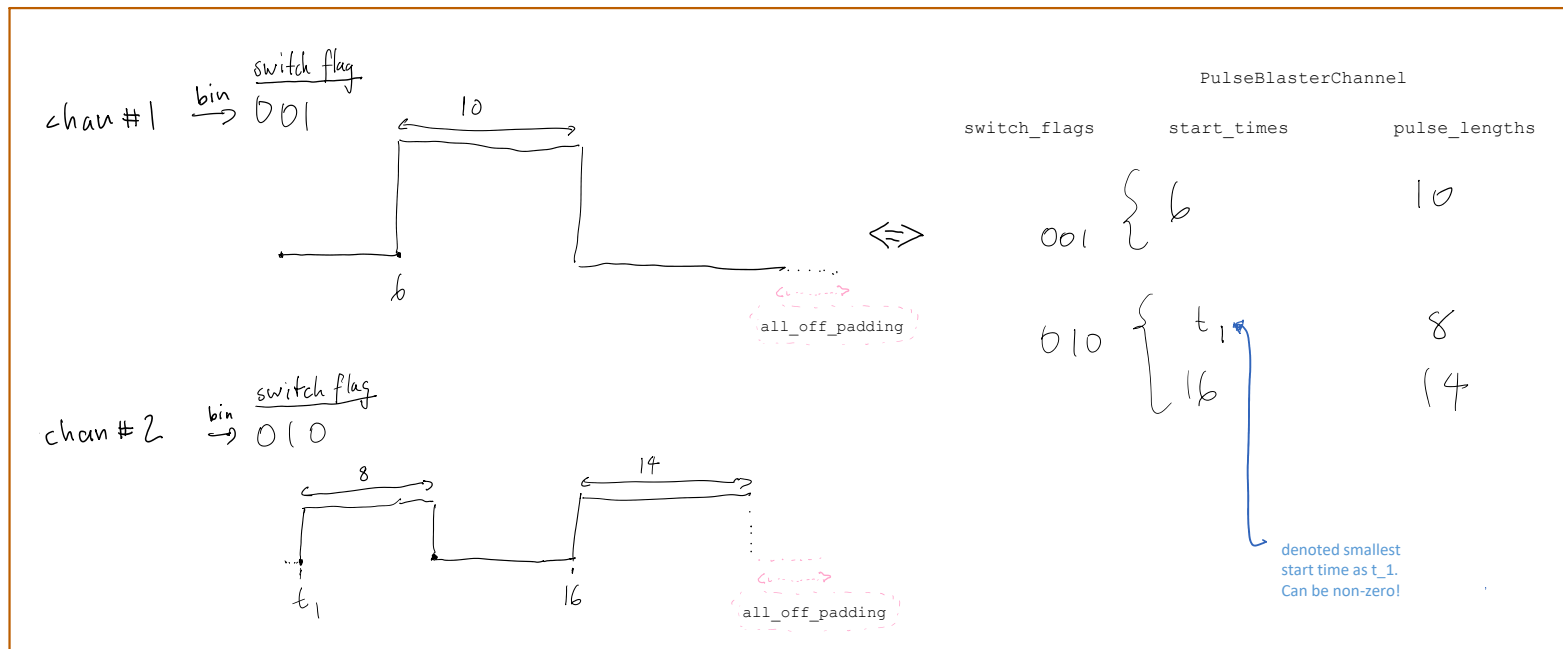


`_create_insts_lengths(channels: List[PulseBlasterChannel], all_off_padding:int=0)`

- Is an intermediate step to generate pb instructions:
 - o Generates two array of equal lengths called `inst_lengths` and `switch_flags`
 - o `Inst_lengths` are durations of a instructions
 - o `Switch_flags` are flags that toggle the state of the channel i.e: off-> to on and on-> off.
- This two array allows to compute the output state of pulse blaster.

Example of desired pulse program



`_create_insts_lengths(channels: List[PulseBlasterChannel], all_off_padding:int=0)`

1. Combine all PulseBlasterChannels

unsorted_times unsorted_switch_flags

6 001

16 001

t_1 010

8 010

16 010

30 010

2. Prepend (0, 000) & sort w.r.t. time

times

0

t_1

6

8

16

16

30

switch_flags

000

010

001

010

001

010

010

prepend (0, 000) such that all channels can be low @ $t \leq t_1$

3. Diff times to get instruction lengths.

inst_lengths

t_1

$6 - t_1$

2

8

0

14

all_off_padding

switch_flags

000

010

001

010

001

010

010

We can add many 000 we want since $000^A \times = X$ $\Rightarrow 000^A$ is identity operator

Each channel is switched on and off

the final switch flag switches off last high channel. In other words, all channels will be off after it is processed.

Insert all_off_padding length here.