Practical Exam, Spring 2021, M1

Xarxes, Grau d'Enginyeria Informàtica

Full name: ..... NIU: .....

1 Introduction

In this exam you need to implement a small command-line application that performs some network operations. In order to pass this exam:

- read carefully this document,
- implement your application on the `exam.c` file, and
- debug and test your implementation.

A `tar.gz` file containing the application project is provided together with this document.

```
wget http://moixero.uab.cat/x-m1.zip
7z x x-m1.zip
tar xJf 2021e1.tar.xz
cd 2021e1-student/
```

Note: only **administrative** questions will be answered during the examination. In case of technical doubts, please take an educated guess.

2 Specifications

You need to create a program that waits for **a single TCP connection**, and once established, returns a copy of any data received to the original sender, except that your program must swap the endianness of the data, i.e., it must swap the order of every pair of bytes.

Details:

1. The program needs to wait for (only) one incoming TCP connection on port 1234.
2. The program needs to terminate once the connection is closed by the client.
3. The total data sent back by the program needs to be exactly the same data received, but with every pair of bytes swapped.

For example, if your program receives the following bytes:

```
1, 23, 25, 60, 11, 255,
```

it must reply with:

```
23, 1, 60, 25, 255, 11.
```

Note that the previous bytes may be received in two packets of 3 bytes each.

3 Test

Employ the following command to test your deliverable.

```
$ make test
```

Succesful test completion is indicated by printing `Test OK!` in the terminal.

4 Grade certification

Follow these steps to certify that you have passed the exam:

1. Once you are certain that your implementation is correct **and it passes the provided test**, call one of the available professors.
2. **After** receiving confirmation by the professor, upload your `exam.c` file to `http://moixero.uab.cat/`.
3. Copy the obtained SHA1 checksum and delivery time stamp below.

   ..... (checksum)

   ..... (time stamp)
4. Fill the following fields:

   I ..... (student name), with NIU ..... (NIU), certify that the information in the previous item is correct, and that I have not been involved in any academic irregularity (such as plagiarism) during this exam.

   ..... (student signature)
5. Ask a professor to fill the following fields:

   I ..... (professor initials), certify that I have seen the aforementioned student pass the test and that I have visually inspected the `exam.c` source file to my satisfaction.

   ..... (professor signature)
6. Congratulations, you have passed the exam!