Introduction To Computer Programming C++
Mr. Clausen
Program C8A, C8B

Program 8A Even or Odd 20 points

Write a program that asks the user to enter an integer. Use an if / else statement to tell the user whether the number is an even or odd integer. Save the program as LastNameFirstNameP8A.cpp in your "S:" directory. To see a model for this program, look at the source codes for the programs "books.cpp" and "pizza.cpp" in the network directory titled: IntroCompProgFiles. Look in the folder, Other C++ Resources and the folder Other Textbook Examples.
As you type all your programs this year, be sure not to type past the 80-column line in Borland C++ 5.02 for Windows. If you have any statements longer than 80 columns, press the return key to "wrap" the statement around to the next line.

1) Type comments at the beginning of the program to display your name and other information just like those used for program 1A. **Make sure to change the program name and program description in these comments, so that the program number, name, and description say what is listed above.**

2) Include <iostream.h> (so you can use the cout and cin commands), and inlcude <conio.h> so you can use getch() to leave your output displayed on the screen until the user presses any key to continue.

3) There are no constants necessary for this program.

4) Inside the **int** main() function, on the first line below the left curly bracket that begins the main function, declare a variable of type **int** named user_number.

5) In all our programs, follow the Input, Calculations, and Output organization of your program. Make sure that you include the following comment lines in the **int** main ( ) portion of your program (each comment followed by the appropriate source code).

6) After the variable declarations (before the input section) use **cout** statements to display your name and period output just like those used for program 1A **Make sure to change the program name and program description in these cout statements.** Start these commands with the following statement:
//------------------------------Display My Information----------------------

7) For the Input section, ask the user to enter an integer. Assign the user's input to the variable user_number. Make your program user friendly by prompting them for this value. Start these commands with the following statement:
//-----------------------------------Input----------------------------------

8) We are going to combine the calculations and output sections of your program into one part. It should consist of

the following comment line and commands to determine whether the integer is an even or an odd number. Start these commands with the following statement:
//--------------------------Calculations and Output--------------------------
To determine whether the number is even or odd, use an if / else statement. The boolean expression should use the modulus operator to divide the number by two. If it divides evenly (the remainder is equivalent to zero, **be careful to use the equivalent operator and not the assignment operator**) then use a cout statement to tell the user that the number is an even number. If it does not divide evenly, use a cout statement with the else portion of the if statement to tell the user that the number is an odd number.

When you are finished with your program, have tested it thoroughly to make sure that your calculations are correct, and are sure that you don't need to make any changes, then save your program in the "W" network mapping, and the Program 8A folder.

Program 8B Menu Choice 20 points

Write a program to convert a temperature from Celsius to Fahrenheit or from Fahrenheit to Celsius using a menu and a switch statement. Save the program as LastNameFirstNameP8B.cpp in your "S:" directory. To see a model for this program, look at the source codes for the programs "books.cpp" and "pizza.cpp" in the network directory titled: IntroCompProgFiles. Look in the folder, Other C++ Resources and the folder Other Textbook Examples. As you type all your programs this year, be sure not to type past the 80-column line in Borland C++ 5.02 for Windows. If you have any statements longer than 80 columns, press the return key to "wrap" the statement around to the next line.

1) Type comments at the beginning of the program to display your name and other information just like those used for program 1A. **Make sure to change the program name and program description in these comments, so that the program number, name, and description say what is listed above.**

2) Include <iostream.h> (so you can use the cout and cin commands), and inlcude <conio.h> so you can use getch() to leave your output displayed on the screen until the user presses any key to continue. Include <iomanip.h> so we can use the **setprecision** command.

3) Declare a constant of type **double** for FREEZING_POINT_OF_WATER = 32.0 and use this identifier in your formulas to convert a temperature from Celsius to Fahrenheit or from Fahrenheit to Celsius.

4) Inside the **int** main() function, on the first line below the left curly bracket that begins the main function, declare a variable of type **char** named menu_choice, declare variables of type **double** for celsius and fahrenheit.

5) In all our programs, follow the Input, Calculations, and Output organization of your program whenever possible. We will deviate from this model in this program as described below. Make sure that you include the following comment lines in the **int** main ( ) portion of your program (each comment followed by the appropriate source code).

6) After the variable declarations (before the input section) use **cout** statements to display your name and period output just like those used for program 1A **Make sure to change the program name and program description in these cout statements.** Start these commands with the following statement:
//------------------------------Display My Information----------------------

7) For the Input section, you will begin by displaying a "menu" and call this the Main Menu. The menu should look like the following:

Main Menu For Temperature Conversion

1) Convert Celsius To Fahrenheit
2) Convert Fahrenheit To Celsius
Q) Quit the Program.

Enter Your Choice:

Assign the user's input to the character variable menu_choice. Start these commands with the following statement:
//-----------------------------------Menu-----------------------------------

8) We are going to combine the input, calculations, and output sections of your program into one part. It should consist of the following comment line and commands to convert from celsius to fahrenheit or vice versa. Start these commands with the following statement:
//----------------------Input, Calculations, and Output----------------------
Before the switch statement, set the precision to one decimal place, so all of our temperatures will display only one decimal place.

To convert from celsius to fahrenheit and vice versa we will use a switch statement. Make sure that your switch organizational structure and style looks like a nice two column table as illustrated in the lecture notes for this lesson.

For case '1' ask the user to enter the celsius temperature using a prompting cout statement followed by a cin statement to store the temperature. Next, have the calculation statement to convert the celsius temperature into fahrenheit. The formula is: fahrenheit = 1.8 * celsius + FREEZING_POINT_OF_WATER; Then, display the celsius temperature and converted fahrenheit temperatures using cout statements followed by getch(), clrscr(), and then the break statement.
For case '2' ask the user to enter the fahrenheit temperature using a prompting cout statement followed by a cin statement to store the temperature. Next, have the calculation statement to convert the fahrenheit temperature into celsius. The formula is: celsius = (fahrenheit - FREEZING_POINT_OF_WATER) * 5.0 / 9.0; Then, display the fahrenheit temperature and converted celsius temperatures using cout statements followed by getch(), clrscr(), and then the break statement.
For case 'Q' tell the user that they have chosen to quit the program and thank them for using your program.

Don't forget to have a **default** cout statement in your switch statement telling the user that they entered an invalid choice, and to enter a 1, 2, or Q.

Since we are using a character variable as our swith control variable, don’t forget to place single quotes around the ‘1’, ‘2’ and ‘Q’.

When you are finished with your program, have tested it thoroughly to make sure that your calculations are correct, and are sure that you don’t need to make any changes, then save your program in the “W” network mapping, and the Program 8B folder.