

KAUNAS UNIVERSITY OF TECHNOLOGY

FACULTY OF INFORMATICS

T120B166 Development of Computer Games and Interactive Applications

*Drowning Bullets*

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| *IFZm-1, Emilija Kravčenko:* |
|  |
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# **Description of Your Game**

Description of Your Game.

1. 3D or 2D? 3D
2. What type is your game? First Person Looter Shooter
3. What genre is your game?Action Roguelike
4. Platforms (mobile, PC or both?) PC
5. Scenario Description. Pirmo asmens 3D roguelike šaudyklė. Žaidėjas pradeda žaidimą vandenyje. Link jo bėga priešai (monstrai). Kai veikėjas šauna šiek tiek paneria gilyn. Ilgai panėrus paskęsta. Jei monstrai sužeidžia taip pat miršta. Turas pasibaigia kai žaidėjas nužudo visus priešus arba miršta. Tada žaidėjas gali pasirinkti ar kovoti toliau ar baigti žaidimą ir išlipanti iš vandens. Kiekvieną turą priešų vis daugėja ir jie stiprėja (turi daugiau gyvybių, suteikia daugiau žalos). Priešus nužudžius, jie palieka po savęs naujus ginklus, šaudmenis, gyvybių atstatymą arba, rečiau, pagerinimus žaidėjo veikėjui arba žaidėjo ginklams.  Nereikalingus ginklus galima išardyti į pagerinimus ginklams.Pagerinimų kiekis yra neribotas ginklams ir veikėjui, jų galima prisidėti kiek norisi. Kiekvienas žaidėjo veikėjas turi vieną pradinį pasyviai veikiantį gebėjimą. Atrakinus naują veikėją, veikėjo gebėjimas taip pat atsirakina ir jį galimą pridėti prie senų veikėjų gebėjimų. Perėjus penkis turus atsirakina gebėjimas pradėti žaidimą iškarto po penkių turų. Tai galioja kas 5 turus (10, 15, 20…). 101 turas yra paskutinis ir jame žaidėjas kovoja prieš vieną didelį monstrą. Nugalėjus jį žaidėjas laimi. Žaidimo metu žaidėjas taip pat gali atsirakinti naujas kovos vietas (pelkę, suledėjusį vandenį ir pan.). Kiekvienai kovos vietai saugomas atskiras pereitų turų sekimas.

**Laboratory work #1**

**List of tasks** (main functionality of your project)

1. Camera Movement
2. Guns
3. Ammo Control

# **Solution**

## **Task #1. *Camera Movement***

Adding movement to character’s camera when player moves mouse. Moving the mouse changes what the player sees and the direction their character is looking at. Rotation to the side is unlimited, but looking up and down has fixed values.

A screenshot of a video game

Description automatically generated

Figure 1. Camera Movement Screenshot

After mouse motion camera and character rotates towards that direction based on defined mouse sensitivity. Pressing Escape key cancels mouse tracking and displays mouse cursor.

A screen shot of a computer program

Description automatically generated

Table 1. Camera Movement Code

## **Task #2. *Guns***

Adding gun models. Creating animations for shooting reloading, changing weapon. Creating weapon resources. Adding ray cast to check if shot hit target.

A screenshot of a computer program

Description automatically generated

Figure 2. Gun and animation Screenshot

Weapon Resource is used to define weapon class, weapon variables to use on all guns.

A screen shot of a computer program

Description automatically generated

Table 2. Weapon Resource code

HitScanCollision calculates ray’s direction, end point, any collision that intersects with ray. On collision it displays Hit indicator – Bullet hole.

HitScanDamage checks if Ray cast from a gun points at an object in group “Target”. And sends variables of weapon damage, bullet’s direction and position where it hit target.

A screen shot of a computer program

Description automatically generated

Table 3. Weapon Collision detection code

## **Task #3. *Ammo control***

Adding current ammo, magazine, reserve ammo and max ammo variables. These variables help to track and display each gun’s Ammo state and capacity. After reaching 0 ammo, weapon automatically reloads after “shooting” - pressing left mouse button. Player can also press “R” to reload at any time.

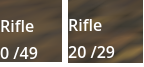


Figure 3. Rifle gun’s ammo Screenshot

When starting gun’s current ammo is gun’s full magazine ammo. On reloading it checks if the current ammo is full. If not, it calculates how much to take from ammo reserve and recalculates gun’s current and reserve ammo variables. At the end it sends signal to update gun’s variables.

A screen shot of a computer program

Description automatically generated

Table 4. Weapon Reload Code

**Defense**

**Task: On player’s character’s collision with Monsters take damage.**

Solution:

When moving checks is collided object has method Hurt. If it does, the player takes one damage. And waits 1 second before checking if colliding with anything.

A screen shot of a computer screen

Description automatically generated

Table 5 Player‘s damage on collision code

A screenshot of a video game

Description automatically generated

Figure 4 Player‘s damage on collision screenshot

**User's manual**

**How to play?** Shoot monsters and gather resources dropped from dead monsters. Avoid dying by taking too much damage or drowning.

**Descriptions of the rules of the game**. Kill all monsters and advance to next wave with more and stronger enemies or come back home to improve stats keeping the loot. Killing Boss wins the game. But still lets you replay the waves as much as you want.

**Descriptions of the controls / keys.** Arrow keys moves character, mouse moves character’s camera. Spacebar makes character jump. Left mouse button shoot from a gun. Mouse scroll wheel changes weapons. R key reloads weapon.

# **Literature list**

1. Source #1. <https://www.youtube.com/watch?v=ZaEzjnoIy3M>
2. Source #2. <https://docs.godotengine.org/en/latest/>

# **ANNEX**

Github link:

https://github.com/EmiKrav/Drowning-Bullets.git