

5 Minutes Farmer – Technical Design Document (TDD)

This **TDD** describes the modular architecture, systems, and components required to implement *The 5 Minutes Farmer*. It acts as a **blueprint for development**, ensuring clean, scalable, and reusable code.

Week 1 – Core Systems

1. Player Movement + Interaction

- Input System → abstraction for keyboard/controller/mobile
 - PlayerManager → central façade, holds references
 - PlayerMovementController → handles movement, acceleration, facing
 - PlayerInteractionController → raycast/trigger detection for interactions
 - PlayerAnimationController → wraps Animator, handles blending
 - PlayerVFXController → optional dust, interaction effects (Optional)
 - PlayerSFXController → footsteps, interaction sounds (Optional)
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2. Farm Grid + Tile States

- GridManager → generates farm grid dynamically
 - TileController → state machine (Empty, Planted, Watered, Growing, Harvestable)
 - TileData (ScriptableObject) → defines tile/crop properties
 - CropManager → controls crop lifecycle and state transitions
 - TileVisualController → handles sprite/mesh updates
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3. Timer System + Crop Growth/Harvest

- GameTimer → 5 min countdown, broadcasts tick/end events
 - CropGrowthSystem → subscribes to timer, updates crop growth
 - HarvestSystem → handles harvesting, inventory updates
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4. Score System + Basic UI

- ScoreManager → tracks points, raises OnScoreChanged event
 - UIManager → listens to ScoreManager/GameTimer, updates UI
 - GameOverUI → shows final score, restart button
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Week 2 – Expansion & Polish

5. Second Crop Type + Shop System

- CropData (ScriptableObject) → defines crop properties (name, growth, value)
 - ShopManager → UI for buying seeds/upgrades
 - CurrencyManager → tracks in-game currency
 - UnlockSystem → unlocks crops/items when purchased
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6. Audio + Placeholder Art

- AudioManager → singleton/service locator, pools sounds
 - Placeholder Art → simple sprites for farmer, tiles, crops
 - VFXController → particle effects for planting/harvesting
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7. Playtest + Bug Fixes

- Debug logging
- Balance crops (growth vs. value)
- Fix colliders, animation glitches

8. Final Polish + Build + Screenshots

- Clean UI layout
- Fix art scaling issues
- Export PC build
- Capture screenshots of gameplay