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\* Assignment 10 - using Functions

\* @author: sh0inx

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#include <stdlib.h>

#include <stdio.h>

//Function: Prompt User for Conversion Unit

int userPrompt(int input) {

//user prompt

printf("\nPlease select the unit of measurement you would like to convert to.\n");

printf("0 - Celsius\n");

printf("1 - Farenheit\n");

printf("2 - Quit\n\n>> ");

scanf\_s("%i", &input);

return input;

}

//Function: Error if User Input != 0, 1, or 2

int errorPrompt(int input) {

//error dialogue

while (input != 0 && input != 1 && input != 2) {

printf("Sorry, that's not an option. Please select either \"0\", \"1\", or \"2\".\n>> ");

scanf\_s("%i", &input);

}

return input;

}

//Function: Prompt for Temperature

double temperaturePrompt(int input, double temperature) {

//Prompt for temperature in Farenheit

if (input == 0) {

printf("\nYou have opted to convert to Celsius. Please input the temperature in Farenheit.\n>> ");

scanf\_s("%lf", &temperature);

return temperature;

}

//Prompt for temperature in Celsius

if (input == 1) {

printf("\nYou have opted to convert to Farenheit. Please input the temperature in Celsius.\n>> ");

scanf\_s("%lf", &temperature);

return temperature;

}

}

//Function: Convert Celsius to Farenheit

double celsiusToFarenheit(double celsius) {

return (((9.0 / 5.0) \* celsius) + 32.0);

}

//Function: Convert Farenheit to Celsius

double farenheitToCelsius(double farenheit) {

return ((5.0 / 9.0) \* (farenheit - 32.0));

}

//Function: Prompt for loop confirmation

int loopPrompt(int loop) {

//end loop prompt

printf("\nIf you would like to convert another temperature (max: 10 values), please input \"1\".\n");

printf("Otherwise, input \"0\", or any other integer, to finish and view results.\n>> ");

scanf\_s("%i", &loop);

return loop;

}

printResults (int countC, int countF, double startingCelsius[], double startingFarenheit[], double convertedCelsius[], double convertedFarenheit[]) {

//if program added to countC, run results

if (countC > 0) {

printf("\nConverted Temperatures (Farenheit)\n");

for (int i = 0; i < countC; i++) {

printf("F: %lf", startingFarenheit[i]);

printf(" . . . ");

printf("C: %lf\n", convertedCelsius[i]);

}

}

//if program added to countF, run results

if (countF > 1) {

printf("\nConverted Temperatures (Celsius)\n");

for (int i = 0; i < countF; i++) {

printf("C: %lf", startingCelsius[i]);

printf(" . . . ");

printf("F: %lf\n", convertedFarenheit[i]);

}

}

}

//Function: Main Thread

main() {

//Introduction

printf("Hello there! Let's convert some temperatures, shall we?\n");

//Initializing variables

int loop = 1; //loop to act as a boolean for deciding whether to loop (initially set to 1 so that loop runs on startup)

int count = 0; //loop number, cannot exceed 10

int countC = 0; //loop number, cannot exceed 10

int countF = 0; //loop number, cannot exceed 10

int input = 3; //input to act as a boolean for deciding between celsius(0) and farenheit(1) (initially set to 3 so that user input is required)

double temperature = 0.0; //user input temperature data

double startingCelsius[11]; //array to hold starting temperature values in Celsius

double startingFarenheit[11]; //array to hold starting temperature values in Farenheit

double convertedCelsius[11]; //array to hold converted temperature values in Calsius

double convertedFarenheit[11]; //array to hold converted temperature values in Farenheit

//loop to obtain multiple data points

while (loop == 1) {

input = userPrompt(input);

input = errorPrompt(input);

if (input == 0 || input == 1) {

temperature = temperaturePrompt(input, temperature);

if (input == 0) {

startingFarenheit[countF] = temperature;

convertedCelsius[countF] = farenheitToCelsius(temperature);

countF++;

}

if (input == 1) {

startingCelsius[countC] = temperature;

convertedFarenheit[countC] = celsiusToFarenheit(temperature);

countC++;

}

}

if (input == 2) {

break;

}

//if count exceeds max array length, break loop before adding to count

if (count > 10) {

break;

}

loop = loopPrompt(loop);

count++;

}

printResults(countC, countF, startingCelsius, startingFarenheit, convertedCelsius, convertedFarenheit);

//end program

system("pause");

}

**[There are only two screenshots, my program runs once for all values instead of having to be run multiple times for each temperature conversion.]**

SCREENSHOT 1: Data Values 1 – 3, Loop = True

Text

Description automatically generated

SCREENSHOT 2: Data Value 4, Loop = True, QuitText

Description automatically generated