

CMIS 102: Introduction to Programming

Assignment 5: Final Project

Summary:

The final project is the last chance to demonstrate that you have acquired understanding of algorithm design and the computer programming process and is valued at 25 points and is 25% of your course grade. It is due at the beginning of the last class.

Part A: Temperature Conversion Program 5 Points

The first part is relatively simple and just requires you to code the temperature converter program from Assignment 3, but this time using two user defined functions called CtoF() and FtoC(). This part requires manipulation of your Assignment 3 Part A code and you may submit the modified design document from Assignment 3 to support these two functions.

Part B: Casino Chip Counter 20 Points

The Imperial Pacific Casino <http://imperialpacificsaipan.com/en/> in Saipan has added one more color chip for the high rollers and decided to automate the chip counting program you created previously to comply with the new IRS withholding tax regulations. They have contracted with you to create a chip counting program that will assist in cashing out client's chips. They have agreed to fly you over for an all expense paid week to observe the casino in action.

You enjoy your time in Saipan, while doing your Design Phase. You have agreed that you will not leave Saipan until all parties agree with your Program Specifications and Design. Once the design is approved you will enter the Implementation Phase and return home to do your coding. The casino will pay you one red chip per hour until you complete the program.

You are required to utilize one or more user defined functions and one or more arrays in your program.

Design Document Requirement:

A **Design Document** is required as in previous assignments and will be 50% of the grade. The design document needs to include the following explicitly labeled items and the first draft is Due at the beginning of the Week 7 class:

1. Program specifications
2. Algorithm design showing mathematical equations in computer algebra format.
3. Flowchart for main program or functions.
4. Design for text used for output displays.
5. Known test data for which you know the results for all possible conditional paths.

Problem Description

This final program may utilize the casino scenario described below. If you would rather create your own program for another worthy application of equal or greater difficulty please clear it

with me during our Week 7 class.

The Casino has made several modifications to earlier version program requirements. A gold colored chip will now be used at the casino and represent \$500. So chip colors are

- Black = \$5
- Blue = \$20
- Red = \$50
- Green = \$100
- Gold = \$500

The USA Internal Revenue Service has modified the tax code such that US Residents will now have tax withheld from all winnings at a rate determined by the residency of the gambler. This will require customers to retain receipts when they buy chips. The customer will need to submit all receipts when they cash out at a cashier. The winnings are calculated by subtracting the receipt total from the chip value total.

The customer will be asked for their residency by showing either a passport or drivers license. If the customer is a USA, Guam, or CNMI resident they will need to provide their social security number. If the gambler has lost they are simply paid cash for all chips. If the gambler has won, the following information needs to be requested and calculations made to determine withholding tax based on the latest IRS regulations:

1. U.S. & Guam Residents will have 20% withholding tax on winning.
2. CNMI Residents will have 10% withholding tax on winnings.
3. All foreign residents will have no withholding tax on winnings.

The cash out is determined by subtracting the tax from the total chip value.

The program must display a set of formatted results to include all entered data to include receipts total, chip quantity by color, chip total value, winnings, tax withheld, and amount cashed out. The final results will be printed as a well formatted customer receipt for taxes.

Program Implementation Submission:

Create a JavaScript program using the file `CasinoTax.html` that will utilize either procedural program constructs or an event driven program using an HTML form for the Graphical User Interface (GUI). Make sure the final file is well documented to include comments with your name.

Due date for the implementation phase is the last class at 6pm.