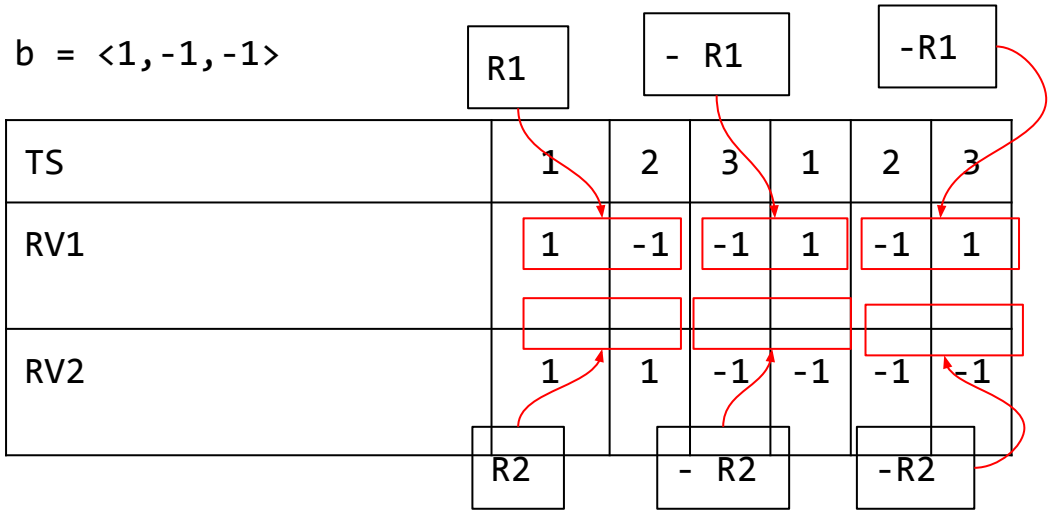
Our original time series :Ts = <1,2,3,1,2,3>

We use a basic window size 2 and a sliding windows size 6
We build 2 basic random vectors of size 2 :
R1 = < 1,-1> , R2 = < 1,1>
We build 2 random vectors RV1 and RV2 of size 6 using basic random vectors R1 or -R1 (to build RV1) and R2 or -R2 (to build RV2) . This choice is determined by a random vector b:
if bi = 1 we use R1 and if bi = -1 we use -R1.

We set b = <1,-1,-1>



We obtain the following
Sketch TS*(RV1,RV2) :
<(-1+-2+1),(3+-4+-5)>
< -2 , - 6 >

We add two incoming values : < 3,2>

We remove the two first values in the series : <1,2>
And The series becomes : < 3,1,2,3,3,2>

time series	1	2	3	1	2	3	3	2
RV1			1	-1	-1	1	-1	1
RV2			1	1	-1	-1	-1	-1

New values in
the time series

We update the current sketch by deleting the first dot product of the two outdated values

Current sketch : <(-1+-2+1),(3+-4+-5)>

We add two incoming values : < 3,2>

We remove the two first values in the series : <1,2>
And The series becomes : < 3,1,2,3,3,2>

time series	1	2	3	1	2	3	3	2
RV1			1	-1	-1	1	-1	1
RV2			1	1	-1	-1	-1	-1

New values in the time series

We update the current sketch by deleting the first dot product of the two outdated values

Current sketch : <(-1+-2+1),(3+-4+-5)>

Then, the values are shifted and multiplied by 1 or -1 according to “b”. Here “-2” becomes “2” because it moves from a position having value -1 to a position having value 1 in “b”.

New sketch : <(2+1+?),(4+-5+?)>
Reminder b = <1,-1,-1>

We add two incoming values : < 3,2>

We remove the two first values in the series : <1,2>
And The series becomes : < 3,1,2,3,3,2>

time series	1	2	3	1	2	3	3	2
RV1			1	-1	-1	1	-1	1
RV2			1	1	-1	-1	-1	-1

New values in
the time series

We update the current sketch by deleting the first dot product of the two outdated values

Current sketch : <(-1+-2+1),(3+-4+-5)>

And we add the values of the dot product restricted to the two incoming values.

New sketch : <(2+1+-1),(4+-5+-5)>
< 2 , -6 >

And again, we add two incoming values : < 1,3>

We remove two values in the series : <3,1> The series becomes : < 2,3,3,2,1,3>

time series	3	1	2	3	3	2	3	1
RV1			1	-1	-1	1	-1	1
RV2			1	1	-1	-1	-1	-1

New values in the time series

We update the current sketch by deleting the dot product of the two outdated values

Current sketch : <(2+1+-1),(4+-5+-5)>

And we add the values of the dot product restricted to the two incoming values.

New sketch : <(-1+-1+-2),(5+-5+-4)>

< -4 , -4 >

We repeat the same process every timesteps...