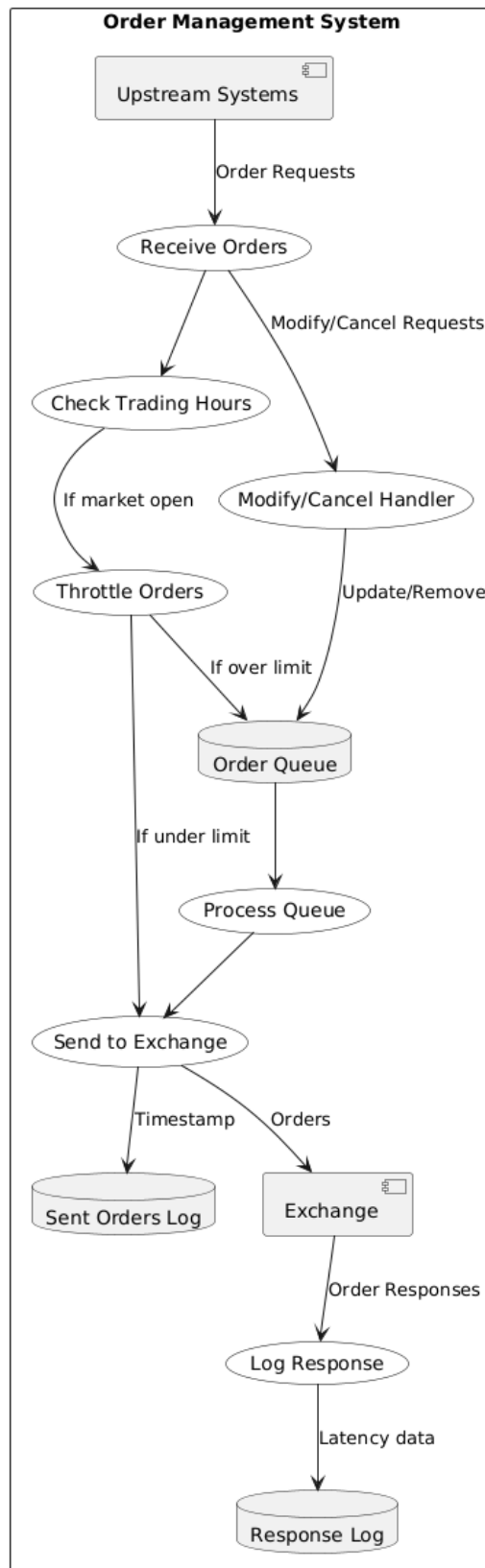


ORDER MANAGEMENT SYSTEM

DATA FLOW DIAGRAM:



DATA STRUCTURES

Class/Enum	Description
OrderRequest	Contains order details
OrderResponse	Tracks exchange responses
RequestType	Defines order actions
ResponseType	Exchange response status

KEY VARIABLES

Configuration

Variable	Type	Purpose
marketOpen	LocalTime	Start of trading hours (e.g., 10:00)
marketClose	LocalTime	End of trading hours (e.g., 13:00)
maxOrderPerSecond	int	Rate limit (e.g., 100 orders/sec)

State Tracking

Variable	Type	Purpose
isTradingTime	volatile boolean	Market open/closed status (thread-safe)
ordersThisSecond	AtomicInteger	Counts orders sent in current second
orderQueue	ConcurrentLinkedQueue<OrderRequest>	Thread-safe queue for rate-limited orders
sentOrderTimes	ConcurrentHashMap<Long, Long>	Tracks orderId → send timestamp for latency

System Management

Variable	Type	Purpose
scheduler	ScheduledExecutorService	Runs periodic tasks

CORE FUNCTIONS

Initialization

Function	Purpose
OrderManagement()	Constructor: Starts scheduled tasks for market checks and queue processing

Market Operations

Function	Purpose
checkMarketHours()	Checks current time vs. marketOpen/Close; updates isTradingTime
sendLogon()	Sends login message to exchange when market opens
sendLogout()	Sends logout message when market closes

Order Processing

Function	Purpose
onData(OrderRequest)	Entry point for incoming orders: <ul style="list-style-type: none">• Rejects if market closed• Handles Modify/Cancel via handleSpecialRequest()• Throttles using ordersThisSecond and orderQueue
handleModifyCancel()	Updates/removes queued orders for Modify/Cancel requests
sendOrder()	Sends orders to exchange (simulated); tracks send time
processQueue()	Processes queued orders each second (resets ordersThisSecond)

Response Handling

Function	Purpose
onData(OrderResponse)	Processes exchange responses: calculates latency
logResponse()	Logs response details and latency

Utility

Function	Purpose
shutdown()	Stops background tasks gracefully