

UNIVERSITY OF TRANSPORT AND COMMUNICATIONS

---------------------------o0o -----------------------

**GREAT EXERCISES FOR THE SUBJECT**

**GAME THEORY AND APPLICATIONS**

**SPACE INVADERS**

Instructor: **Master Nguyen Viet Hung**

Implementation team: Group 9 – CNTTVA1- K61

List of participating students:

|  |  |  |
| --- | --- | --- |
| **STT** | **Code SV** | **Full name** |
| 1 | 202602939 | **Dinh Thi Huong** |
| 2 | 202612944 | Tran Trung Kien |

***Hanoi, May 2023***

**FOREWORD**

In the current digital age, video games have become one of the most popular pastimes of young people. According to Wikipedia, a video game is a game that uses electronic devices to create an interactive system that players can play. The most popular form of video game today is the video game. Other common forms of video games include non-visual devices such as handheld video games, stand-alone systems, and specific non-visual products. visual image.

Video games not only entertain, but also provide players with new and exciting experiences and sometimes even give them some useful knowledge.

Along with the strong development of the Internet as well as mobile phones in Vietnam in recent years, video games have become more and more expanded, and become an indispensable entertainment for children's lives. People. Followed by the game industry growing at a rapid pace, a lot of good and attractive games have been born in the past time. Stemming from the above facts, our group realizes the important role of building and developing video games. For those reasons, group 9 decided to choose the topic "Building the game Space Invader - Space Invaders" with the foundation of Unity Framework and C# language .

In the process of implementing the topic, our group still has many shortcomings, we look forward to receiving your comments and suggestions.

Sincerely thank!

**MỤC LỤC**

[**SECTION 1: GAME OVERVIEW 5**](#_Toc134604431)

[**1.1 Game Title: 5**](#_Toc134604432)

[**1.2 Game Genre : 5**](#_Toc134604433)

[**1.3 Game Perspective : 5**](#_Toc134604434)

[**1 .4 Game Modes : 5**](#_Toc134604435)

[**1.5 Target Audience: 5**](#_Toc134604436)

[**1.6 Code idea: 5**](#_Toc134604437)

[**1.7 Goals : 5**](#_Toc134604438)

[**1.8 Topics of game: 5**](#_Toc134604439)

[**SECTION 2: GAME BACKGROUND & GAME FLOW 6**](#_Toc134604440)

[**2.1 Background Story 6**](#_Toc134604441)

[**2.1 Characters starting story 6**](#_Toc134604442)

[**SECTION 3: GAME PLAY 7**](#_Toc134604443)

[**3.1 Objectives 7**](#_Toc134604444)

[**3.2 Game logic 7**](#_Toc134604445)

[**3.3 Mechanics 7**](#_Toc134604446)

[**3.4 Game Resources 7**](#_Toc134604447)

[**3.5 Game progression 7**](#_Toc134604448)

[**SECTION 4: GAME ELEMENTS 8**](#_Toc134604449)

[**4.1 Environment 8**](#_Toc134604450)

[**4.2 Characters 8**](#_Toc134604451)

[**4.2.1 Player Characters: 8**](#_Toc134604452)

[**4.2.2 Non-Player Characters: 8**](#_Toc134604453)

[**SECTION 5: GAME PLAY I/O CONTROLS & GUI INTERFACES 9**](#_Toc134604454)

[**5.1 Game Play I/O Control 9**](#_Toc134604455)

[**5.2 GUI interface 9**](#_Toc134604456)

[**5.2.1 Main menu interface 9**](#_Toc134604457)

[**5.2.2 Pause menu 9**](#_Toc134604458)

[**5.2.3 The menu when the game is over 9**](#_Toc134604459)

[**SECTION 6 : VISUAL AND AUDIO FEATURES 10**](#_Toc134604460)

[**6.1 Visual Features: 10**](#_Toc134604461)

[**6.2 Audio Features: 10**](#_Toc134604462)

[**SECTION 7 : SYSTEM PARAMETERS & REQUIREMENTS 10**](#_Toc134604463)

[**7.1 System Requirements 10**](#_Toc134604464)

[**SECTION 8 : ILLUSTRATION 11**](#_Toc134604465)

[**8.1 Menu screen 11**](#_Toc134604466)

[**8.2 Help Screen 11**](#_Toc134604467)

[**8.3 Pause screen 12**](#_Toc134604468)

[**8.4 Home screen 12**](#_Toc134604469)

[**8.5 End game screen 12**](#_Toc134604470)

# SECTION 1: GAME OVERVIEW

## 1.1 Game Title:

SPACE INVADERS

## **1.2** Game **Genre** :

Action/ Adventure game

## **1.3 Game Perspective** **:**

Character perspective

## **1 .4 Game Modes** :

1 player

## 1.5 Target Audience:

* Age 12+
* People who like to play action games

## 1.6 Code idea:

Guardians of the Galaxy, or Space Invaders is a new project we implemented based on similar games that are extremely popular today such as: Space Shooter, Chicken Invaders, ...

A game with fairly simple graphics and features, but still extremely attractive to players, making gamers have to be extremely focused and quick if they don't want to lose.

## 1.7 Goals :

As for In-game, the player's task is to fight and shoot down all enemy aircraft to win, with a dense frequency of appearances and extremely fierce enemy fire. To reach the top and break the game, it requires players to have extremely high proficiency and concentration.

1.8 Topics of game:

Survive , fight

# SECTION 2: GAME BACKGROUND & GAME FLOW

## 2.1 Background Story

In the year 2200, there was a riot in the universe. The planets are at war with each other for dominance so they have created a lot of powerful enemies with powerful, advanced weapons that can track us down for easy destruction. The player's task is to transform into soldiers to protect their Earth. The galaxy has a quiet appearance, but hidden inside are many dangers that are always lurking such as black holes, dimensional variations, lost spacecraft, ... that require determination to overcome the challenges of each of them. ta. The resource that the player is provided with for his journey is a warship and a space station.

## 2.1 Characters starting story

Players will be granted 1 battleship, control their battleship to fight, shoot back, protect their planet (Earth) against the invasion of aliens.

# SECTION 3: GAME PLAY

## 3.1 Objectives

* Navigate, move the battleship
* Shoot down as many enemies as you can, protect your battleship

## 3.2 Game logic

## ­3.3 Mechanics

* If the character's health is zero then the character dies and the level needs to be repeated
* Battleships can't go through enemies or out of the game screen
* Info and help in the game:

When the game starts, there will be a menu interface containing buttons: play, help, quit.

On the player's part, you will use the keys:

W (↑): to advance

S (↓): to go down

A (←): to go left

D (→): to go right

Space (\_\_\_): to shoot back the enemy

For the mobile version, players will tilt the phone in all directions to control the battleship, and press the "Shoot" button to destroy the enemy.

* **Statistics:**

Points that the player has gained in the match

## 3.4 Game Resources

Score: determined by the number of enemies killed in the match

## 3.5 Game progression

From easy to medium and difficult

The number of enemies will increase in number over time

# SECTION 4: GAME ELEMENTS

## 4.1 Environment

The location of the game is endless space in the Milky Way. The Milky Way, or **Milky Way** , is a galaxy that contains our Solar System. It appears in the sky as a faint band of light extending from the constellation Cassiopeia in the north to the constellation Crux in the south, and is brightest in the constellation Sagittarius - the center of the planet. center of the Milky Way.

## 4.2 Characters

### **4.2.1 Player Characters:**

Navy blue battleship

### **­ 4.2.2 Non-Player Characters:**

Enemy battleship, orange

# SECTION 5: GAME PLAY I/O CONTROLS & GUI INTERFACES

## 5.1 Game Play I/O Control

* Keyboard
* To move around the environment:
* Keys W (up) , A (to the left) , S (down) , D (to the right)
* Special key:
* Spacebar to shoot bullets
* Shoot button in the left corner to shoot bullets (for mobile)

## 5.2 GUI interface

### **5.2.1 Main menu interface**

Select:

* Start: Start playing
* Help: Game Guide
* Quit: Quit the game

### **5.2.2 Pause menu**

Select:

* Resume: Continue
* Play Again: Game Guide
* Main Menu: Exit the game

### **5.2.3 The menu when the game is over**

Select:

* Play Again: Game Guide
* Main Menu: Exit the game

# SECTION 6 : VISUAL AND AUDIO FEATURES

## 6.1 Visual Features:

* HUD:
* Top left: Current score
* Top right: Current number of lives
* Bottom right: Shoot button
* Explosion effect when destroyed
* Stars and moons, planets move

## 6.2 Audio Features:

* Menu background sound, game ending sound
* Explosion sound when destroyed
* Sound when bullets are fired

# SECTION 7 : SYSTEM PARAMETERS & REQUIREMENTS

## 7.1 System Requirements

* Keyboard
* Mouse (may or may not be)
* Loudspeaker
* Hard Drive

# SECTION 8 : ILLUSTRATION

## 8.1 Menu screen

A screen shot of a video game

Description automatically generated with medium confidence

## 8.2 Help Screen

A picture containing text, screenshot, font

Description automatically generated

## 8.3 Pause screen

A screenshot of a video game

Description automatically generated

## 8.4 Home screen

A screenshot of a video game

Description automatically generated

## 8.5 End game screen

A screenshot of a video game

Description automatically generated