**Question**:  
The software development team has the following tasks to complete for the new project management tool. Using the **Critical Path Method (CPM)**, calculate the critical path, project duration, and determine which tasks are on the critical path and which have slack. You need to consider task durations, dependencies between tasks, and calculate the total time required to complete the project.

**Tasks:**

1. **Requirements Gathering**: Duration: **4 days** (No dependencies)
2. **System Design**: Duration: **5 days** (Depends on Requirements Gathering)
3. **UI Design**: Duration: **3 days** (Depends on Requirements Gathering)
4. **Database Design**: Duration: **3 days** (Depends on System Design)
5. **API Development**: Duration: **7 days** (Depends on System Design)
6. **Frontend Development**: Duration: **10 days** (Depends on UI Design)
7. **Backend Development**: Duration**: 12 days** (Depends on Database Design, API Development)
8. **Testing**: Duration: **5 days** (Depends on Frontend Development, Backend Development)
9. **Deployment**: Duration: **2 days** (Depends on Testing)

**Dependencies:**

* **System Design** depends on **Requirements Gathering**
* **UI Design** depends on **Requirements Gathering**
* **Database Design** depends on **System Design**
* **API Development** depends on **System Design**
* **Frontend Development** depends on **UI Design**
* **Backend Development** depends on **Database Design** and **API Development**
* **Testing** depends on **Frontend Development** and **Backend Development**.
* **Deployment** depends on **Testing**