Distributed Systems
TP n°3 - Sliding window

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All documents are available at: http://perso.ens-lyon.fr/ievgennia.oshurko/teaching/DS

Protocol
The sliding window concept is used in many protocols to keep track of delivered messages. It is for example used as part of the TCP protocol.

![Figure 1: Sliding window](image)

Pseudocode
A pseudocode for the description of this protocol could be the following:

```plaintext
var s_p, a_p : integer init 0, 0;
in_p : array of words /* data to be sent */
out_p : array of words init udef, udef, ...;
S_p: { a_p <= i < s_p + l_p }
begin send (pack, in_p[i], i ) to q end
R_p: { [pack, w, i] in Q_p }
begin receive [pack, w, i]
if out_p[i] == udef then begin
out_p[i] := w;
a_p := max( a_p, i-l_q+1);
s_p := min{ j | out_p[j] = udef};
end
else
/* ignore due to retransmission */
end
L_p : { [pack,w, i ] in Q_p }
begin Q_p = Q_p \ [pack, w, i] end
```
Assignment

Question 1

a) Implement the sliding window algorithm between two processes.

b) Check the correctness of your implementation by transferring 100 integers between the 2 processes. For example process A could send the first 100 decimals of $\pi$ to process B while process B send the first 100 decimals of $\phi$.

c) Simulate packet lost and check how your algorithm react to that. Try with different packet loss rates.