Course 'Operating Systems Architecture'– Evaluation exercises: IPC System V

UFAZ, L2
Lecturers: Pierre Parrend, Konul Alyieva
Exercises: Pierre David, some from Vincent Loechner, Unistra.

This exercise sheet is evaluated.

Following given recommendations for your report:
- Professional cover page with name, university level, date.
- Do NOT forget to make a professional, nice-looing layout
- For each exercise
  - Intermediary versions of the running program, with running code + execution trace output + explanation of each step
  - Complete version of the running program, with running code + execution trace output + explanation of each step

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1. Exercise 1

We want to handle requests provided as messages, with each request entailing a priority (between 1 and 3 included, 1 being the highest priority) and a data of type `char []`.
The message queue is identified by a key built by a file name (e.g. `toto`) and the letter E.

1.1. Write the server program for handling the message queue, then handles the messages according to their priority. Each message is handled through a function `handle` that we consider to be available. The program must terminate and erase the message queue when it receives a message with data of size zero.

1.2. Write the client program which receives 0 (for sending a message of size 0) or 2 parameters (`priority` and `data` string).

2. Exercise 2

Explain, for each of the following code excerpts, why it cannot be executed safely by two threads.

```
struct listelem *head ;              double bank_account;

void insert_list (struct listelem *e)   void receive (double amount)
{                                    {
    e->next = head ;                     bank_account += amount ;
    head = e ;                       }
}
```