## Emergency Response Simulation Report

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### OOP Concepts Used

**Abstraction**  
The EmergencyUnit class is an abstract base class that defines a template for all units (Police, Ambulance, Firefighter, etc.) with methods like CanHandle and RespondToIncident.

**Inheritance**  
Specialized units such as Police, Firefighter, Ambulance, and SearchAndRescue inherit from EmergencyUnit, extending functionality.

**Polymorphism**  
Different unit types override the RespondToIncident and CanHandle methods to behave appropriately depending on the incident type.

**Encapsulation**  
Data like Name, Speed, and Type are contained within each class, accessed via constructors and not directly exposed for modification.

### Lessons Learned

* Designing for flexibility with polymorphism allowed easy extension (e.g., adding SearchAndRescue).
* Simulating response time with Stopwatch added realism and scoring complexity.
* Implementing user interaction via CLI helped validate real-time decisions.
* Learned the importance of balancing game mechanics (scoring vs difficulty).

### Challenges Faced

* Ensuring correct unit selection logic — sometimes users selected invalid units; added input validation.
* Balancing score calculation with speed vs. difficulty vs. time required tuning.

### Class Diagram

