

House Hunting

Design Document



The Team

Name:	Student No.	Roles + Skills:	Responsibilities:
Isaac Thomas	103657454	Primary - Narrative Secondary - Producer/Designer	Working with the level designer and artists to establish a strong narrative through environment, characters, and aesthetic.
Jacob Waltzer	102108760	Primary - Mechanics Designer Secondary - Project Management	Translating the creative ideas from our game designers into detailed plans and documentation that can be effectively utilised by the programming team. I have also taken on some management responsibilities.
Nikita Golev	102098683	Primary - Programmer	Take ideas from the design team and create the logic which runs the software.
Kai Siang Kao	103819380	Primary - Programmer Secondary - AI Design	Develop and implement the game's software architecture and mechanics, debugs technical issues, and collaborates with others to ensure code quality and consistency
Paul Daniel Mihai	103066063	Primary - Programmer	Working with AI Designers to implement specified AI behaviour.

James Leung	102573711	Primary - Systems Programmer Secondary - Systems Design	Maintaining documentation and working with designers and other programmers to create and implement game systems/mechanics
Patrick Siassios	102577027	Primary - Mechanics Designer	Translating the ideas from mechanics to programmable scripts to be followed
		Secondary - Programmer	
Ethan Franks	102092258	Primary - Producer Secondary - Environmental Designer	Facilitate ease of communication among members of the group and external parties. Work with the artists and narrative designer to establish a strong narrative through the environment.
Natasha Wong	103263699	Primary - Artist Secondary - Narrative	Create high quality assets that won't hinder performance whilst also contributing to the visual style of the game.
Zhenbang Cao	102450199	Primary - Artist Secondary - Designer	Creating highly finished assets that fit the overall style of the game and providing in-depth design of gameplay and interaction.
Allen Pham	103492215	Primary - Programmer	Create the mechanics from the design docs and some light modelling work.

Overview/Narrative

Out in the wilds of another Earth there exists a vast area consisting of a treacherous desert, soothing plains, and a dense forest, as well as a plethora of sentientFURNITURE?! Yes, furniture! Explore this untamed landscape, hunting down chairs, tables, couches, and even giant stuffed bears, all for the sole purpose of decorating your cosy little cabin. But be careful! Some of these furniture are known to attack! Keep a safe distance, to not fully alert them, utilise objects within the world to stealthily manoeuvre the terrain and avoid alerting these dangerous home living appliances! So what are you waiting for?! Grab that crossbow, and get to hunting!

Upon beginning a new game, a 20 second animatic will play detailing the narrative and goals of the game.

The Machinery

The game is split into two main phases, the hunting phase and the decorating phase.

Hunting Phase

In the hunting phase, players venture into the world and search for sentient furniture. They engage in FPS gameplay, using a crossbow and lures to hunt down and capture the furniture. If they are killed, the player is sent back to their home with their captured furniture. They can place and arrange furniture in their house, customising the interior design.

Controls

Action	Input
Movement	WASD
Crouching/Sneaking	Ctrl
Running	Shift
Jump	Spacebar
Fire weapon	LMB
Aim down sights	RMB
Interact	E
Inventory	I
Return to Cabin	H
Pause	Esc
Lure	G
Weapon Wheel (Post-PAX)	Tab

Weapons

Players have a crossbow to use when hunting furniture, as well as lures. They can also press the 'Aim down sights' button to aim, increasing their accuracy at the cost of movement speed.

The crossbow in House Hunting is projectile based. This ensures that each shot has a realistic impact and doesn't continue to pass through objects. When a projectile hits furniture, it deals damage and is destroyed. Projectiles fired by the crossbow can bounce off of the environment.

The crossbow is limited to 15 arrows, and automatically reloads after each shot. The limited arrows encourages players to be conscious of what they hunt and how they hunt, increasing pressure on the player which in turn will have a greater sense of reward when they do capture the furniture.

Reloading will play the reloading gun animation over 1 second. The gun will not be fireable until after this action is complete.

Player Health

The player's health is shown using hearts. At the start of each hunt, players have 3 hearts. If the player dies, they return to the house and any collected furniture from that hunt is lost. When the player is hit by hostile furniture, they lose health. The damage can vary, but it always goes down in half-heart increments.

Inventory

During a hunt, the player has a temporary inventory that holds only the furniture they've collected in that specific hunt. If the player dies, all these items are lost. The user interface for this hunting inventory mirrors the house inventory, but it omits the "Place" button.

(Stretch Goal) Lure

The player has the ability to deploy a "lure" to attract furniture. This can be placed by pressing a designated hotkey. The lure has the potential to attract one piece of furniture at a time, pulling them into a predefined radius to investigate the lure.

Alertness and Lure Interaction

Furniture at or above a certain alertness level, known as Alertness Threshold 2, will not be attracted by the lure. Additionally, if a piece of furniture reaches this alertness threshold while already being lured, it will disengage and ignore the lure entirely.

Furniture Behavior Near Lure

When furniture enters a smaller radius around the lure, referred to as the immediate vicinity, it will stop moving and face the lure for a set amount of time. During this period, the furniture's alertness level will decrease at a rate of 5 units per second on top of the standard decay rate.

Lure Despawn Conditions

The lure has a global despawn timer, currently set to 100 seconds. This timer will continue to count down as long as the lure exists, but the lure itself will not disappear if it's currently attracting a piece of furniture.

Lure Stats

Range	???
Active time	7.5s
Alert decay rate	5/s
Max lifetime	100s

Sneaking

Players can crouch to sneak around the environment, reducing their speed, but also reducing the chance of them being noticed by furniture.

Decorating Phase

In the decorating phase, players can decorate their house with the furniture they have collected in the hunting phase. Keeping it as a first-person perspective allows a seamless transition from the hunting scene.

In the house, the player can access their inventory to see what furniture they have collected. They can then select the furniture they want to place into the cabin before interacting with it to decorate.

Controls

Action	Input
Movement	WASD
Crouching/Sneaking	Ctrl
Running	Shift
Jump	Spacebar
Rotate placement	Scroll wheel
Place furniture	LMB
Pick up furniture	E
Inventory	I
Return item to inventory	R

Decorating the House

While in their house, the player can press the ‘Inventory’ button to open their inventory and view their unplaced furniture. They can then select any of the furniture in their inventory to prepare to place it in the world. The furniture will be placed where the player is looking, and they can use the ‘Rotate placement’ input to rotate the furniture. Once they are happy with the location and rotation of the furniture, pressing the ‘Place furniture’ button will lock it in place. Trying to place furniture that is overlapping and clipping into other furniture is not permitted, maintaining realism and order within the game environment. If a player changes their mind about the placement of a piece of furniture, it can be picked back up by holding the ‘Adjust furniture placement’ button.

Surface Furniture

Some furniture, such as the table, can have other furniture placed on top of it.

(Stretch Goal) Rewards

In the game, players progress by placing unique furniture pieces in their home. Every time a player adds a piece of furniture that they haven't placed before, they move closer to reaching a milestone. Achieving these milestones is not only a moment of celebration but also rewards the player. As milestones are hit, the atmosphere comes alive with firework-style particle effects and jubilant sound effects. Beyond the visual and auditory rewards, players can also look forward to tangible upgrades. These milestones can grant enhancements to the player's health, boost their movement speed, or even increase their ammo capacity.

Game World

Biomes

The game world features four main biomes: snow, desert, plains and forest with a transition on the map between them. The biomes will each feature their own variety of furniture,

Furniture Spawning

The game world will be populated with a variety of "spawner" objects, each of which has a list of furniture that it can spawn.

At the start of the hunt, a random selection of spawners will be chosen to each spawn a random piece of furniture from their list. Furniture does not respawn over the course of the day.

The location in which furniture will be spawned is based on size and theme.

Big furniture will be in the plains where they can navigate easier. Smaller furniture will be in the forest.

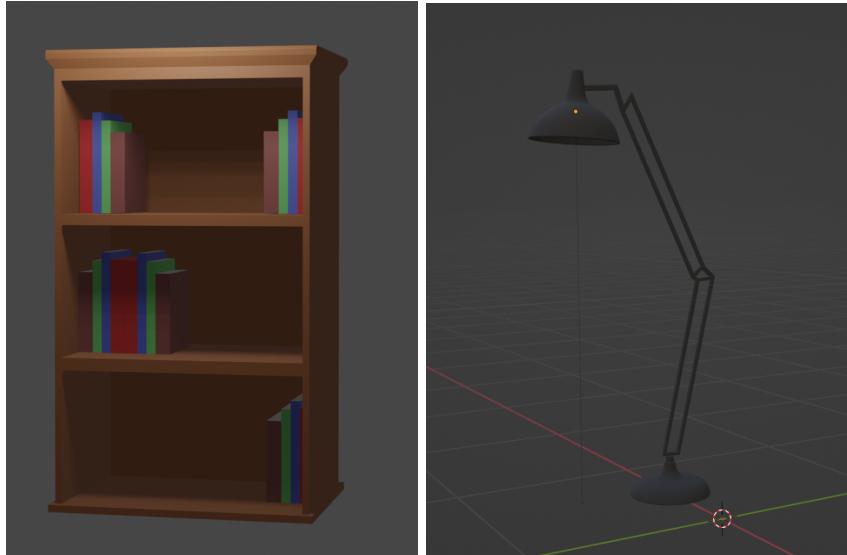
Thematically, fridges will be in the snow biome, and stoves and various heat themed appliances will spawn in the desert.

Campfires & Map

Each biome contains a campfire. Outside the cabin will be an interactable map that the player can then choose which campfire to teleport to. This map is only accessible from outside the front of the cabin.

Furniture

 Furniture List - House Hunting



Variety

There will be a variety of furniture in the game, each with their own unique appearances and attack patterns. There are some special furniture hidden away in each biome for the player to find. Some furniture will have variations of themself that will behave the same with slightly different stats. E.g: Armchair Large will have more HP and be slightly slower than Armchair Small.

Attack Patterns

	Description	Exposed variables (Default)
Charge	On seeing the player, the furniture should wait for a period of time before charging at the player's position. If it comes in contact with the player, the player should be knocked backwards.	Charge time (2s) Charge speed (3x) Knockback amount (5m) Cooldown (7.5s) Damage (??? hearts)
Slam	On seeing the player, the furniture approaches the player until it is within range of making its	Range of Jump (10m) AoE radius (2m)

	slam attack, jumping in the air, doing AoE damage when it lands.	Damage (1 Heart) Cooldown (5sec)
Projectile	On seeing the player, the furniture will try to remain within a certain distance of the player, and fire projectiles at them. If the player moves such that the furniture is no longer in that range, it should flee (if the player approaches it), or chase (if the player moves away from it).	Projectile range (20m) Min player range (10m) Projectile speed (10m/s) Damage (1 heart) Projectile colour (red)
Alert	On seeing the player, the furniture begins to flee while making a constant sound that increases the alertness of all furniture in a radius.	Alertness increase (10/s) Alert radius (50m) Sound effect
Steal (STRETCH GOAL)	Upon entering its “area”, the furniture will charge towards the player, and steal 1 furniture item from their inventory. After doing so, the furniture will be constantly running away from the player at double speed.	
Reflect (STRETCH GOAL)	Upon being fully alerted, it will constantly face the player, not moving. If the player shoots it, they will take damage equal to the amount of damage the furniture would have received. This behavior would not be limited to being fully alerted, however. Even when not alerted, if the player hits the glass side of it, the damage will be negated and reflected back at them.	
Grapple (STRETCH GOAL)	Furniture will make its way towards the player and latch on to them, dealing initial impact damage and slowing them, while doing continuous damage while it remains latched on. The damage varies.	

Senses, Sounds and Alertness

All furniture has an alertness gauge which goes from 0 to 100. It can be raised by two methods, sight and hearing. It is represented by a question mark above the furniture, which fills

up as alertness increases. If alertness is at 0, the question mark is not visible, and if the alertness is at 100, it is replaced with an exclamation mark.

At certain thresholds, the furniture will exhibit different behaviours. Some may retreat even if they aren't aware of the player's position, while others may get curious and approach to see what it is they spotted. These are just examples and not the full range of furniture behaviours.

Alertness Increase

Action	Alertness Increase (variable)
Sneaking (sound)	2 per second
Walking (sound)	5 per second
Running (sound)	10 per second
Jump (sound)	10 immediately
Getting shot	50 immediately
Reloading (sound)	5 immediately
Player in vision	25 per second
Projectile impacts environment (sound)	5 immediately

Behaviours and Thresholds

Alertness Level	Example Behaviour(s)
Threshold 0: Start: 0 End: 0	Standard roaming behaviour
Threshold 1: Start: 33 End: 0	Stop moving and look around in random directions. If it sees the player it will lock their sights on them.
Threshold 2: Start: 66 Revert to threshold 1 at: 33	Mark the player's position at the moment the furniture hits this alert level. Flee: Moves away from the marked position

at normal speed.

Investigate: Moves towards marked position. If the furniture gets to the marked position, it reverts to its threshold 1 behavior.

Threshold 3:

Start 100

Revert to threshold 1 at: 33

Flee from Player: Runs away from the player at variable speed (x2).

Attack: There are varying attacks that a furniture can make. (see [Attack Patterns](#))

Alertness Decay

Furniture behaviour is determined by different alertness thresholds. Each threshold has a starting and an ending alertness level, as detailed in the table below.

When a furniture's alertness reaches a particular threshold's starting level, its behaviour changes accordingly until it hits the starting level of the next higher threshold.

Should the furniture's alertness drop, its behaviour will revert to the conditions specified for the lower alertness threshold.

Changes in alertness

Current Threshold	Change in Alertness	New Threshold
T0	Rises above 33	T1
	Drops to 0	T0
T1	Rises above 66	T2
	Drops below 33	T1
T2	Rises to 100	T3
	Drops below 33	T1
T3		

When Furniture is Shot

When a piece of furniture is shot, if it is in threshold 0 or 1, it will run around at variable speed (set to x2 for now) in random directions for a variable amount of time (7.5s for now); Being shot raises a furniture's alertness by 50.

Injured furni will project blood puddles on the floor every few seconds as it runs, this will use a decal projector. From the place it is hit a particle emitter will spawn initially firing off wood chips and spraying blood. Furniture stops bleeding after a variable amount of time.

Furniture Death

Upon death, the furni is given a rigidbody and a small force is applied to the last bullet hole to tumble the furni into its “dead” state. This should put the furniture into a ragdoll state.

When furniture is dead, it can be picked up by pressing E.

Environment

If the player takes cover behind objects like trees, rocks, or bushes, these objects should obstruct the furniture's line of sight, effectively making the player invisible to them.

UI

Main Menu

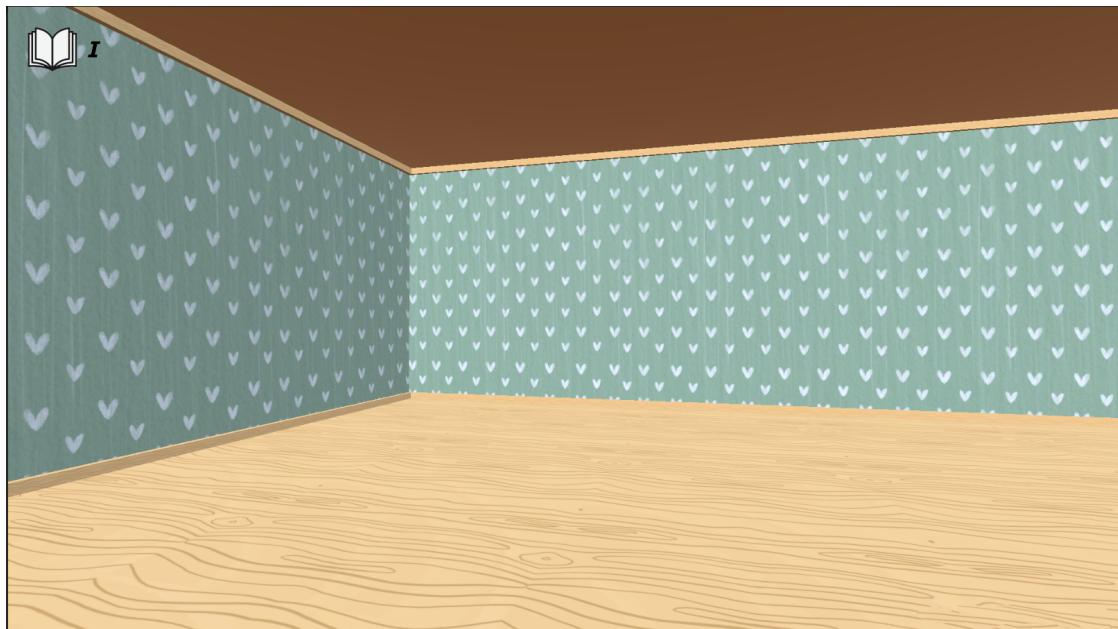


Hunting Scene

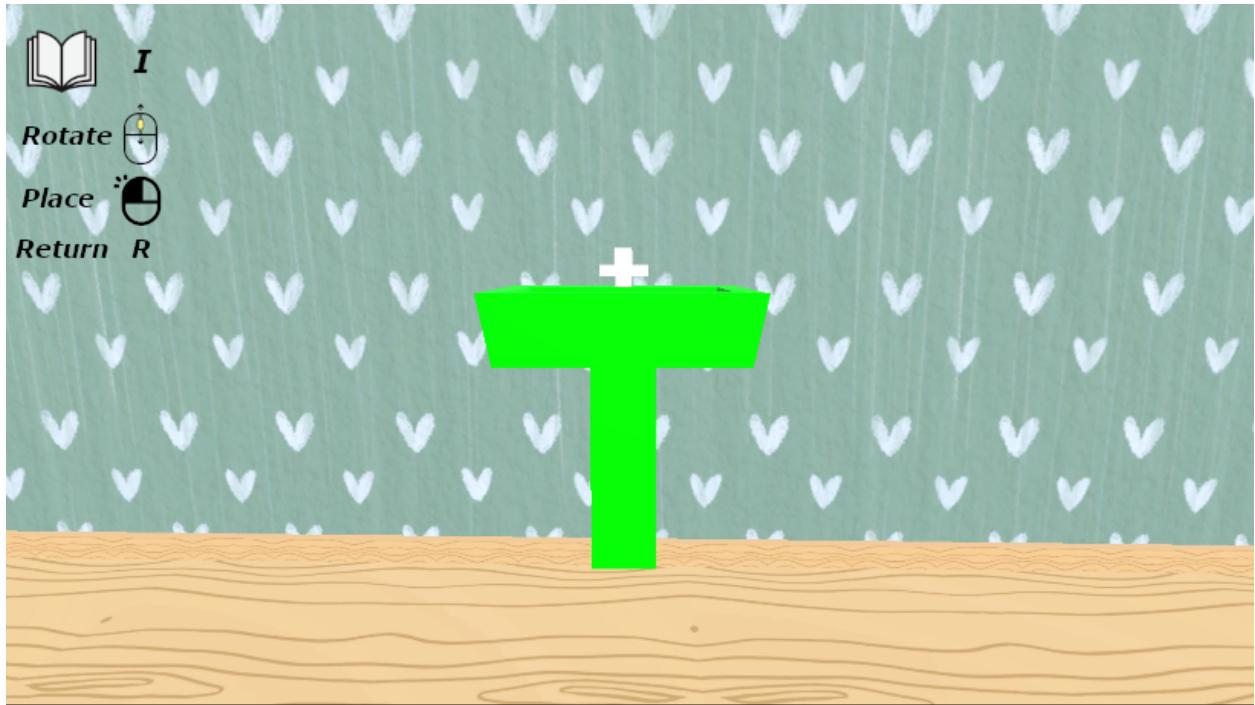


While hunting, the UI will show important information to the player. This includes their health, a compass which marks the house's location as well as the cardinal directions, and controls for Inventory and returning to the house.

Decorating Scene

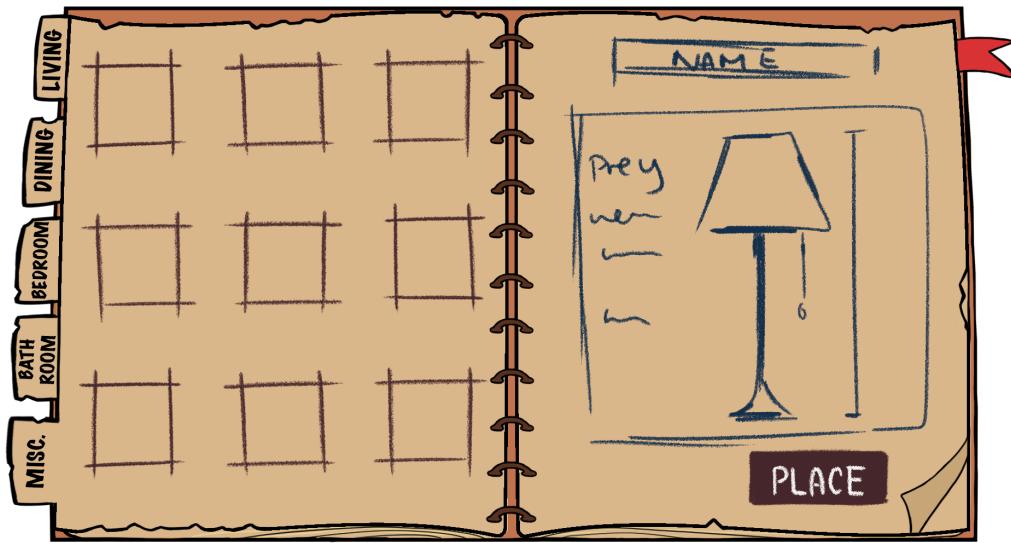


The initial decorating UI only shows the Inventory icon as well as its hotkey.



When placing furniture, additional context controls appear.

Inventory



In the inventory, furniture items are categorised into tabs based on their room placement: Living, Kitchen, Bedroom, Bathroom, and Misc. Each piece of furniture occupies its own cell and doesn't stack with others. On the left side of the inventory, you can see the sprites representing

each furniture piece. By selecting a furniture cell, the right side displays the details for that item. This includes the furniture's name, a 3D model will slowly rotate, and both a "Discard" and a "Place" button.

While the player is in the hunting scene, the inventory only displays what the player has caught on that hunt and the "Place" button is omitted.

Brand Identity

Our games concept makes our branding inherently unique and with the contrast between our two main mechanics allows us interesting opportunities in regard to identity. Our aesthetic, paired with our talented artists allows us to put out interesting graphics and snippets of development to get people excited in the project, a majority of our branding will come from social media and community interaction. We will present ourselves as a light hearted collective of designers. We will achieve this by using expressive colours and highlighting the talents of our art team to our fullest extent. We believe screenshots, concept art, short videos of prototype builds and model animations will help carry across the feelings we are trying to convey from our brand.

Intended Audience

The intended age range of our target demographic lies between the ages of 12 and 26 years old. The game's combination of hunting and decorating elements, along with its light-hearted and creative nature, would appeal to casual gamers who enjoy games that can be played in short sessions or at a relaxed pace. Its interior designing/home building aspects would attract players with a passion for creativity as it allows for customization of unique spaces similar to games like Animal Crossing, The Sims, or similarly designed games. In contrast to its light-hearted nature, the FPS mechanics and the act of hunting for sentient furniture would attract players who enjoy first person shooter and hunting games, with a unique twist on a traditional hunting experience, while maintaining its playful theme through character, environment, and narrative design.

The Schedule

Trello Board Link

<https://trello.com/invite/b/B2CNfJQD/ATTI8d88dbae3cd89c9266f4c809e569c05d40AF8F3D/house-hunting-project-plan>

Itch.io

<https://onehouseonefish.itch.io/house-hunting>

Changelog

Changes	Date	Team Member
Removed boss furniture	6/09	Ethan/Isaac/Nat/Jacob
Added player health	6/09	Ethan/Isaac/Nat/Jacob
Removed Shop	6/09	Ethan/Isaac/Nat/Jacob
Replaced boss furni with unique inanimate furni “special furniture”	7/09	Ethan/Isaac/Nat/Jacob
Reviewing of Machinery section	8/09	James