



ANCIENT FORGE

Unity Test Project

Introduction

This assignment is about building a forging minigame in Unity (version 2022+). You will manage an inventory of items, place those items into various machines, and complete quests to unlock additional machines. The project features no player avatar as the goal is to demonstrate skills in data-driven architecture, UI handling, and quest-based progression.

You can find the necessary sprites (generated with Midjourney) here: [📁 Unity Developer Test](#).

Beyond just implementing the mechanics, we want to see how you structure your code, organize your data, and handle modular architecture. We're less concerned with visual polish per se (although it's always a plus!) and more interested in clarity, extensibility, and consistency.

Below you'll find a detailed description of things to do as well as the delivery process & what happens next. You have **48 hours** to complete the assignment.

Good luck!

Design Spec

1. Items and Resources

| ID | Name | Type | Description |
|----|------------------------|----------|--|
| 1 | Iron Ore | Resource | Raw material used to create metal-based items |
| 2 | Gold Ore | Resource | Raw material used to create gold-based items |
| 3 | Fire Shard | Resource | Elemental crystal that provides heat and a slight enchantment |
| 4 | Ember Dust | Resource | Powdered substance that enhances forging success |
| 5 | Dragon Scale | Resource | Very rare scale granting high defensive properties |
| 6 | Iron Ingot | Crafted | Base metal bar smelted from Iron Ore |
| 7 | Steel Ingot | Crafted | Stronger metal bar forged from Iron Ingot and Fire Shard |
| 8 | Gold Ingot | Crafted | Refined bar smelted from Gold Ore |
| 9 | Flame-Gold Ingot | Crafted | Advanced alloy forged from Gold Ingot + Fire Shard |
| 10 | Ember Blade | Crafted | Blazing sword created by fusing steel with Ember Dust |
| 11 | Draconic Shield | Crafted | Advanced shield reinforced with Dragon Scale |
| 12 | Radiant Staff | Crafted | Enchanted staff requiring Flame-Gold Ingot + Ember Dust |
| 13 | Enhanced Ember Blade | Crafted | Upgraded Ember Blade with runic enhancements |
| 14 | Enhanced Radiant Staff | Crafted | Runic variant of the Radiant Staff with improved magical power |
| 15 | Draconic Crown | Crafted | Royal headpiece forged with Flame-Gold Ingot + Dragon Scale |

All items should be stored in an inventory displayed as a grid that tracks quantities (a label in the bottom-right corner of the cell). When a recipe is started, input items are removed. If the recipe succeeds, the resulting item is added to the inventory.

2. Machines

There are five machines total. Three are active from the start. Two are locked and are revealed by completing quests. Each machine has its own panel where the user places items, presses a forge button, and waits for a timer as the progress bar loads.

| Machine | Unlocked? | Primary Use |
|--------------|-----------|---|
| Smelter | Start | Converts Iron Ore into Iron Ingot |
| Anvil | Start | Forges Steel Ingot from Iron Ingot and Fire Shard |
| Enchanter | Start | Infuses steel-based items with Ember Dust |
| Rune Carver | Quest #1 | Adds advanced runes or transformations to items |
| Dragon Forge | Quest #2 | Handles high-tier forging with Dragon Scale |

3. Recipes and Forging Rules

Each recipe requires a specific machine. All recipes have a set base time in seconds and a success percentage. Failure results in losing all input items.

Smelter Recipes

- Iron Ore → Iron Ingot**
 - Time: 2 seconds
 - Success: 100%
- Gold Ore → Gold Ingot**
 - Time: 3 seconds
 - Success: 100%

Anvil Recipes

- Iron Ingot + Fire Shard → Steel Ingot**
 - Time: 4 seconds
 - Success: 90%
- Gold Ingot + Fire Shard → Flame-Gold Ingot**
 - Time: 5 seconds
 - Success: 85%

Enchanter Recipes

- Steel Ingot + Ember Dust → Ember Blade**
 - Time: 5 seconds
 - Success: 80%
- Flame-Gold Ingot + Ember Dust → Radiant Staff**
 - Time: 6 seconds

- Success: 75%

Rune Carver Recipes (Unlocked by Quest #1)

1. **Ember Blade + Ember Dust → Enhanced Ember Blade**
 - Time: 4 seconds
 - Success: 85%
2. **Radiant Staff + Ember Dust → Enhanced Radiant Staff**
 - Time: 5 seconds
 - Success: 80%

Dragon Forge Recipes (Unlocked by Quest #2)

1. **Steel Ingot + Dragon Scale → Draconic Shield**
 - Time: 6 seconds
 - Success: 75%
2. **Flame-Gold Ingot + Dragon Scale → Draconic Crown**
 - Time: 7 seconds
 - Success: 70%

4. Quests and Unlocks

The following quests are visible from the start. Each quest updates progress every time a successful craft is completed. Once the requirement is reached, the quest is marked as complete and the associated machine becomes available.

| Quest | Requirement | Unlocks Machine |
|---------------|----------------------|-----------------|
| Smelt Mastery | Craft 5 Iron Ingots | Rune Carver |
| Elemental | Craft 2 Ember Blades | Dragon Forge |

5. Bonuses

Two special items can reside in the inventory to improve forging outcomes:

| Bonus Item | Effect |
|-------------|--|
| Lucky Charm | Increases success rate by 10 percentage points |
| Time Amulet | Reduces crafting time by 2 seconds |

The bonus items are things you either start off with, or end up with one of them (random) after completing all quests. Having multiple of these items doesn't make the effects stack. Candidates should show these effects in the user interface or note them in some forging feedback.

6. Starting Inventory

When the scene starts, assign initial items to the player's inventory according to the ranges below. Each item count is generated independently:

- Iron Ore: **3 to 5**
- Gold Ore: **1 to 3**
- Fire Shard: **0 to 2**
- Ember Dust: **0 to 2**
- Dragon Scale: **0 to 1**
- Lucky Charm: **25% chance** to start with exactly 1
- Time Amulet: **25% chance** to start with exactly 1

The system should not grant any crafted items at the start. Only resources, plus potential bonus items. If the random roll for Lucky Charm or Time Amulet does not succeed, the player starts without it.

Implementation Guidelines

1. **UI-Driven**
Place the machines in a vertical list on the right side, with an inventory panel on the left side, and your character view (containing active quests and active bonuses) at the top. No need for a visualization of the player avatar in any sense.
2. **Simultaneous Crafting**
Each machine should operate independently on its own timer. The user may start multiple crafting processes if resources are available.
3. **Quest Tracking**
Whenever an item is successfully crafted, update the quest progress. If the quest requirement is met, set the quest to complete and unlock the corresponding machine immediately.
4. **Data-Driven**
Use the items, recipes, machines, quests, and bonuses exactly as listed. No additional items or features are necessary.
5. **Use Your Game Dev Intuition**
When in doubt and you're not 100% sure how something should work, simply go with your gut! We want to see **if you're a game developer**, not just a programmer.
6. **Documentation**
Provide a brief README with instructions on how to run the project in Unity, how the data is organized, and any unique code decisions.

Delivery

Candidates should provide a Git repository link with a short readme outlining the project structure and any noteworthy architectural choices. Please commit your changes as you go, we want to see your approach to version control as well. Send your solution to work@ancientforgestudio.com with the title "AF Interview Assignment: Your Name".

Follow-Up Interview

After submission, we'll be following up with a select few candidates for a live interview to discuss the project & potential partnership.