**Homework: Google Data Engineering Training Session**

**Task 1: Difference between a VPC Network and a Subnet**

A **VPC Network** is like a private network that allows your resources (like virtual machines or databases) to communicate securely with each other. It covers a wide area (global) and acts as the main network where everything connects.

A **Subnet** is a smaller part of the VPC Network that helps organize resources by region (specific areas). It provides IP addresses for resources within that area.

**Difference:**

* VPC Network is like a big, main road system that connects everything.
* Subnet is like smaller roads within specific areas to keep things organized.

**Task 2: Role of IAM in GCP**

**IAM (Identity and Access Management)** controls who can do what on Google Cloud. It makes sure only authorized people or applications can access your resources. It's like setting up permissions for different people based on their roles.

Purpose: To protect your resources and give access only to those who need it.

Example: If I create a storage bucket, I can allow only myself to edit it, but others can just view it.

**Task 3: Differences between IAM Policies and Service Accounts**

* **IAM Policies:** Rules that decide what people or services can do. Example: Allowing someone to view, edit, or delete resources.
* **Service Accounts:** Accounts used by applications to access resources without human involvement. Example: A program automatically reading data from a storage bucket.

**Difference:**

* IAM Policies are for giving permission to people.
* Service Accounts are for giving permission to applications or programs.

**Task 4: Differences Between Various Storage Classes in GCP**

Google Cloud has different storage options for saving your files:

* **Standard:** For files you need to access often. It's fast but costs more.
* **Nearline:** For files you don't use much, like once a month. Cheaper than Standard.
* **Coldline:** For files you rarely use, maybe once a year. Cheaper but slower to access.
* **Archive:** For files you almost never use. Cheapest but takes the longest to access.

**Difference:**

* More expensive storage is faster.
* Cheaper storage is slower but good for storing old files you don't need often.