User Manual

Sow & Gain

Version: 4.0

Project Group 16

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1   Introduction

"Sow & Gain" is a pixel-art farming simulation game. You step into the shoes of a farm owner and enjoy a leisurely life planting, watering, harvesting, and trading crops in a charming pixel world.

- Dynamic Simulation: Crop growth is influenced by both weather patterns and the passage of time.

- Real-Time Cloud Saves: Powered by Firebase, your progress syncs seamlessly across multiple devices.

- Relaxed Gameplay: Easygoing pace lets you pause and step away at any time.

1.1   End Users

This game is designed for anyone who loves pixel-art farming simulations—no technical expertise required.

1.2   System Requirements

Operating System

- Windows 7 or later

Software

- Python 3.8 or higher

- Required libraries listed in `requirements.txt` (install via `pip install -r requirements.txt`)

Hardware

- Any x86/x64 CPU capable of running Python

- Minimum 2 GB RAM (4 GB recommended for smooth performance)

Storage

- Approximately 50 MB of free disk space

2   Quick Start

2.1   Running the Game and Registering an Account

1. To begin, download and unzip `sow-and-gain.zip` to a folder of your choice.

2. To launch the game, double-click `sow-and-gain.exe`.

3. On the login screen:

   1) To enter your email, type it into the **Email** field.

2) To set your password, type it into the **Password** field.

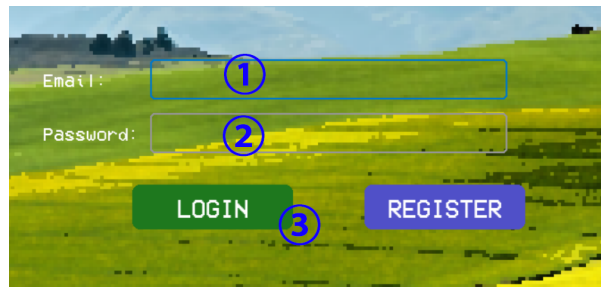3) To create your account or sign in, click the **Log In / Register** button.

Figure 1: Login screen showing the Email and Password fields centered, with the "Log In / Register" button at the bottom-right.

2.2 Planting Your First Seed

1. To move your character onto an empty plot, press the arrow keys ($\uparrow$, $\downarrow$, $\leftarrow$, $\rightarrow$).

2. To select the hoe, press Q or E until the hoe icon is highlighted in your inventory bar.

3. To till the soil, hold down SPACE while standing over the plot.

4. To plant a seed, switch to the *Seed* item and press SPACE.

5. To water the seed, switch to the *Watering Can*, aim at the planted seed, and press SPACE.

Figure 2: The character is standing next to the land with seeds already planted.

3 Software Overview
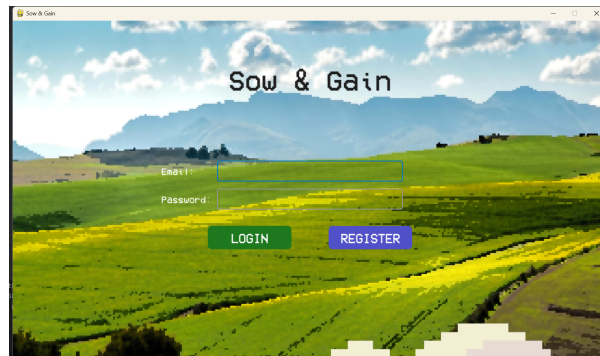
3.1 Login / Registration Screen

Figure 3: Login / Registration screen showing two centered input fields labeled "Email" and "Password," with a green **LOGIN** button and a purple **REGISTER** button below; pixel-art valley background.

Key Elements:

- **1. Game Title –** *Sow & Gain*

- **2. Email field:** To register or log in, enter your email address.

- **3. Password field:** Enter your password.

- **4. LOGIN button:** Click to sign in with an existing account.

- **5. REGISTER button:** Click to create a new account.

Function Overview: To log in or register, enter your credentials and click the appropriate button. On success, you will proceed to the farm interface.
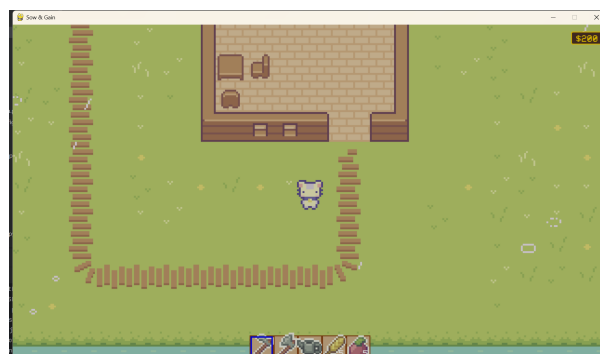
3.2 Farm Interface

Figure 4: Pixel-art farm view with the player character standing in front of a wooden cabin at center, surrounding green grass tiles indicating tillable plots, and a toolbar at the bottom.

Key Elements:

- **Player Character:** The avatar controlled by the player, shown at center.

- **Cabin:** The base structure located above the character.

- **Tillable Grass:** Green pixel grass tiles marking cultivable land.

- **Toolbar:** Displays tools in order—Hoe, Axe, Watering Can, Seed Packet, Crop Satchel.

- **Currency Display:** Shows the player's current in-game money balance, typically at the top-right corner of the HUD.

Function Overview: This is the main gameplay area where you move, till soil, plant seeds, water crops, and harvest produce.

3.3 Pause Menu

Figure 5: A black vertical menu in the top-left corner over the farm background listing buttons: **ESC**, **Save**, **Load**, **Quit**.

Key Elements:

- **ESC:** Close the menu and resume play.

- **Save:** Save progress locally or to the cloud.

- **Load:** Load a previously saved slot.

- **Quit:** {Return to the title screen.

Function Overview: Press ESC at any time to open this menu and choose to save, load, or quit.
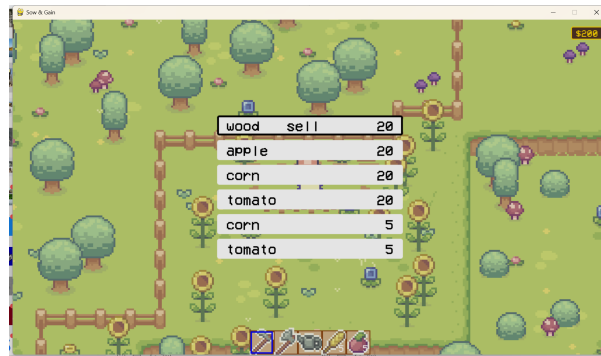
3.4   Inventory / Trading Screen

Figure 6: Trading interface showing a vertical, light-gray panel with item names (e.g., wood, apple, corn), a "Sell" button next to each, and a quantity or price on the right; the semi-transparent panel overlays the farm view.

Key Elements:

- **Item List:** Vertical list of inventory items.

- **Sell buttons:** Click to sell the corresponding item.

- **Quantity / Price:** Displays current stock or sale price.

- **Background:** Semi-transparent farm scene visible behind the panel.

Function Overview: View and manage your inventory, selling crops or wood to merchants for in-game currency.

4   Features & Gameplay

4.1   Basic Operations

- **Movement**
  To move around the island, press the arrow keys (↑, ↓, ←, →). The character moves at a constant speed in the direction of your input.

- **Sleeping**
  To skip the night, approach the bed and press TAB to interact.

Figure 7: The bed is in the left corner of the cabin.

- **Item Switching**
  To switch between items in your inventory, press Q or E to move left or right.

Figure 8: **Inventory Layout:** From left to right: Hoe, Axe, Watering Can, Corn, Tomato. Quantities are shown in the lower-right corner of each slot.

- **Tilling Soil**
  To till a plot of grass, select the Hoe with Q/E and press SPACE while standing on a grass tile.
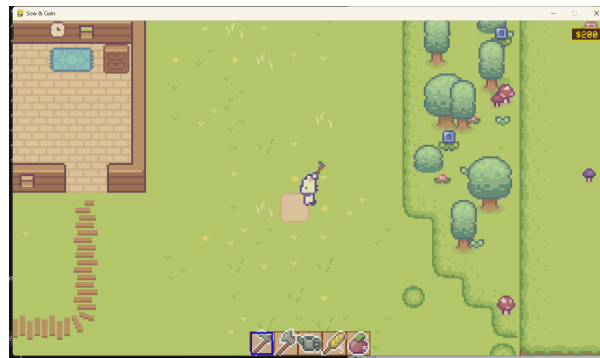

Figure 9: Tilled soil appears highlight, indicating it is ready for planting.

- **Planting Seeds**
  To plant a seed, select any seed packet and press SPACE on a tilled tile. Only one crop can be planted per tile; adjacent tiles may each hold one seed.

- **Watering Crops**
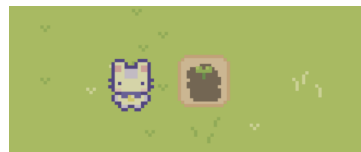 To water your crops, equip the Watering Can and press SPACE.

Figure 10: Watered soil turns a darker, moist color. Every plant requires watering after planting.

- **Waiting for Growth**
  After planting, wait for the crop to grow.

Figure 11: Different crops have different growth cycles.

- **Harvesting**
  When a crop turns golden, walk onto it and press SPACE to harvest. Harvested crops auto-matically move into the rightmost slot of your satchel.

- **Buying & Selling**
  Press **Space** to trade with the merchant.

Figure 12: Approach the merchant NPC in the top-right corner and press TAB to open the trading menu.

- **Chopping Trees**
  Chop trees to yields wood and occasionally apples.

Figure 13: Approach a tree at the map's edge, switch to the Axe with Q/E, then hold SPACE to chop.

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4.2 Crop Types & Growth Stages

- **Plantable Crops:** Tomato and Corn.
  To plant, till the soil and sow the corresponding seed. Each crop has multiple growth stages as shown below.

- **Map-Spawned Crops:** Apple.
  Apples grow on trees and respawn each time you load the game; chop trees to collect apples.

4.3 Day / Night Cycle & Weather

- **Day / Night Cycle:** 8 real minutes = 1 in-game day.

- **Sunny Weather:** Crops require manual watering.

- **Rainy Weather:** Rain automatically waters all tilled soil.

4.4 Saving

- **Cloud Saves:** Automatic—game saves once per in-game day. Load via `ESC` menu by selecting **Load**.

- **Local Saves:** Manual—two local slots available.
  - Press 2 or 3 to save to slot A or B.
  - Press 5 or 6 to load from slot A or B.

- **Overview:** Loading restores your position, time of day, weather, crop states, and inventory.

5 Advanced Features

5.1 Texture Customization

Function Overview: Customize any in-game art by swapping the PNG files in the `images` folder.

1. Open the game root directory and navigate to the `images` folder.

2. Enter the subfolder matching the asset type (e.g. `environment`, `character`, `fruit`, etc.).

3. Rename the existing texture (e.g. `grass.png` → `grass_old.png`) to back it up.

4. Place your custom PNG file into the same folder, making sure it has the **same filename**.

5. Restart `sow-and-gain.exe`—your new texture will load automatically.

5.2 Quick Undo

Function Overview: Instantly revert your last actions (tilling, planting, watering).

- Press 4 to undo your most recent action within the last 30 seconds.

5.3 Cross-Device Cloud Save

Function Overview: Seamlessly load your latest farm state on any device via Firebase.

1. Launch the game and log in with your account.

2. Press ESC and select **Load** to fetch your cloud save.

3. The game restores your position, time of day, weather, crop status, and inventory.

6 FAQ & Troubleshooting

6.1 How to Delete a Save File

All save files are stored as .json in the saves/ folder under the game directory. **Solution:**

• To delete a save, open the saves/ folder and remove the corresponding .json file.

6.2 Cannot Register or Log In

Invalid Email Format

Figure 14: Error message indicating invalid email format.

Solution:

• Ensure your email follows the format username@provider.com.

Email Already Registered

Figure 15: Error message indicating this email is already in use.

Solution:

- Click **Login** instead of **Register** to access your existing account.

Password Too Short

Figure 16: Error message indicating the password must be at least six characters.

Solution:

- Ensure your password is at least six characters long.
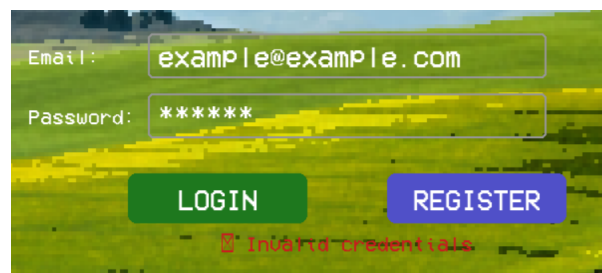
Invalid Credentials

Figure 17: Error message indicating a wrong email/password.

Solution:

- Re-enter your email and password carefully.

- If you forgot it, contact the administrator at `admin@example.com` for a reset.

6.3   Network Connection Errors

Verify network connectivity if login or registration still fails after trying the above steps:

- Verify that your device is connected to Wi-Fi or mobile data.

- Disable any firewall or proxy that might block the game's network access.

6.4   Unresponsive Controls

Use an English keyboard layout for game controls:

- Switch your input method to English or enable Caps Lock, then retry.

7 Glossary

Inventory / Toolbar The bar at the bottom of the screen showing your tools and items.

Tilled Soil Soil that has been plowed (appears darker), ready for planting.

Seed Packet An item used to plant a specific crop on tilled soil.

Watering Can Tool for watering planted seeds; necessary for crop growth.

Crop Satchel The rightmost inventory slot where harvested crops are stored automatically.

Currency Display Shows the player's current in-game money balance.

NPC (Non-Player Character) Game characters not controlled by the player; merchants are NPCs for trading.

Merchant An NPC selling and buying goods (wood, crops).

Undo A quick-undo feature (press 4) that reverts your last action within 30 seconds.

Day / Night Cycle Game time progression where 8 real minutes equal one in-game day.

Cloud Saves Automatic saves to Firebase enabling seamless cross-device progress.

Save Slot Manual local save slots (A & B) you can write to or load from.

JSON A text-based data format ('.json') used for saving and loading local save files.

Texture PNG image assets in the 'images/' folder that determine how game objects look.

Cross-Device Refers to playing on multiple devices with progress synced via cloud.

Firebase Google's real-time database service powering the cloud-save functionality.

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