Operating System Lab (CS 411): (Spring: 2019-2020)

Assignment - 1   *Marks: 10*
Assignment Out: *17th January, 2020*

In this assignment you need to write two C++ program and a small `bash` script. C++ programs are used in the `bash` script as commands. The `bash` script will take a positive integer n as its argument. It reads n integer data and prints the largest data (using the C++ programs). As an example:

```
$ largest.sh 5
6 1 4 7 3
Largest: 7
```

1. The first C++ program `splt.c++`, compiled as
   `$ g++ -Wall splt.c++ -o splt`
   takes a positive integer n as a *command line argument*:
   `$ splt 5`
   It reads n integers in an array. Then it creates a child process. The parent process finds the largest data from the first half of the array (index: 0 to $n/2 - 1$) and prints it. The child process finds the largest data from the second half of the array (index: $n/2$ to $n - 1$) and prints it. The program uses a function (`int largest(int [], int)`) for finding the largest. Note that **none of the process prints anything other than the data and white spaces**.

   ```
   $ splt 5
   6 1 4 7 3
   6
   7
   ```

2. The second C++ program (`max.c++`) is very simple. It reads two integers and prints the larger among them. Compile it as
   `$ g++ -Wall max.c++ -o max`.

   ```
   $ max
   6
   7
   Largest: 7
   ```

3. The `bash` script takes its argument n and passes it to `splt` as its command line argument and uses pipe '`|`' to pass the output of `splt` (both parent and child) to `max`. The script is just one line!

4. All read are from `stdin` and all print are on `stdout`.