CSARCH2 – S14
Simulation Project

Project: CSARCH simulator

*Develop a simulator using

- Web-based application with Graphics User Interface (GUI)

Submission type: (1) URL link of your web-based simulator
(2) GitHub link (source code, readme file/user's manual)
Deadline: please refer to Canvas for deadline
Demo: TBA

Group #	**Topic (see description below)**
01	IEEE-754 Decimal-32 floating point translator (including all special cases)
02	IEEE-754 Decimal-64 floating point translator (including all special cases)
03	Binary multiplication simulator
04	Sequential Circuit Binary Multiplier simulator
05	Non-Restoring Unsigned division simulator
06	Restoring Unsigned division simulator
07	BCD generator and translator
08	UNICODE

1. IEEE-754 Decimal-32 floating point translator (including all special cases)
    - Input: 8-digit hex input or 32-bit binary input (provide a separator for various sections of the input)
    - Output: (1) Decimal (provide an option for the user to choose between fixed or floating point) (2) with an option to paste the result in notepad
2. IEEE-754 Decimal-64 floating point translator (including all special cases)
    - Input: 16-digit hex input or 64-bit binary input (provide a separator for various sections of the input)
    - Output: (1) Decimal (provide an option for the user to choose between fixed or floating point) (2) with an option to paste the result in notepad
3. Binary multiplication simulator
    - Input: binary or decimal (max up to 16-bit)
    - Output: (1) pencil-and-paper (2) Booth's (3) Extended booth's algorithm
        - option to show step-by-step or "all" mode of the intermediate result
        - with option to output results in text file.
4. Sequential Circuit Binary Multiplier simulator

- Input: binary or decimal (use a minimum number of bits; max up to 16-bit)
- Output:
    - Option to show either step-by-step or “all” mode of the A and Q output after every step
    - option to output result in text file.

5. Non-Restoring Unsigned division simulator
    - Input: binary or decimal (use minimum number of bits; max up to 16-bit)
    - Output:
        - Option to show either step-by-step or “all” mode of the A and Q output after every step
        - option to output result in text file.
6. Restoring Unsigned division simulator
    - Input: binary or decimal(use minimum number of bits; max up to 16-bit)
    - Output:
        - Option to show either step-by-step or “all” mode of the A and Q output after every step
        - option to output result in text file.
7. BCD generator and translator
    - For BCD generator:
        - Input: decimal; output: unpacked BCD, packed BCD, densely-packed BCD;
    - For Densely-packed BCD translator:
        - Input: Densely-packed BCD, output: decimal
    - Note: output with an option to output result in a text file
8. UNICODE
    - Input: Unicode (with invalid Unicode check)
    - Output: UTF-8; UTF-16; UTF-32 [format: xx xx xx; where x is hex nibble]
    - Note: output with option to paste result in notepad