Emergency Response Simulation Report

In this project, I developed a simple emergency response simulation using Object-Oriented Programming (OOP) principles in C#.
The goal was to create different types of emergency units that could respond to various incidents, depending on their specialization.
Through this project, I practiced applying key OOP concepts in a real-world style scenario.

OOP Concepts Applied

- Abstraction:
  I created an abstract class called `EmergencyUnit`, which defines shared properties and behaviors for all types of units. This made the design cleaner and avoided repeating code.
- Inheritance:
  The classes `Police`, `Firefighter`, `Ambulance`, and `Paramedic` all inherit from `EmergencyUnit`, gaining its properties while implementing their own specific logic.
- Polymorphism:
  Each unit overrides the `CanHandle` and `RespondToIncident` methods, allowing the program to behave differently depending on which unit is selected.
- Encapsulation:
  The attributes like `Name` and `Speed` are managed properly inside each unit, making the code easier to maintain and safer from accidental changes.

Challenges Faced

And some lesson I learned was realizing how abstraction can simplify a system I had a small challenge with generating random response times

Another challenge was user input: currently, if a wrong input is entered, the program crashes.
Overall, this project helped me better understand how different OOP principles work together in a real program. And some lesson I learned was realizing how abstraction can simplify a system

Simple diagram representation