Lab for ITSC 2181, Module 06 - Unit 2, Lab #2: Declare and Access an Array in RISC-V Programming using RARS

In this lab, you will learn how to declare and access an array in RISC-V assembly in RARS,

We will use RISC-V Assembler and Runtime Simulator (RARS) for this lab, which is available from https://github.com/TheThirdOne/rars. **A video for introducing how to use RARS simulator is available from https://passlab.github.io/ITSC3181/resources/UsingRARS_ITSC3181.mp4.**

1. Review the document Fundamentals-of-RISC-V-Assembly.
2. Understanding the code structure of an assembly program, e.g. the https://github.com/TheThirdOne/rars/wiki/Creating-Hello-World program. There are two sections, named .text section and .data section, in the program. The .text section is for the code and the .data section is for the data. There is a "main" label in the .text section and "str" label in the .data section. The two labels are symbols representing the addresses of the memory locations where corresponding code or data are stored in memory.
3. Study and understand the first 9 lines of the program in https://github.com/TheThirdOne/rars/blob/master/test/memory.s: the way it declares an array of 8 bytes named buffer, the use of la and li instructions to load the address and initialize a register with immediate.
4. Create a main program in RISC-V assembly for the following C program. In the program, both the array A[4] and the variable sum should be declared in the .data section with correct sizes in bytes. Then use la pseudo instruction to load the address of the array A's base and variable sum to registers. From there, you can use load/store instructions to access the memory locations of the variable and array element. Please refer to the lecture and the similar example we develop during the class.

```
void main () {
	int A[4];
	int sum;
	A[0] = 10;
	A[1] = 11;
	A[2] = 12;
	A[3] = 13;

	sum = A[0] + A[1] + A[2] + A[3];
}
```

For submission: please submit the assembly program in the textbox and then a PDF file that shows the execution screenshot of the program in RARS.