLeftToBeRetired holds the years left.
    */
    int yearsLeftToBeRetired = 0;

    /*
    if the user enter y the program continues,
    otherwise the program terminates itself.
    userInput variable is used to continue the program or
    terminate the program.
    */
    char userInput = 'y';

    /*
    Since the retire ages of a male and a female is different,
    the gender of person is important.
    We ask the person's gender to the user.
    */
    char gender = 'm';

    do
    {
        printf("Enter the birth year of the person : ");
        scanf("%d" , &birthYear);

        printf("Enter the gender of the person (m: male , f: female): ");
        scanf(" %c" , &gender);

        /*
        Here the age of person is calculated.
        */
        ageOfPerson = 2010 - birthYear;
    }
    while(userInput != 'n');
}
```
if the person is male then we subtract the age from 65 to find the years left to be retired.

if the person is male then we subtract the age from 60 to find the years left to be retired.

if (gender == 'm')
{
    yearsLeftToBeRetired = 65 - ageOfPerson;
}
else if (gender == 'f') // if the person is female
{
    yearsLeftToBeRetired = 60 - ageOfPerson;
}

/* we have calculated years left to be retired for a person. if the years left is smaller than zero, then the person should be retired. */
if (yearsLeftToBeRetired < 0) // if the person is already retired
{
    printf("The person should be retired.");
}
else
{
    printf("Years left to be retired: %d\n", yearsLeftToBeRetired);
}

/* We ask to user if he or she wants to continue */
printf("Do you want to continue: ");
scanf(" %c", &userInput);

/* if the user enters y, the program continues, terminates otherwise. */
while (userInput == 'y');

return(0);