

# The game of TV-Tennis

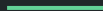
---

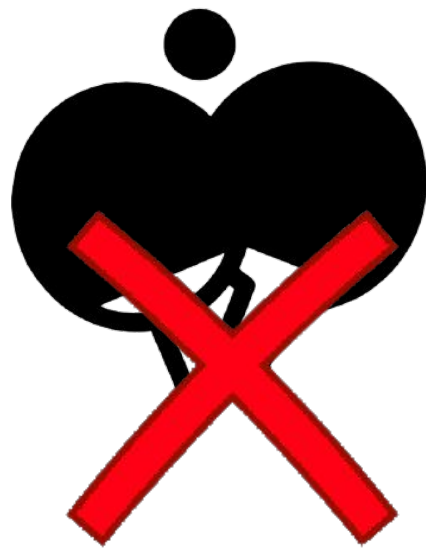
Project group 6

22 May 2021

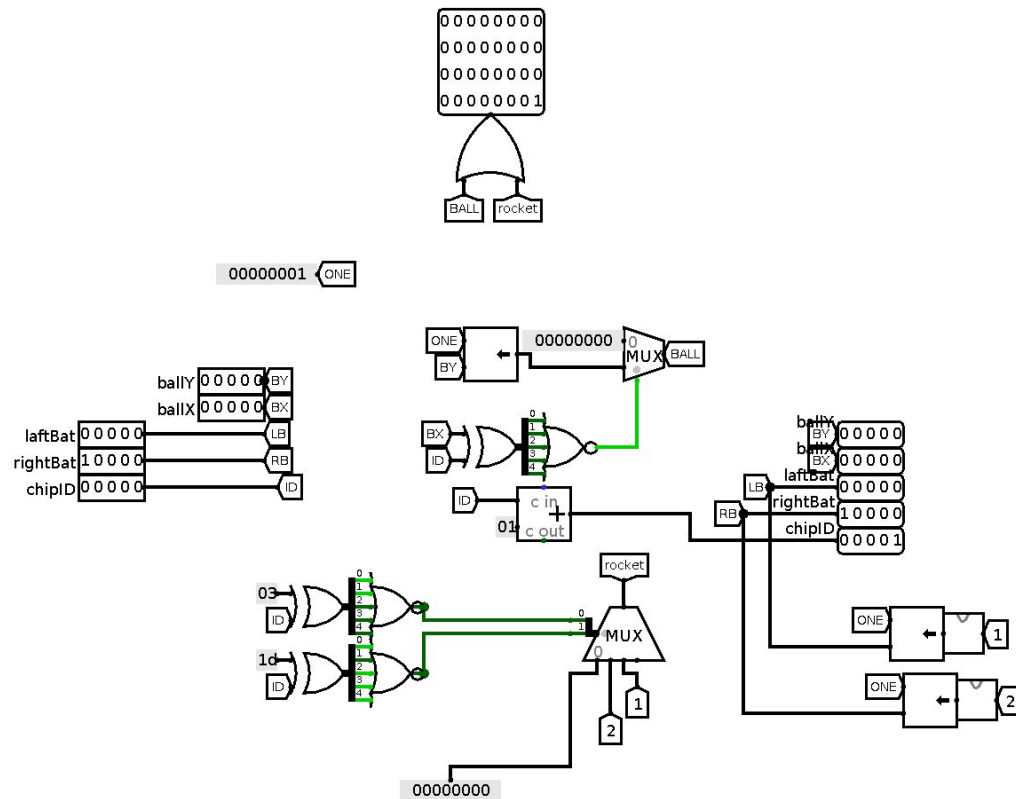
# Contents

- Videosystem
- Kinematic controller
- Artificial intelligence
- Project innovations
- Further development plan
- Demo





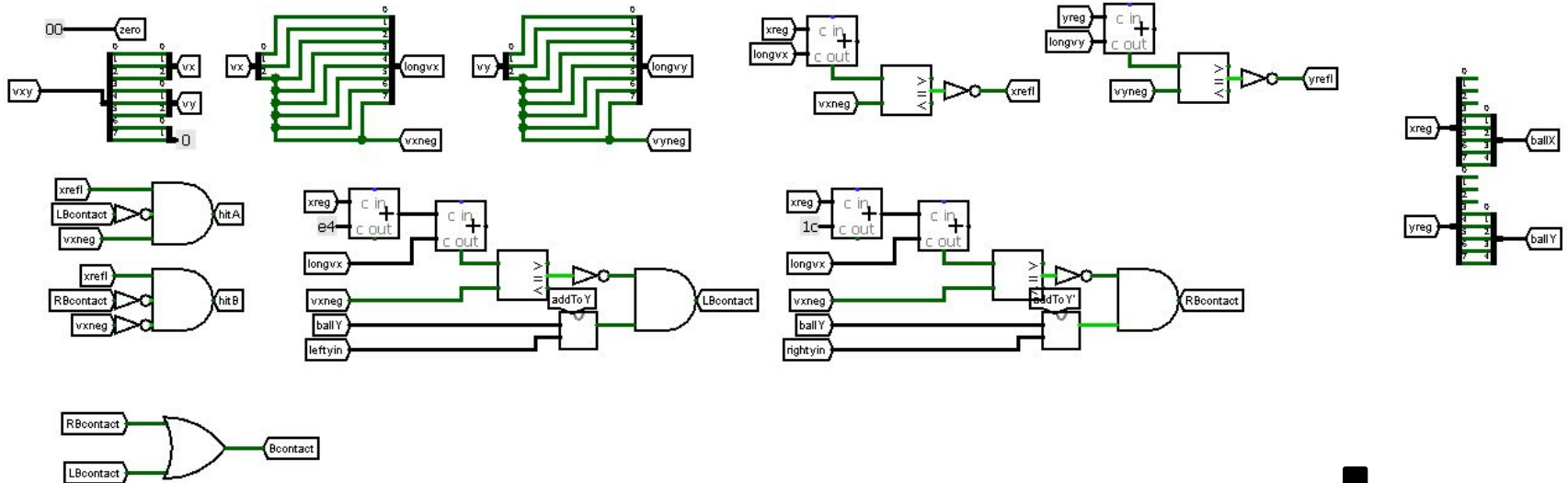
# Videosystem



# Kinematic Controller

## Combinational block

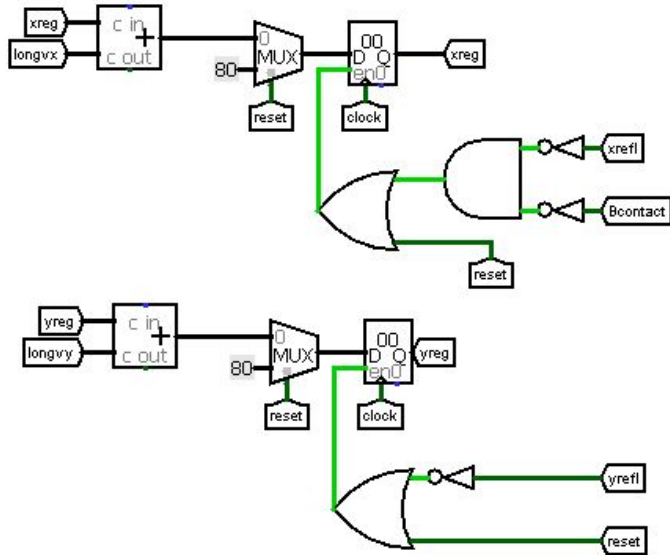
### Combinational



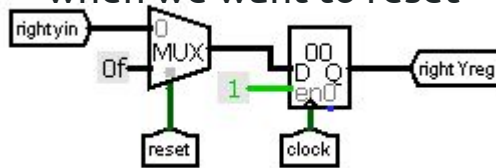
# Kinematic Controller

## Behavior block

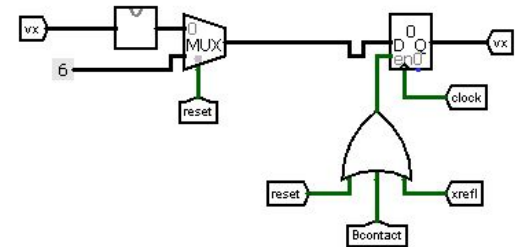
Update all coordinates



Update velocity  
when we want to reset

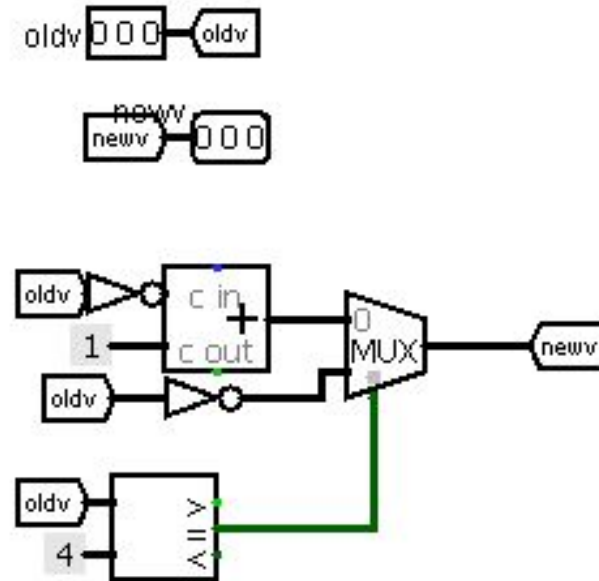


Update horizontal speed



# Kinematic Controller

## Reflect chip



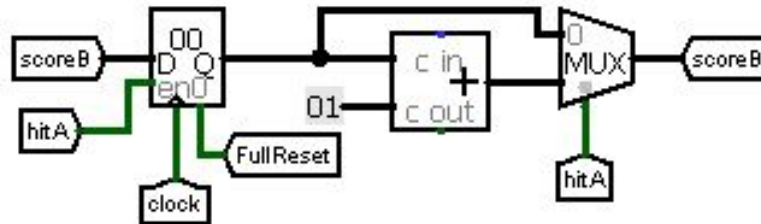
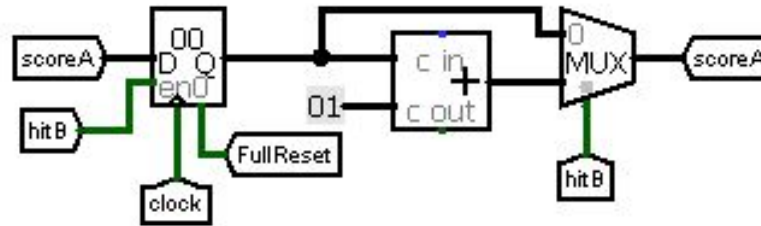
## Updating the vertical speed of the ball





# Kinematic Controller

These two schemes are for counting scores





# Artificial intelligence

## Making the bot for controlling right bat

```
1  .sect 0x00
2  start:
3  ldi r3,bx
4  ldi r3,r3
5  ldi r1,bat
6  st r1,r3
7
8  toPlayer: # when the ball goes to player
9  ldi r2,vy #bot chases it with Vy=-1
10 ldi r2,r2
11 tst r2
12 bml minus
13 inc r3 #v=1
14 br continue
15 minus:
16 dec r3 #v=-1
17 br continue
18
19 continue:
20 ldi r9,vx
21 ldi r9,r9
22 tst r9
23 st r1,r3
24 bml toPlayer
25
26 ldi r9,vy
27 ldi r9,r9
28
29 go: #ball moves to bot
30 # bot moves with VyVy_Ball
31
32
33 st r1,r3 # we always store Bat_y so his movement
34 # will be smother
35 add r0,r3
36
37 ldi r1,bx
38 ldi r1,r1
39
40 ldi r1,bat
```

Memory Matches

Adr:	Label:	Content
FF	bat	+000

Registers

PC	P5: I Page	IX2X	SP
00	0 000	0000	89

r0	r1	r2	r3
0x00	0x00	0x00	0x00
NUL	NUL	NUL	NUL
+000 000	+000 000	+000 000	+000 000
00000000	00000000	00000000	00000000

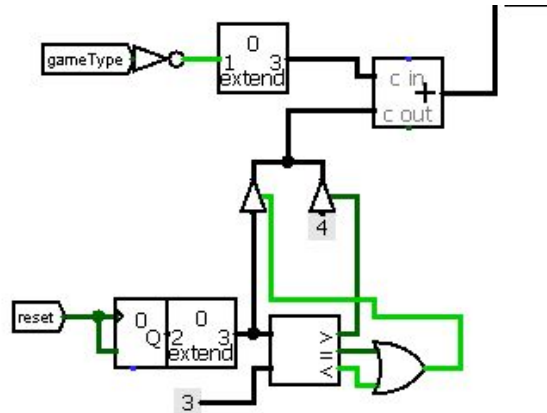
Page 0 Memory

0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
1	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
2	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
3	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
4	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
5	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
6	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
7	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
8	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
9	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
A	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
B	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
C	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
D	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
E	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
F	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00

I/O Ports + IP\_Butons\_8x1

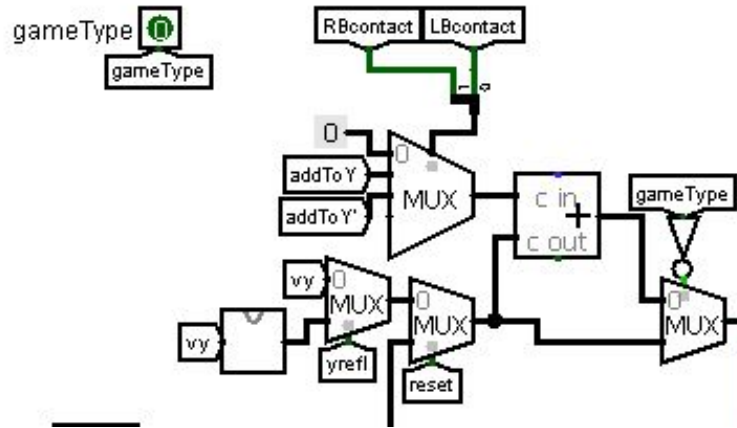
# Project innovations

## Random vertical speed after restart



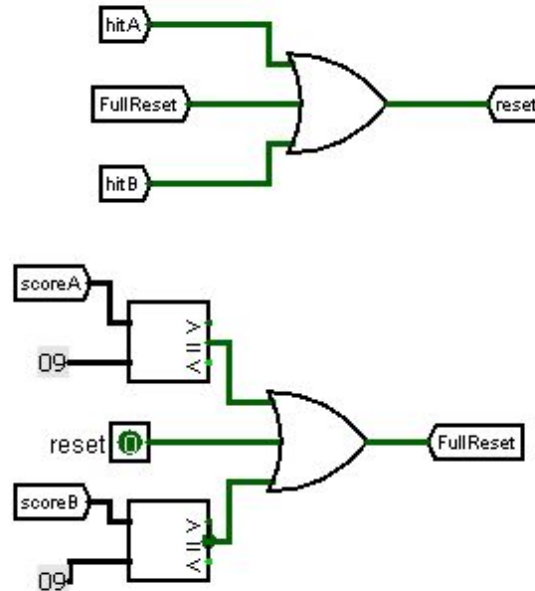
# Project innovations

Two different game modes



# Project innovations

Reset ball position after goal or pressing reset button



# Further development plan

- Add “real” angles
- Add multiple difficulty levels for the bot
- Add animations and sounds



# Thank you for your attention

Panfilov Vyacheslav - group 20213

[v.panfilov@g.nsu.ru](mailto:v.panfilov@g.nsu.ru)

Malov Alexey - group 20214

[a.malov1@g.nsu.ru](mailto:a.malov1@g.nsu.ru)

Ivanov Oleg - group 20215

[o.ivanov@g.nsu.ru](mailto:o.ivanov@g.nsu.ru)

