FACULTY OF COMPUTERS, INFORMATICS AND MICROELECTRONICS

TECHNICAL UNIVERSITY OF MOLDOVA

WINDOWS PROGRAMMING

LABORATORY WORK #5

Collaboration. Complex application: Traffic light.

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Laboratory work #1

1 Purpose of the laboratory

Advanced Form Elements. Child Windowses. Basics of Working With Keyboard.

2 Laboratory Work Requirements

– **Basic Level (grade 5 - 6) you should be able to:**

  a) Simulate the work of a traffic light for an intersection with 4 traffic lights.

  b) The user should be able to increase the speed of traffic light. (interval when colors are changed)

  c) The user may be able to increase the number of generated random cars.

– **Normal Level (grade 7 - 8) you should be able to:**

  a) Realize the tasks from Basic Level.

  b) In the simulation should be present 2 crosswalks with people passing.

  c) Random special cars crossing (at least2; ex. ambulance, president care, police car, etc)

– **Advanced Level (grade 9 - 10) you should be able to:**

  a) Realize the tasks from Normal Level.

  b) Introducing of the car accident generated by the wrong crossing of the car/pedestrian or presence of drunk driver.

3 Laboratory work implementation

3.1 Tasks and Points

a) Created script for the paths that are used by the cars and pedestrians. The script is applied to parent and it shows in gizmo our way with color that we can select.

b) Created script for the engine of the car. The car moves using 4 wheel colliders and has a mechanic of steering just like a real car. The script takes as input the path of the car, front wheelColliders and the script is applied to a gameObject that has 2 wheelColliders. The script is also responsible for visual steering of wheels and rotations and mechanism such as breaking.

c) Created script for pedestrians. The pedestrians are also using a path, however they have a pathfinding algorithm built in from unity, in this way we won't have problems when they collide with each over or when they have obstacles in the way. The pedestrians use same template for the path they walk.

d) Created intersection logic for pedestrians. They can walk only when their lights are green. Also when they start walking the cars heading their way are stopping.

3.2 Laboratory work analysis

Clone with HTTPS :
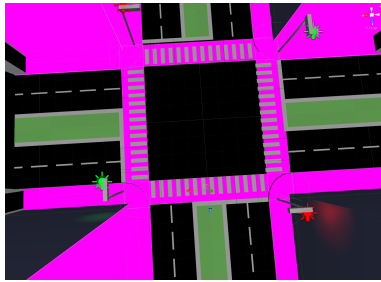https://github.com/StasBizdiga/Unity3D-Semaphore.git
Clone with SSH :
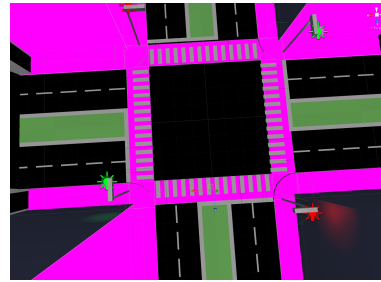git@github.com:StasBizdiga/Unity3D-Semaphore.git
Repository Link :
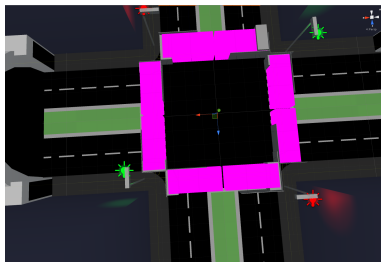https://github.com/StasBizdiga/Unity3D-Semaphore

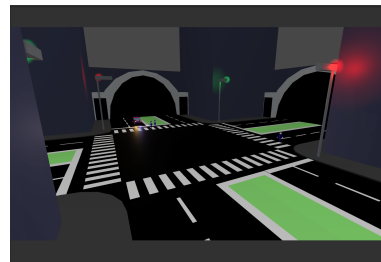## 3.3 Prove your work with screens

(a)Paths

(b)Walkable area for pedestrians (pink)

(a)Pedestrian walking area logic elements

(b)Screen from simulation

Conclusions

– We learned that it would be suicide to do this in winapi, even if we make it 2D, because even with built in tools it was a challenge to make it all work.

– We learned how to make simulation of events that happen in realtime and how to handle them.

– We learned how to divide tasks to multiple and make a mess with a repository.

References

1 Unity Engine https://madewith.unity.com/

2 Unity Documentation https://docs.unity3d.com/Manual/index.html