

Short Report on the Emergency Response Simulation

This C# code simulates the dispatch of emergency units (Police, Firefighter, Ambulance) to various incidents (Fire, Crime, Medical) occurring at different locations. The simulation proceeds in rounds, where random incidents are generated, and the system attempts to find a suitable emergency unit to respond. Points are awarded for successful responses and deducted when no appropriate unit is available.

Key Components:

Emergency Unit (Abstract Class): This serves as a blueprint for all emergency units. It defines common properties like Name and Speed, and abstract methods Can Handle(string incident Type) (to check if a unit can respond to a specific incident type) and Respond To Incident(Incident incident) (to simulate the unit's response). The To String() method is overridden for easy representation of unit information.

Concrete Emergency Unit Classes (Police, Firefighter, Ambulance): These classes inherit from Emergency Unit and provide specific implementations for the abstract methods. Each unit type is designed to handle a particular type of incident.

Incident Class: This class represents an emergency event with a Type (e.g., "Fire", "Crime", "Medical") and a Location.

Simulation Class: This class contains the logic for running the simulation:

Generate Random Incident(): Creates a random incident based on predefined locations and incident types (which can be extended by the user).

Find Available Unit(): Iterates through a list of emergency units to find the first one that can handle the given incident type.

Run Simulation(): This is the main simulation loop. It prompts the user for the number of simulation rounds and initial unit information. It then generates incidents, attempts to dispatch units, updates the score, and finally displays the simulation results, including the locations, incident types, emergency units, and the final score.

Get Unit Speed From User(): A helper method to safely get a positive integer for the speed of each unit from the user.

Program Class: This simple class contains the Main method, which is the entry point of the application and simply calls the Run Simulation() method.