Restaurant Simulation - Quick Start Guide

# 1. Overview

This guide provides a quick start for running and interacting with the Restaurant Simulation system. It covers setup, console commands, logging, and basic workflows for initializing and controlling the simulation.

# 2. Setup

1. Ensure Java (JDK) and `make` are installed on your system.

2. Place all Java source files under `./src` and ensure `makefile` is in the root directory.

3. Compile and run the simulation:

- `make clean`

- `make run`

# 3. Console Commands

* run <ticks>: Run the simulation forward by N ticks.
* step: Advance simulation by one tick.
* load <file>: Load an initialization file and set object variables.
* reset: Reload init file, reset simulation time to 0.
* save <file>: Save current object states to file.
* listObjects: List all registered simulation objects.
* showObject <ObjectName>: Display state of a specific object.
* displayStates: Show state of all objects.
* setValue <Object> <variable> <value>: Modify a variable dynamically.
* setVCD <file>: Set waveform/log file name for logging.
* startLogging: Begin event-driven logging to VCD file.
* stopLogging: Stop logging and close file.
* exit / quit: Exit the simulation console.

# 4. Initialization & State Files

Init files define default variable values for objects at simulation start. Example format:

Restaurant.revenue = 0  
Cook.skillLevel = 4  
Inventory.ingredients[Tomato].quantity = 50

Use `load <filename>` to apply, and `reset` to reload values and reset time.

# 5. Event-Driven Logging

Objects declare loggable variables at construction via `registerLoggables()`.  
When events occur (e.g., Server start/stop, table occupancy changes), objects trigger logs using `triggerLog()`.  
SimulationManager collects these events and writes them to the VCD/log file.

# 6. Example Workflow

1. Start simulation: `make run`  
2. Load init file: `load init.txt`  
3. Run simulation for 100 ticks: `run 100`  
4. View object state: `showObject Server`  
5. Start logging: `setVCD sim\_output.vcd` then `startLogging`  
6. Reset simulation: `reset`  
7. Save state: `save snapshot.txt`  
8. Exit console: `exit`

# 7. Notes

- Extend loggable variables per object in `registerLoggables()`.  
- Define state-change triggers using `triggerLog()` for important events.  
- Expand `SimulationManager` to parse init files into object variables automatically.