//Computer Science 240

//Project Number 3 (division, multiplication, and making decisions)

//Students: Abrahams, Thomas; Krochman, Max

// Part 1

// Due Feb 16th 2017

//

#include<iostream>

using namespace std;

short drinkNum = 0;

short drinkType = (short)'W';

short sandwichNum;

short sandwichSize = 10;

short total = 0;

void menu() {

char myDrinkType;

cout << "---------------7-11 Convenient Store ---------------" << endl;

cout << "Drinks" << endl;

cout << "\tSoda(S)..............................$2" << endl;

cout << "\tWater(W).............................$1" << endl;

cout << "Sandwiches" << endl;

cout << "\t10 inches............................$3" << endl;

cout << "\t12 inches............................$5" << endl;

//This is how many drinks...

cout << "How many drinks? ";

cin >> drinkNum;

//This is what type of drink

cout << "\tWhat kind of drink (S=Soda, W=Water)? ";

cin >> myDrinkType;

//This is how many sandwiches;

cout << "How many sandwiches?";

cin >> sandwichNum;

cout << endl << "\tWhat size of sandwich (10/12 inches)? ";

cin >> sandwichSize;

myDrinkType = toupper(myDrinkType);

//cout << "Get ready" << endl;

drinkType = (short)myDrinkType;

}

void thankYou()

{

cout << "Your total bill is " << total << endl;

system("Pause");

}

int main() {

\_\_asm {

call menu;

mov ax, drinkNum; //ax = num of drinks

mov bx, sandwichNum; //bx = num of sandwiches

mov cx, drinkType; //cx = types of drinks

cmp cx, 'W';

je true1;

false1:

cmp cx, 'S'; //Check if soda

jmp true2;

true1:

//Drinks multiplied by 1

mov total, ax; //total = 1\*drinks

jmp testSandwich;

true2:

mov bx, 2; //bx = 2

cwd; //Ready multiplication.

imul ax, bx; //ax = 2\*soda

mov total, ax; //total = 2\*soda

testSandwich:

mov ax, sandwichNum; //Num of sandwiches

//Get sandwich type.

mov cx, sandwichSize; //Get the size

//See if it is 10 inches

cmp cx, 10;

je sandTen;

sandTwelve:

mov ax, sandwichNum; //Num of Sandwiches

cwd; //prepare 12 inches \* 5

imul ax, 5; //sand\*12

add total, ax; //Gets total.

jmp finish;

sandTen:

mov ax, sandwichNum; //Num of Sandwiches

cwd; //prepare 12 inches \* 5

imul ax, 3; //sand\*3

add total, ax; //Gets total.

jmp finish;

finish:

call thankYou;

}

}



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// Part 2

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//

#include "stdafx.h"

#include <iostream>

using namespace std;

int intergerInput = 0;

int negitiveOne = -1;

int average = 0;

int counter = 0;

int one = 1;

int emptyInt = 0;

int decPlace = 0;

void mainMessage() {

cout << "Let's compute your score's average:" << endl;

}

void loopMessage()

{

cout << "Enter your score(-1 to stop): ";

cin >> intergerInput;

}

void endMessage()

{

cout << endl << "Your Average is " << average << endl;

cin >> average;// just to pause the program for user input before closing so results can be seen.

}

int main() {

\_\_asm {

call mainMessage;

mov ebx, negitiveOne;// place the -1 value in the ebx reg

LoopBack:

call loopMessage;

mov eax, intergerInput;

cmp negitiveOne, eax;// Flag EAX and the Negitive ONe value for INput

je True;// Test if the User input equals -1

False://If input does not equal -1

add average, eax;

mov ecx, counter;

add ecx, 1;

mov counter, ecx;

jmp LoopBack;

True://If input equals -1

mov eax, average;

mov ecx, counter;

cdq;

idiv ecx;

mov average, eax;//Moving averge calc from EAX to average Int Var for cout later

call endMessage;

}

return 0;

}



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// Part 3

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//

#include<iostream>

#include<cstdio>

using namespace std;

short adultMalePrice = 100;

short teenMalePrice = 75;

short adultFemPrice = 80;

short teenFemPrice = 85;

short age = 0;

char gender = 'M';

short total = 0;

char male = 'M';

char female = 'F';

void menu()

{

cout << "--------------------ACE CLUB--------------------" << endl;

cout << "Male" << endl;

cout << "\tAdult( age > 19 ).......................$100" << endl;

cout << "\tTeenager( age 13-19 )....................$75" << endl;

cout << "Female" << endl;

cout << "\tAdult( age > 19 ).......................$80" << endl;

cout << "\tTeenager( age 13-19 )...................$85" << endl;

cout << "How old are you? ";

cin >> age;

cout << "What is your gender (M/F)? ";

char myGender;

cin >> myGender;

//Convert

gender = myGender;

}

void thankyou()

{

cout << "Your membership is $" << total << endl;

}

void kidWarn()

{

cout << "You are a kid. No membership for you" << endl;

}

void theEnd()

{

cout << "Thank you for your time." << endl;

system("Pause");

}

int main()

{

\_\_asm {

//gender, age,

//Determine gender

menu:

call menu; //Menu gets variables.

mov al, gender; //al = gender

cmp al, male;

je male1;

cmp al, 'm';

je male1;

//Check for female.

mov al, female;

cmp al, female;

je female1;

//Check for female lowercase

mov al, female;

cmp al, 'f';

je female1;

jmp menu;

female1:

mov ax, age; //ax = age

cmp ax, 20; //

jge femaleTwenty;

cmp ax, 13;

jge female13to19;

jmp kid;

femaleTwenty:

//20 years old female.

mov total, 80;

jmp finish;

female13to19:

mov ax, age;

mov total, 85;

jmp finish;

male1:

mov ax, age; //ax = age

cmp ax, 20; //

jge maleTwenty;

cmp ax, 13;

jge male13to19;

jmp kid;

maleTwenty:

//20 years old female.

mov total, 100;

jmp finish;

male13to19:

mov ax, age;

mov total, 75;

jmp finish;

kid:

call kidWarn;

jmp endgame;

finish:

call thankyou;

endgame:

call theEnd;

}

return 0;

}



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// Part 4

// Due Feb 16th 2017

//

#include "stdafx.h"

#include <iostream>

using namespace std;

short a = 0, b = 0, c = 0;

short d = 0, e = 0, f = 0;

short x = 0, y = 0;

short temp1 = 0, temp2 = 0;

short upperHalf = 0, lowerHalf = 0;

short zero = 0, negitiveOne = -1;

void mainMessage()

{

cout << "This program solves the system" << endl << "aX + bY =c" << endl;

cout << "dX + eY = f" << endl;

cout << "ENter the values of a,b, and c:";

cin >> a >> b >> c;

cout << endl;

cout << "Enter the values of d,e, and f:";

cin >> d >> e >> f;

cout << endl;

}

void endMessage()

{

cout << "X =" << x << " " << "Y =" << y;

cin >> x;// to pause program

}

int main()

{

\_\_asm {

call mainMessage;

//First calculating Y

//Firstly the Upper half of the equation

//(a\*f - c\*d)

mov ax, a;

mov bx, f;

mul bx;

mov temp1, ax;

mov ax, c;

mov bx, d;

mul bx;

mov temp2, ax;

mov ax, temp1;

mov bx, temp2;

sub ax, bx;

mov upperHalf, ax;

//Then the lower half

//(a\*e - b\*d)

mov ax, a;

mov bx, e;

mul bx;

mov temp1, ax;

mov ax, b;

mov bx, d;

mul bx;

mov temp2, ax;

mov ax, temp1;

mov bx, temp2;

sub ax, bx;

mov lowerHalf, ax;

//final Y calc

mov ax, upperHalf;

mov bx, lowerHalf;

idiv bx;

mov y, ax;

//Lastly calculate X

//Top Half

//(c\*e - b\*f)

mov ax, c;

mov bx, e;

mul bx;

mov temp1, ax;

mov ax, b;

mov bx, f;

mul bx;

mov temp2, ax;

mov ax, temp1;

mov bx, temp2;

sub ax, bx;

mov upperHalf, ax;

//Lower half

//(a\*e - b\*d)

mov ax, a;

mov bx, e;

mul bx;

mov temp1, ax;

mov ax, b;

mov bx, d;

mul bx;

mov temp2, ax;

mov ax, temp1;

mov bx, temp2;

sub ax, bx;

mov lowerHalf, ax;

//final X calc

mov ax, upperHalf;

mov bx, lowerHalf;

imul negitiveOne;

idiv bx;

imul negitiveOne;

mov x, ax;

call endMessage;

}

return 0;

}

