

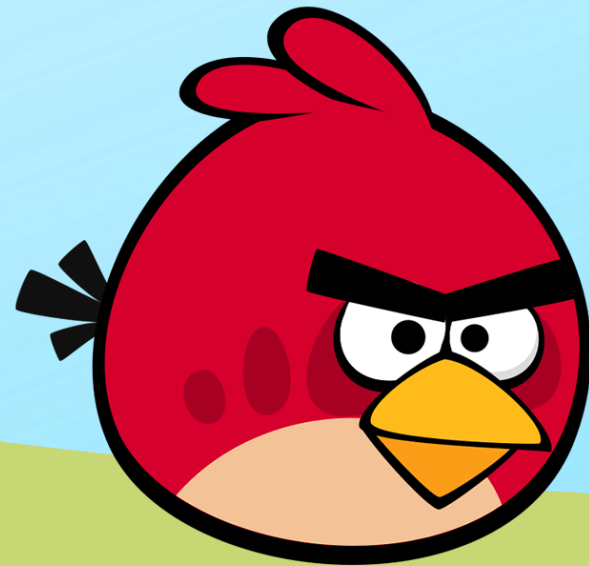
The background is a vibrant, cartoonish landscape. At the top left, a bright yellow sun with rays is partially obscured by a large, fluffy white cloud. The sky is a clear, light blue. On the left and right sides, there are stylized green trees with white trunks. The ground is a rolling green hill with several green bushes in the foreground. In the center, the title 'ANGRY BIRD' is written in large, bold, green capital letters with a slight shadow effect. Below the title, the names 'JAWAD SEMAAN' and 'HANNA ASHKAR' are listed in bold black text. Further down, the instructor's name 'ALON' and the submission date '01-21-2025' are provided, followed by 'WINTER 2025'. At the bottom, two Angry Birds are depicted: a red bird on the left and a yellow bird on the right, both with angry expressions.

# ANGRY BIRD

**JAWAD SEMAAN**

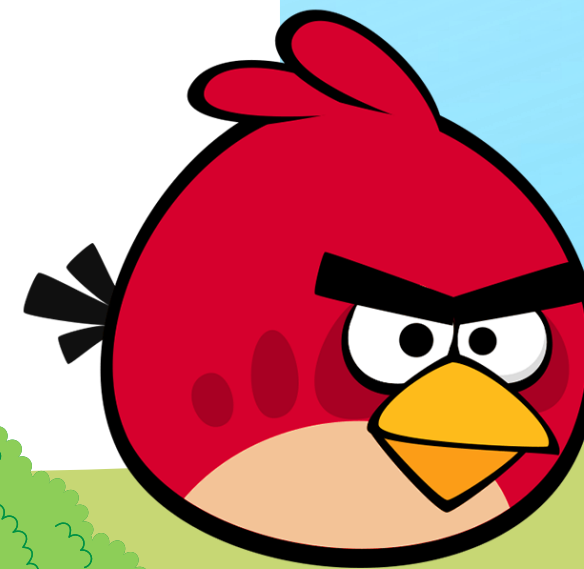
**HANNA ASHKAR**

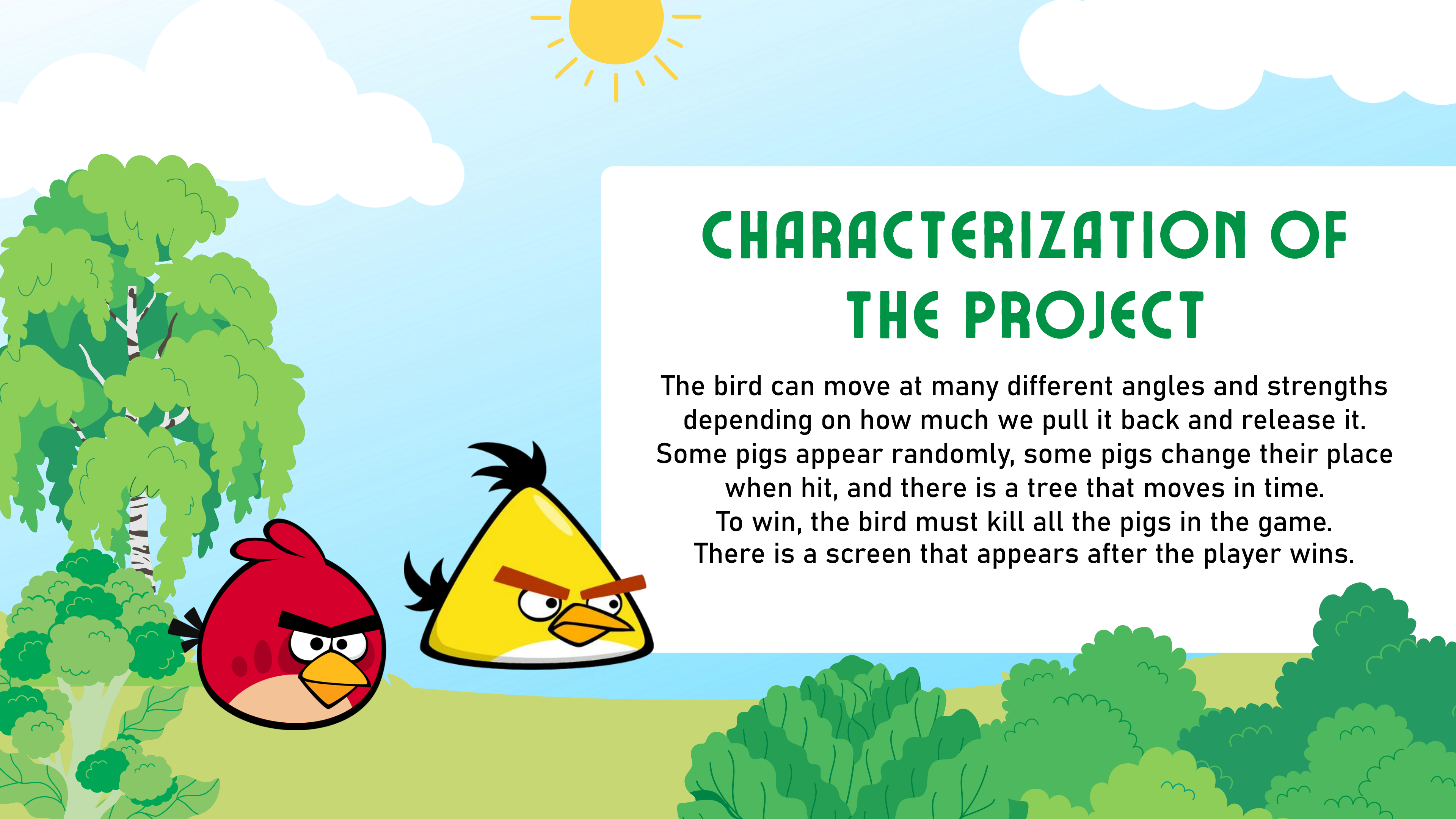
**INSTRUCTOR NAME: ALON**  
**SUBMISSION DATE: 01-21-2025**  
**WINTER 2025**



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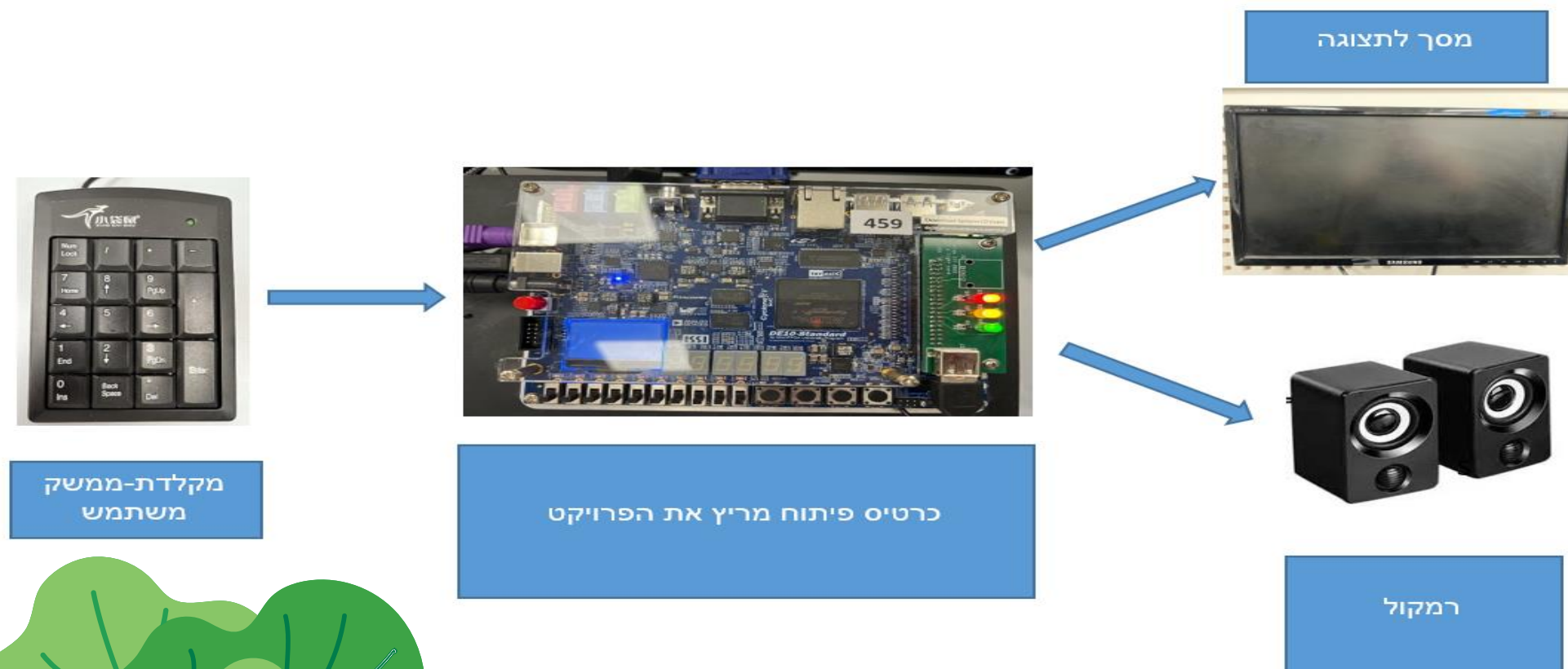


# CHARACTERIZATION OF THE PROJECT

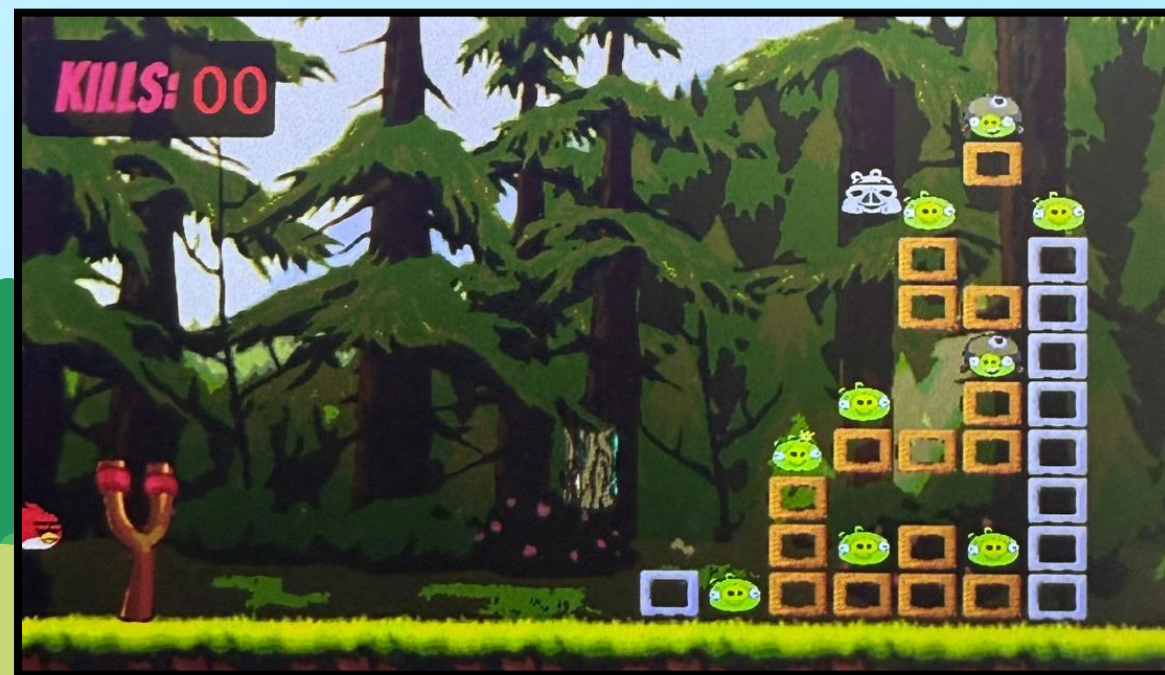
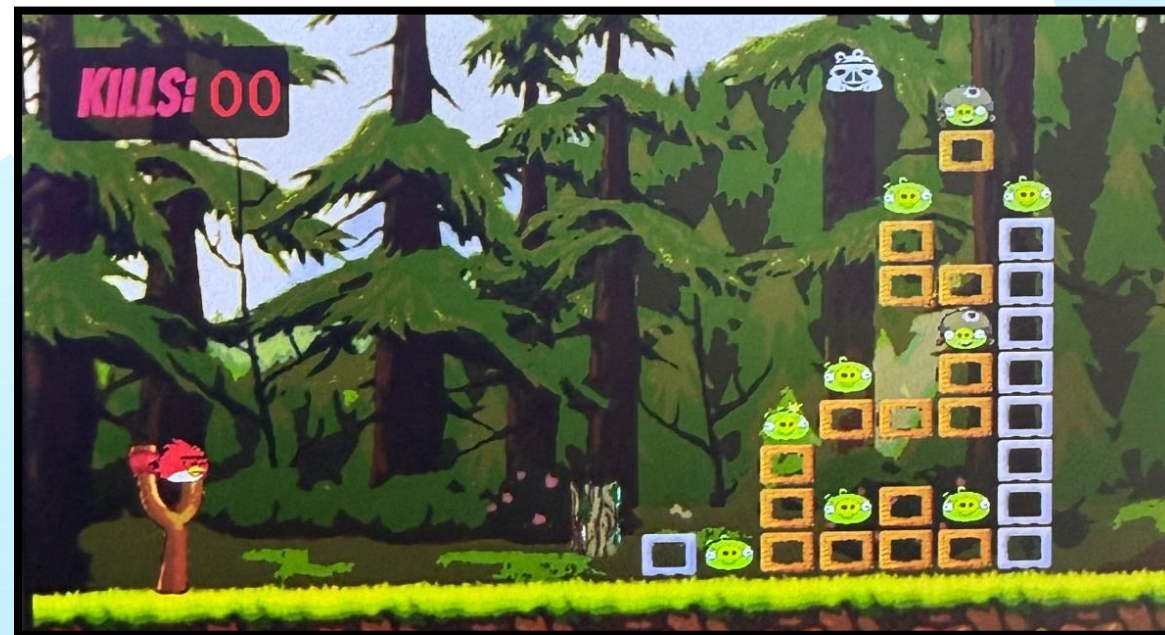
The bird can move at many different angles and strengths depending on how much we pull it back and release it. Some pigs appear randomly, some pigs change their place when hit, and there is a tree that moves in time. To win, the bird must kill all the pigs in the game. There is a screen that appears after the player wins.



# SYSTEM INTERFACES







SCREENSHOTS  
OF THE GAME



# OPERATING INSTRUCTIONS

WHEN YOU STRETCH  
BACK, IT INCREASES THE  
STRETCH UPWARDS.

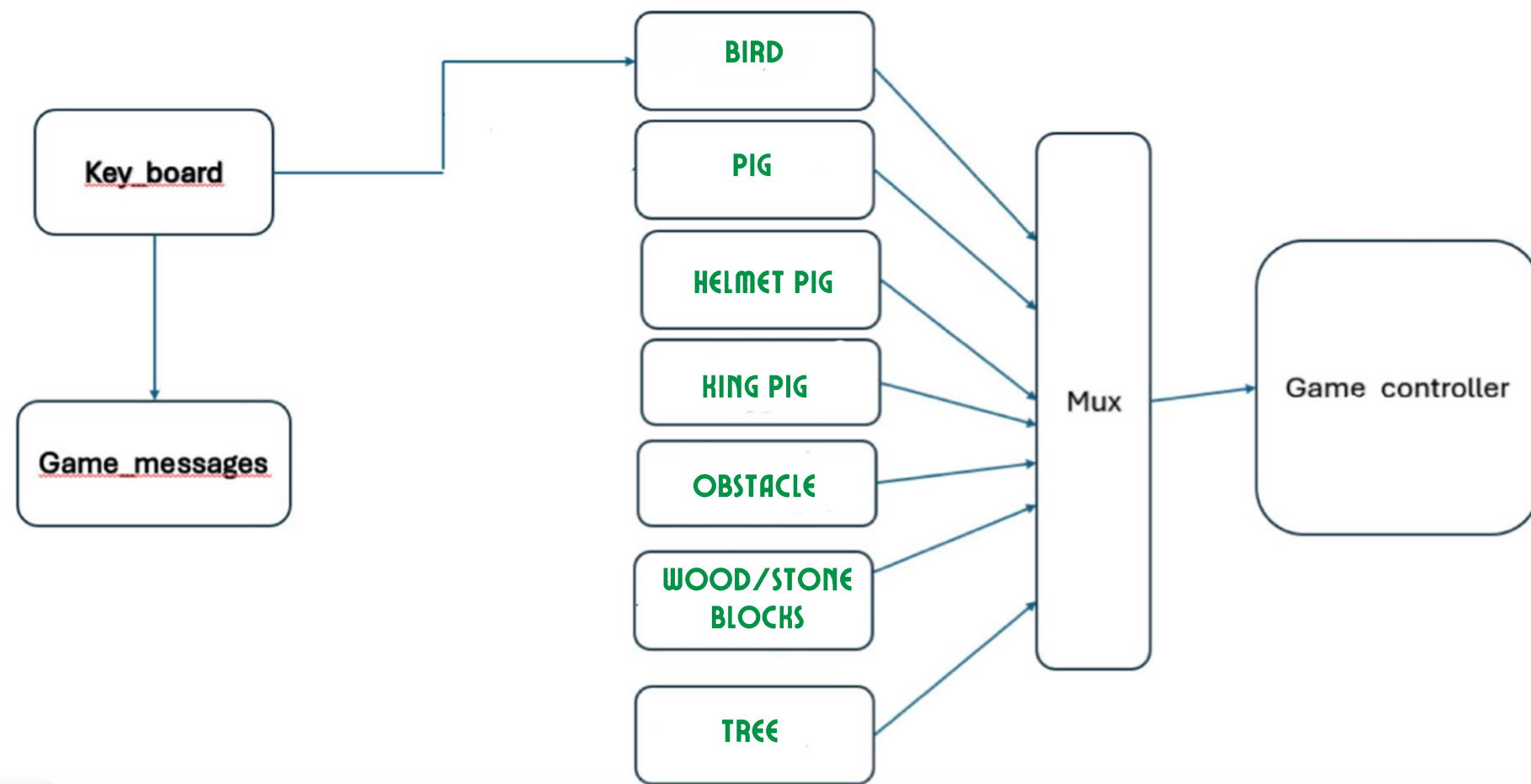
WHEN YOU PULL BACK,  
THE TENSION DROPS  
DOWN.



MOVE BACKWARDS AND  
WHEN RELEASED IT  
SHOOTS.

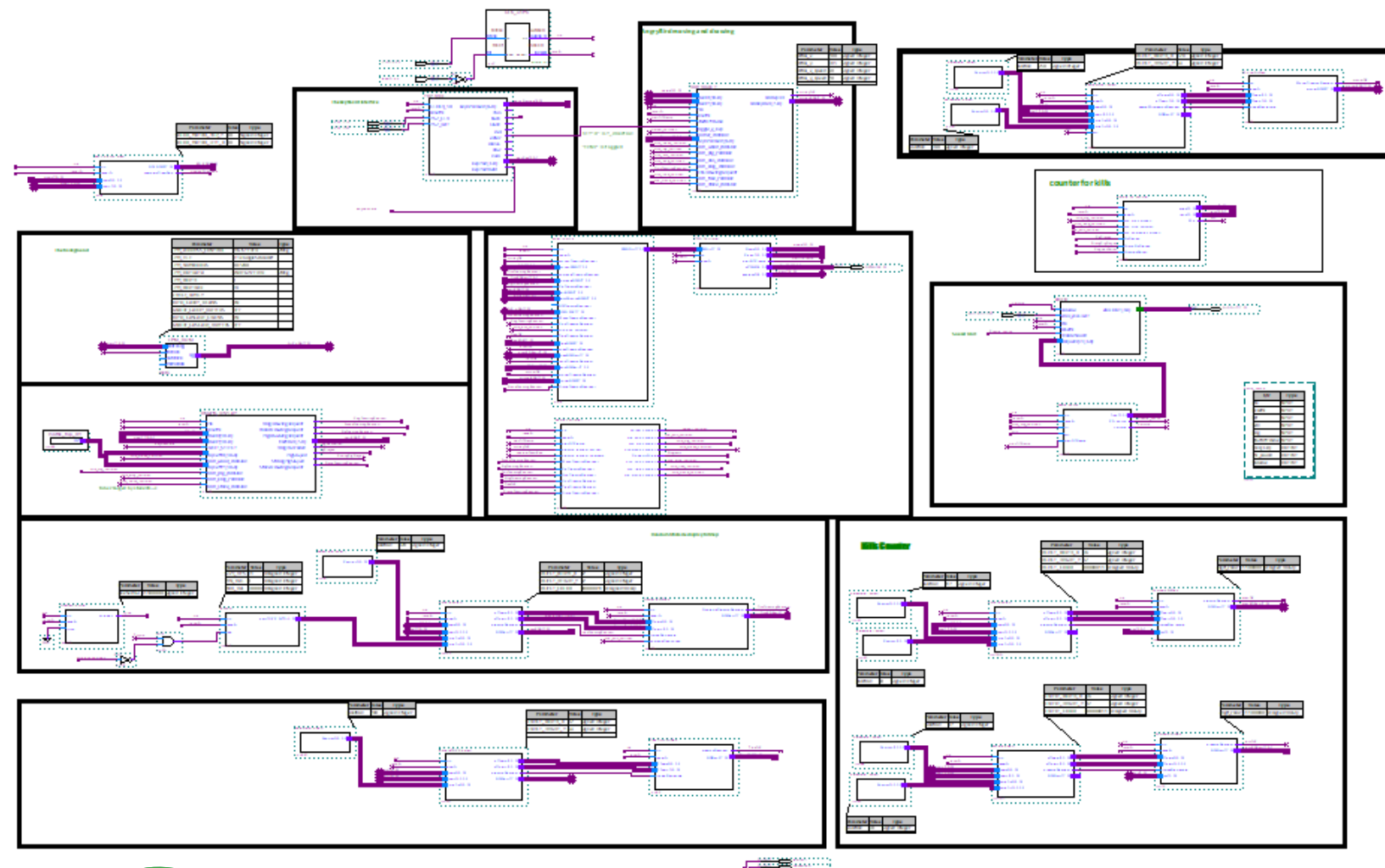


# RECTANGLE SCHEME



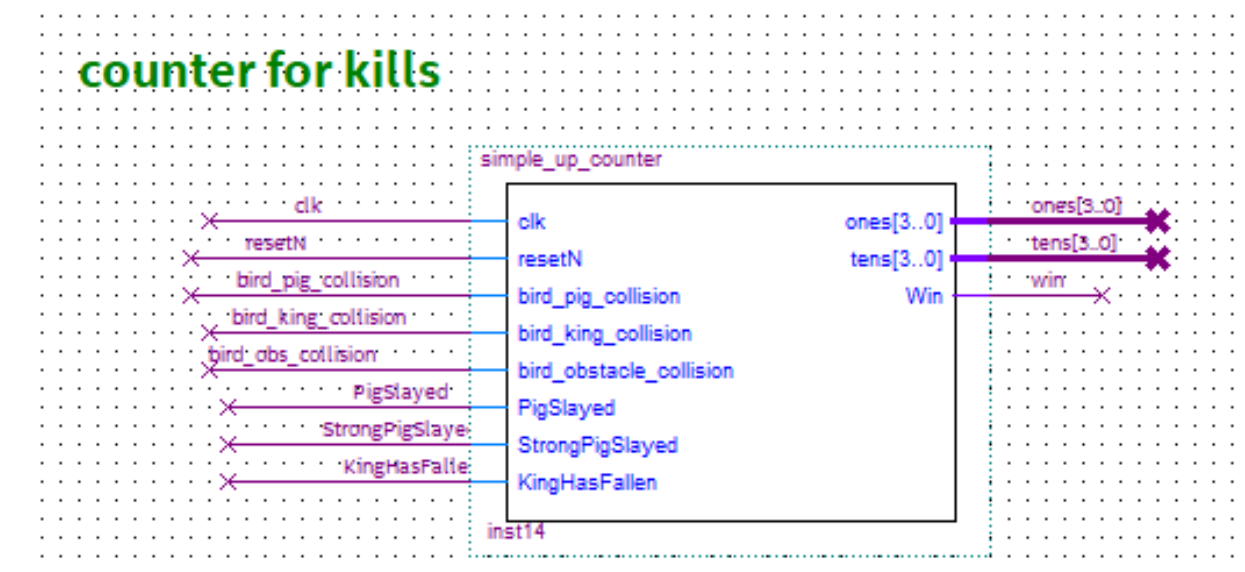
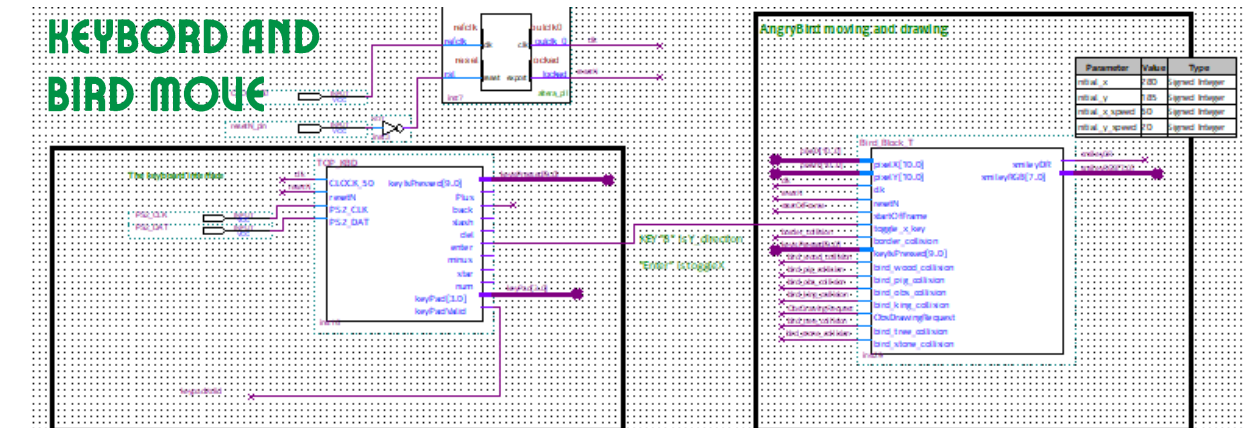
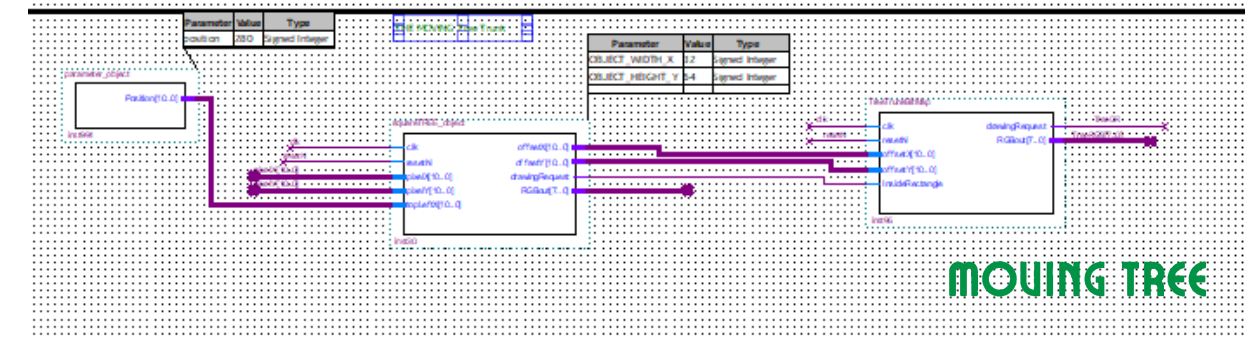
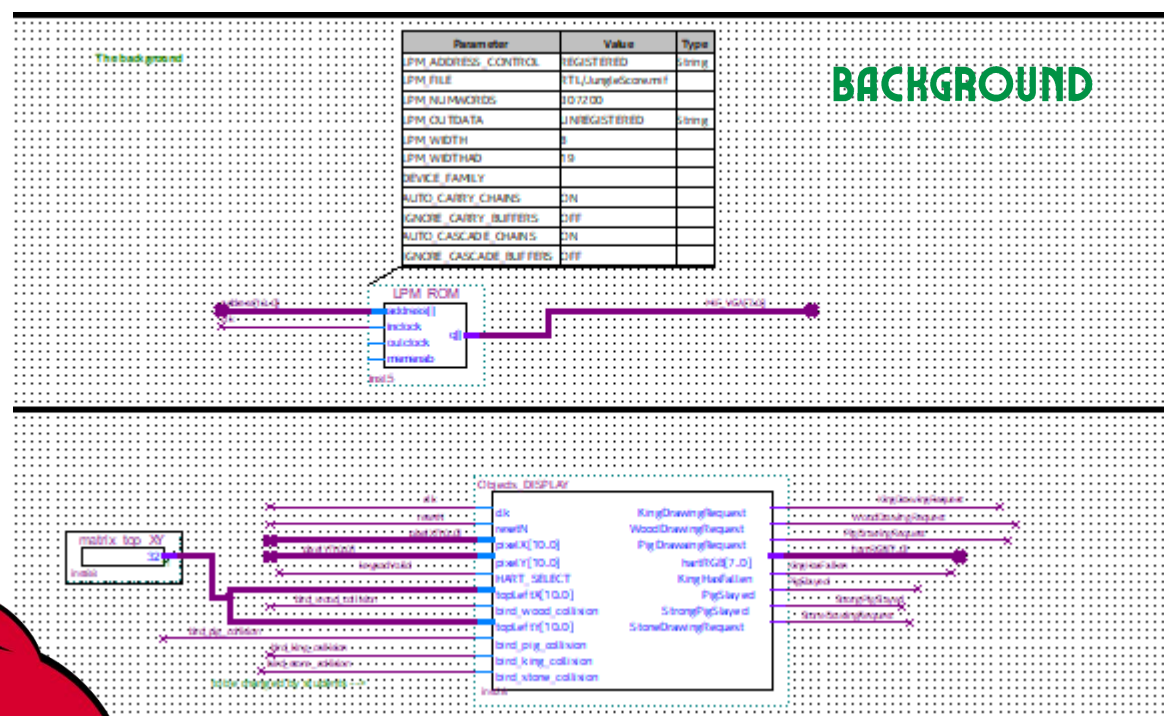
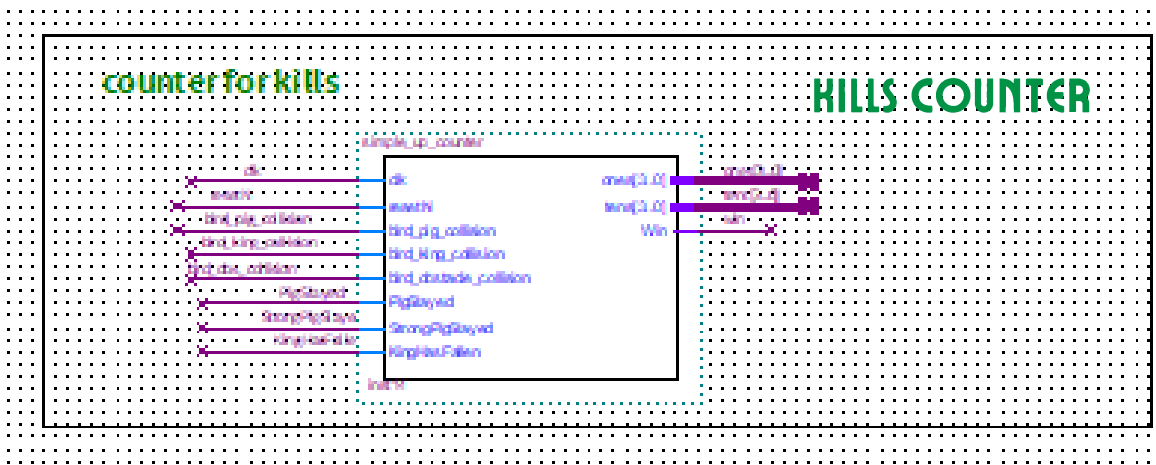


# UPPER HIERARCHY

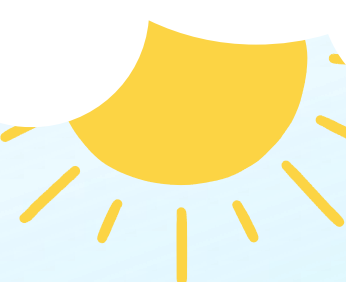




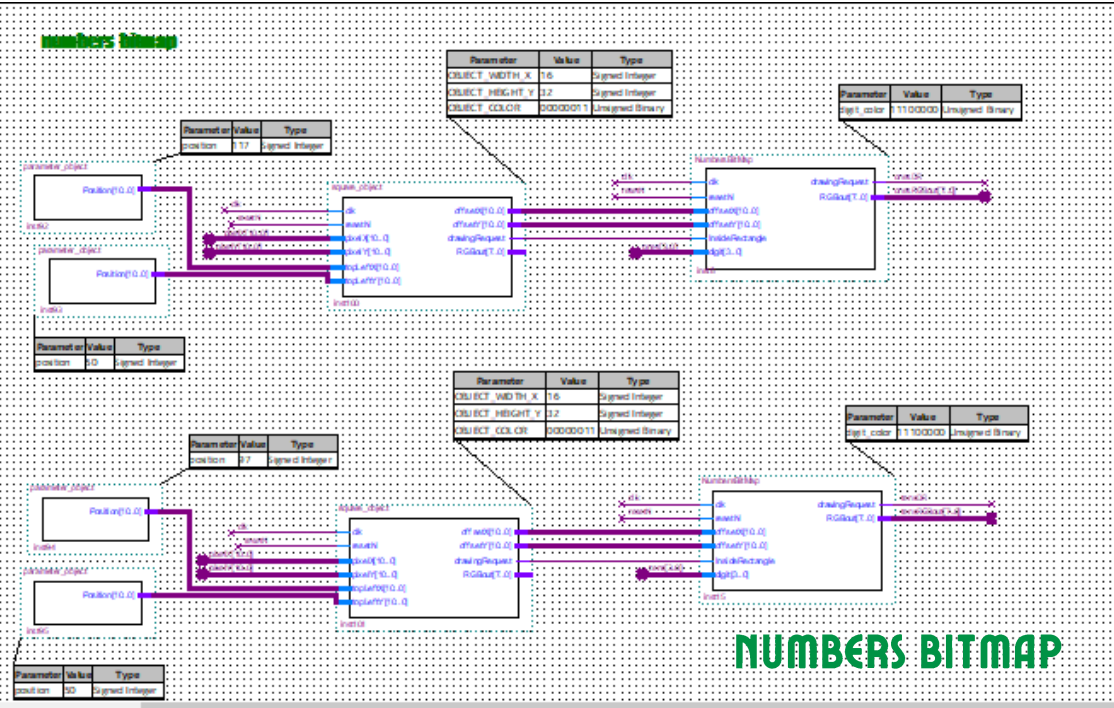
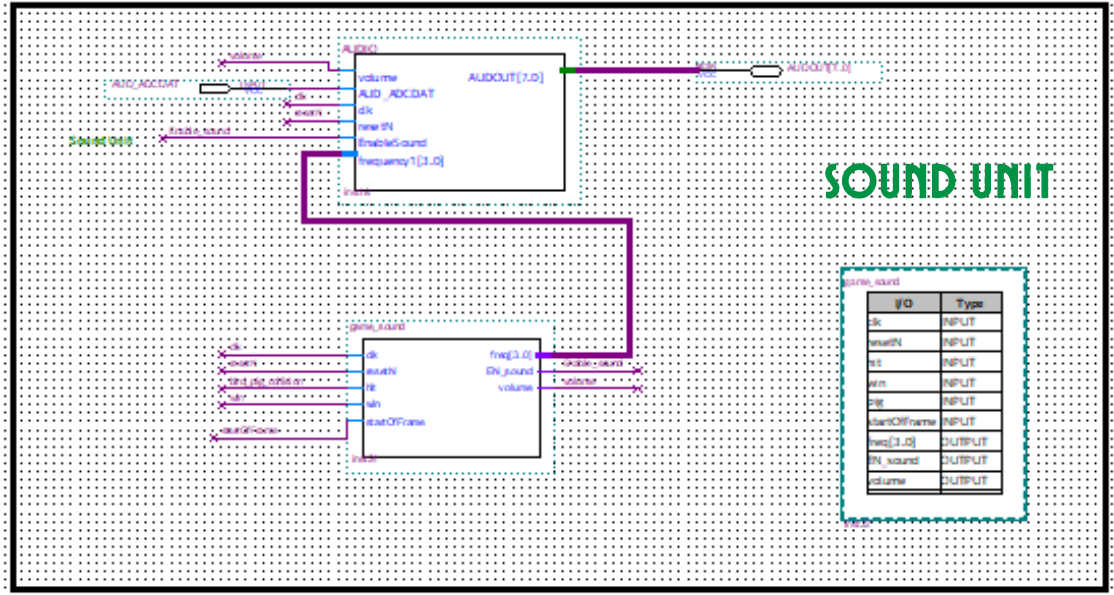
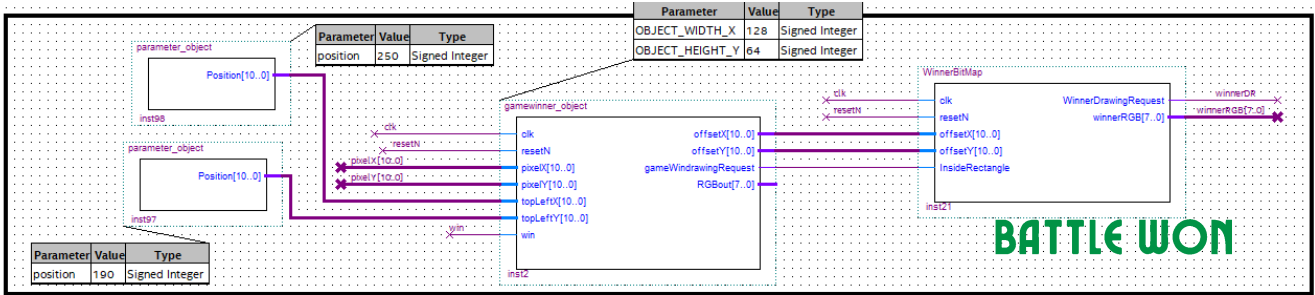
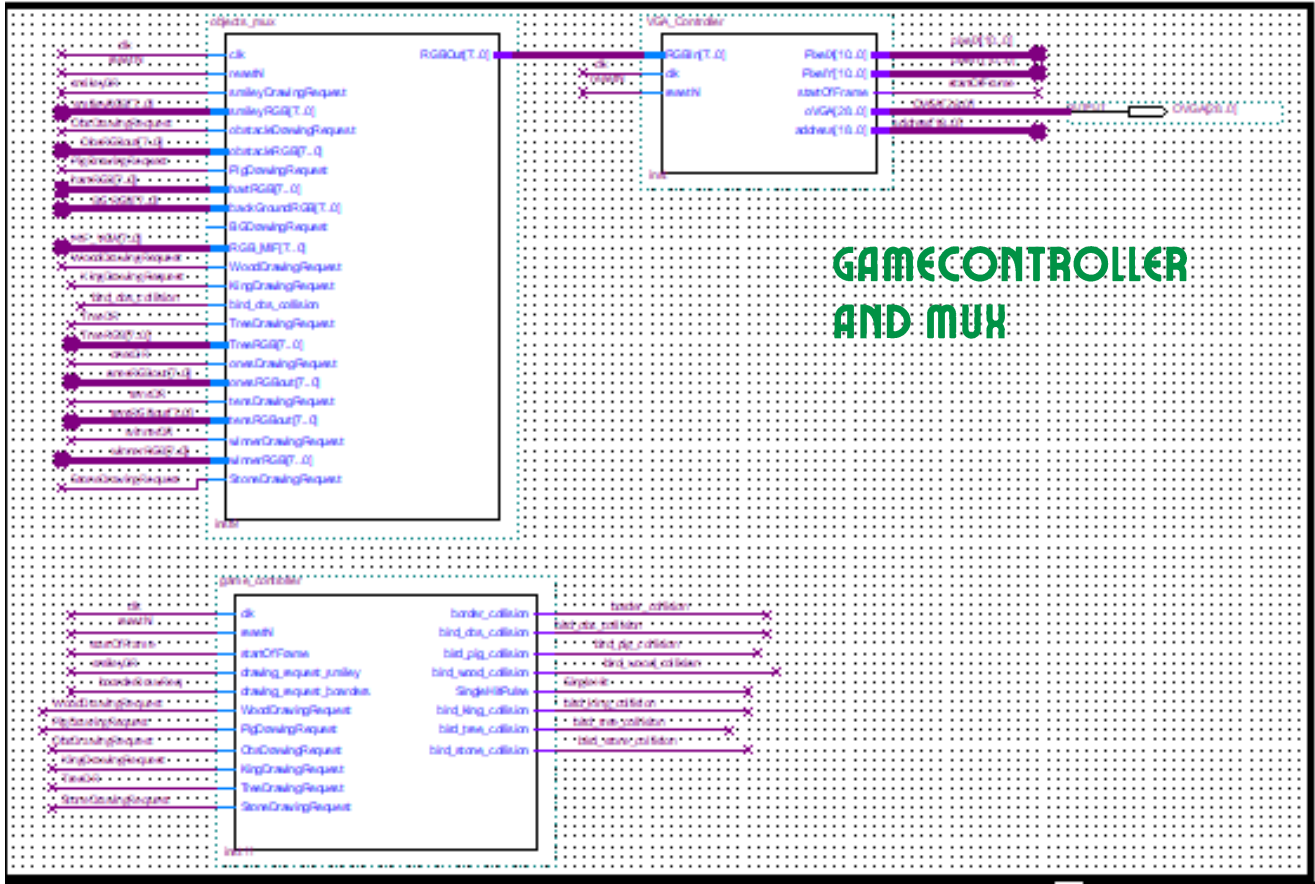
# UPPER HIERARCHY







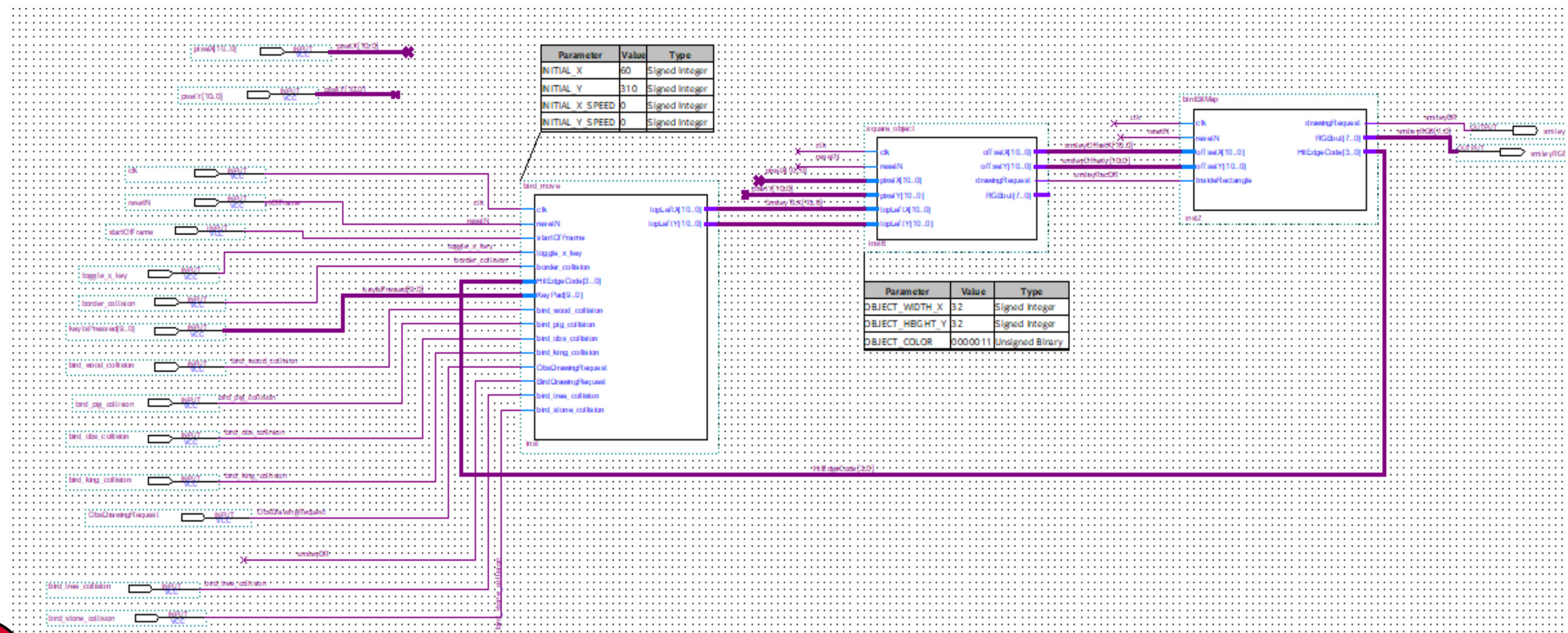
# UPPER HIERARCHY







# FIRST MODEL – THE BIRD





# FIRST MODEL – DESCRIPTION OF THE MOVEMENT

## Bird Move

In this model, we simulated the bird's movement through a state machine that moves the bird according to the key on the keyboard, and we handled the launch force and the coils at different angles, as well as collisions with the boundaries so that the bird does not exceed the screen.

## Square\_Object

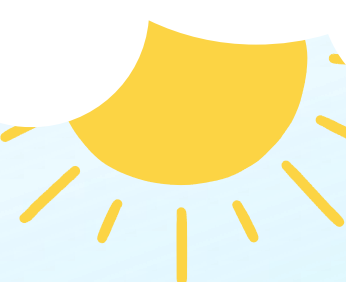
This model takes the upper left corner of the player and determines the area in which we draw the bird.

## Bird BitMap

This model is responsible for drawing the bird according to the bitmap.

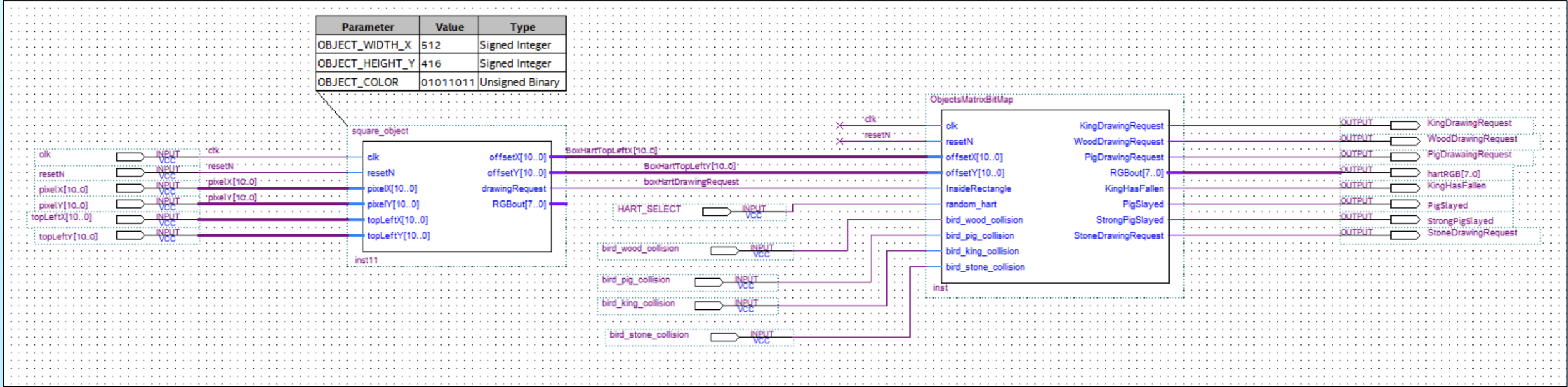






# OBJECTS\_DISPLAY

## Model Two – Pigs+Blocks








GETS DAMAGED






TELEPORTS 2 TIMES





GETS DAMAGED



PURPOSE:



# HOW THE MODEL WORKS?

BLOCK is 32\*32 pixels  
Matrix is 16 rows and 16 col

640\*480 → 512\*416 USE



מקבל את הזווית השמאלית העליונה

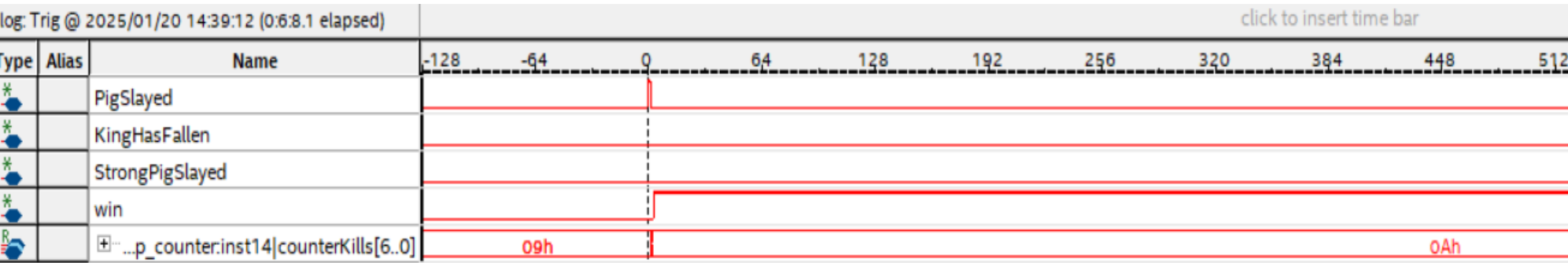
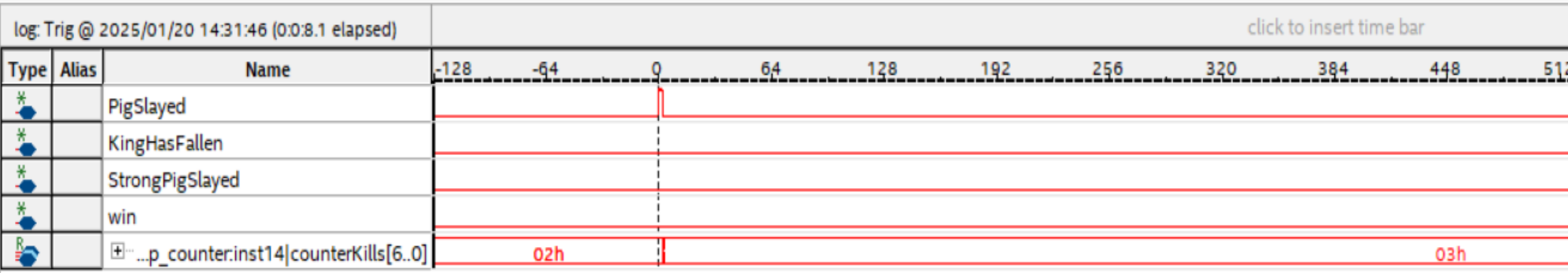


אחראי על ציור  
וסדר האובייקטים

	3	0	0	0	4	0	0	0	0
	1	0	0	4	1	4	0	0	0
	5	0	0	3	3	3	0	0	0
		0	0	1	2	1	0	0	0
		0	0	3	3	3	0	0	0
		0	0	* 1	2	1	0	0	0



# SIGNAL TAB



You can see how the bird's kills counter mechanism works so that after each time a pig dies, the counter increases by one, and only on the tenth and final hit do we see the win sign increase.





# SUMMARIZE AND CONCLUSIONS

- The nature of the project and the difficulty of dealing with the division of roles and work order gave us a very important tool for continuing our studies at the Technion and especially for our future employment.
- We learned to divide the large problem into small subproblems and worked on them separately and finally connected them to get our final project.
- The labs we did throughout the semester and up to the project helped us a lot in developing ways of thinking for the models in our project and provided us with extensive knowledge in System Verilog.