Write a program that shows the following menu:

```
MENU:
1. Simple Thread
2. Example of threads (FCFS)
3. Exit
Select one option:
```

Every time this program is executed, only one option can be selected. If user selects:

- **Option 1** – the original code of NachOS will be executed (2 threads are created and execute SimpleThread() function)
- **Option 2** – the program will create 3 threads that will share an array of integers, named *Buffer*. Size of the array is 6, and the elements of this array will be asked the user to be entered.

Below is the description of the functionality of each one of those threads.

- **Thread 1** – it needs to sort the numbers in *Buffer* in descending order. Once the numbers are sorted, it prints out the array.
- **Thread 2** – it finds the largest number in *Buffer*, and calculates its factorial. It prints the array, the largest number, and its factorial.
- **Thread 3** – it calculates the average of the numbers in *Buffer*. It prints the array, and the average value of its numbers.

Francisco Javier Torres Reyes, PhD

Report

The following questions need to be submitted to your Professor via email: francisco.torres@uaslp.mx

Include your OS-CYYY-PN-LastName in the subject of the email, where:

C – S for the semester beginning in January, and F for the semester beginning in August
YYYY – the current year
N – Practice number
LastName – your two last names, with capital letter for the initials

Use **OS-CoverReport.docx** as a template for the report you are going to submit. Name the file CYYYY-OS-LastName-PNN.docx where:

C – S for the semester beginning in January, and F for the semester beginning in August
YYYY – the current year
LastName – your two last names, with capital letter for the initials
NN – practice number.
For example, if I am submitting the report for the first practice and I am taking this course on August 2019, the name for the document would be **F2019-OS-TorresReyes-P01.docx**
Do the same for the .PDF version of the report. You will submit both documents.

Questions:

1. At the beginning of `threadtest.cc`, include the full names of the members of the team and the date.

2. The method to execute processes (`fork()`) won't be modified.

3. `threadtest.cc` is the only file that will be modified in this practice.

4. Be careful where you invoke `yield()`: context switching is based on this. At least there is one call to yield() on each one of the 3 threads.

5. Comment the modifications you made to `threadtest.cc`

6. Show the output of this program to your Professor (schedule a date and a time to do this)