**Assignment – AWS Solution Architecture**

**Objective**

To evaluate your ability to design a cost-effective AWS hosting solution based on a given Bill of Material (BOM). You will recommend the right architecture, pricing model, and implementation/migration approach for the client.

**Assignment Tasks**

**1. Requirement Analysis**

* Review the provided **BOM (to be shared separately)**.
* Identify the core components required for hosting (Compute, Storage, Database, Networking, Security, etc.).
* Map the requirements to relevant AWS services.

**2. Solution Design**

* Propose a **solution architecture diagram** for the application hosting environment.
* Ensure the architecture follows AWS **Well-Architected Framework** (Security, Reliability, Cost Optimization, Performance Efficiency, Operational Excellence, Sustainability).
* Highlight considerations for **Availability, Scalability, Security, and Backup/DR**.

**3. Cost Optimization & Pricing Model**

* Evaluate hosting the solution using different AWS pricing models:
  + **On-Demand Instances**
  + **1-Year Reserved Instances (RI)**
  + **3-Year Reserved Instances (RI)**
* Prepare a **comparative commercial BOM** for each option.
* Recommend the most **cost-effective approach**, with justification.

**4. Implementation & Migration Plan**

* **If it’s a greenfield project (new setup):** Suggest step-by-step implementation plan on AWS.
* **If it’s a brownfield project (existing infra migration):** Provide a **migration plan**, including:
  + Assessment of current environment.
  + Migration strategy.
  + Cutover approach with minimal downtime.
  + Testing and validation plan post-migration.

**5. Deliverables**

You are required to submit:

1. **Solution Architecture Diagram** (draw using AWS Architecture Icons – can use tools like Lucidchart, Draw.io, or AWS Architecture Tool).
2. **AWS Services Mapping** (which AWS service is used for which BOM requirement).
3. **Commercial BOM Comparison** (On-Demand vs 1-Year RI vs 3-Year RI).
4. **Final Recommendation** (best-fit cost-effective approach).
5. **Implementation / Migration Plan** (step-by-step).

**Evaluation Criteria**

* **Technical Accuracy** – Correct mapping of BOM to AWS services.
* **Cost Optimization** – Effective use of pricing models and cost-saving options.
* **Clarity of Architecture** – Well-defined and easy-to-understand solution diagram.
* **Completeness** – Inclusion of implementation/migration plan.
* **Presentation** – Structured documentation and clear explanation.