THE SURVIVORS

PROJECT SYNOPSIS

OF MAJOR PROJECT

BACHELOR OF TECHNOLOGY

COMPUTER SCIENCE AND ENGINEERING

SUBMITTED BY	PROJECT GUIDE
	Dr. VIVEK THAPAR
AMAN CHAUHAN (1805158)	
ARYAN MAHESHWARI (1805163)	
GURJEET SINGH TATLA (1805174)	

Vivu Thapar
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GURU NANAK DEV ENGINEERING COLLEGE

LUDHIANA

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1. Introduction

The Survivors is a game created as a Major Project for the Computer Science and Engineering Department.

The Survivors is a 3D virtual environment game map in which single or multiple players will fight/survive using weapons (eg. guns) against a random number of artificially intelligent enemy bots until either all bots are eliminated or all players are eliminated/quit.

The idea of developing a game is not new for us. We also developed a game during our Minor Project and did our 6 Months industrial training in Game development.

As everyone knows, there are several types of computer games. Shooter is one of the best-known game genres. A shooter game is a game which makes the player feel within the game world. After the success of Doom which is accepted as the first shooter game, many companies took a crack at this type of game. Nowadays, the best seller game is a kind of shooter.

Technology Used

- Game Development Engine

- 3D Modeling Software

- C++

- Texturing software

This project comes under the field of game development.

2. Rationale

We chose this topic since we already worked on a game in our Minor Project. We also did our 6 Months industrial training in game design and development. The Survivors will be multiplayer and will implement Artificial Intelligence since these are the latest trending technologies.

Games may serve as a useful cultural tool through which instruction can effectively make use of existing capacities. Games might promote effective education through game elements and their relation to developmental mechanisms. Promoting optimal health is a useful analogy: optimal health is the result of many contributing factors. For example, effectively managing stress, having a supportive social network, and regular exercise all contribute to good health.

There is much evidence for the effects that video games—specifically action games—can have in several general cognitive domains (study of Bavelier et al., 2012). For example, such games have been demonstrated to enhance the spatial resolution of vision (study of Green and Bavelier, 2007), visual short-term memory (study of Boot et al., 2008), spatial cognition (study of Feng et al., 2007), probabilistic inference (study of Green et al., 2010), and reaction time (study of Dye et al., 2009). Although there have been suggestions that video games can improve science education, to date, the evidence has been mixed.

3. Objectives

- To design and implement a 3-dimensional game written in C++ using a game development studio.

- To facilitate multiple players in a single session/room

- To implement enemy bots with the help of Artificial Intelligence

4. Literature Review

The objective of this major project is to facilitate the support of multiplayer games. The focus of our literature review is to establish the background and motives for this project. The growth and popularity of on-line games has been phenomenal in the past decade. Multiplayer games such as Call of Duty, PUBG, the World of Warcraft and Counter-Strike have attracted millions of players on a global scope and achieved huge commercial success. Fighting in a game is real-time intensive and requires quick physical response from the players. The results of the fighting are predetermined by the game logic according to the level of strength of the avatar models or through somewhat random operations or factors. There is much evidence for the effects that video games—specifically action games—can have in several general cognitive domains.

"Brain Plasticity Through the Life Span: Learning to Learn and Action Video Games"

-   Daphne Bavelier, University of Geneva, Switzerland (July 2012)

This work reviews how complex training environments such as action video game play may actually foster brain plasticity and learning. This enhanced learning capacity, termed learning to learn, is considered in light of its computational requirements and putative neural mechanisms.

"Action-Video-Game Experience Alters the Spatial Resolution of Vision"

-   C. Shawn Green, University of Wisconsin-Madison, USA (January 2007)

This work reviews how action video games affect visual and mental focus. Compared with nonplayers, action-video-game players could tolerate smaller target-distractor distances. Critically, similar effects were observed in non-video-game players who were trained on an action video game.

5. Feasibility Study

Game Concept

A 3D virtual environment game map in which single or multiple players will fight/survive using weapons (eg. guns) against a random number of artificially intelligent enemy bots until either all bots are eliminated or all players are eliminated/quit.

Market analysis

Genre: Shooting

Platform: PC

Age Range: 8+

Technical Analysis

- Designing the 3D virtual environment map, character models and weapons

- Enabling player movement and animation

- Enabling weapons to fire

- Implementing health and death (health=0) mechanics

- Enabling enemies through Artificial Intelligence

- Implementing multiple players in a single lobby.

- Implement end of game conditional (win/loss)

For this project we need hardware configuration like:

- Processor - intel i5 or greater (or similar to this)

- Ram - 8gb or greater

- Graphic Card - Nvidia GTX with Vram 4gb or greater (or similar)

- Storage - 1TB or greater

Software requirements includes:

- Epic Game Launcher

- Unreal Engine 4 or greater

- Autodesk Maya

- Blender

- Photoshop
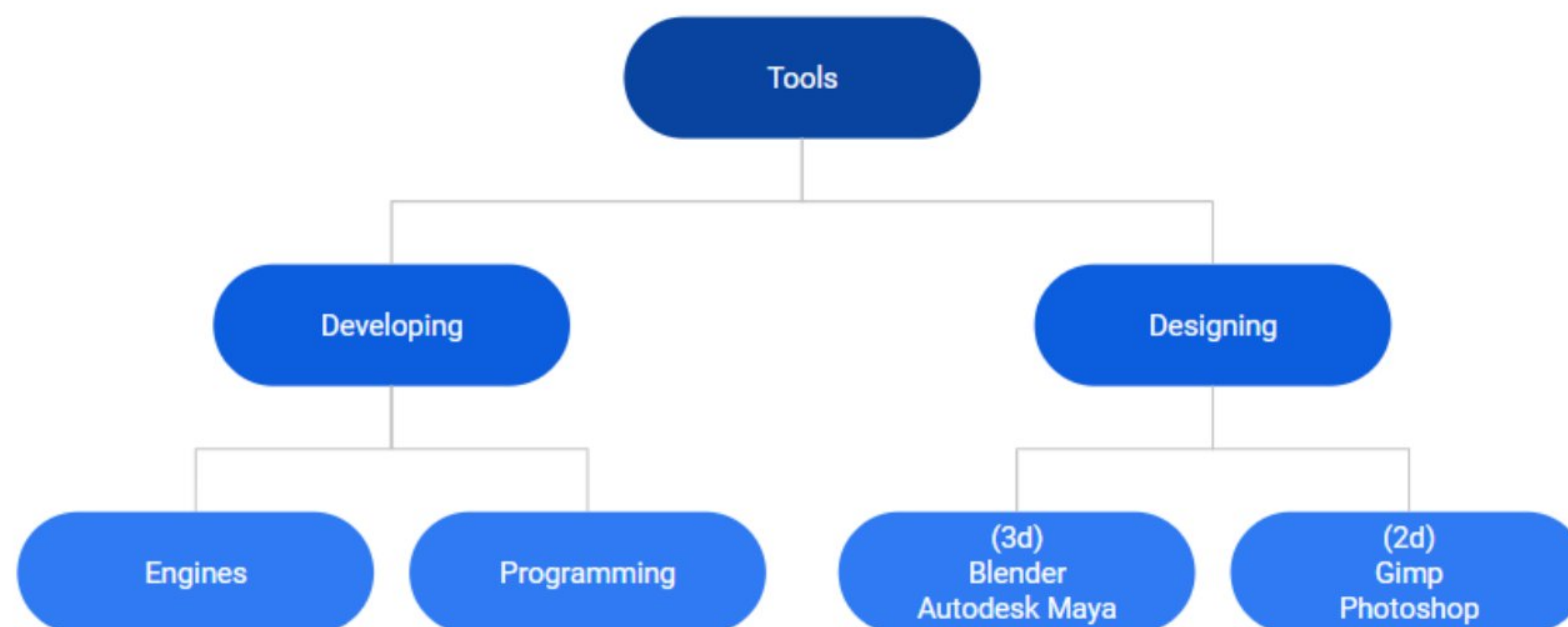
Estimated Schedule: 16-20 weeks

Resource Cost

- Unreal Game Development Engine: Open Source

- Autodesk Maya: Student License

- Blender: Open Source

- Photoshop: Student License

6. Methodology

Steps to follow:

- Designing the 3D virtual environment map, character models and weapons

- Enabling player movement and animation

- Enabling weapons to fire

- Implementing health and death (health=0) mechanics

- Enabling enemies through Artificial Intelligence

- Implementing multiple players in a single lobby.

- Implement end of game conditional (win/loss)

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                          │  Tools   │
                          └────┬─────┘
              ┌────────────────┴────────────────┐
        ┌───────────┐                      ┌───────────┐
        │ Developing│                      │ Designing │
        └─────┬─────┘                      └─────┬─────┘
        ┌─────┴─────┐                  ┌─────────┴─────────┐
   ┌─────────┐ ┌─────────────┐   ┌───────────┐      ┌───────────┐
   │ Engines │ │ Programming │   │   (3d)    │      │   (2d)    │
   └─────────┘ └─────────────┘   │  Blender  │      │   Gimp    │
                                 │Autodesk Maya│    │ Photoshop │
                                 └───────────┘      └───────────┘
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7. Facilities Required For Proposed Work

For this project hardware specifications are given as :-

- Processor - intel i5 or greater (or similar to this)

- Ram - 8gb or more

- Graphic Card - Nvidia GTX with Vram 4gb or greater (or similar)

- Storage - 1TB or more

Software that needed for this project :-

- Epic Game Launcher

- Unreal Game Development Engine

- Autodesk Maya

- Blender

- Photoshop

- Visual Studio Code

8. Expected outcomes

A 3D virtual environment game map. In this, single or multiple players will fight/survive using weapons (eg. guns) against a random number of artificially intelligent enemy bots. The game will not end until either all bots are eliminated or all players are eliminated/quit.

9. References

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