

Battle Simulator

Asset documentation 1.0

Thank you for purchasing the Battle Simulator

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INTRODUCTION

There's more and more battle simulator games, the genre is popular both for mobile devices and pc and with this asset I've strived to create an easy solution to make battle simulator games, including both 3D character placement and 2D grid-based character placement. You can use the editors for configuring your levels and enemies beforehand and create mobile games as well as pc games. This document will provide an overview of the asset and I'll try to explain all the features included.

To get started, please make sure to import the tag settings. Then simply navigate to the menu, desert or forest scene and press play to try it out. Please see the controls below. The automatic lighting might look a bit different if you start with the menu scene, but it'll look the same in your build.

GAME CONTROLS

Default:

- Wasd to move the camera around
- Middle mouse button to look around
- Select a character in the left panel by clicking the character buttons
- Scroll to zoom
- Move your mouse over the battlefield and click to place a character
- Hold the left mouse button and drag to spawn characters faster
- Right mouse button to rotate your character
- Hold left control to snap your character in place
- Hold x or press the remove button to remove characters
- Use the clear button to clear all characters on the battlefield

Grid:

- Automatically uses snapping
- Click 'grid layout' to open the 2D grid
- Click anywhere in the grid to place a character
- Click again to remove a character

Mobile:

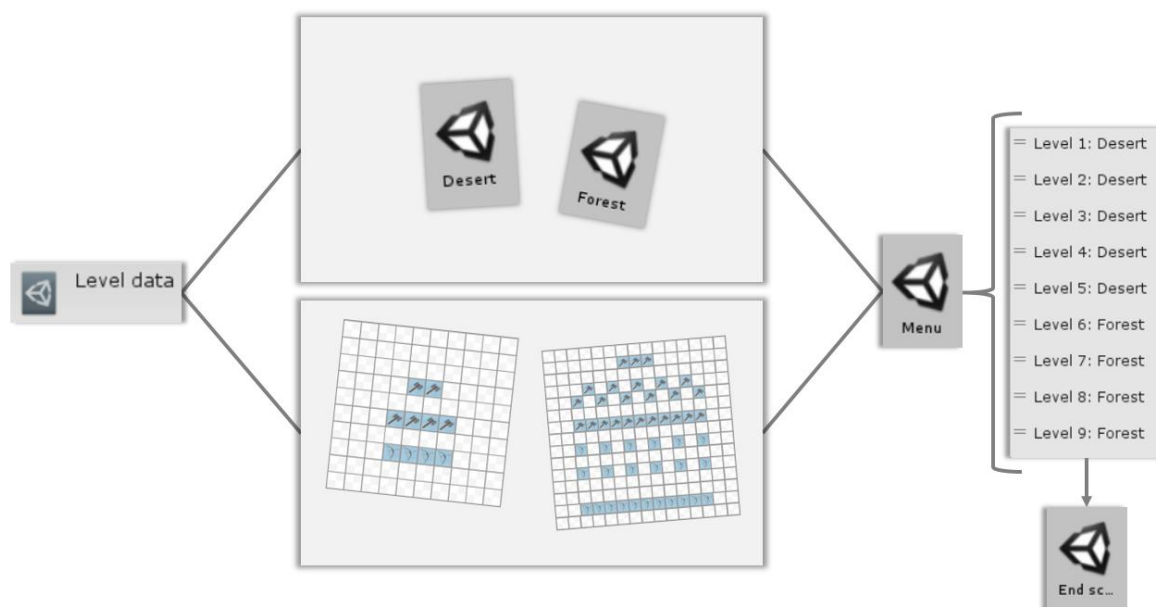
- Move the camera using the joystick
- Pinch to zoom the camera
- Drag to rotate the camera
- Use the grid to place characters

GENERAL OVERVIEW

Normally, you would probably use separate scenes for each level, or have one scene for the entire game, but since the number of scenes has quite a big impact on the final build size, I wanted to create a way to design the enemy armies beforehand, but still reuse the scenes.

Basically, the kit stores a list of levels in a scriptable object and whenever the player opens a scene, it will find the current level and use data for that level. Each level consists of a grid size (the size of the enemy army) a list of enemy units, the amount of coins the player can spend on that particular level and the scene (or environment) where the level will take place. If you open the forest or desert scene from within the Unity editor, it will start the current level in the selected scene. Normally, when the game has been built, players can only open levels from the menu scene, so it will check the selected level and open the correct scene.

If a player manages to complete all levels and continues to the next level, it'll open the scene called 'End screen' to make sure the game doesn't get stuck.



LEVEL & MENU SYSTEM

You can add and remove levels using the editor (please see 'Editor'). These levels will automatically be added to your main menu. The way it displays your levels is by separating them by scene. In the editor you specify a scene for each level and whenever the scene differs from the scene of the previous level, it'll create a new tab in your main menu. For example, if you were to add 10 levels taking place in the forest, then 5 desert levels and then another 6 forest levels, it will create 3 tabs in the main menu. The first one containing 10 forest levels, the second one 5 desert levels and so on.

Except for the campaign button (where you'll find your levels), there's also some simple panels like credits & how to play. Please open the menu scene and use the canvas elements to modify these panels.

EDITOR

The kit uses a scriptable object to edit level and enemy data. To open the editor, please navigate to **Edit – Level data**. Here you'll find your levels and settings.

MAIN SETTINGS

- Enemies list: here you'll find your enemies. Please make sure to put your enemy prefabs in the **Resources – Enemies** folder and they'll show up in the editor.
- Custom images: This setting has nothing to do with your actual game. It just makes editing the enemy armies a bit simpler. By unchecking this setting, the editor will use the build in prefab previews for your enemies which might be hard to differentiate between. Please check this setting to add your own editor images in the enemies list.
- Spawn delay: The delay between each spawned enemy at the start of your level that creates a nice spawn effect.
- Grid: Enables the 2D grid option and activates a 3D grid to limit the 3D world. This way the 2D coordinates can be translated into world space positions and vice versa. Please use the border color setting to change the 3D grid border color. You can also set alpha to 0 to remove the 3D grid (it'll then still limit the 3D range to be able to translate it into grid positions).
- Button highlight: The border color of highlighted buttons.
- Tile color: Default tile color.
- Invalid position: Tile color when you can't place a character.
- Remove color: Tile color when removing characters.
- Erase button color: Color of the erase button when removing characters.
- Selected panel color: Color of the selected button for the bottom-left panel.
- Border color: 3D grid border color.
- Demo character alpha: Transparency level of the demo character.
- Button effect time: Spawn effect time for the character buttons.
- Check range: While placing characters, this range will be checked to determine if the player can or cannot place a character.

- Rotation step: How much the character will rotate when clicking right mouse button.
- Place range: Maximum distance between the camera and the 3D mouse position to place the character.
- Grid size: Radius of the 2D grid. For example, 10 means a width of 20, which equals a total of 400 possible positions.
- Snapping key: The key to snap characters in place.
- Spread units: With this option enabled, your characters will work together and spread across the enemies. For example, if there's enemy spearmen in the front and archers behind them, your characters will immediately start attacking both the spearmen and the archers. With this option disabled, they'll simply attack the closest enemy, which would mean they first attack the spearmen in the front and then continue to attack the archers in the back afterwards. For bigger numbers of characters or mobile devices, I recommend not to use this option since it's quite performance heavy.

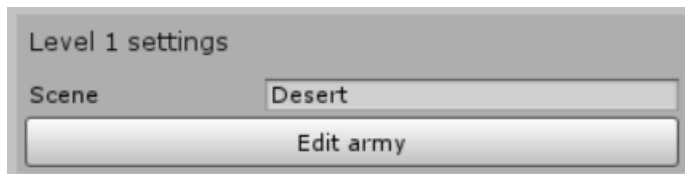
PLAYERPREFS

The level system uses PlayerPrefs to save completed levels. Please use the 'Delete PlayerPrefs' button to reset game progress.

LEVELS & ENEMIES

Except for the main settings, there's the levels tab. Please open the levels tab to edit and add new levels.

First, you can use the 'clear all' button to immediately clear all levels from the list. It should show a few demo levels. You can click any level in the list and it'll show these settings for the level:



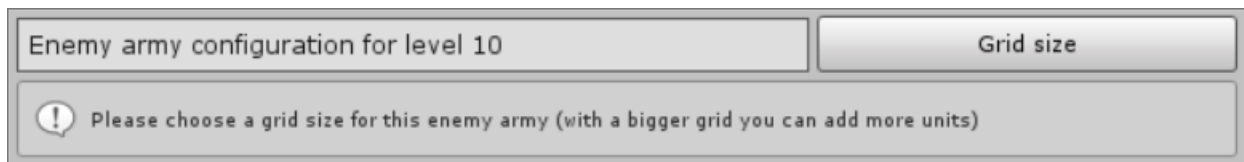
Additionally, please use the following icon to drag the level around and reorder the list:



Please use the tiny + and - buttons to add and remove selected levels.

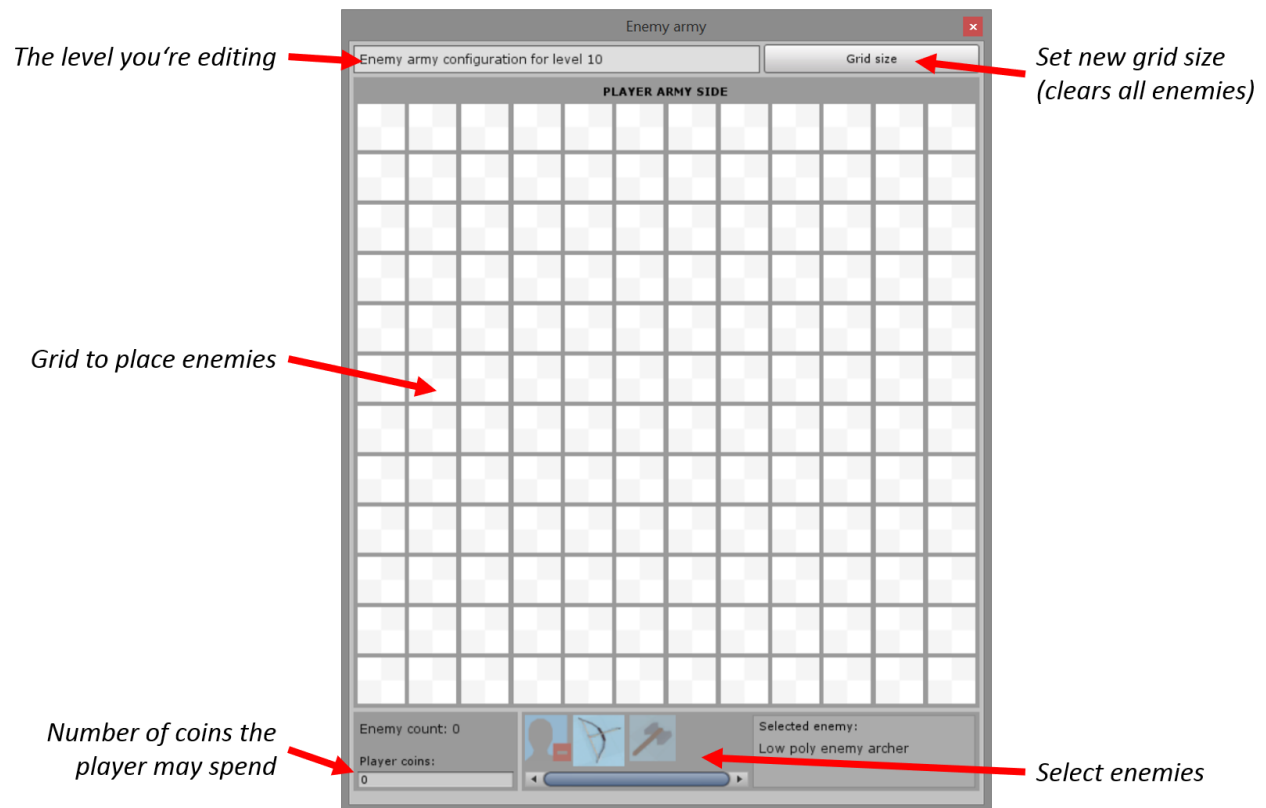
Whenever you add a new level, it's very important to fill in a scene for the level. This is the environment where that level will take place. Please always make sure to fill in a scene that actually exists in the project and add the scene to your build settings for it to work.

After specifying the scene, please press 'edit army' to place enemies in the new level. For new levels, you'll see this setup window:



Please choose a grid size and then select 'set grid size' to start.

The window will now look something like this (depending on the selected grid size):



Please select one of your enemies from the bottom-center of the window and click anywhere to place it. You can always use the most left button to erase units from the window. Also, make sure to set the number of coins for the player (otherwise the player won't be able to place any units).

When you're done placing enemies, you can either close the window and try out the new level or select another level from the list.

ENEMY PLACEMENT

When you've setup the levels and enemies, it'll automatically place the enemies when the player starts a new level. If you want to change the spawn position, please move the 'Enemy army spawner' game object. This object contains the EnemyArmy script that uses raycasting to get points on the terrain where it spawns your enemies.

CHARACTER PLACEMENT

One of the main features of the Battle Simulator is placing your characters to design an effective strategy and complete the level. Players can select characters from the left side of the screen and click or drag to place them onto the battlefield. The demo character provides a preview showing the currently selected character and the CharacterPlacement script uses raycasting from the mouse position to determine the place location. Additionally, it'll check for units close to the mouse position to determine whether the player can place a character. Please see 'main settings' in the editor to change the range and colors for placing characters. Additionally, if you want to edit the actual character buttons, please edit the 'Character button' prefab via **Prefabs – UI – Character Button**.

2D GRID SYSTEM

You can also enable the grid system (the mobile manager prefab will automatically enable the grid system) via the settings panel. For mobile devices, this replaces the 3D place system and for pc it'll both work. The grid system will add a 3D border to the battle field to indicate the grid in 3D space. This way it can translate the 3D position into grid positions and vice versa. For this to work, it also enables snapping automatically because it wouldn't be able to translate terrain positions into grid positions otherwise.

Basically, the grid consists of a number of cells, starting with index 0 at the top-left corner. The cell index increases from left to right where the bottom-right cell has the highest index. Whenever you click a cell, it'll take the index and translate it into a position relative to the grid center. It also works the other way around, so when you click the terrain in 3D space, it'll take the position, compare the x and y coordinates to the grid center and find the correct 2D grid index to fill the cell.

CHARACTER NAVIGATION & SCENE SETUP

The characters use Unity's built-in navmesh for pathfinding. For them to use the navmesh system, they all have a navmesh agent component. Please keep in mind that whenever you create a scene or change any terrain, you'll need to set all static objects to '**navmesh static**' and **rebake the navmesh** for the modified scene.

Furthermore, the two main components in each level/scene are the placement manager and the enemy army spawner. Like mentioned earlier, the enemy army spawner spawns the enemy army that you've created via the editor, based on coordinates relative to the enemy army spawner object.

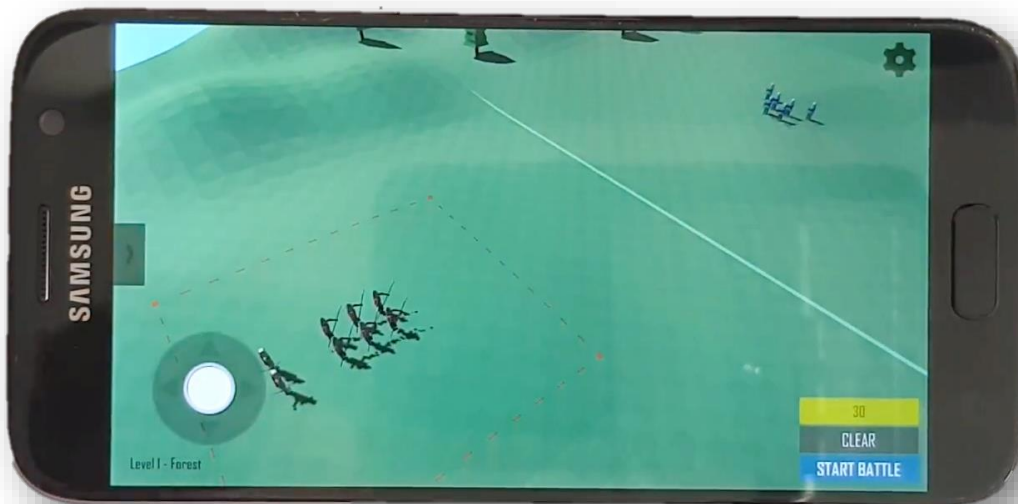
The placement manager takes your settings and handles character placement (as the name suggests). It's very important to link all objects and UI elements correctly, so for example if you were to remove the canvas and add a new one, you'll need to reassign the placement manager variables before testing the game. This object also holds your available characters under 'troops'. Since there's a separate placement manager in each scene, you could decide to use one particular scene for the first few levels and remove a few character from the list, so players can earn new characters when unlocking new levels.

MOBILE CONTROLS

For mobile battle simulator games, the asset also has mobile controls. Players can control the camera using a joystick, use the grid to place troops and pinch & swipe to look around. To get started, please **enable the mobile manager** prefab (or drag & drop one into the scene if there are none) and **disable the main camera**. Make sure to add the mobile manager to all scenes and if you want, you can rotate and re-position the mobile camera. Please make sure to change the camera position using the 'Mobile Camera' game object and rotate the actual 'Main Camera' object.

For the mobile settings, please go to the 'Joystick background' UI object and adjust the 'Cam Joystick' settings.

For mobile devices, please make sure to change the platform via your build settings. Additionally, it might be a good idea to adjust the quality settings to something mobile friendly.



CHARACTER SETUP

A battle simulator without any characters would probably get boring quite soon. Therefore, it's important to have a variety of enemies and allies to choose from throughout the game. First, we'll need to setup the character prefab and then we can add it to the enemy army editor or character list depending on whether it's an enemy or an ally.

UNIT SCRIPT

Each character depends on the 'unit' script. This script will search for nearby enemies, handle animations, deal damage and kill the characters. Both the enemies and the player allies use this same script.



As you can see above, there's not too much options. For more options, please open the editor 'Level data' settings and there you'll for example find the option to spread units instead of them simply attacking the closest enemy.

Options:

- Lives: the number of lives for this character
- Damage: How much damage does this character
- Attack Tag: It will attack all objects with this tag
- Ragdoll: The ragdoll that appears when this character dies
- Attack Audio: Sound when the character is attacking
- Run Audio: Sound when character is running

CHARACTER PREFAB

If you want to customize the game and add your own characters, please follow these steps to setup the prefab:

- Please start by importing your character model into the project and selecting the Humanoid animation type.
- Then drag it into the scene. It should have an animator component already, please select one of the animator controllers for your character or add a new one with custom animations.
- Now tag your character 'Enemy' or 'Knight'. Enemy if you're creating a new enemy, and 'Knight' if you're creating an ally for the player to deploy.
- Then please add a navmesh agent component and a capsule collider. Please make sure they fit the character and set a walk speed via the navmesh component.
- Copy/paste the Unit script and audio source from one of the included characters and for the Unit script, please set the 'attack tag' to the tag of the opposite character. So, if this is an enemy, that would be 'Knight' and if this is an ally, it should be 'Enemy'.
- Now, please create the ragdoll for your new character. To do so, please drag & drop the character model into the scene and use the ragdoll tool (GameObject- 3D Object – Ragdoll) to create a new ragdoll. Then drag the ragdoll into your project folder and add it to the Unit script of your new character.
- Finally, copy the 'health' and 'minimap' objects from one of the included characters and drag them onto your new character object. Make sure they're positioned correctly according to the character and keep the names the same (so if duplicating these objects adds '(1)' to the names, please remove it).

Now that the new character is done, please continue with the following steps to use it in-game.

ADDING YOUR NEW ENEMY TO THE GAME

After you've setup your enemy, there's not much left to do. Please drag and drop the new enemy character from your hierarchy into the 'Enemies' folder. This folder is located at **Assets – Resources – Enemies** and it's best not to change this location nor the folder names. After adding the enemy to this folder, it should appear in the editor and you can place it in your game.

ADDING YOUR NEW ALLY TO THE GAME

Adding new allies requires a few more steps, but it's not complicated either:

- Like with the enemy character, please drag and drop the new character anywhere in your project folder.
- Choose the scenes/environments where this character may be placed.
- In those scenes, please find and select the 'Placement manager'.
- Then in the inspector, please scroll down and expand the 'troops' array by one.
- Now you can add your new character prefab, set its cost and create a (rectangular) image to show your character in the left character panel and, if you selected grid, in the 2d grid.

You should now be able to place the new character and see it fight other characters. Your allies will only show up in the scenes where you've added the character to the 'Placement manager' object, so if you want you could for example only put 2 characters in the first few scenes and increase the number of available characters throughout the game.

CONCLUSION

In this document, I've tried to explain as much of the asset as possible and I genuinely hope it will be helpful while developing your game.

For any questions or suggestions, please don't hesitate to contact me via T3Dmake@gmail.com, I'm happy to help.

Thank you again for purchasing, since this is the very first version of the Battle Simulator, a review or rating would help a lot.