# Wide Awake

**Overview**

The project I have chosen is a virtual reality (VR) survival shooter, which will include a custom controller for the player to plug their VR controller into in order to play with, this will be an optional addition, players are able to play both with and without the controller. The controller would be 3D printed with a small motherboard inside that would allow connection to not only the controller but the computer as well in order to function, the reason for this will be detailed below. The game would be based on a small child's nightmare in a doll house, with life size dolls coming in waves to get the main character. The custom controller itself would be in the shape of a toy dart gun that would also be visualised in the game.

**Motivation:**

The main motivation behind this project idea is the lack of survival shooters for those with VR. Most VR shooter games are either competitive; against other people in nature or campaign driven, whereas this game will be more of an endless style survival shooter aimed at a younger audience. Another motivation is the lack of VR games with their own custom controller. You have companies such as Zero Latency that allow you to come in and use their controller but it isn't something you can play from your own home. The controller itself would be light enough for easy access to a younger audience as well.

**Description:**

You awake one night to find that you are no longer in your bed, but in the doll house that has sat untouched for months in your living room. In your hands you find your favourite dart gun and in the other a flashlight, in the distance a giggle, frozen in place with fear you must survive as long as possible.

### The game:

This game places you in the position of a child stuck in a repetitive nightmare, with waves of dolls coming to get you. The game itself plays as an endless shooter, scoring you points and game currency as you fight your way through the endless stream of enemies.

**Player:** Stuck in the one place/small area to move around in, able to turn 360 degrees. Flash light in one hand and dart gun in the other. Health bar that takes damage from the dolls when they get too close.

**Flashlight:** Helps slightly increase visibility in what is a pretty dark environment. But will have to balance keeping it charged as if it is used for too long power will run out. Upgrades available from the shop

**Dart Gun:** Endless ammo but starting dart gun will have a sluggish fire rate with upgrades available.

**Dolls:** 3 different enemies each with their own unique ‘traits’. Betty moves at a regular speed but will take average damage before defeated. Sally is faster but takes less damage to be defeated. Dawn is more of a boss, bigger and will charge towards the player if they are not looking, but will slow down when the player is looking at them. A large amount of damage will need to be inflicted before being defeated, has a distinctive laugh to let the player know when she has come to play. Each doll will award the player points for unlocks and currency to buy new items.

**Shop:** Option in the main menu can buy upgrades for guns and flashlights; these function as a one off purchase so players are able to switch between different weapons.. Other objects you can buy include health potions and traps for enemies; these function as a buy a number of items to use.

### The Custom Controller:

A 3D printed dart gun will be designed for use as a controller which will be partnered along with the game's release. People can also opt to just buy the game without the controller or purchase the controller later. It will contain a holder for the VR controller, different versions would then need to be made for the different available controllers. Will contain a trigger button that when pressed sends a signal to a small circuit board in the controller to fire off the gun in game.

The reason for the VR controller to be plugged in and connected to the additional controller is to use the battery pack inside the gun to run the VR controller. This is because if you keep them separate the controller can die and it can be a pain to try and swap batteries and or charge the separate gun. The reason for the internal circuit board is to determine not only if there is a controller connected to use as opposed to the general VR controller, but also so that the player can press the trigger on the controller to fire the gun. The VR controller itself would then just be used to track the location of the gun.

The Controller would come with the option of connecting via Bluetooth to the player's computer if the computer had available software or an extra dongle would be included for connection.

**Tools and Technology:**

For the Game itself the game making software Unity will be required, I have chosen this to develop in as it is not only what I am most familiar with but the tool SteamVR is able to be used for ease of connecting the VR equipment to it and then testing the game, SteamVR also works with multiple, if not all, different types of VR headsets the team will be able to ensure that the game will work for different VR headsets. Another reason I have chosen to use Unity is that is uses C# for programming and comes with access to Visual Studios in order to develop all code for the game. Unity itself can also be used for creating particle effects that are required throughout the game.

For the Art assets, I have opted to use Blender for this project as an artist is able to create the models in Blender as well as rig, animate and render them. These are all important aspects in order to create a functioning video game. Gimp will be used to create textures for the game, I have chosen Gimp as it is what I am most familiar with, it allows not only the editing of photos but you are able to draw and create your own images.

FL Studio can be used for creating audio clips, such as background music and sound effects, this will include but not limited too the sound of the dolls footsteps and giggles, the sound of both the player and enemy taking damage, the flashlight turning off and on as well as the dart gun being fired.

**Controller:**

In order to create the controller itself the modelling software Blender can be used to model the controller, then a 3D printer will be required to print it, plastic glue to attach printed gun pieces to each other as well as paint for the gun. For the internal circuit board we are opting to use an arduino nano as it is a basic do it yourself circuit board with components for bluetooth easily available. A mechanical switch will be required for the trigger button on the gun, a battery pack and charging plug will be required as well as wires to connect everything together. Finally weights may be required to balance out the weight on the gun with the VR controller on the end.

**Other Tools:**

Other tools would include Google docs in order to create pre production documentation, this will involve the Game Design Document, Scope lists, google docs has been chosen as it is an easy platform for the team to work together on the one document at the same time. Hack and Plan can be used for tracking progress of the development, it is a tool that has been created specifically for game development, it allows you to keep an eye on your scope and help meet deadlines.

**Skills Required:**

Rather than going through the skills required I'm going to go through the different roles that are required to make a video game and what is required of their role.

**Game Designer:**

It is usually the role of the game designer to create the initial documentation for the game, it is their general game development skills that are used to identify the main main mechanics of the game, the scope of the game, which will include asset lists for each discipline, art, programming and audio. Another requirement for the designer is to create the game scene and levels, if there is no set level designer. The game will start off by being ‘grey-boxed’ this is where the game space is created using primitive shapes, most commonly cubes, to block out the shape and design of the level, then when art assets are created they will be brought into the game and replace the grey-boxed shapes.

**Producer:**

It is the typical role of the producer to communicate through the different departments and ensure the project is running to the set timeline, if the project falls behind it is up to the producer to converse with the game designer and decide what can be removed from the game or what is required to get back onto schedule. It is also usually the role of the producer to liaise with any investors or 3rd parties.

**Artist:**

It is the role of the artist to create the 3D assets for the project, this includes modelling, texturing, which usually involves what is known as UV-unwrapping and creating the textures, as well as rigging, if animation is required, and animation. There are many kinds of artists, some will create concept art for the project to help create and set the art style for the game, others are character artists, who will create the 3D character models, others are environment artists, who would create not only the landscape for the game but also any assets that are found in the space, this includes furniture as well as the dart gun and flashlight models.

**Programmer:**

It will be the role of the programmer to create functionality in the game, this will vary from creating scripts that will control the players, firing off the dart gun, controlling the movement on the enemies as well as the enemy spawn rate. Due to using Unity the programming language requirement will be C#, and being a VR game the programmer will need to be able to connect the project with Steam VR. Due to using VR another skill required will be being able to create functionality for the VR hardware, this is made easy with SteamVR as there is not only extensive documentation but a lot of the programming uses the same functions.

**Audio Engineer:**

It will be the job of the audio engineer to create the required sound for the game, this involves not only creating the backing music but also the Sound Effects, sometimes this is two different roles but often at small indi studios this is the job of one person. They will be required to have knowledge of not only music principles but also be able to create new music, generally that loops seamlessly after a given amount of time. It will be the job of the audio engineer to record sounds and then edit them to put into the game as sound effects that will range from the player shooting their dart gun, to the rolls giggling to eerie background noises.

**Outcome:**

With a successful project this will be one of the first VR shooters as well as VR games to have its own custom controller. The impact could start a new way for gaming as well as accessibility for people to play VR video games. Although the VR controller can be quite simple to some there are still quite a lot of buttons this would just deduce the buttons on the controller to just 1 button, a trigger button. Although the use of the in game flash light would still require the use on the normal controller again there would be a reduction of buttons used, such as just a trigger button that when held down activates the flashlight and another button to activate the menu.