Project:	Write two programs. **MARIE Binary Search**: Implement a binary search program using the MARIE architecture of our text. If the input value is found, the address of the value is placed in the output. If the input value is not in the list, a hexadecimal value of 2BAD is placed in the output. The list of values to search is given below. -47, -43, -41, -37, -31, -29, -23, -19, -17, -13, -11, -7, -5, -3, -2, -1,1, 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47. Prompt the user to input the search key. **MARIE Exponentiation**: Implement a program that finds a^b where a and b are positive integers and $a^b < 2^{15}$. Prompt for the base, a, first. Then prompt for the exponent b. - Find the time complexity of the two programs.
Deliverables:	Your deliverable is a document. The document is named CRN-*author1-author2*-**p01.docx**. For example, if the team consisting of Ms. Fiona **Faultless** and Ms. Petunia **Perfect,** enrolled in section CRN **11404**, submits project p01, the file name of their document would be **11404-Faultless-Perfect-p01.docx**. The team must attach their document to the note sent to your instructor. Your document must include the following six items.
1.	File **M-BS.mas**. This file, when assembled, executes a binary search on the MARIE simulator. Your file M-BS.mas must have an author identification comment that is similar to: /Author1: Mr. Charles Babbage /Student ID: *00000000 /E-Mail: cbabbage@uco.edu /Author2: Ms. Ada Lovelace /Student ID: *00000001 /E-Mail: elovelace@uco.edu /Course: CMSC 3833 – Computer Organization II /CRN: 10931, Autumn, 2019 /Project: p01 /Due: September 16, 2019 /File: M-BS.mas
2.	File **M-BS.lst**. This file is produced when file **M-BS.mas** is assembled.
3.	Time Complexity Analysis for the MARIE binary search program. Find $T(n)$ where n is the number of values to search and $T(n)$ is the number of instructions executed to find the key value.

4.	File **M-EX.mas**. This file, when assembled, finds a^b where a and b are both positive integers and $a^b < 2^{15}$. Your file M-EX.mas must have an author identification comment that is similar to that described above.
5.	File **M-EX.lst**. This file is produced when file **M-EX.mas** is assembled.
6.	Time Complexity Analysis for the MARIE exponentiation program. Find $T(n)$ where n is a function of a and b, and $T(n)$ is the number of instructions executed to find a^b.
	Modify and complete the project template, http://cs2.uco.edu/~trt/cs3833/p01Template.docx, to create your submission.

Electronic Submission:	You and your partner make a single submission. Attach your document specifying the Instruction Set Architecture that you designed to a note to me trturner@uco.edu.

Scoring Block			
Section	**Available**	**Earned**	**Explanation**
MARIE Binary Search	15	15	
MARIE Binary Search Time Complexity	10	10	
MARIE Exponentiation	15	15	
MARIE Exponentiation Time Complexity	10	10	
Total	**50**	**50**	