Game Design Document
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Name of the Game: Village Defender
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Tutorial: Group 2 (Ioannis Bikas)
Link to the game repository: Github - Village Defender

Table of content

1 Overview

[This section is dedicated to summarize the game and to answer important initial questions: what are the game objectives? What makes it unique? Who is the targeted audience? What is the platform for the game? What genre will the game pertain? What is the overall gameplay? These are samples of what an overview section need to have. The goal of this section is to have a quick way to look for the main highlights of the game. A new member on a game development team can read this section to catch up the idea of the game, or in an advanced game design stage a designer can use it to verify if the ideas he has are in harmony with the general idea of the game. The high concept document can evolve to become this section].

Dates mapped to Assignments:

- **Assignment 3:** 2022/05/25
- **Assignment 4:** 2022/06/08
- **Assignment 5:** 2022/06/21
- **Assignment 6:** 2022/06/28
- **Assignment 7:** 2022/07/12

1.1 Game abstract

[Summarize the game in a few words].
2022/05/25 The game is about defending and leveling your village. You start as a villager who completes quests to upgrade different buildings inside the village which is surrounded by walls. Outside the walls different materials can be gathered: Wood by woodcutting with an axe, stone by mining with an pickaxe, fish by fishing with an fishing rod, wheat by farming and even more. In the night monsters attack the village which you have to defend. The game ends if the village has fallen.

1.2 Objectives to be achieved by the game

[Describe the benefits to be achieved by making the game. Objectives should guide the design decisions of the game. Any constraint should be linked to objectives to].
2022/05/25 The main objective is to defend the village as long as possible. Therefore you need to achieve smaller objectives:

- Upgrade/construct different buildings in the village (Construction)
- Craft better gear at the different buildings (higher tier, better equipment) (Outwit)
- Complete quests given by NPCs in the village (Alignment)
- Reorder buildings and walls in the village (Alignment & Construction)
- Organize special villager to automate resocure gathering (Alignment)

1.3 Core gameplay

[Describe the main activity the player will be doing in the game. Focus on writing why will it be fun?].
2022/05/25 The main activity is gathering resources and upgrading the village. By that the player gets stronger and could also craft better equipment which makes it faster and more fun to gather resources again. This is fun because you can see the progress of the village and get the feeling of becoming stronger. There are different weapon types and upgrades you can work on. Each playthrough you can focus on different upgrades to achieve.
Each type of gathering resources will be its own little game of skill.

1.4 Game features

[This section describes the principal characteristics the game will have].
2022/05/25 The player is trying to defend the village. Therefore he can reorder buildings and walls. After each phase, daytime to gather resources and nighttime to defend the village, the game gets harder (monster grow stronger). Pruchase upgrades and craft weapons to fight the monsters. Sell items you dont need to trade them for items that are needed. You can upgrade tools be more efficient while gathering. Some buildings can destroy monsters and can be placed strategically to defend the village.

1.4.1 Genre

[Describe the game genre by defining elements or a common basic rule set that describes the nature of the game].
2022/05/25 The game combines different genres and ideas. Mainly it is a Construction-and-Management-Simulation. It also adds aspects of a tower-defense game. Lastly these geners are combined with the genres of an action and survival game.

1.4.2 Number of players

[Establish the number of players the game has. If the game has multiplayer describe the number of players intended to handle and indicate if the multiplayer game is competitive, cooperative or collaborative. Describe any special mode the game has for multiplayer].
2022/05/25 The game is for single player.

1.4.3 Game theme

[Describe the guidelines to the aesthetics of the game. Some examples of game themes can be: post nuclear earth, Greek mythology or medieval].
2022/05/25 The game theme is medieval. The region which the game takes place is a forest with a small village mostly build out of wood. While progressing in the game the village upgrades to a town made out of stone and better technologies.

1.4.4 Story summary

[Write a brief summary of the history of the game].

2022/05/25 The story will be a narrative introduction to the game. The player, who is a traveling adventurer, starts in a village where he is told that the way he wants to go is not available anymore. So the traveler decides that he wants to stay a few days in the village. The village chief says he can only stay if he helps the other villagers with some tasks. Therefore he helps the farmer to farm wheat with a starter hoe, helps the lumberjack to cut down a tree, helps the blacksmith to gather stone and iron and helps the fisherman to fish up a fish. After that tasks the day is over and the night starts where the first monsters come and the player helps to defend the village. Therefore he reorganizes the village layout and builds a new building which helps to defend the village with the resources the player gathered in the daytime. After constructing the building the player talks to the old wise woman of the village who gives the player a magic tool to locate monsters. The player decides to stay in the village to defend it until there are no more monsters left.

2   Mechanics

[This section describes the game elements, its attributes, and its interaction rules. All elements that create the game must be detailed and described in this section. A game character, its visual aspect, its sound effects, its personality may be described in this section].

2.1   Game elements categories

[Create game elements categories. This may help to organize better the design and to establish a solid base for reuse. Some examples of game elements categories are: enemy, boss, weapon, world or music].

2022/05/25 This is are the following categories:

- enemy

- item resources

    – mining: stones, gems, ores
    – logs
    – fish
    – monster drops
    – coins

- weapons

    – melee: sowrds, axes
    – ranged: bows, crossbows
    – magic: staffs, scrolls

- armor

- buidligns

- world objects: trees, stones, lakes, wheat fields

- NPCs: quest npc, shop npc, controllable npc

2022/06/08 Some of the game elements categories are implemented. The item resource wood got implemented. Four types of buildings got implemented: House 2x2, Wall, Gate (open) and Gate (closed).

2.2   Rules

[Describe the valid actions that the player can do and how the game should respond to these actions].
2022/05/25
If the player looses all its health the game ends.
If all villagers die the game ends because the village is lost.

The player can use tools and weapons, tools can be used on its belonging resource type and weapons can be used on monsters.
The player has a hotbar of 5 useable items.

2.2.1 Interaction rules

[Describe the valid interaction between game elements and the result of the interaction].
2022/05/25
If a player gets hit by a monster he loses health.
The player can pick up items which are placed in his backpack.
The player can equip armor. Weapons and other useable items can be put in the hotbar to interact with.
The player cant move through solid objects (e.g. walls).
The player can start dialogs with npcs.
The player can buy buildings at a special shop npc.
Special resource sources need special equipment to be gathered.

2022/06/08 The backpack is now a normal inventory. Another interaction is placing, moving and rotating buildings.

2022/06/21 The backpack is now implemented as a TextUI backpack

2.2.2 Artificial Intelligence

[Describe here how the game elements should react under different circumstances in the game].
2022/05/25
Monsters try to attack the village.
Monsters attack the player when in range or got attacked by the player.
Quest NPCs and Shop NPCs are to scared to interact in the night.
Controllable NPCs can fight monsters in the night.
Controllable NPCs can gather resources in the day.
Controllable NPCs can hold and equip gear (and have their own inventory).

2.3 Game world elements

[Describe elements that are outside the core gameplay. Some examples of game world elements are: world map or transportation (horse, boat or car)].
2022/05/25
Gathered resources renew after a fixed time.
The world map is a fixed size.
The village area can be extended. In extended area the resources wont renew.

2022/06/08 The building area for the village is now a fixed size.

2.4   Game log elements

[Describe elements that register the player progression. Some examples of game log elements can be: score, save or achievement].
2022/05/25
The game can be saved and continued.
The game score is the most survived ingame days.

2.5   Other elements

[Describe any other element that can't be classified on any other element classification in the mechanics].
2022/05/25 Day and night phase is time based.
In the night monsters spawn.

2022/06/08 An Hour system has been implemented. Day and night will be bases on the hour.
E.g. night is at 8 pm (20th hour).

2022/06/28 An particle system has been added to the game. In this version it contains footstep particles. In later versions this could become dependend on the material you are waling on.

2.6   Assets list

[This section contains the list of every game asset that needs to be created to finish the game].
2022/05/25 Assests get added later on.
2022/06/08

- Buildings:
    - House 2x2
    - House 3x2 (Special Buildings)
    - Wall
    - Gate (open)
    - Gate (close)
    - Outpost
    - Well
- Resources:
    - Wood

- Stone
- Iron
- Wheat
- Fish

- Useable Items:

  - Sword
  - Axe
  - Bow
  - Staff
  - Armor (Helmet, Chestplate, Leggings, Shoes)

- Player and NPC

  - Villager
  - Player
  - Golem
  - Archer
  - Zombie
  - SkeletonArcher
  - Shop NPC (Blacksmith, BuildingShop, ...)

- Tiles and Particles

  - Material grass
  - Material village objects
  - Material walkway (stone)
  - Material wood
  - Material water
  - Material leaf
  - Material stone (stone)
  - Material dirt
  - Material farming field

2022/06/21 First NPC blacksmith is implemented. The iron axe has been implemented as InventoryItemData.

2022/06/28 Tiles and Particles added to the list. The list contains all materials which are or will be used in the game.

3   Dynamics

[This section describes the flow of the game. History, levels, chapters, puzzles, interfaces (hardware and software). This section is directly related with the mechanics section since the dynamics are constructed from the elements in the mechanics].

3.1   Game World

[This section describes the world where the game is played].
2022/05/25 The village is the center of the map. From there you have four directions to go. In the north direction is a forest. In the south direction are fields to farm on. In the west direction is a lake to fish in. Lastly in the east is a quarry.

3.1.1   Game theme details

[Describe the world environment, its ambientation. Put in details how the game world should look, sound and feel].
2022/05/25 You can differentiate into five areas with five different moods during the day. The village should feel alive and busy. There are people running arround working and chatting and talking about the life in the village. They are sometimes scared if the defense of the night was close and sometimes happy if special quests got completed. The forest should feel mysterious and vivid, sometimes its foggy. You should see squirrels running arround and frogs jumping. In the deeper forest the atmosphere should be more like in a swamp, more fog, more water, darker greens. The fields should feel alive, you see plants moving and growing flowers aside and other villagers trying to work on the fields. The lake should feel quiet and sunny. The quarry should feel dry and dusty, like a hard enviroment to work in.
In the night all areas should be really dark and scary. Only the village admittes light and the monsters are coming. The mood is threatening.

2022/06/28 A lot of the theme feeling could be achieved with a rich particle system. Weather and wind, falling leafs, cutting trees or mining stone as well as footsteps give the game a better feeling.

3.1.2   Missions/levels/chapters Flow

[Describe how the player can navigate through the world in the game, if navigation is linear or he can choose where to go, if he can skip levels or if there are restrictions to enter in some areas].
2022/05/25 There are no restriction to enter areas. The world is open to explore and to gather resources from. The further away resources are from the village, the higher the tier of that item is. The map size is fixed.

3.2 Missions/levels/chapters elements

[This section describes the elements that will form the core gameplay].
2022/05/25 The core gameplay is to upgarde the village and your gear. The first steps in the game is how to acquire different resources with different tools. After the first night you can decide freely which branch of the game you want to focus on. That could be upgrading the village or upgrading the weapons and gear or upgrading tools to gather resources more quickly.

3.2.1 Objectives

[Describe the objectives to achieve in the dynamics of the game].
2022/05/25 The objective is to survive the longest. Each day the monsters get stronger and therefore it will be harder to defend the village.

2022/06/08 Subobjectives as mentioned before are: Building the village, Upgradgin gear.

2022/06/21 A quest for the blacksmith has been implemented. Collector 1 is a quest to collect wood in the forest and to return it to the blacksmith. As a reward you get an iron axe.

3.2.2 Rewards

[Rewards to the player for his actions in the game. Like achieving a goal or beating a challenge].
2022/05/25 The reward for winning a night against the monsters are the monster drops which can be turned in to upgrade your items and gear.

2022/06/08 Rewards are also seing the progress of the village

3.2.3 Challenges

[Challenges put to the players throughout the game. Some examples of challenges are: a fight, a puzzle or a boss fight].
2022/05/25 The challenge is to put the focus in the right objectives. As the game gets harder you need to progress in the different branches of the game. You need to upgrade tools to gather faster, you need to upgarde the village so it doesnt get run over by the monsters and you need to upgarde gear and weapons to be strong enough to kill the monsters. During that activities you need to organize the controllable npcs to collect and gather resources efficient.

3.3 Special areas

[Describe the areas which not classify as mission, level or chapter. Some examples of special areas are: stores, inns or bonus areas].
2022/05/25 All areas are part of the main level.

2022/06/21 Regions have been added. Implemented are Village and Forest. But there will be: Village, Fields, Forest, Quarry, Lake.

2022/07/12 The forest has been implemented with a disc posion sampling aglorithm with which trees are getting planted

3.4 Game interface

[Describe every element of every screen that the player can manipulate. Some screen examples can be: title, options, main, inventory or save].
2022/05/25

- Title
    - Start the game
    - Continue the game
    - Exit the game
    - Scoreboard
- Options
    - Set the controls to new keys
    - Save the game
    - Leave the game (move to Title screen)
- Main
    - While in village a button to interact with npcs
    - While in village a button to change the [21]
    - A hotbar where the items are displayed
    - A backpack where you can see your items
    - A button to the the tasks of the controllable npcs
    - A button for options which pause the game
    - A game over screen
- Inventory (Backpack)
    - Equip gear to hotbar
    - Equip armor to armor slots
    - Hotkeys for tools or equip to hotbar
    - Drop/delete items in the backpack
- Layout
    - Able to pick up buildings and place them again out of an hotbar
    - Rotate buildings
    - Move Buildings by dragging them with the mouse

2022/06/28 Added a game over view to the list (bullet point main).

3.5 Controls interface

[Describe how the player can manipulate every screen in the game].
2022/05/25 Iventory, Main and Options get manipulated by navigating with the mouse. You can click buttons or drag and drop items in the inventory. The main level gets manipulated by moving the character, most by inetracting with keyboard and mouse. You walk your character with w, a, s, d and interact with items with your left or right mouse button. The Layout for the village can be edited by mouse, drag and drop and a combination of buttons.

2022/06/21 The inventory is now a TextUI backpack. The main UI now contains an extra element to show the latest quest. Both UI layout can be enabled and disabled by player key inputs. A Debug Console has been added to the game with different commands.

3.6 Game Balance

[Describe the elements that are easy to change and can be used to increase or decrease the challenges difficulty. Examples of elements that can easily balance the challenges are enemy speed, life or number of enemies in a fight].
2022/05/25 The game balance is depends on the difficulty of the monsters in the night. The changing attributes will be: number of enemies, health of enemies, speed of enemies, damage of enemies, behaving of enemies (Attacking intelligent, having different attacks in later stages). Also the econmy could be adjusted. Higher prices for upgrades, less resources from gathering, fewer drops from monsters.

4 Visuals and Sounds

[This section details what the player sees and hears. This section can be extended in case of augmented reality games like the inclusion of smells].
2022/05/25 No visuals and sounds yet.

2022/06/28 Updated Game visuals.

4.1 Game visuals

[Describe all the visual aspects of the game used by providing screenshots and short descriptions].
2022/05/25 No visuals yet.

2022/06/08 Some game visuals have been added. They can be viewed in the unity project inside the GitHub repository.

2022/06/21 New NPC blacksmith with new assets have been added.

2022/06/28 As described in the "Game theme details" the game should feel alive. Most time the player tries to gather materials on his own. That is why it is important to have a living and rich enviroment. Examples for those enviroment could be: Weather and wind, falling leafs,

cutting trees particles, mining stone particles, footsteps. Also little background NPCs: Snails or squirrles as well as frogs (these should not be interactable and only more visual) An example for a game who used such ideas is Terraria [**terraria**].

4.2 Game sounds

[Describe all the sound and music used in the game and describe why you use them].
2022/05/25 No sounds yet.

5 Document information

5.1 Definition, acronyms and abbreviations.

[Define all the concepts, acronyms and abbreviations needed to the understanding of this document].
2022/05/25 Term or abbreviation

Definition and acronyms

- hotbar - items you can equip faster with hotkeys
- mobs - monster
- mob drops - items the monster drops

5.2 Document references.

[List all the documents referenced by this GDD and specify where they can be found]. **2022/06/08** References can be found in Chapter References.

6 Attachments

[Add any other information or relevant document to the design of the game].
2022/06/08, 2022/06/21, 2022/06/28, 2022/08/08 In this chapter are other tasks of the assignments.

- **Assignment 3 sections:** 6.1, 6.2
- **Assignment 4 sections:** 6.3, 6.4
- **Assignment 5 sections:** 6.5
- **Assignment 6 sections:** 6.7
- **Assignment 8 sections:** 6.8, 7.3

6.1 Discussion of formal and dramatic elements (Tracy Fullerton)

6.1.1 Formal elements

The **player** is a voluntary participant who plays the game for long sessions in which they progress in the village by upgrading and construct new buildings and by upgrading the own gear. The **objective** is to survive as long as possible. The subobjectives are to grow stronger. Therefore you gather resources, complete quests, upgrade building, craft weapons and armor and defeat monsters. The **procedures** are clear and achievable. You decide on the branch you want to progress in. For example you decide to upgrade your village walls which you could need wood for. So you start gathering wood with an axe. Each night you defeat monsters to play on. The **rules** are giving a day night cycle in which you try to progress through the day and proof your progress through the night. The different interactions show where the weaknesses of your village or gear are to improve the progress in the different branches of the game. There are three different kinds of **resources**. The first category is the collectable resources. They are used to upgrade gear and buildings or are used in quests. Therfore they are really valuable. The second category is time. You only have a specific amount of time before the day ends and you have to fight the monsters. The third category is health and villagers. If one of these two ressources run out you loose the game. The **boundaries** are given. Nobody can be hurt outside the game. The players village is only virtual. The **outcome** is measurable because the game will end but the result is how far you were able to progress.

6.1.2 Dramatic elements

The **challenge** is to become stronger by upgrading your village and your gear. It is important to progress in the right branches to be able to resist the attacks of the monsters in the night. During the **play** the palyer can decide in which branch they wants to focus. There are fixed borders for the map but the player can move freely. The **premise** is a fantasy world with medival weapons and magic. Your village is in the forest and dependent on itself. The artstyle will be comic/sketch like. The **characters** of the game should feel alive when in dialog but should be functional during the gathering phase (while no quests are active). Characters should reflect the current siutation of the game. If the nightly fights are too easy to win the charcters should be pretentious and their dialogues should show that. If fights are more hard to win the charchters should be afraid of the next night. The **story** is limited to the introdcution. It is used to show the player the game and the main mechanics.

6.2 Paper prototype video

Here is the link for the paper protoype video. The link purpose is only for this project in this module. Do not share this link with others. Thanks.

The video shows the player walking arround gathering resources. In the first part the player is farmin a pumkin. Then he walks into the village. In the inventory is at that point wood and iron which is used to carft an axe at the blacksmith. The axe is equiped in the inventory to the hotbar. (Reminder: The button with the layout changes[21] was an idea later on and wasnt added in the video.) After crafting the axe the player moves on to the forest and cuts down a tree. After collecting the wood the player moves back to the village but during the way it be-

comes nighttime. So the player fights a skeleton. (I propably want to implement that the player is always the center of the screen and the enviroment is "moving" arround the player. I found that really hard to realize in a stop motion movie. Thats why I am adding this text. But I hope the general game idea is clear.)

Link: Village Defender - Entertainment Computing

6.3   First playable Prototype

In this sections I explain what different prototype game objects I implemented.

- Resources: Time, wood
  The time system is a game object with a script. For now time just flies by. But in the next steps the time will trigger events which will e.g. start the monsters to spawn [6]. The implementation of the wood resource is part of my inventory system. I used the idea of by Game Dev Guide [11]. It was shown how to use a camera to screenshot icons from the camera of the screen. I added a way to pick up items by walking over them.

- Objectives: Building System
  The Building System is based on a grid where buildings occupy tiles. The building to place can be rotated and moved across the tilemap. When you place the building you cant place other buildings over them. The idea is mixed from different tutorial by Tamara Makes Games [9], [7], [8]. I combined the different ideas and added the rotate function. I also added a way that pre-placed objects in a scene are getting noticed by the system and are listed in the tilemap. So after starting the game the tiles under the buildings are occupied. I also added a building view which has some bugs right now resulting from the way I try to get the cell position of the tilemap. That will be fixed in a later version of the game.

- Outcome: Inventory system, healthbar
  I implemented an inventory system. Items (resources) that can be picked up are put to the inventory. At the moment the inventory is not visualized but by inspecting the player you can see that items are getting picked up and are stored in the inentory list [11]. I didnt change that system yet, but i am planning to add a hotbar system and also set a maximum stack size. The healthbar system is an implementation by Code Money [17]. I took that implementation and made a GUI object out of it. So it can be rendered in a canvas.

- Others:
  I have implemented a camera following script [2].

As stats I have implemented Healthpoints. The healthbar can be used on the player and also enemies. In the project submission the player can take damage and heal (T and H Keys).

6.4   Game Engines

Graphics:
The style should mostly be low poly medival deisgn. I try to use the lighting in the game to indicate day and night cylce but that is not implemented yet. Also particle systems should give

visual feedback for actions in the game.

User Input/Output:
The user input and output should be based on the input types. The first two are Buttons and shortcut-keys for buttons. E.g. open inventory button or pressing E. The second input type is interactions on the screen. By clicking with a sword equipped in a direction should lead to an attack in that direction.

Game Logic and Game Object Model:
The game logic is based on trying to be efficient. You need to use time as a ressource and try to get your equipment strength ahead oft the rising difficulty. You upgrade your village by placing new buildings and reorddering it. So you can last longer against an attack. You upgrade your gear to kill the monster waved before the villages defense falls.

6.5 Implementing a quest

For task a) I have implemented a blacksmith. He has different dialogs which trigger different events on an action button which gets activated in the belonging dialogue part (Note: For now only the smae text gets displayed due to a bug. But the correct button events trigger). The dialogue gets avitivated by a box collider as mentioned as a tip in the assignment. The dialgoue box and the wrapping arround a trigger is an idea by Brackeys [1].

For task b) I came up with my own system. A quest contains title, description and subgoals with their own descriptions. The NPC holds a quests and chooses by the fact of holding a quest the correct dialogue. After the player accepts the quest the player holds the quest and a quest observer observes the progress. One player only holds one quest but the quest itself is flexible. THe NPC chooses on his quest complete conditions the correct dialogue which triggers the corresponding action button. The action button completes the quest and the rewards are given. I tried to implement some kind of stateful NPC. The QuestSystem/DialogueSystem is bound to NPC behaviour (the base class of blacksmith). So it can be extended with any amount of NPCs. The quest itself gets updated in the QuestUI (also the InventoryUI).

For task c) I had implemted allready buttons to manipulate health. But now i have implemented a cheat console (Idea by Game Dev Guide [10]). The cheat console can be opened by pressing "+" and inputs can be executed with "Return". The following list of commands have been implemented:

- help: shows help for all commands

- player_health_full_life: Heals the players health to 100.

- player_health_set_to <int>: Sets the player health to given argument

- time_set <int>: Sets the time to given argument

6.6 Animations

The healthbar is changing color symbolizing the heartbeat Therefore I used the image object and change the color by changing the image.color property. At lower healthpoints (<30) the color changing speeds up. The inventory and the quest menu are animanted now and scale into the scene. This implementation uses LeanTween [19] and also the tutorial in the assignment [4]. If the player hits 0 healthpoints a game over screen fates in [4].

As effect animations i have a footstep particle system. As you walk you can see grass ermerging from the players feet (best seen on the walkway). This idea is by Press Start [20]. The feedback animation is a pickup animation of the player when he picks up wood.

The character animation is using idle, walking, punching and the death animation (also the just mentioned pick up). The death animation is triggered by the event of hitting 0 healthpoints. The blacksmith (NPC) has now also an idle animation. For all of the animator and animation controller work i watched serveral videos from iHeartGameDev [12] [13].

6.7   Animations

The forest was implemented with a disc poison sampling algorithm. The alorithm is optimized to only generate potential new points in a given area inside the grid. The generated points in the fixed size of the area are drawn with Gizmo to be visualized. When the program starts the trees are put at the generted points. There are three random types of trees which are planted [14].

6.8   Game Polishing and Evaluation

The implementation of this assignment is different to the others because there are no requirements of tasks. I explain in this section what I have implemented and for what reasons I did that.

My game isnt structured in levels its more like a survival based game with one of its core features being the building system of the village. It was my goal to complete the building system. Therefore I had to implement some more features:

- Reselection of building to move them arround again.

- Deletion of buildings.

- Restrictions for the amount of buildings

- Restrictions for the building area

- Own camera top down view

Most of these features I implemented in my old grid building system. I wasnt happy with the results so I rebuild the entire system. I used ideas and material from Code Monkey [18], [15], [16]. I used a custom GridSystem which I had to adjust for my requirements. The Grid and the GridBuildingSystem were added and the old features dismantled.

For finishing the game I also implemented a start menu and a way to return to the menu after dying (only possible by taking enough damage with T-Key). The tutorial I used for that feature is from Brackeys [3].

The game has a build version on Uni Bremen seafile: Seafile Village Defender. Another platform to play the game is itch.io: Itch.io Village Defender

I have installed the universal render pipeline to use the Shader Graph. With that I wrote my own shader which is used on the plane of the game. The shader shows tiles of the grass texture (or any texture that is the input) and paints them accordingly to its world position. With that the tiles align perfectly to the grid building system. By using the material for the plane instead of a unity

tile map the shadows can be casted correctly to the ground which improve the visuals greatly (Idea by Justin Foley [5]).

Based on the study I had adjusted the selection of new bulding types while in building mode.

7 Study

7.1 Introduction to the questions

In my study I investigate the research question: Is the building system of the game Village Defender fun? Therefore I used the standardized PXI questionaire. In addition to that I designed four more questions for participants to answer:

- How did you like the building system in terms of intuitive use?

- How did you like the building system in terms of responsiveness?

- The building system handles build attempts outside the building area (grey area) on the left and right side differently. On the left side the building snaps to the closest spot on the building grid. The right side gives you a warning message that you cant build. Which one did you like more and why?

- Did you like the top down view to build?

The first two questions are designed for general feedback on the system. Did the participants have any struggles or did like/dislike parts of the system. The 3rd question gives a choice about two different implementations in the game. Both are valid options and are used in several known games. The last question is about the perspective in the game. Classic builder games have a top down view. More modern games have a more complex system where the camera can be moved arround and can be roated. The question is put like this to see if the participants want a more complex camera system or if this system is good enough.

7.2 Evaluation

The PXI questionaire, given answers and average answer:

Question	Answers	Average
Playing the game was meaningful to me	1, 3, 3, 0, 0, 2	1,5
The game felt relevant to me	2, 3, 2, 0, 0, 2	1,5
Playing this game was valuable to me	2, 3, 2, 0, -1, 2	1,33333333333333
I wanted to explore how the game evolved	2, 3, 3, 1, 2, 3	2,33333333333333
I wanted to find out how the game progressed	2, 3, 3, 1, 2, 3	2,33333333333333
I felt eager to discover how the game continued	2, 3, 3, 0, 1, 3	2
I felt I was good at playing this game	-1, 3, -2, 0, 1, 2	0,5
I felt capable while playing the game	0, 3, -2, 3, 2, 2	1,33333333333333
I felt a sense of mastery playing this game	0, 3, 0, 3, -1, 1	1
I felt free to play the game in my own way	1, 3, 2, 2, 3, 3	2,33333333333333
I felt like I had choices regarding how I wanted to play this game	0, 3, 2, 0, 2, 3	1,66666666666667
I felt a sense of freedom about how I wanted to play this game	1, 3, 2, 0, 2, 3	1,83333333333333
I was no longer aware of my surroundings while I was playing	2, 3, 1, -1, 1, 0	1
I was immersed in the game	2, 3, 2, 0, -1, 0	1
I was fully focused on the game	2, 3, 3, 2, 1, 2	2,16666666666667
The game informed me of my progress in the game	1, 3, 3, 1, 1, 2	1,83333333333333
I could easily assess how I was performing in the game	1, 3, 2, 0, 0, 2	1,33333333333333
The game gave clear feedback on my progress towards the goals	1, 1, 3, 1, 1, 2	1,5
I enjoyed the way the game was styled	1, 3, 3, 2, 2, 2	2,16666666666667
I liked the look and feel of the game	1, 3, 3, 1, 2, 3	2,16666666666667
I appreciated the aesthetics of the game	0, 3, 3, 1, 2, 3	2
The game was not too easy and not too hard to play	1, 3, 1, 0, 1, 1	1,16666666666667
The game was challenging but not too challenging	1, 3, 1, 0, 1, 0	1
The challenges in the game were at the right level of difficulty for me	1, 2, 0, 0, -1, 2	0,666666666666667
It was easy to know how to perform actions in the game	2, 3, 3, 2, 2, 3	2,5
The actions to control the game were clear to me	2, 3, 3, 3, 3, 3	2,83333333333333
I thought the game was easy to control	-1, 3, 3, 3, 1, 0	1,5
I grasped the overall goal of the game	-1, 3, 3, 1, 1, 2	1,5
The goals of the game were clear to me	-1, 2, 3, 0, 2, 2	1,33333333333333
I understood the objectives of the game	-1, 2, 3, 3, 1, 2	1,66666666666667
I liked playing the game	2, 3, 2, 1, 0, 2	1,66666666666667
The game was entertaining	2, 3, 3, 1, 1, 2	2
I had a good time playing this game	3, 3, 3, 1, 1, 2	2,16666666666667

The study had six participants born between 1968 to 2004. The average year of birth was 1993. 66% of participants were male, 33% female, 0% N/A.
The participants answered the additional questions like this (summarized):

- How did you like the building system in terms of intuitive use?

  The system was intuitive. Controlls were explained well in the UI. It was simple to use (not many actions to remember). It was obvious how the system would work.

- How did you like the building system in terms of responsiveness?

  The system was responsive. The buildings had a nice preview of the placement. After placing a new building I would like to be autoselected on that building. The different colors (blue and red) made it easy to see where i can and cant build. The building area was clearly to see. Lag free and no latency.

- The building system handles build attempts outside the building area (grey area) on the left and right side differently. On the left side the building snaps to the closest spot on the building grid. The right side gives you a warning message that you cant build. Which one did you like more and why?

  The warning messages (3)
  The auto snapping (0)
  Other opinions (3)

  Other opinions: It would be great if there would be a mixture of both systems where the blueprint building wont leave the building area even if the mouse is outside of it (like a border).
  I liked the message system more but the snapping was very helpfull when placing walls at the border of the building area.

- Did you like the top down view to build?

  The top down view is great. It is better for an overview for buildings in the village. It was a new experience to play a building game in a top down view.

7.3 Interpretation

First the PXI: The PXI is devided in two main parts. The Psychosocial Consequences and the Functional Consequences. The first part is mainly about Meaning, Mastery and Engagement. All those questions had an average result which is aspected due to the low amount of quests and story. Also there are no enemies implemented yet and the starting quest is only picking up an item. The challenge is therfore the lowest score in the survey which is also understandable. The second half of the survey is for the prototype more interesting. The progress feedback had an average score due to the low amount of quest again I assume. The appeal of the game was rated very positivly which is good. The Challenge is again not implemented why the question was understood differently. Some said it was good for building purposes others gave 0 or 1 points because there are no real challenges yet. The most important feedback of the survey is the Ease of control. The prototype has focussed on that category the most and the results are good. The highest score in the surey is that players know how to perfom which actions. This relates to intuition and the well desinged UI and explainations in it. In the summary/enjoyment part of the survey the participant thought that the game was interesting and fun.

The qualitative questions gave more sight on how special systems were adopted. There were mixed feelings about the way how not buildable places should get handled. All participants thought that the snapping alone is a bad thing but a mixture of both is for half of the participants the way to go. The other half likes the warning messages more. One finding was that the auto-deselection of building types after placing them is not intuitive which I agree to.

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