**🎯 Inputs**

**These are the things we “feed” into the system:**

1. **Users / Service Requests**
   * **Number of users (e.g., 50 users).**
   * **Each request has:**
     + **Resource demand: CPU, memory, bandwidth.**
     + **Latency requirement: how fast it needs response (e.g., 100 ms for healthcare).**
     + **Willingness-to-pay: maximum cost user is ready to pay.**
2. **Fog Nodes**
   * **Number of fog nodes (e.g., 5 fog servers).**
   * **Each has:**
     + **Available resources: CPU capacity, RAM, storage.**
     + **Initial price: base cost per unit resource.**
3. **Cloud (Optional)**
   * **Acts as backup if fog nodes cannot serve.**
   * **Higher latency but large capacity.**
4. **Game Parameters**
   * **Pricing rule (price ↑ if demand > supply, ↓ if demand < supply).**
   * **User utility function = (benefit − price − latency penalty).**
   * **Provider utility function = (price × allocation − cost).**

**🎯 Outputs**

**These are the results produced by the system:**

1. **Allocation Matrix**
   * **Which user is allocated to which fog node (or cloud).**
   * **Example:**
   * **User 1 → Fog 2**
   * **User 2 → Cloud**
   * **User 3 → Fog 1**
2. **Final Prices**
   * **Dynamic resource price per fog node after equilibrium.**
   * **Example: Fog 1 → $0.05/unit, Fog 2 → $0.08/unit.**
3. **Performance Metrics**
   * **Latency per user (did they meet their requirement?).**
   * **Resource Utilization (how much CPU/RAM of fog nodes was used).**
   * **Fairness / Social Welfare (are resources fairly shared?).**
   * **Provider Profit.**

**📖 Simple Example**

**👉 Imagine 10 users want to use 2 fog nodes.**

* **Fog Node 1: 50 CPU units.**
* **Fog Node 2: 30 CPU units.**
* **User 1 needs 10 units, max pay = $5, wants < 50ms latency.**
* **User 2 needs 20 units, max pay = $2, latency tolerant (300ms).**
* **… etc.**

**🔹 System runs the game:**

* **Prices adjust dynamically based on demand.**
* **Critical user (User 1) is placed in Fog Node 1 (low latency, high willingness-to-pay).**
* **Less urgent user (User 2) is pushed to Fog Node 2 or even cloud.**

**👉 Output:**

* **Allocation matrix showing who got which fog node.**
* **Final prices per fog node.**
* **Metrics showing overall utilization and fairness.**

**⚡ Now you’ll be able to explain clearly:  
Inputs = user requests + fog node resources + pricing rules  
Outputs = allocation, prices, latency, utilization**