Project: Numbering System Converter

The Number System Converter project is designed to convert numbers between different numbering systems, such as binary, octal, decimal, and hexadecimal. The objective of this project is to create an assembly program that can efficiently translate numbers from one system to another, providing the ability for users to input a number and enter the desired output format.

Requirements:

1. You will receive three inputs from the user: the number to be converted, the system it belongs to, and the desired system you want to convert to.
2. Write the following two assembly functions:
    a. OtherToDecimal: receives two parameters (the number and the system to which it belongs)
    b. DecimalToOther: receives a decimal number, and the system to which it should be converted.
3. Output will be the number in the desired system.
4. Your program should be able to convert from any system to any other system.
5. You MUST use mars as your assembly simulator, and you should deliver a program free of syntax errors.
6. **Bonus:** input validation to maintain that the input number belongs to the current numbering system (i.e. current system: 8, number: 78) should output an error message that 78 doesn't belong to the 8 system and exit.

Sample Input and Sample Output:

Enter the current system: 10
Enter the number: 67
Enter the new system: 8

The number in the new system: 103

Enter the current system: 2
Enter the number: 100101

Enter the new system: 10

The number in the new system: 37

Enter the current system: 2
Enter the number: 100101
Enter the new system: 10

The number in the new system: 37

Enter the current system: 7
Enter the number: 43
Enter the new system: 16

The number in the new system: 1F

Enter the current system: 4
Enter the number: 203
Enter the new system: 12

The number in the new system: 2B

Deliverables

One file name G#_ID1_ID2_ID3_ID4_ID5.asm

Grading Criteria

Input from user (base1, number, base2)	1
OtherToDecimal (2 arguments)	2.5
DecimalToOther (2 argument)	2.5
Main Section	3
Valid Output	1
Bonus	2

Submission Rules

1. Max members in a team: **5 and** Min is: **3** from the **same lab**, or **labs given by the same TA**.
2. Assignment due date is: **Thu. 27 Dec. 2024**.
3. Submit one file named G#_ID1_ID2_ID3_ID4_ID5 (**.asm**)
4. **Cheating is totally prohibited and it will be escalated directly to the Dr.**
5. No submissions are accepted by mail.