1.) HTTP-Triggered ETL Microservice with CI/CD

Build a Cloud Run service that exposes an HTTP endpoint to accept JSON payloads representing sales transactions. The service should:

- Validate the incoming JSON against a predefined schema.
- Transform it (e.g., calculate tax, enrich with timestamp).
- Load the cleaned records into a BigQuery table.

Requirements:

- Containerize the service (any language) and deploy to Cloud Run.
- Write unit tests for schema validation and transformation logic.
- Configure a Cloud Build pipeline:
- Trigger on pushes to the main branch in your Git repo.
- Build the container, run tests, and deploy to Cloud Run (with traffic splitting for staging vs. prod).

2. Cloud Storage-Triggered File Processor

Create a Cloud Run function that processes CSV files dropped into a raw-data/ folder in a GCS bucket. For each new file:

- Read the CSV using Pandas or similar.
- Compute basic metrics (row count, null counts per column).
- Write the metrics as a JSON file into a reports/ folder in the same bucket.

Requirements:

- Use a Pub/Sub notification on the bucket so that every new file triggers your Cloud Run service.
- Handle only .csv files; non-CSV should return HTTP 400.
- Include retry logic and idempotency (e.g., track processed filenames in Firestore).
- Set up a simple Cloud Build pipeline to:
- Lint and test your code.
- Deploy to Cloud Run on merges to develop.

3. Scheduled Batch Job Orchestration

Implement a daily batch job in Cloud Run that:

- Fetches all JSON files older than 24 hours from a GCS bucket prefix (e.g., events/YYYY/MM/DD/).
- Aggregates them into hourly summary CSVs (e.g., total events per type).

- Uploads the summaries to another bucket or BigQuery.

Requirements:

- Define this as a Cloud Run Job (not a service).
- Schedule it with Cloud Scheduler via an HTTP trigger or Pub/Sub.
- Use a Serverless VPC connector if you need to reach private resources.
- CI/CD - Cloud Build trigger on tags (e.g., v*), building and deploying the Job spec.

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Submit:

1.) Zip file of code base
2.) Detailed doc explaining the steps followed