# Object and Method Reference (Simulation Kernel)

This reference describes the classes, attributes, and methods in the simulation kernel design where HeartbeatManager serves as the central Simulation Kernel, managing both console and waveform logging.

## SimProcess (Interface)

Methods:  
+ evaluate(): boolean  
+ commit(): void  
+ getState(): String[][]

## SimEntity (Abstract Base Class)

Attributes:  
- tickCounter: int  
- nextTickCounter: int

Methods:  
+ evaluate(): boolean (base tick logic)  
+ commit(): void (base state update)  
+ getState(): String[][] (returns tick count or overridden fields)

## SimulationClock

Inherits: SimEntity  
Attributes:  
- currentTime: int  
- tickRate: int

Methods:  
+ advanceTime(): void  
+ getCurrentTime(): int  
+ evaluate(): boolean (overridden)  
+ commit(): void (overridden)  
+ getState(): String[][] (includes current time)

## HeartbeatManager (Simulation Kernel)

Attributes:  
- processes: List<SimProcess>  
- clock: SimulationClock  
- vcdWriter: PrintWriter (waveform output)  
- signalIds: Map<String, String>

Methods:  
Core Simulation:  
+ registerProcess(SimProcess)  
+ run(int): void  
+ stepOnce(): void  
+ getClock(): SimulationClock  
+ getProcesses(): List<SimProcess>  
  
Console Commands:  
+ startConsole(): void  
+ listObjects(): void  
+ showObject(String): void  
+ setValue(String, String, String): void  
+ tick(int): void  
+ runTicks(int): void  
  
Waveform Logging:  
+ startLogging(String): void  
+ stopLogging(): void  
+ logTick(int): void  
+ displayStates(): void

## Restaurant

Inherits: SimEntity  
Attributes:  
- revenue: double

Methods:  
+ evaluate(): boolean (inherited)  
+ commit(): void (inherited)  
+ getState(): String[][] (overridden for custom fields)

## Cook

Inherits: SimEntity  
Attributes:  
- busy: boolean

Methods:  
+ evaluate(): boolean (inherited)  
+ commit(): void (inherited)  
+ getState(): String[][] (overridden for custom fields)

## Customer

Inherits: SimEntity  
Attributes:  
- patience: int

Methods:  
+ evaluate(): boolean (inherited)  
+ commit(): void (inherited)  
+ getState(): String[][] (overridden for custom fields)

## Server

Inherits: SimEntity  
Attributes:  
- tablesAssigned: int

Methods:  
+ evaluate(): boolean (inherited)  
+ commit(): void (inherited)  
+ getState(): String[][] (overridden for custom fields)

## Table

Inherits: SimEntity  
Attributes:  
- capacity: int  
- occupied: boolean

Methods:  
+ evaluate(): boolean (inherited)  
+ commit(): void (inherited)  
+ getState(): String[][] (overridden for custom fields)

## Order

Inherits: SimEntity  
Attributes:  
- orderReady: boolean

Methods:  
+ evaluate(): boolean (inherited)  
+ commit(): void (inherited)  
+ getState(): String[][] (overridden for custom fields)

## Platter

Inherits: SimEntity  
Attributes:  
- cookingTime: int

Methods:  
+ evaluate(): boolean (inherited)  
+ commit(): void (inherited)  
+ getState(): String[][] (overridden for custom fields)

## Ingredient

Inherits: SimEntity  
Attributes:  
- quantity: double

Methods:  
+ evaluate(): boolean (inherited)  
+ commit(): void (inherited)  
+ getState(): String[][] (overridden for custom fields)

## Inventory

Inherits: SimEntity  
Attributes:  
- stockLevel: int

Methods:  
+ evaluate(): boolean (inherited)  
+ commit(): void (inherited)  
+ getState(): String[][] (overridden for custom fields)

## Refrigerator

Inherits: SimEntity  
Attributes:  
- temperature: double

Methods:  
+ evaluate(): boolean (inherited)  
+ commit(): void (inherited)  
+ getState(): String[][] (overridden for custom fields)

## Stove

Inherits: SimEntity  
Attributes:  
- activeBurners: int

Methods:  
+ evaluate(): boolean (inherited)  
+ commit(): void (inherited)  
+ getState(): String[][] (overridden for custom fields)

## Finance

Inherits: SimEntity  
Attributes:  
- netRevenue: double

Methods:  
+ evaluate(): boolean (inherited)  
+ commit(): void (inherited)  
+ getState(): String[][] (overridden for custom fields)

## Hostess

Inherits: SimEntity  
Attributes:  
- guestsQueued: int

Methods:  
+ evaluate(): boolean (inherited)  
+ commit(): void (inherited)  
+ getState(): String[][] (overridden for custom fields)

## CashRegister

Inherits: SimEntity  
Attributes:  
- balance: double

Methods:  
+ evaluate(): boolean (inherited)  
+ commit(): void (inherited)  
+ getState(): String[][] (overridden for custom fields)

## ServerTable

Inherits: SimEntity  
Attributes:  
- bell: boolean

Methods:  
+ evaluate(): boolean (inherited)  
+ commit(): void (inherited)  
+ getState(): String[][] (overridden for custom fields)