

Google Cloud Skills Boost for Partners

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Text Prompt
Engineering
TechniquesCourse - 8 hours Complete

Course overview

Text Prompt
Engineering
TechniquesGet Started with Vertex AI StudioGetting Started with Google Generative AI Using the Gen AI SDKCommon Generative AI Use CasesPrompt Design StrategiesGenerative AI with Vertex AI: Text Prompt Design

Introduction to Generative AI > Course > Text Prompt Engineering Techniques >

Quick tip: Review the prerequisites before you run the lab

[End Lab](#)

00:11:29

Caution: When you are in the console, do not deviate from the lab instructions. Doing so may cause your account to be blocked.
[Learn more.](#)[Open Google Cloud console](#)

Username

student-04-25a91090bc67e

Password

1rd9xHFcFQIK

Project ID

qwiklabs-gcp-03-2b41a84

Get Started with Vertex AI Studio

Lab 1 hour No cost Introductory★ ★ ★ 1 Rate LabThis lab may incorporate AI tools to support your learning.**GSP1154** Google Cloud Self-Paced Labs[Previous](#)[Next >](#)

Lab instructions and tasks

100/100

GSP1154

Overview

Objectives

Setup and requirements

Task 1. Create applications from prompts

Task 2. Design effective prompts

Task 3. Engineer and manage prompts

Task 4. Use multimodal prompts with Gemini

Task 5. Explore Vertex AI Media Studio

Congratulations!

Overview

Vertex AI is a comprehensive machine learning development platform that provides both **predictive** and **generative** AI capabilities. It allows you to train, evaluate, and deploy predictive machine learning models for forecasting purposes. Additionally, you can utilize the platform to discover, tune, and serve generative AI models to produce content. For instance, insurance companies constantly seek to improve efficiency in areas like claims processing and risk assessment. Vertex AI Studio offers a powerful way to rapidly prototype generative AI solutions for such challenges.

[Vertex AI Studio](#) lets you quickly test and customize generative AI models so you can leverage their capabilities in your applications. It provides a variety of tools and resources, including an intuitive user interface (UI), that make it easy to start with generative AI, even if you don't have an extensive background in machine learning.

This lab guides you through Vertex AI Studio, where you'll unlock the potential of cutting-edge generative AI models like Gemini. You will step into the role of helping an

idea towards a deployable application, design sophisticated prompts to achieve specific generative outcomes, and use multimodal capabilities to analyze various types of data, including images—all directly in the Google Cloud console. No need for APIs or Python SDKs for these core tasks.

Objectives

In this lab, you learn how to:

- Create applications from prompts.
- Design effective prompts.
- Engineer and manage prompts.
- Use multimodal prompts.

Setup and requirements

Before you click the Start Lab button

Read these instructions. Labs are timed and you cannot pause them. The timer, which starts when you click **Start Lab**, shows how long Google Cloud resources are made

available to you.

This hands-on lab lets you do the lab activities in a real cloud environment, not in a simulation or demo environment. It does so by giving you new, temporary credentials you use to sign in and access Google Cloud for the duration of the lab.

To complete this lab, you need:

- Access to a standard internet browser (Chrome browser recommended).

Note: Use an Incognito (recommended) or private browser window to run this lab.

Which may cause extra charges related to your personal account.

- Time to complete the lab—remember, once you start, you cannot pause a lab.

Note: Use only the student account for this lab. If you use a different Google Cloud account, you may incur charges to that account.

How to start your lab and sign in to the Google Cloud console

1. Click the **Start Lab** button. If you need to pay for the lab, a dialog opens for you to select your payment method. On the left is the Lab Details pane with the following:

- The Open Google Cloud console button
- Time remaining

- Other information, if needed, to step through this lab

2. Click **Open Google Cloud console** (or right-click and select **Open Link in Incognito Window** if you are running the Chrome browser).

The lab spins up resources, and then opens another tab that shows the Sign in page.

Tip: Arrange the tabs in separate windows, side-by-side.

Note: If you see the **Choose an account** dialog, click **Use Another Account**.

3. If necessary, copy the **Username** below and paste it into the **Sign in** dialog.

student-04-25a91090bc67@qwiklabs.net



You can also find the Username in the Lab Details pane.

4. Click **Next**.

1rd9xHFcFQIK



You can also find the Password in the Lab Details pane.

6. Click **Next**.

Important: You must use the credentials the lab provides you. Do not use your Google Cloud account credentials.

Note: Using your own Google Cloud account for this lab may incur extra charges.

7. Click through the subsequent pages:

- Accept the terms and conditions.

- Do not sign up for free trials.

After a few moments, the Google Cloud console opens in this tab.

Note: To access Google Cloud products and services, click the **Navigation menu** or type the service or product name in the **Search** field.

Task 1. Create applications from prompts

case: creating a prompt that helps an insurance professional summarize client information for a risk analysis report and then prepare this prompt as a simple application.

1. In the Google Cloud console, from the **Navigation menu** (≡), select **Vertex AI** > **Vertex AI Studio** > **Overview**.

2. From the Vertex AI menu, under **Vertex AI Studio**, select **Create prompt**. This will bring you to the prompt editor page.

The UI contains three main sections:

- **System Instructions** (located at the top): a set of instructions that the model processes before it processes prompts. When a system instruction is set, it applies to the entire request. It works across multiple user and model turns when included in the prompt. We recommend that you use system instructions to tell the model how you want it to behave and respond to prompts.

- and set advanced options.
- **Prompt** (located at the bottom): Here, you can create a prompt that utilizes multimodal capabilities.

3. Once the new untitled prompt page loads, click on **Untitled Prompt** in the top left corner and rename your prompt to **Insurance Risk Summary - Prototype**.

4. In the main canvas, click into the **System instructions** text box and enter the following to give your AI assistant a role relevant to our insurance scenario:

warehouse. The business is 5 years old. The building is a concrete tilt-up structure, originally built in 2010. They store a variety of non-hazardous dry goods. Fire safety measures include a full sprinkler system, a centrally monitored fire alarm, and documented annual inspections by a certified third party. Security measures include a 24/7 centrally monitored burglar alarm, comprehensive security camera coverage of the interior and exterior, a fully fenced perimeter, and nightly patrols by a contracted security guard service. The company reports no major property or liability losses in their 5-year history. They have specifically asked to ensure their new automated shelving and retrieval system, installed last month, is adequately covered under the policy."

Your Task:

1. Briefly summarize the key details of the 'SafeHarbor Warehousing' business and its existing safety measures.
2. Based *only* on the notes provided, identify any

Present the summary first, then the questions/risk factors as bullet points.

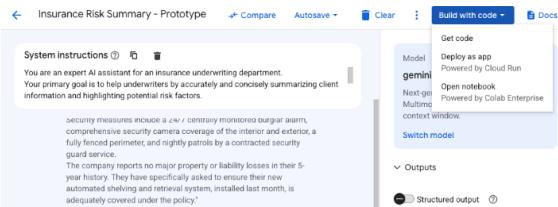
6. In the Configuration section on the right:

- Ensure the **gemini-2.0-flash-001** model is selected. You can click **Switch model** if you need to change it.
- If not already set, toggle the **Advanced** options, and for **Region**, select **us-central1**.

7. Click the **Submit** arrow button (typically at the bottom right of the prompt input area or by pressing CTRL+Enter). Review the model's response.

8. At the top of the page, click the **Save** button. In the "Save prompt" dialog, the name **Insurance Risk Summary - Prototype** should be pre-filled. Confirm the **Region** is correct (**us-central1**) and click **Save**.

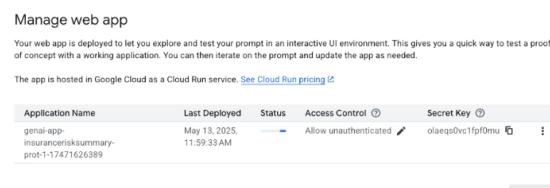
9. Now, you'll explore how this drafted prompt can be turned into a prototype application. At the top right of the page, click the **Build with code** button. From



10. In the "Deploy to Cloud Run" dialog that appears:

- You may need to **Enable services** if prompted (e.g., Cloud Build API, Cloud Run API). Click **Enable** if necessary and wait for the services to be enabled.
- Check the **Acknowledgement** for publicly deploying your app.
- Click **Create App**.

11. The deployment process will begin and might take a few minutes. You may see



12. Once completed, click the **Close** button in the **Manage web app** box. Then, to open your newly deployed application, click the **Build with code** button again at the top right of the page. From the dropdown menu, now select **Open app (Powered by Cloud Run)**. This will open your "Vertex AI GenAI App" in a new browser tab.



is a concrete tilt-up structure, originally built in 2010.
They store a variety of non-hazardous dry goods.

13. You should now see a page titled "Welcome to Vertex AI GenAI App!" with your prompt title, "Insurance Risk Summary - Prototype," displayed.

Welcome to Vertex AI GenAI App!

This prototype was built using your Vertex AI Studio prompt. Follow the steps and recommendations below to begin.

Next steps:

- Go to Cloud Run [source code editor](#) to customize application code.
- Go to your Vertex AI Studio prompt to update and resupply.
- Go to Cloud Run [Security settings](#) to turn off unauthenticated access when it's not needed. [Learn more](#)

Type a message... ▶

... in the character section, in the Type a message... input field at the bottom, enter a new test message. For example:

New Customer Inquiry:
"Applicant 'Coastal Goods Delivery' has a fleet of 10 delivery vans, all equipped with GPS and telematics. They operate within a 100-mile radius of their depot. Drivers undergo annual safety training. They had one minor fender bender last year, no injuries, \$1500 damages. What are the primary risk considerations?"

Please summarize key points and identify potential risks.

15. Click the submit arrow button to send your message to the application.

16. Observe the response from your deployed GenAI app. It should process your input based on the logic and system instructions you defined in Vertex AI Studio.

Note: As indicated by the warning on the app page, this application allows unauthenticated access by default. In a production scenario, you would configure appropriate security settings. For this lab, the default is fine for exploration.

17. You have now completed the full cycle:

- Designed a prompt in Vertex AI Studio.
- Deployed it as a serverless application using Cloud Run with a few clicks.
- Directly opened and interacted with your generative AI model through a web interface. This demonstrates the power of Vertex AI Studio for rapid prototyping and deployment of generative AI capabilities.

Click **Check my progress** to verify the objectives.

Create a prompt application with Vertex AI Studio.

✓ Check my progress

Assessment Completed!

Task 2. Design effective prompts

In Task 1, you prototyped an initial prompt. Now, you'll dive deeper into refining prompts to get more precise, controlled, and useful outputs from the generative models. This is a core skill in prompt engineering. You will continue with your insurance theme by trying to extract specific information from a claims document or improving the summarization quality.

Zero-shot prompting

You'll start by creating a new prompt to explore detailed prompt design.

- Ensure you are in the main **Vertex AI Studio** area. If you were viewing your deployed app from Task 1, close that browser tab to return to the Google Cloud console.
- From the **Navigation menu** (≡), select **Vertex AI > Vertex AI Studio > Create**

3. If you started with a new prompt page (showing "Prompt Samples"), click on **Untitled Prompt** in the top left corner and rename it **Insurance Claim Data Extraction**.
4. Familiarize yourself with the scenario for this section: *An insurance adjuster often receives unstructured notes or emails about a new claim and needs to quickly extract key pieces of information to enter into their claims management system.*
5. In the **System instructions** box, enter the following:

You are an AI assistant specializing in parsing and extracting specific data points from unstructured insurance claim notifications.
 Your goal is to identify and list key information accurately.
 If a piece of information is not found, clearly state "Not found".
 Output the extracted information in a key: value format, with each key on a new line.

6. In the main prompt area, paste the following example of an unstructured claim

Claim Notification Received:
 "Hi team, just got a call from Mrs. Eleanor Vance, policy #POL458892. She reported a kitchen fire that occurred on May 12th, 2025, around 3 PM. The main damage seems to be to the oven and surrounding cabinets. She mentioned smoke damage in the kitchen and dining area too. She thinks the total damage might be around \$7,500. Her contact is 555-0123. No injuries reported, thankfully."
Extract the following:
 - Policy Number
 - Claimant Name
 - Date of Loss
 - Time of Loss
 - Type of Loss
 - Brief Description of Damage
 - Estimated Loss Amount
 - Injuries Reported

7. In the **Configuration** section on the right:

- Set **Temperature** to **0.1** (for more factual, less creative extraction).
- Set **Output token limit** to a reasonable number, like **1024**.
- Ensure the **Region** is **us-central1**.

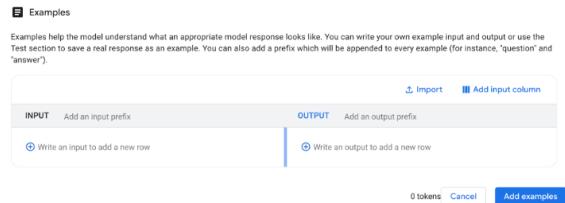
8. Click the **Submit** arrow button. Review the output. This first attempt without explicit examples is called **zero-shot prompting**.

9. Once you are done reviewing the response from your zero-shot attempt, click the **Clear** icon on the top toolbar to clear the entire prompt canvas. This is necessary because examples can typically only be added to a fresh prompt.

Few-Shot prompting

Often, providing a few examples (few-shot prompting) can significantly improve the model's performance, especially for specific formatting or nuanced extraction.

1. On the bottom right of the **Prompt** section, click the **Add Examples** (+) button.



2. In the "Examples" interface that appears:

- For the **INPUT** of your first example, paste the following unstructured note:

Claim Notification Received:
 "Email from John Sterling (policy P01 77521) re: water

John Sterling (policy holder) got water damage at his shop. Happened sometime last night, May 10th, 2025. A pipe burst in the ceiling. Stockroom is flooded, some damage to inventory. He's not sure on the cost yet.

Extract the following:

- Policy Number
- Claimant Name
- Date of Loss
- Time of Loss
- Type of Loss
- Brief Description of Damage
- Estimated Loss Amount
- Injuries Reported

- For the **OUTPUT** of your first example, paste the following perfectly formatted extraction:

Policy Number: POL77521
Claimant Name: John Sterling
Date of Loss: May 10th, 2025
Time of Loss: Night
Type of Loss: Water damage
Brief Description of Damage: Pipe burst in ceiling, stockroom flooded, some damage to inventory.
Estimated Loss Amount: \$5,000 - \$10,000



- Click the **Add examples** button to save this example and return to the main prompt.

3. **Re-add System Instructions:** Since clearing the prompt also cleared the system instructions, paste them again into the System instructions box at the top:

You are an AI assistant specializing in parsing and extracting specific data points from unstructured insurance claim notifications.
Your goal is to identify and list key information accurately.
If a piece of information is not found, clearly state "Not found".
Output the extracted information in a key: value format, with each key on a new line.



4. **Provide the New Input and the Prompt:**

- In the area labeled **(Input)** **Write value here**, paste the original claim notification for Mrs. Eleanor Vance that you want the model to process

Claim Notification Received:
"Hi team, just got a call from Mrs. Eleanor Vance, policy #POL458892. She reported a kitchen fire that occurred on May 12th, 2025, around 3 PM. The main damage seems to be to the oven and surrounding cabinets. She mentioned smoke damage in the kitchen and dining area too. She thinks the total damage might be around \$7,500. Her contact is 555-0123. No injuries reported, thankfully."



5. In the area labeled **Write your prompt here** (below the input field), you need to provide the instruction for the model. This tells the model what to do with the **(Input)** text, using the Examples as a guide. Enter the following:

Extract the following data points from the provided claim notification:
- Policy Number
- Claimant Name
- Date of Loss
- Time of Loss
- Type of Loss



- Injuries Reported

6. Ensure your configurations (Model, Temperature, Token Limit, Region) are still set as desired (e.g., Temperature at 0.1).

7. Click the **Submit** arrow button again. Compare this new output to the previous zero-shot attempt. Note if the accuracy or formatting has improved significantly due to the few-shot example and the structured input method.

Experimenting with prompt configurations

Now, you'll explore how different parameters in the **Configuration** panel (on the right) can affect the model's response. Ensure your "Insurance Claim Data Extraction" prompt

with the few-shot example is active.

1. Experiment with **Temperature**:

- **Explanation:** Temperature controls randomness. Lower values (e.g., 0.0-0.2) make the output more focused and deterministic. Higher values (e.g.,

- **Try it:** Change **Temperature** to **0.7**. Click **Submit** and note any changes. Then, change **Temperature** back to **0.1**.

2. Experiment with **Output Token Limit**:

- **Explanation:** This sets the maximum number of tokens (parts of words) the model can generate for its response.

- **Try it:** Set **Output token limit** to a very small number, like **20**. Click **Submit** and observe the truncated output. Reset it to a suitable value (e.g., **1024**, or the default).

3. Experiment with **Top-P**:

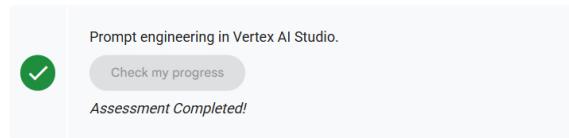
- **Explanation:** Top-P (nucleus sampling) also controls randomness. It considers only the most probable tokens whose combined probability mass exceeds the Top-P value. A value of **1.0** considers all tokens. Lowering Top-P (e.g., to **0.8**) makes the output more focused, similar to lowering temperature.

- **Try it:** With Temperature at **0.1** (or slightly higher, like **0.5**, to better

4. Briefly review other settings in the **Advanced** configuration panel:

- **Safety Filter Settings:** These are active by default to help block harmful content. For this lab, you'll use the default settings.

Click **Check my progress** to verify the objectives.



Task 2: Experiment with prompts

Once you have a working prompt, you'll often want to experiment with changes to the instructions or model configurations to see if you can improve the response. The "Compare" feature in Vertex AI Studio is designed for this. For this section, you'll use the prompt we just created.

1. Ensure you are in the main **Vertex AI Studio** area. If you were viewing your deployed app from Task 1, close that browser tab to return to the Google Cloud console.

2. Navigate to create a new prompt. From the **Navigation menu** (≡), select **Vertex AI** > **Vertex AI Studio** > **Create prompt**.

3. Click on **Untitled Prompt** in the top left corner and rename this new prompt to **Comparison Base - Restaurant Risks**.

4. Set up this simple base prompt:

- In the **System instructions** box, enter:

You are an insurance risk analyst assistant. Your task is

- In the main prompt area (where you "Write your prompt here"), paste the following:

Scenario:
"The applicant, 'The Fiery Grill,' is a new upscale restaurant specializing in wood-fired oven pizzas and open-flame grilling. They have installed a brand new, custom-built fire suppression system for their cooking area, but it has not yet been certified by a third party. The restaurant plans to feature live acoustic music on weekend evenings and has a small, raised stage area. They also want

to offer valet parking."

Based on this scenario, list three primary risk factors an underwriter should consider.

- In the **Configuration** section on the right:

- Select the **gemini-2.0-flash-001** model.

- Ensure the **Region** is **us-central1**.

5. Click the **Submit** arrow button. Review the model's initial response.

6. Click the **Save** button. Confirm the name **Comparison Base - Restaurant Risks** and save it. You generally need to save a prompt before you can effectively use it in some comparison workflows, especially if you plan to compare *with a saved prompt* later.

7. Now, with this **Comparison Base - Restaurant Risks** prompt and its response displayed, click the **Compare** button on the top toolbar.

Note: If prompted, **Exit without saving** then click **Continue**.

8. The "Compare" interface will open. Your **Comparison Base - Restaurant Risks** prompt, its configurations, and its latest response will typically be displayed in a column on the left.

The screenshot shows the 'Compare' interface. At the top, there are three tabs: 'Compare' (which is active and highlighted in blue), 'Submit prompts', and 'Evaluate'. The main area is titled 'Comparison Base - Restaurant Risks'. It contains a 'Scenario' box with the text: 'The applicant, 'The Fiery Grill,' is a new upscale restaurant specializing in wood-fired oven pizzas and open-flame grilling. They have installed a brand new, custom-built fire suppression system for their cooking area, but it has not yet been certified by a third party. The restaurant plans to feature live acoustic music on weekend evenings and has a small, raised stage area. They also want to offer valet parking.' Below this is a configuration section with a table:

Model	gemini-2.0-flash...
Temperature	0.2
Token limit	8192

A list of three risks follows:

1. Uncertified Fire Suppression System: High fire risk due to potential malfunction.
2. Live Music/Stage: Increased liability from accidents and noise.
3. Valet Parking: Liability exposure for vehicle damage/theft.

To the right of the main area, there is a sidebar with the text: 'Add a comparison to see how a different prompt, model, and/or parameter settings change the model output'. It includes three buttons: '+ Compare new prompt', '+ Compare saved prompt', and '+ Ground truth'.

Comparing by modifying prompt instructions

You'll now see how changing the instructions affects the output for "The Fiery Grill." In the **Compare** view, the comparison panes may not have a separate "System Instructions" field; if so, you'll prepend any system-level guidance to the main prompt.

1. In the central area of the **Compare** interface (or to the right of your first prompt), click the **+ Compare new prompt** button.

2. A new prompt editing pane will appear on the right.

3. Configure this new (second) prompt as a variation:

- In the single large text box for the prompt in this right-hand pane, paste the following combined instructions and scenario:

You are an expert insurance risk analyst assistant. Your

potential mitigation strategy or question for the underwriter. Be clear and structured.

Scenario:

"The applicant, 'The Fiery Grill,' is a new upscale restaurant specializing in wood-fired oven pizzas and open-flame grilling. They have installed a brand new, custom-built fire suppression system for their cooking area, but it has not yet been certified by a third party. The restaurant plans to feature live acoustic music on weekend evenings and has a small, raised stage area. They also want

to offer valet parking."

Based on this scenario, list three primary risk factors an underwriter should consider.

- **Configurations for this variation:**

- Ensure the **Model** is the same as the first prompt: **gemini-2.0-flash-001**.

- Keep **Temperature** at **0.2**.

first prompt to isolate the effect of the instruction change.

- Scroll down in the pane and click **Apply**.

4. Once the new prompt variation is set up with its text and configurations in the right-hand pane, click the **Submit prompts** button (usually located at the top of the "Compare" interface).

5. Wait for both prompts to generate responses. Review the two responses side-by-side. Does the second prompt now include mitigation strategies or questions, due to the modified instructions?

6. To save this as a new prompt, Click **Save as new**, then enter your desired *[Prompt name]*, and then click **Save**.

Comparing with a different temperature setting

Now, you'll use a comparison pane to test a different temperature.

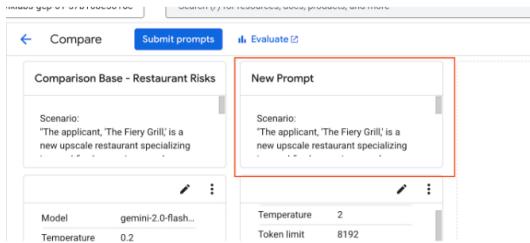
1. In the text box inside of the second prompt pane (the one on the right),

(without the added system instructions about mitigation). Copy and paste the prompt from your Comparison Base - Restaurant Risks (left pane):

Scenarios:
"The applicant, 'The Fiery Grill,' is a new upscale restaurant specializing in wood-fired oven pizzas and open-flame grilling. They have installed a brand new, custom-built fire suppression system for their cooking area, but it has not yet been certified by a third party. The restaurant plans to feature live acoustic music on weekend evenings and has a small, raised stage area. They also want to offer valet parking."

Based on this scenario, list three primary risk factors an underwriter should consider.

*If the compare view doesn't have a system instruction box for this pane, ensure the system instructions "You are an insurance risk analyst assistant..." are prepended here if they were cleared, or rely on the original system instructions if they apply globally from the left pane.



2. Click the **Edit** (pencil) icon in the second prompt pane below the text box:

- **Configuration Change:** In the configuration settings for this second prompt pane, change the **Temperature** to **2.0**. Ensure the Model is still **gemini-2.0-flash-001**.
- Scroll down in the pane and click **Apply**.

3. Click **Submit prompts** again.

Is the output more speculative, or significantly different compared to the **0.2** temperature output?

Note: setting the temperature this high will likely result in less coherent or relevant output, but it demonstrates the extreme effect of the parameter.

5. To update the changes, click the **Update** button located below the second prompt pane.

Comparing different models and configurations

Now you will try comparing your base model with a different model and settings to observe differences in reasoning or output style.

1. In the text box inside of the second prompt pane (the one on the right),

- **Prompt Text:** Use the same original "Fiery Grill" scenario and request for three risk factors as in your Comparison Base - Restaurant Risks (left pane). (Again, ensure the base system instruction is effectively present for this pane, either by prepending it if necessary or if the UI carries it over implicitly).

- **Configuration Changes for this variation:**

- Change the **Model** to **Gemini 2.5 Pro** (select this from the model dropdown for this pane).
- Set the **Temperature** to **0.2**.
- Set the **Output token limit** to **65535** (or the maximum allowed by the model in the UI).
- Scroll down in the pane and click **Apply**.

3. Click **Submit prompts**.

4. Review the responses. Compare the output from **Gemini 2.0 Flash** (left pane) with **Gemini 2.5 Pro** (right pane).

Notice any differences in the identified risk factors, the detail provided, the structure of the response, or how it seems to reason through the scenario.

Other comparison options (brief overview)

Vertex AI Studio offers other ways to add prompts for comparison:

1. Notice the **+ Compare saved prompt** button in the area where you added a "new prompt" for comparison.

- Clicking this would allow you to select one of your previously saved prompts from "Prompt Management" to compare against.

Note: As indicated in the UI (and to clarify the scope of "conversation history"), prompt comparison has limitations. For instance, it does not support chat prompts, prompts with media, or prompts with conversation history involving **more than one exchange**.

2. You may also see a **+ Ground truth** button.

evaluation metrics, which can be useful for advanced prompt testing but is beyond the scope of this introductory lab. For our purposes, visual side-by-side comparison is sufficient.

3. To exit the "Compare" view and return to the main prompt editing interface (for example, to continue working on the version you prefer), click the **back arrow** at the top left of the "Compare" interface.

Prompt Management

As you experiment with different instructions, examples, and configurations, it's crucial to save your work. Saving prompts allows you to:

- Organize your experiments.
- Reuse effective prompts easily.

Vertex AI Studio provides **Prompt Management** for this purpose.

Saving a prompt

"Insurance Claim Data Extraction" prompt.

1. Ensure the prompt you want to save is active in the main prompt editing interface (e.g., you might have just exited the "Compare" view and have a preferred version

open, or you are in the Comparison Base – Restaurant Risks prompt).

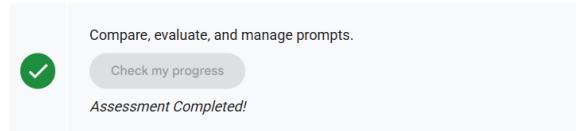
2. If you have already saved your prompt, you will notice an **Autosave** button on the top toolbar. Once you initially save your prompt, **Autosave** is on by default. If you would like to disable this feature, you can click the button and select **Turn off Autosave**.

Accessing Prompt Management

Once you have saved prompts, you can manage them in **Prompt Management**.

1. Navigate to create a new prompt. From the **Navigation menu** (≡), select **Vertex AI > Vertex AI Studio > Prompt Management**.
2. You will see a list of your saved prompts, often including their names, media, model, and the last modified date.

Click **Check my progress** to verify the objectives.



Task 4. Use multimodal prompts with Gemini

In this task, you'll use the main prompt interface in Vertex AI Studio with the Gemini model to analyze an image and extract information from it. This demonstrates how to design prompts for various analytical tasks such as description, text extraction, and

1. In the Google Cloud console, from the **Navigation menu** (≡), select **Vertex AI > Vertex AI Studio > Create prompt**.
2. At the top left, click **Untitled Prompt** and rename your prompt to **Timetable Image Analysis**.
3. In the **Configuration** panel on the right:
 - Ensure the **gemini-2.0-flash-001** model is selected. You can click **Switch model** if you need to change it.
 - Toggle the **Advanced** options, and for **Region**, select **us-central1**.
4. Download the sample timetable image to your local machine:



5. In the **Prompt** section (at the bottom of the page), click the **Insert Media** (≡) button, typically found on the right side of the prompt input area.
6. In the **Select source** menu that appears, click **Upload** and then select the timetable image file you just downloaded from your computer. The image will appear directly in the prompt input area.

Note: You'll notice several options for sourcing your media. These typically include direct **Upload**, providing a file **By URL**, importing from **Cloud Storage** or **Google Drive**, and even linking a **YouTube video**. For this lab, you'll focus on the direct **upload** method.

7. Now, you can ask the model to perform a few tasks on the image. Below the

- Provide a concise title for this image (under 5 words).
- Describe the image in one or two sentences.
- Extract all visible text from the image. Present the flight schedule as a clearly formatted list with columns for "Time" and "City".

8. Click the **Submit** arrow button (bottom right of the prompt section) and review the model's response.

9. Next, you can ask a question that requires reasoning based on the extracted information. Replace the previous text prompt (leave the image in place) with the following:

Based on the flight schedule shown in the image, what percentage of the listed flights depart before 11:30 AM? Show your calculation if possible.

10. Click the **Submit** arrow button and examine the response.

right:

- Adjust the **Temperature** to **0.8**.
- Resubmit the *exact same prompt* from step 9 ("Based on the flight schedule... percentage...").
- Note if the style, confidence, or detail of the explanation changes.
- After observing, set the **Temperature** back to a lower value like **0.2** for more predictable responses.

Note: Temperature controls randomness. Lower values (e.g., 0.0-0.2) are good for factual responses, while higher values (e.g., 0.7+) can lead to more diverse or creative outputs, which might be less suitable for precise data extraction or analysis.

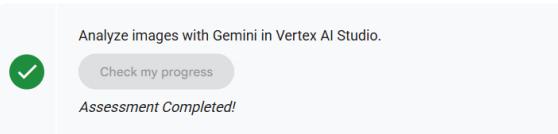
12. Once you're satisfied with your exploration, save your work. Click the **Save** button on the top toolbar.

The name **Timetable - Travel Analysis** should be pre-filled.

- Confirm the **Region** is **us-central1**.
- Click **Save** in the dialog.

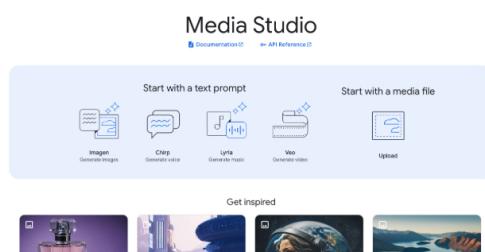
Note: After clicking **Save**, allow a few moments for the prompt to be saved before proceeding if you were to navigate away immediately.

Click **Check my progress** to verify the objectives.



Beyond text, Vertex AI Studio offers powerful tools for generating various media types directly from text prompts or by refining existing media. In this task, you'll explore generating images, videos, and voice.

- Ensure you are in **Vertex AI Studio**. If you're not already there, navigate from the **Navigation menu** (≡) by selecting **Vertex AI > Vertex AI Studio > Media Studio**. The page should resemble the following:





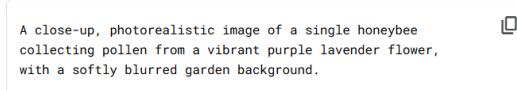
Generating an Image with Imagen

You'll start by generating an image.

1. On the Media Studio landing page, under the "Start with a text prompt" section, click on **Imagen - Generate images**.

The screenshot shows the Media Studio interface. On the left, there's a text input field with placeholder text "Submit a text prompt to generate images Or upload an image for more actions." Below it is a "Write your prompt, or create one with Help me write" button. On the right, the "Settings" panel is open, showing the "Model" set to "Imagen 3". It includes sections for "Aspect ratio" (with 1:1 selected), "Number of results" (set to 4), "Safety" (Person generation set to "Allow (Adults only)", Safety filter threshold set to "Block few"), and "Advanced options". A note at the bottom says "Model may output inaccurate or offensive imagery that doesn't represent Google's views." and a "Report inappropriate content" link.

2. In the text prompt area at the bottom, enter a descriptive prompt. For example:



3. In the **Settings** panel on the right:

- Ensure the **Model** is set to **Imagen 4** (or the latest available Imagen model).

- For **Aspect ratio**, select **1:1**.
- Set **Number of results** to **4** for this first generation.
- Review the **Safety** settings (e.g., Person generation, Safety filter threshold) and leave them at their defaults or adjust as preferred for this non-person-focused prompt.

4. Click the **Submit** button at the bottom right of the prompt area.

5. After a few moments, your generated images will appear in the main area.

6. Click on one of the generated image thumbnails to open the detail view.

The screenshot shows the generated image detail view. At the top, there's a "Image" tab and a close button. Below it is a large thumbnail of a honeybee on a lavender flower. To the right, the "Image details" pane is open, showing a green checkmark for "SynthID detected". Under "AI actions", there's an "Inpaint" button. Below the image, there's a smaller thumbnail of the same scene. At the bottom, there's an "Export image" button with a note about optional upscaling, and a row of four small thumbnail images.

7. In the **Image details** pane on the right:

- Observe the available **AI actions** such as **Inpaint** (to add/remove elements using a mask), **Outpaint** (to extend the image), and **Export image** (which may offer upscaling).
- Notice if **SynthID detected** is displayed with a green checkmark.
- (Optional): select one of the options **Inpaint** or **Outpaint** and play

around with them to see the capabilities of Imagen.

What is SynthID?

watermark directly into the pixels of AI-generated images. This watermark is designed to be imperceptible to the human eye but detectable by an algorithm. Its purpose is to help identify images as AI-generated, promoting transparency and responsible AI practices, even if the image is later modified (e.g., compressed, filtered).

Generating a Video with Veo

Next, you'll generate a short video. You'll use the quick navigation toolbar within the Media Studio tools.

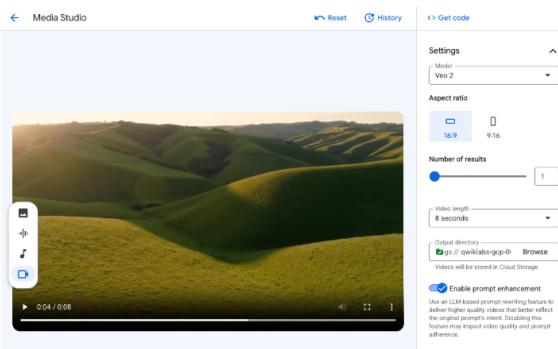
1. In the small vertical toolbar on the far left of the page (with icons for different media types: image, audio, music, video), click the **video icon** (it looks like a video camera) to switch to the video generation tool. This opens the Veo interface.
2. In the text prompt area at the bottom, enter a prompt for a short video. For example:

Drone shot slowly flying over vast green hills at golden hour.

- Ensure the **Model** is set to **Veo 2** (or the latest available Veo model).
- Set the **Aspect ratio** to **16:9**.
- Keep **Number of results** at **1**.
- Set **Video length** to **5 seconds** (or a similar short duration).
- For **Output directory**, click **Browse**.
 - If your project's bucket (`qwiklabs-gcp-03-2b41a84a0659-bucket`) is listed, select it.
 - If not, or if you need to specify the path, you might need to type `gs://qwiklabs-gcp-03-2b41a84a0659-bucket/` (ensure the trailing slash) or use the navigation to find your bucket.
- Click **Select** to confirm the output directory.
- Ensure **Enable prompt enhancement** is checked.

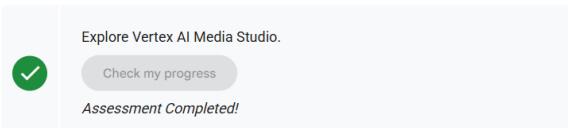
4. Click the **Submit** button.

5. Video generation can take longer than image generation. Once ready, the video will appear and you should be able to play it within the interface.



like adding a soundtrack or a voiceover.

Click **Check my progress** to verify the objectives.



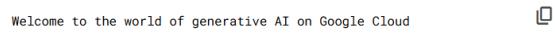
Generating Voice with Chirp (Optional)

If you wish to explore AI-generated voice:

1. In the small vertical toolbar on the far left, click the **Audio icon** (it looks like a microphone) to switch to the voice generation tool. This opens the Chirp interface.

2. You might be prompted to enable the **Cloud Text-to-Speech API** if it's not enabled (this might take a moment).

3. Once the interface is ready, in the text prompt area at the bottom, enter the text you want to synthesize. For example:



4. In the **Settings** panel on the right:

- Select a **Model** (e.g., Chirp 3. HD Voices).
- Choose your desired **Language** (e.g., English (US)).
- Select a **Voice** from the dropdown list. You can try a few different ones to hear their characteristics.
- Explore any **Advanced options** if available and desired.

5. Click the **Submit** button.

6. After processing, you should be able to play the generated audio directly in the

Congratulations!

Congratulations! In this lab, you successfully navigated Vertex AI Studio to prototype a generative AI application for an insurance scenario, from initial design and deployment to advanced prompt engineering and comparison. You practiced refining text outputs for specific analytical tasks and explored the exciting multimodal capabilities for generating images, video, and voice. These foundational skills will empower you to build even more sophisticated generative AI solutions on Google Cloud.

Next steps / learn more

- Dive deeper into the capabilities of the generative AI models you explored (like Gemini for text and image analysis, Imagen, Veo, and Chiro) by visiting the official [Generative AI models documentation](#).
- Learn how to design prompts for better results by reading the [Prompt engineering guide](#) or the [Design strategies guide](#) for best practices and advanced techniques.
- Learn how to integrate and automate these generative AI functionalities into your applications by exploring the [Vertex AI SDKs documentation](#).
- Continue your learning journey with more [Generative AI labs and courses on Google Cloud Skills Boost](#).

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