

Complete Item System

Implementation Guide

Wood, Wool, Plant & Mushroom Chests
with Key Crafting & Random Spawning

For Godot 4.x Farm Game

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1. System Overview

This implementation guide covers a complete item and chest system for your Godot farm game. The system allows players to collect materials, craft keys, unlock chests, and receive randomized rewards.

System Flow:

1. Collect Materials (wood, mushroom, fiber, fur)
2. Visit Key Forge to craft keys
3. Explore farm for randomly spawned chests (1-4 per load)
4. Use matching key to unlock chest
5. Receive coins and tech points
6. Use currency to buy weapons (500 coins) or upgrades (100 tech points)

2. Features

Feature	Description
Material to Key	Convert materials into keys at Key Forge (1:1 ratio)
Four Key Types	Wood, Mushroom, Plant, Wool keys for matching chests
Locked Chests	Chests require specific key types to unlock
Random Spawning	1-4 chests spawn randomly on farm each load
Randomized Loot	Chests contain varying amounts of coins and tech points
Economy System	Weapons cost 500 coins, upgrades cost 100 tech points
Debug Cheat	F7 key gives materials, coins, and tech points for testing

3. Files Created

Core Scripts:

- Resources/Inventory/KeyItem.gd - Key item class
- Resources/Map/Scripts/LootChest.gd - Lockable chest logic
- Resources/Map/Scripts/KeyForge.gd - Material converter
- Resources/Map/Scripts/ChestSpawner.gd - Random chest spawning

Documentation Files:

- CHEST_SPAWNER_QUICK.md - Quick spawner setup
 - COMPLETE_SYSTEM_INDEX.md - Master documentation index
 - CHANGES_SUMMARY.md - Recent system changes
 - ITEM_SYSTEM_UPDATE.md - Update implementation guide
- Plus several other comprehensive guides...

4. Quick Setup Guide

Follow these steps to implement the complete system:

Step 1: Reload Godot

Close and reopen Godot, or go to Project → Reload Current Project. This makes Godot recognize the new script files.

Step 2: Update Player Script

Add these methods to your player script (Resources/Character/scripts/player.gd):

```
# Add to player.gd
var coins: int = 0
var tech_points: int = 0

func add_coins(amount: int):
    coins += amount
    print("Coins: ", coins, " (+", amount, ")")

func add_tech_points(amount: int):
    tech_points += amount
    print("Tech Points: ", tech_points, " (+", amount, ")")
```

Step 3: Update F7 Debug Cheat

Find the `_debug_topup_resources()` function and update it to include coins and tech points. See `update_player_cheat.gd` for the complete code.

5. Material to Key System

Creating Key Forge:

1. Create a new Node2D in your scene
2. Attach the KeyForge.gd script
3. Add child nodes: Sprite2D, CollisionShape2D, Label (for interaction prompt)
4. Configure the CollisionShape2D for player interaction range

Material Conversion Rates:

Material	Quantity Needed	Creates
Wood	1	Wood Key
Mushroom	1	Mushroom Key
Fiber/Plant	1	Plant Key
Fur/Wool	1	Wool Key

6. Chest Unlocking System

Creating Loot Chests:

Each chest type requires a matching key and provides different reward amounts:

Chest Type	Required Key	Tech Points	Coins
Wood	Wood Key	10-30	50-150
Mushroom	Mushroom Key	20-50	100-300
Plant	Plant Key	15-40	75-200
Wool	Wool Key	25-60	150-400

How It Works:

1. Player approaches locked chest
2. Chest displays: 'Locked - Need [Type] Key'
3. Player presses E (interact key)
4. System checks inventory for matching key
5. If correct key found: key removed, chest unlocks
6. Chest opens automatically after 0.5 seconds
7. Loot awarded, chest disappears

7. Random Chest Spawner

The ChestSpawner system randomly places 1-4 chests on your farm each time the scene loads.

Setup Steps:

1. Add a Node2D to your farm scene
2. Attach ChestSpawner.gd script
3. Create 8-15 Marker2D nodes as children
4. Position Marker2D nodes where you want chests to potentially spawn
5. In Inspector, drag all Marker2D nodes into the 'spawn_markers' array
6. Create a LootChest scene (Node2D with LootChest.gd script)
7. Assign the LootChest scene to 'chest_scene' in Inspector
8. Set min_chests = 1, max_chests = 4

Spawner Configuration:

In the Inspector, you can configure:

- min_chests: Minimum number of chests (default: 1)
- max_chests: Maximum number of chests (default: 4)
- spawn_markers: Array of Marker2D positions
- chest_scene: PackedScene reference to LootChest.tscn

8. Economy & Costs

The system uses a dual-currency economy for progression:

Currency	Earned From	Used For	Cost
Coins	Opening chests	Buying weapons	500 per weapon
Tech Points	Opening chests	Upgrading weapons	100 per upgrade

Important Note:

Chests NO LONGER drop weapons. This was changed to create a more balanced economy where players must save up coins to purchase weapons from a shop (which you'll implement separately).

9. Player Script Updates

Required Methods:

Your player script must have these methods for the system to work:

```
# Currency variables
var coins: int = 0
var tech_points: int = 0

# Add currency
func add_coins(amount: int):
    coins += amount
    print("■ Coins: ", coins, " (+", amount, ")")
    # TODO: Update UI display

func add_tech_points(amount: int):
    tech_points += amount
    print("■ Tech Points: ", tech_points, " (+", amount, ")")
    # TODO: Update UI display

# Spend currency (for future shop implementation)
func spend_coins(amount: int) -> bool:
    if coins >= amount:
        coins -= amount
        return true
    return false

func spend_tech_points(amount: int) -> bool:
    if tech_points >= amount:
        tech_points -= amount
        return true
    return false

# Inventory access
func get_inventory_manager() -> InventoryManager:
    return inventory_manager
```

Updated F7 Debug Cheat:

The F7 cheat has been enhanced to include coins and tech points:

```
func _debug_topup_resources():
    if not inventory_manager:
        return

    print("\n=== DEBUG: TOPPING UP RESOURCES ===")

    # Add materials (25 each)
    var resources = [
        {"name": "Wood", "quantity": 25},
        {"name": "Plant Fiber", "quantity": 25},
        {"name": "Wolf Fur", "quantity": 25},
        {"name": "Mushroom", "quantity": 25}
    ]

    for resource in resources:
        var item = _create_item_from_name(resource.name)
        if item:
            if inventory_manager.add_item(item, resource.quantity):
                print("✓ Added ", resource.quantity, "x ", resource.name)

    # Add coins
    if has_method("add_coins"):
        add_coins(500)
        print("✓ Added 500 Coins")

    # Add tech points
    if has_method("add_tech_points"):
        add_tech_points(100)
        print("✓ Added 100 Tech Points")

    print("=== TOPUP COMPLETE ===")
```

10. Testing Procedures

Test 1: F7 Cheat

1. Run your game
2. Press F7 key
3. Check console output for confirmation messages
4. Verify you received: 25x each material, 500 coins, 100 tech points

Test 2: Key Crafting

1. Ensure you have materials in inventory
2. Walk to Key Forge
3. Press E to interact
4. Check console for 'Successfully crafted [Key Name]'
5. Verify key appears in inventory

Test 3: Chest Spawning

1. Load your farm scene
2. Check console for '=== SPAWNING CHESTS ==='
3. Look for 1-4 chests on the farm
4. Reload scene multiple times
5. Verify different numbers and positions each time

Test 4: Chest Unlocking

1. Craft a key matching a spawned chest type
2. Walk to the chest
3. Press E with matching key
4. Verify: 'Chest Unlocked!' message
5. Wait 0.5 seconds for auto-open
6. Check console for loot amounts
7. Verify coins and tech points were added
8. Verify chest disappears

11. Troubleshooting

No Chests Spawn

Problem: ChestSpawner doesn't spawn any chests

Solutions:

- Check that spawn_markers array is not empty in Inspector
- Verify chest_scene is assigned in Inspector
- Check console for error messages
- Ensure Marker2D nodes are children of ChestSpawner

Keys Not Crafting

Problem: Key Forge doesn't create keys

Solutions:

- Verify material names match exactly (case-insensitive)
- Check KeyItem.gd is recognized by Godot
- Ensure player has get_inventory_manager() method
- Check console for detailed error messages

Chests Won't Unlock

Problem: Correct key doesn't unlock chest

Solutions:

- Verify chest's required_key_type matches key's chest_type
- Check that key is actually a KeyItem instance
- Ensure interaction key ('interact' action) is configured
- Add debug prints in LootChest.gd to track unlock attempts

F7 Doesn't Give Currency

Problem: F7 cheat doesn't add coins or tech points

Solutions:

- Verify add_coins() method exists in player script
- Verify add_tech_points() method exists in player script
- Check that 'topup' action is configured in Input Map
- Look for 'method not found' messages in console

12. Customization Options

Adjust Chest Spawn Count

In ChestSpawner Inspector, change min_chests and max_chests values. For example, set min_chests=2 and max_chests=5 for 2-5 chests per load.

Change Loot Amounts

Select a chest in the scene and adjust these in the Inspector:

- tech_points_min: Minimum tech points
- tech_points_max: Maximum tech points
- coins_min: Minimum coins
- coins_max: Maximum coins

Modify Key Recipes

In KeyForge.gd, edit the recipes dictionary to change material costs:

```
var recipes: Dictionary = {  
  "wood": 1, # 1 wood = 1 key  
  "mushroom": 2, # 2 mushrooms = 1 key  
  "fiber": 1,  
  "fur": 3 # 3 fur = 1 key  
}
```

Change Chest Probabilities

In ChestSpawner.gd, modify the chest_types array to make certain types more common:

```
var chest_types: Array[String] = [  
  "wood", "wood", "wood", # 3x more common  
  "mushroom", "mushroom", # 2x more common  
  "plant", # Normal  
  "wool" # Rare  
]
```

Summary

You now have a complete item system with material collection, key crafting, random chest spawning, and a balanced economy. Players will explore your farm to find random chests, craft keys to unlock them, and earn currency to purchase weapons and upgrades.

Key Features Implemented:

- ✓ Material to key conversion at Key Forge
- ✓ Four chest types with matching keys
- ✓ Random chest spawning (1-4 per load)
- ✓ Randomized loot with coins and tech points
- ✓ Balanced economy (500 coins for weapons, 100 tech points for upgrades)
- ✓ Enhanced F7 debug cheat for testing
- ✓ Complete documentation and troubleshooting guides

Next Steps:

1. Reload Godot to recognize new script files
2. Update your player script with required methods
3. Create scene files for Key Forge and Loot Chest
4. Add ChestSpawner to your farm scene
5. Test each component thoroughly
6. Implement weapon shop and upgrade station (future work)
7. Add visual polish (animations, sounds, particles)

For detailed information on any topic, refer to the markdown documentation files in your farm folder. Good luck with your implementation!