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CS6310 - Assignment 6, Mass Transit Simulation Class Diagram Updates
UML Version: 2.0

EventQueue

- event_queue:Array<Event> [0..*] {ordered}
- buses:Array<Bus> [0..*] {ordered, unique}
- stops:Array<Stop> [0..*] {ordered, unique}
- routes:Array<Route> [0..*] {ordered, unique}

+ schedule_event(event:Event):void
+ remove_event(event_index:Integer):void
+ check_queue_for_event( ):Integer
+ calculate_distance_between_stops(initial_stop:Integer, final_stop:Integer):Integer
+ get_stop_by_ID(stop_ID:Integer):Stop
+ get_bus_by_ID(bus_ID:Integer):Bus
+ get_route_by_ID(route_ID:Integer):Route
- move_bus(bus_ID:Integer, state:String):void
- calculate_waiting_passengers():Integer
- calculate_bus_cost():Real
- calculate_system_efficiency(waiting_passengers:Integer, bus_cost:Real):Real
- check_event_preconditions(event:Event):Boolean

Stop

- ID:Integer {id}
- name:String
- latitude:Real
- longitude:Real
- riders:Integer
- ridersArriveHigh
- ridersArriveLow
- ridersOffHigh:Integer
- ridersOffLow:Integer
- ridersOnHigh:Integer
- ridersOnLow:Integer
- ridersDepartHigh:Integer
- ridersDepartLow:Integer
- passengersWaiting:Integer
- transferPassengers:Integer
- type:String << deprecated >>

+ add_stop(ID:Integer, name:String, riders:Integer, latitude:Real, longitude:Real):void
+ calculate_change_in_passengers(TransitionType:String):Integer
+ sample_normal_distribution(UpperLimit:Integer, LowerLimit:Integer):Integer
+ add_depot(ID:Integer, Name:String, Latitude:Real, Longitude:Real):void <<deprecated>>

1 schedules 0..*

Event

- time_rank:Integer
- event_type:String
- event_ID:Integer
- executed:Boolean
- event_options:Array<String> [*]

+ add_event(time_rank:Integer, event_type:String, event_ID:Integer, event_options:Array<String>):void
+ calculate_timerank(event_type:String, event_ID:Integer):Integer

1

moves

Passenger

0..*

enters and exits

1

1

Bus

- ID:Integer {id}
- route:Route
- route_index:Integer
- number_of_riders:Integer = 0
- capacity:Integer
- speed:Real
- stops_traveled:int = 0
- engine_running:Boolean = false
- is_stopped:Boolean
- time_stopped:Integer = 0
- distance_to_next_stop:Integer
- fuel:Real <<deprecated>>
- max_fuel_distance:Real <<deprecated>>

+ add_bus(ID:Integer, busRoute:Integer, Location:Integer,
Initial-Passengers:Integer, Passenger-Capacity:Integer, Initial-Fuel:Real,
Fuel-Capacity:Real, Speed:Real):void
+ update_bus_state(state:String):void
+ select_next_bus():Integer
+ calculate_time_to_next_stop():Integer
+ start_engine():void

0..* rides 1

lie along

0..*

0..*

Route

- ID:Integer {id}
- route_number:Integer
- Name:String
- route_stops:Array<Stop> {ordered, nonunique}

+ add_route(route_ID:Integer, route:Integer, Name:String):void
+ remove_route(ID:Integer, Number:Integer, Name:String):void
+ extend_route(route_ID:Integer, stop_ID:Integer):void
+ shorten_route(route_ID:Integer, stop_ID:Integer):void
+ get_next_stop(stop_index:Integer):Stop