CPE/EE 345 PROJECT PHASE I:

SIMULATION OF 911 EMERGENCY CALLS

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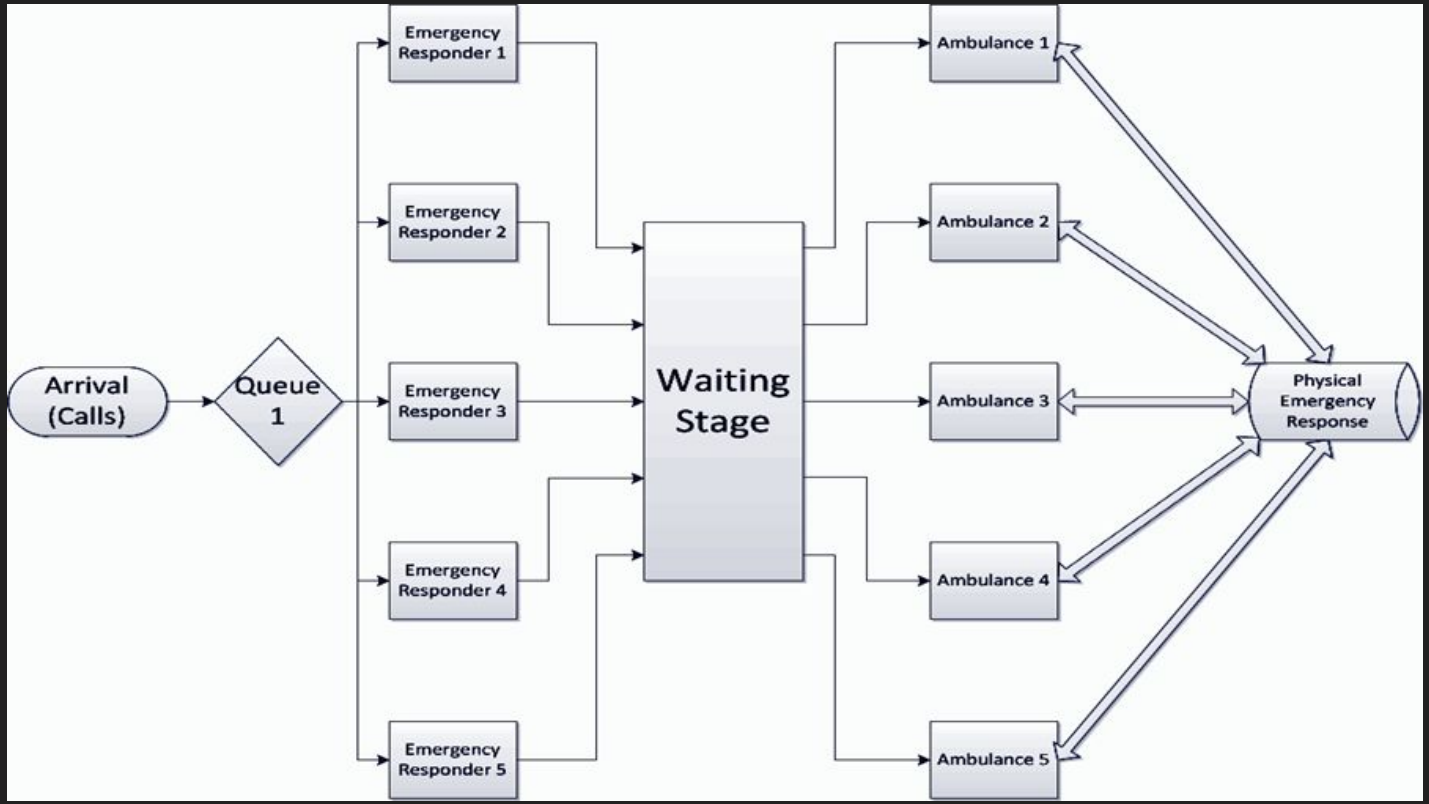
Project Description

- 911 Emergency Telephone Line System
  - Performance Metric: Time in system (waiting and service)
    - This is from the moment the person calls to when the ambulance completes its service
  - Reliant on: Rate of Emergency calls, # of available operators/ambulances, service time distributions

Discrete and Stochastic

- Discrete System: where a state variable changes at discrete points in time
  - 911 calls are the events that drive the system
- Stochastic: Random input, random output
  - 911 Calls are random and you cannot predict when accidents or events will occur.

Block Diagram



Events

- Call Arrivals
- Call Departure
- Ambulance Arrival
- Ambulance Departure

Entities

- Calling Hold Queue
  - FIFO
- Emergency Responders
- Ambulances
- Waiting Stage
  - Another queue. Also FIFO
- Physical Response of Ambulances

Attributes

- Generator: number of ambulances, inter-arrival time distribution
- Queue: time to arrive at site
- Server: distribution of service time
- Connection: false alarms
- Events: call arrival, arrival at emergency, emergency response, return to hospital

State

- Number of calls in queue
- Number of people waiting for ambulances
- State of Ambulances (Idle/ Mobile)
- State of responders (Idle/ on-call)