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**Notes:**

- The main purpose of this session is to get familiar with conditional branch and unconditional jump instructions.
  - Students are also expected to call procedures in this lab sessions.
  - **Students are required to submit your answers to the BKeL system in two weeks.**
  - To submit, please make a zip file that contains all sources for these questions below, each question should be answered in one source file.
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**Question 1.** Write a MIPS program with the following requirements:

1. Declare an string and its length in memory, for example: "Ho Chi Minh City - University of Technology", length = 42
2. Print the string in a reverse order to the terminal, ie. "ygonolnhceT fo ytisrevinU - ytiC hniM ihC oH"

**Question 2.** Write a MIPS program that request a positive integer number, call  $n$ , from users (please check if it's positive or not). The program then prints  $n$  first elements of the Fibonacci Sequence.

**Question 3.** Write a MIPS program with the following requirements:

1. Declare an integer array with 10 data elements;
2. Request data elements from users and store into the array;
3. Sort the elements of the array in the descending order;
4. Print the results to the terminal.

**Question 4.** In this exercise, students are required to write a recursive program although the problem can be solved by iterations.

Write a MIPS program that calculates the sum of all 10 elements in an integer array with synthetic data . Bellow is pseudo code of the recursive version:

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```
int sum(int *v, int k){
    if (k == 1) return v[0];
    return v[0] + sum(&v[1], k-1);
}
```

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**Question 5.** Taking the same requirements in Question 4. Write a MIPS program that is able to find the maximum elements in an array. Bellow is pseudo code of the recursive version:

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```
int max(int *v, int k){
    if (k == 1) return v[0];
    int temp = max(&v[1], k - 1);
    if (v[0] >= temp) return v[0];
    else return temp;
}
```

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————— the end —————