



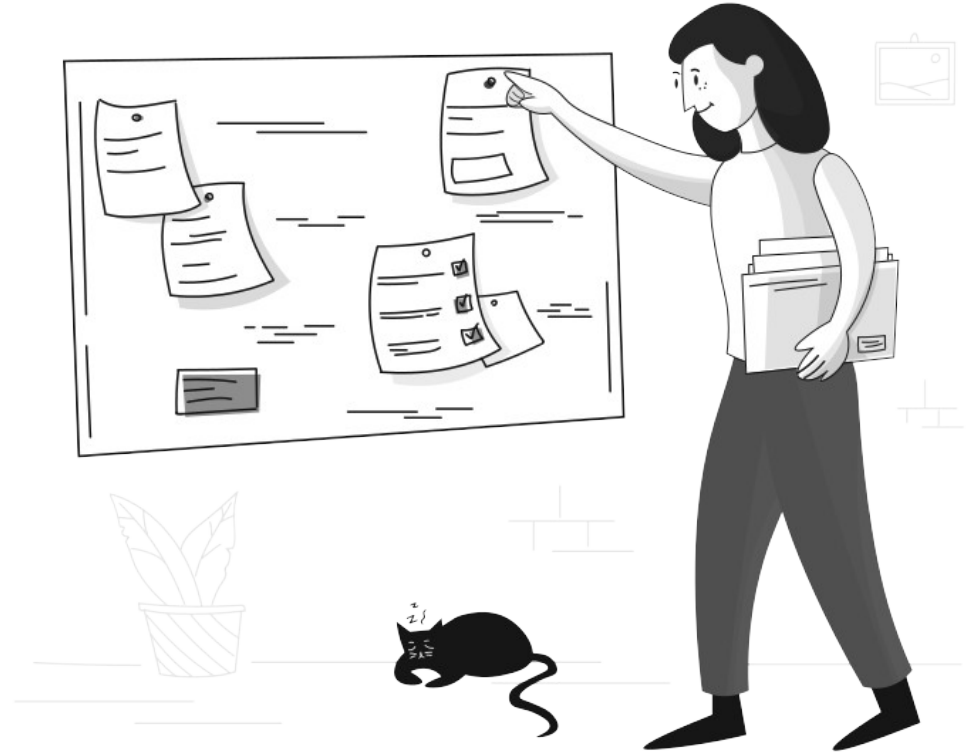
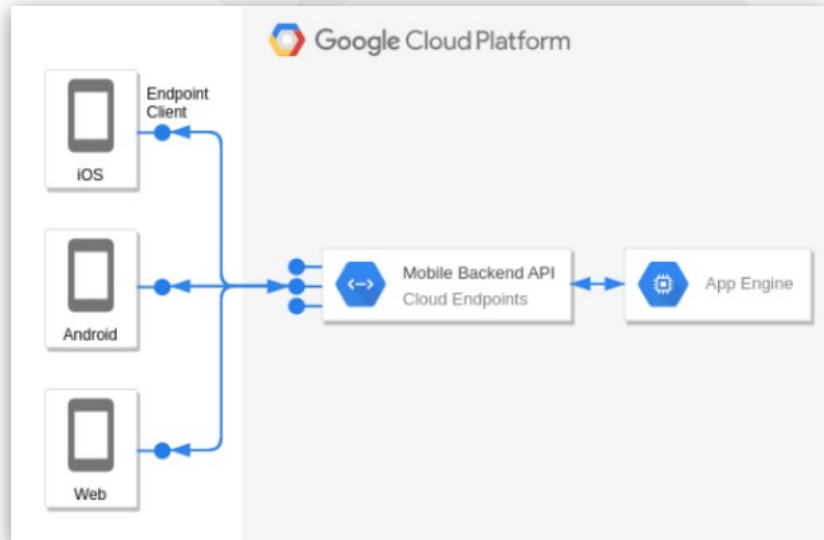
Desafío No. 7

Bootcamp DevOps 63703

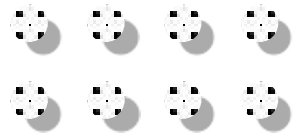
Presentado por:
Marco Vanegas
2023

Objetivos

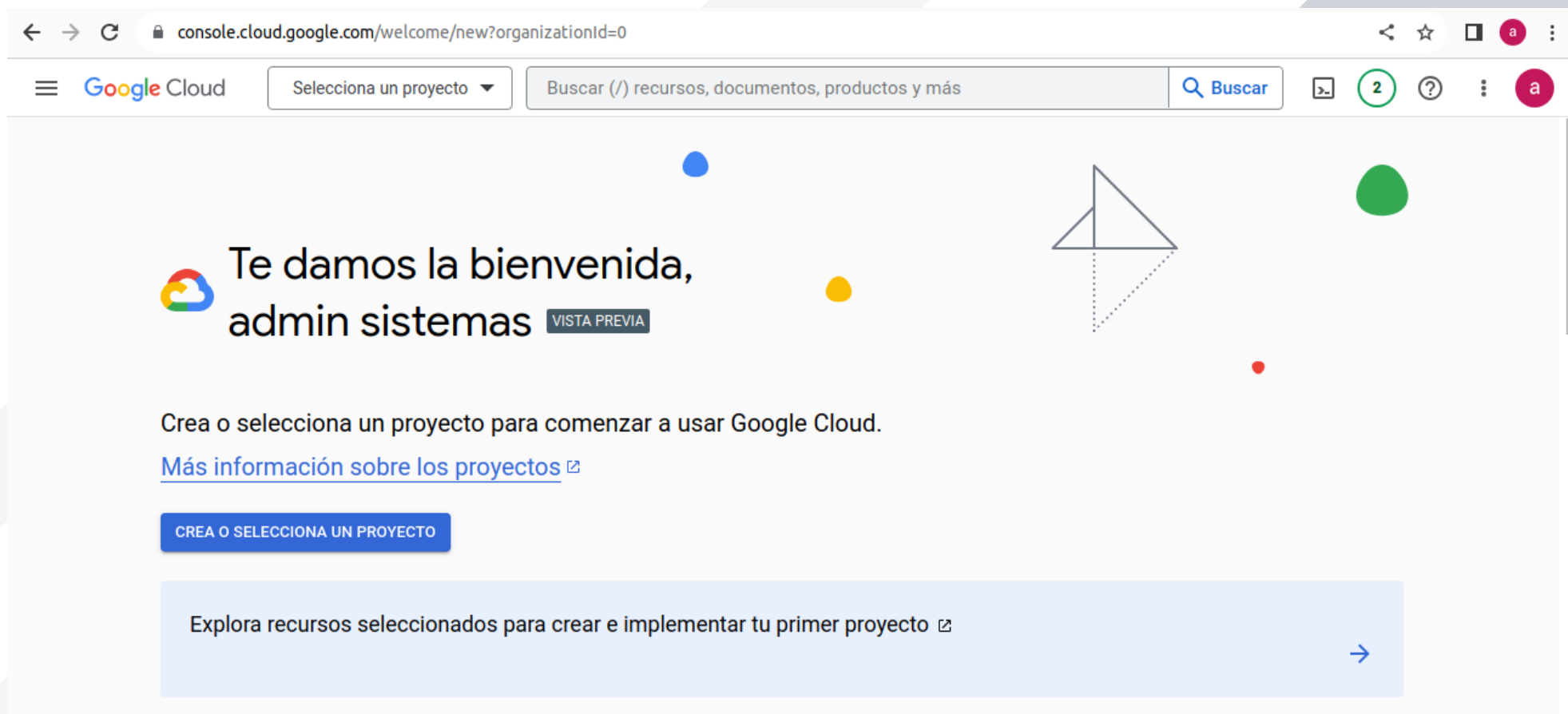
Se necesita crear una infraestructura como código que siga las directivas del siguiente diagrama:



Illustrations by [Pixeltrue](#) on [icons8](#)



1. Se crea una cuenta gratuita en Google Cloud.



The screenshot shows the Google Cloud console interface. At the top, the browser address bar displays 'console.cloud.google.com/welcome/new?organizationId=0'. Below the address bar, the Google Cloud logo is on the left, followed by a dropdown menu labeled 'Selecciona un proyecto'. To the right is a search bar with the placeholder text 'Buscar (/) recursos, documentos, productos y más' and a 'Buscar' button. Further right are icons for a code editor, a notification badge with the number '2', a help icon, and a user profile icon with the letter 'a'. The main content area features the Google Cloud logo, the text 'Te damos la bienvenida, admin sistemas', and a 'VISTA PREVIA' button. Below this, it says 'Crea o selecciona un proyecto para comenzar a usar Google Cloud.' followed by a link 'Más información sobre los proyectos'. A blue button labeled 'CREA O SELECCIONA UN PROYECTO' is positioned below the link. At the bottom, a light blue box contains the text 'Explora recursos seleccionados para crear e implementar tu primer proyecto' and a right-pointing arrow.

← → ↻ console.cloud.google.com/welcome/new?organizationId=0

Google Cloud Selecciona un proyecto Buscar (/) recursos, documentos, productos y más Buscar

Te damos la bienvenida,
admin sistemas **VISTA PREVIA**


Crea o selecciona un proyecto para comenzar a usar Google Cloud.

[Más información sobre los proyectos](#)

CREA O SELECCIONA UN PROYECTO

Explora recursos seleccionados para crear e implementar tu primer proyecto →


2. Se crea un nuevo proyecto.


 Google Cloud

Prueba321 ▼

Buscar (/) recursos, documentos, productos y más

Buscar






Te damos la bienvenida, admin sistemas

VISTA PREVIA

Ya activaste tu cuenta completa



Usa los créditos restantes y, luego, paga por lo que uses.



\$0 de \$300 créditos usados

Vence el 12 de diciembre de 2023


Estás trabajando en el proyecto [Prueba321](#) ?

Número: 522782385354  ID: prueba321-399000 

[Agregar personas a tu proyecto](#)

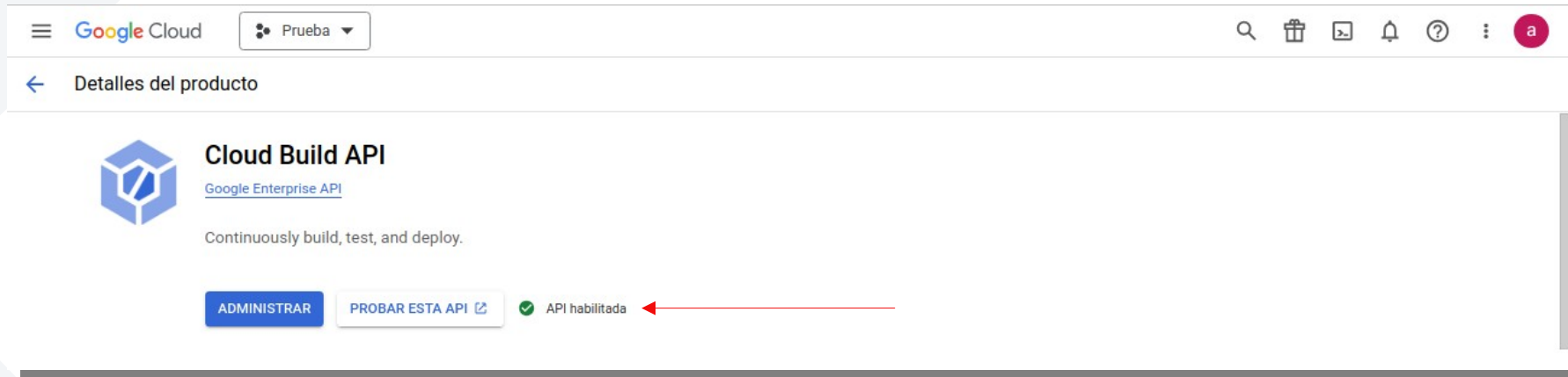
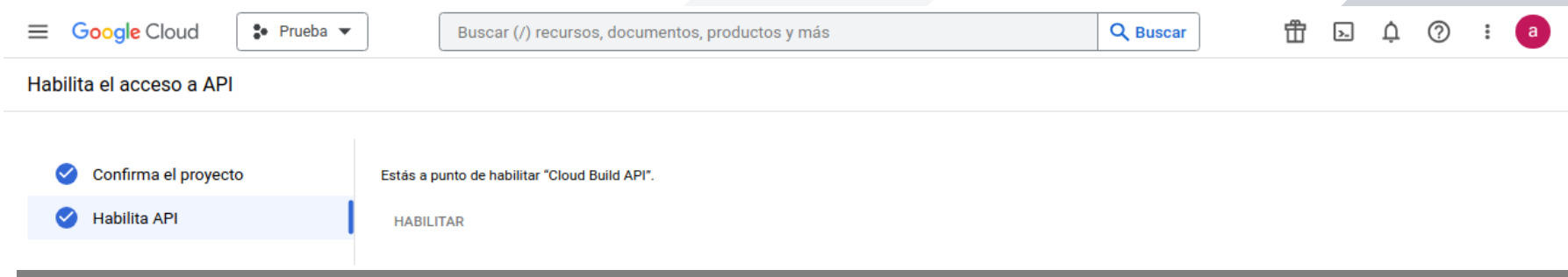
[Configurar alertas de presupuesto](#)

[Revisar la inversión en productos](#)

Explora recursos seleccionados para crear e implementar tu primer proyecto 

→

3. Se habilita Cloud Build API (cloudbuild.googleapis.com).



4. En el ambiente local se instala Google Cloud CLI (<https://cloud.google.com/sdk/docs/install-sdk?hl=es-419#deb>).

```
dev@dev-ThinkPad-T530: ~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7
dev@dev-ThinkPad-T530:~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7$ sudo apt-get update
[sudo] password for dev:
Hit:1 http://co.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://co.archive.ubuntu.com/ubuntu jammy-updates InRelease [119 kB]

dev@dev-ThinkPad-T530:~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7$ sudo apt-get install apt-transport-https ca-certificates gnupg curl sudo
Reading package lists... Done
Building dependency tree... Done

dev@dev-ThinkPad-T530:~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7$ echo "deb [signed-by=/usr/share/keyrings/cloud.google.gpg] https://packages.cloud.google.com/apt cloud-sdk main" | sudo tee -a /etc/apt/sources.list.d/google-cloud-sdk.list
deb [signed-by=/usr/share/keyrings/cloud.google.gpg] https://packages.cloud.google.com/apt cloud-sdk main

dev@dev-ThinkPad-T530:~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7$ curl https://packages.cloud.google.com/apt/doc/apt-key.gpg | sudo apt-key --keyring /usr/share/keyrings/cloud.google.gpg add -
% Total    % Received % Xferd  Average Speed   Time    Time     Current
                                 Dload  Upload   Total   Spent    Left     Speed
  0     0    0     0    0     0      0      0  --:--:-- --:--:-- --:--:--    0Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see apt-key(8)).
100 2659 100 2659    0     0 2191      0  0:00:01  0:00:01 --:--:-- 2192
OK

dev@dev-ThinkPad-T530:~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7$ sudo apt-get update && sudo apt-get install google-cloud-cli
Hit:1 http://co.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://co.archive.ubuntu.com/ubuntu jammy-updates InRelease
```

5. Se inicializa el SDK de Google Cloud, luego se realiza la autenticación mediante el navegador que se abre automáticamente.

```
dev@dev-ThinkPad-T530: ~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7
dev@dev-ThinkPad-T530:~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7$ gcloud init
Welcome! This command will take you through the configuration of gcloud.

Your current configuration has been set to: [default]

You can skip diagnostics next time by using the following flag:
  gcloud init --skip-diagnostics

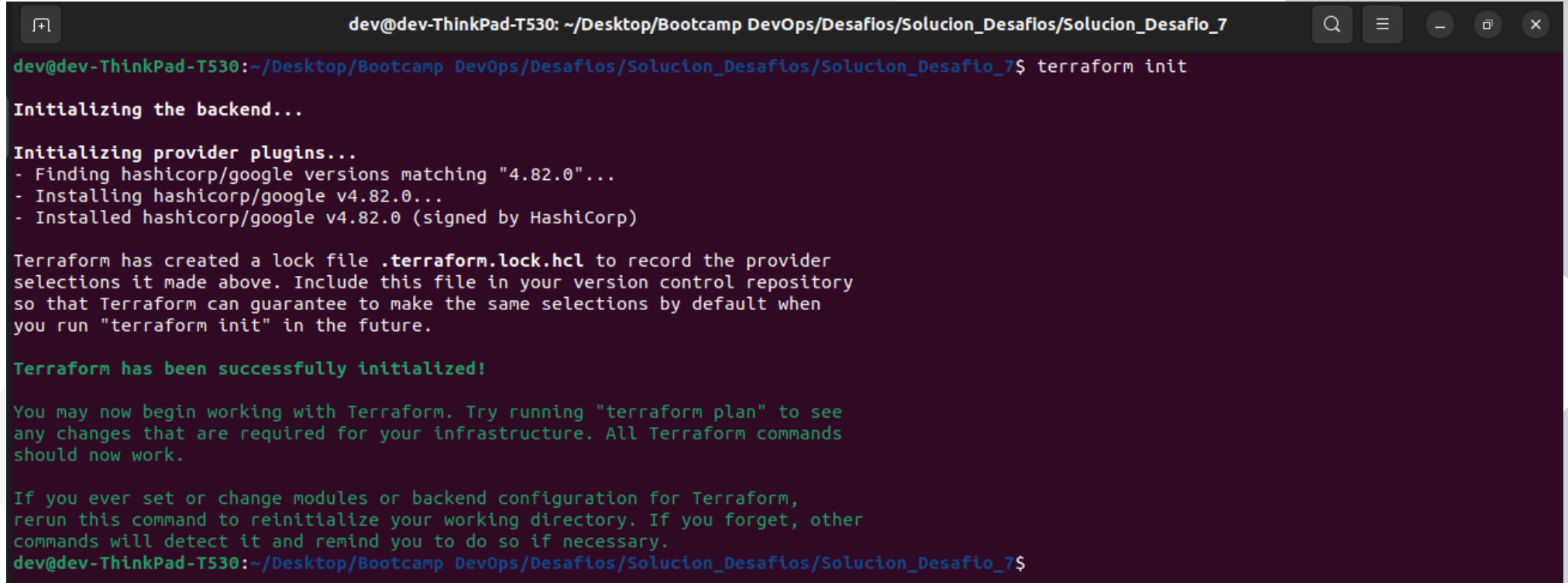
Network diagnostic detects and fixes local network connection issues.
Checking network connection...done.
Reachability Check passed.
Network diagnostic passed (1/1 checks passed).

You must log in to continue. Would you like to log in (Y/n)?  Y

Your browser has been opened to visit:

  https://accounts.google.com/o/oauth2/auth?response_type=code&client_id=32555940559.apps.googleusercontent.com&redirect_uri=http%3A%2F%2Flocalhost%3A8085%2F&scope=openid+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fuserinfo.email+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fcloud-platform+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fappengine.admin+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fsqlservice.login+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Fcompute+https%3A%2F%2Fwww.googleapis.com%2Fauth%2Faccounts.reauth&state=wmYiTI9T9UcIMY6vb0Qt4fzwGwL1ch&access_type=offline&code_challenge=jAaEY930eKRFYV7AxEYH7A10MW81dL6WbZgfuMc3_1A&code_challenge_method=S256
```

6. En esta parte, se inicializa Terraform (terraform init).

A terminal window with a dark background and light green text. The window title is 'dev@dev-ThinkPad-T530: ~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7'. The terminal shows the command 'terraform init' being executed. The output includes 'Initializing the backend...', 'Initializing provider plugins...', a list of actions for finding and installing the hashicorp/google provider v4.82.0, a message about creating a lock file, a confirmation of successful initialization, and instructions on how to use Terraform and when to rerun the init command.

```
dev@dev-ThinkPad-T530: ~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7$ terraform init

Initializing the backend...

Initializing provider plugins...
- Finding hashicorp/google versions matching "4.82.0"...
- Installing hashicorp/google v4.82.0...
- Installed hashicorp/google v4.82.0 (signed by HashiCorp)

Terraform has created a lock file .terraform.lock.hcl to record the provider
selections it made above. Include this file in your version control repository
so that Terraform can guarantee to make the same selections by default when
you run "terraform init" in the future.

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
dev@dev-ThinkPad-T530:~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7$
```


7. Ahora, se crea el plan de Terraform (terraform plan).

```
dev@dev-ThinkPad-T530: ~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7
+ resource "google_endpoints_service" "openapi_service" {
+   apis           = (known after apply)
+   config_id      = (known after apply)
+   dns_address    = (known after apply)
+   endpoints      = (known after apply)
+   id             = (known after apply)
+   openapi_config = <<-EOT
      swagger: "2.0"
      info:
        version: 1.0.0
        title: API Express Swagger 2.0
        description: Simple API with Express using Swagger 2.0
        host: api-name.endpoints.prueba-398917.cloud.goog
        schemes:
          - http
        paths:
          /:
            get:
              summary: Get greeting
              description: Returns a greeting "Hello World!"
              operationId: getGreeting
              responses:
                200:
                  description: Successful response
                  schema:
                    type: string
      EOT
+   project      = "prueba-398917"
+   service_name = "api-name.endpoints.prueba-398917.cloud.goog"
}

Plan: 2 to add, 0 to change, 0 to destroy.
```

Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now.

```
dev@dev-ThinkPad-T530:~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7$
```

8. A continuación, se crean los recursos en Google Cloud con Terraform (terraform apply), que son específicamente un **App Engine** y un **Cloud Endpoint**.

```
dev@dev-ThinkPad-T530: ~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7

    type: string
  EOT
+ project      = "prueba-398917"
+ service_name = "api-name.endpoints.prueba-398917.cloud.goog"
}

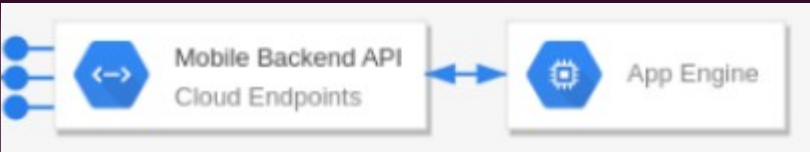
Plan: 2 to add, 0 to change, 0 to destroy.

Do you want to perform these actions?
  Terraform will perform the actions described above.
  Only 'yes' will be accepted to approve.

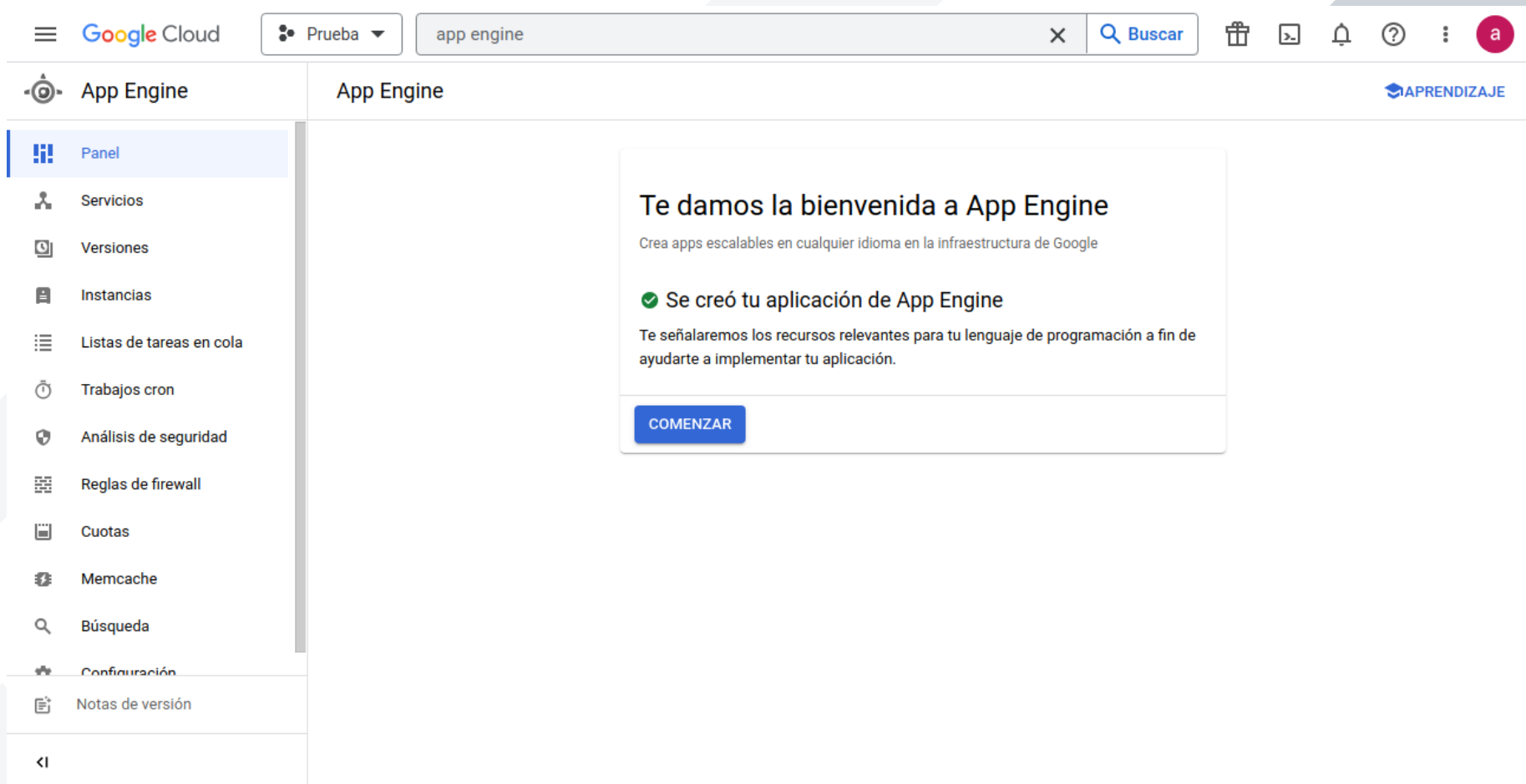
  Enter a value: yes

google_endpoints_service.openapi_service: Creating...
google_app_engine_application.app: Creating...
google_endpoints_service.openapi_service: Still creating... [10s elapsed]
google_app_engine_application.app: Still creating... [10s elapsed]
google_app_engine_application.app: Creation complete after 13s [id=prueba-398917]
google_endpoints_service.openapi_service: Still creating... [20s elapsed]
google_endpoints_service.openapi_service: Still creating... [30s elapsed]
google_endpoints_service.openapi_service: Still creating... [40s elapsed]
google_endpoints_service.openapi_service: Still creating... [50s elapsed]
google_endpoints_service.openapi_service: Still creating... [1m0s elapsed]
google_endpoints_service.openapi_service: Still creating... [1m10s elapsed]
google_endpoints_service.openapi_service: Still creating... [1m20s elapsed]
google_endpoints_service.openapi_service: Still creating... [1m30s elapsed]
google_endpoints_service.openapi_service: Still creating... [1m40s elapsed]
google_endpoints_service.openapi_service: Still creating... [1m50s elapsed]
google_endpoints_service.openapi_service: Still creating... [2m0s elapsed]
google_endpoints_service.openapi_service: Still creating... [2m10s elapsed]
google_endpoints_service.openapi_service: Still creating... [2m20s elapsed]
google_endpoints_service.openapi_service: Still creating... [2m30s elapsed]
google_endpoints_service.openapi_service: Still creating... [2m40s elapsed]
google_endpoints_service.openapi_service: Creation complete after 2m42s [id=api-name.endpoints.prueba-398917.cloud.goog]

Apply complete! Resources: 2 added, 0 changed, 0 destroyed.
dev@dev-ThinkPad-T530:~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7$
```



9. Se verifica la creación de **App Engine**.



The screenshot shows the Google Cloud App Engine console interface. At the top, the Google Cloud logo is on the left, and a search bar with 'app engine' is in the center. To the right of the search bar are icons for a gift, a terminal, a bell, a help icon, and a user profile icon with the letter 'a'. Below the top bar, the left sidebar contains a navigation menu with the following items: 'Panel' (highlighted), 'Servicios', 'Versiones', 'Instancias', 'Listas de tareas en cola', 'Trabajos cron', 'Análisis de seguridad', 'Reglas de firewall', 'Cuotas', 'Memcache', 'Búsqueda', 'Configuración', and 'Notas de versión'. The main content area is titled 'App Engine' and features a welcome message: 'Te damos la bienvenida a App Engine' followed by 'Crea apps escalables en cualquier idioma en la infraestructura de Google'. Below this, a green checkmark icon precedes the text 'Se creó tu aplicación de App Engine', followed by a paragraph: 'Te señalaremos los recursos relevantes para tu lenguaje de programación a fin de ayudarte a implementar tu aplicación.' At the bottom of this message box is a blue button labeled 'COMENZAR'. In the top right corner of the main content area, there is a blue link labeled 'APRENDIZAJE'.

Google Cloud

Prueba

app engine

Buscar

App Engine

APRENDIZAJE

Panel

Servicios

Versiones

Instancias

Listas de tareas en cola

Trabajos cron

Análisis de seguridad

Reglas de firewall

Cuotas

Memcache

Búsqueda

Configuración

Notas de versión

<

Te damos la bienvenida a App Engine

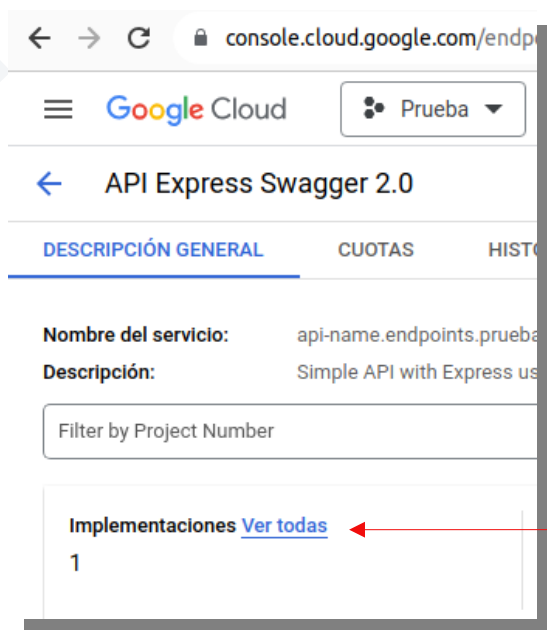
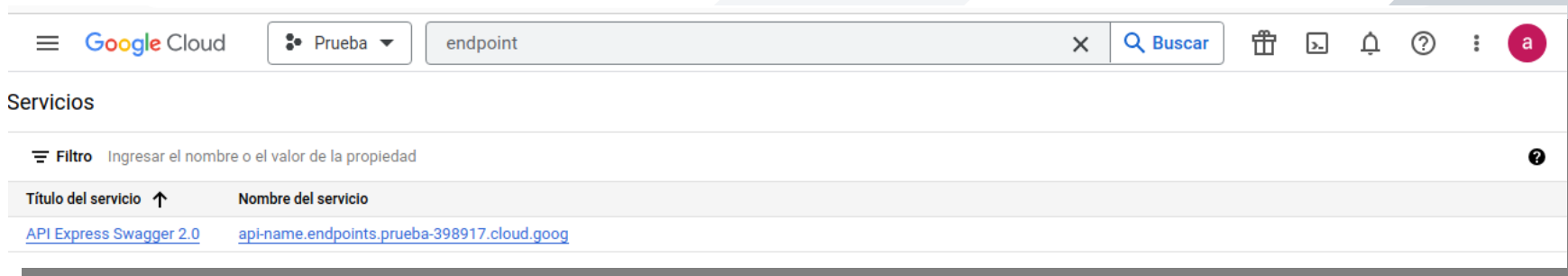
Crea apps escalables en cualquier idioma en la infraestructura de Google

✓ Se creó tu aplicación de App Engine

Te señalaremos los recursos relevantes para tu lenguaje de programación a fin de ayudarte a implementar tu aplicación.

COMENZAR

10. Se verifica la creación de un Cloud Endpoint con su respectiva especificación OpenAPI (Swagger).



Configuration Files

[COMPARE WITH PREVIOUS DEPLOYMENT](#)

```
1 swagger: "2.0"
2 info:
3   version: 1.0.0
4   title: API Express Swagger 2.0
5   description: Simple API with Express using Swagger 2.0
6   host: api-name.endpoints.prueba321-398923.cloud.goog
7   schemes:
8     - http
9     - https
10  paths:
11    /:
12      get:
13        summary: Get greeting
14        description: Returns a greeting "Hello World!"
15        operationId: getGreeting
16        responses:
```

11. En el directorio donde se encuentra la API, se crea el archivo app.yaml.

Referencia: <https://cloud.google.com/appengine/docs/flexible/reference/app-yaml>

```
! app.yaml M X
Solucion_Desafio_7 > api > ! app.yaml
1  # Copyright 2017, Google, Inc.
2  # Licensed under the Apache License, Version 2.0 (the "License");
3  # you may not use this file except in compliance with the License.
4  # You may obtain a copy of the License at
5  #
6  #   http://www.apache.org/licenses/LICENSE-2.0
7  #
8  # Unless required by applicable law or agreed to in writing, software
9  # distributed under the License is distributed on an "AS IS" BASIS,
10 # WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
11 # See the License for the specific language governing permissions and
12 # limitations under the License.
13
14 # [START gae_quickstart_yaml]
15 runtime: nodejs18
16 # [END gae_quickstart_yaml]
```

app.yaml especifica el entorno de ejecución que usa la app.

12. Luego se lleva a cabo el despliegue de la API (gcloud app deploy).

```
dev@dev-ThinkPad-T530: ~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7/api
dev@dev-ThinkPad-T530:~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7/api$ gcloud app deploy
Services to deploy:

descriptor:          [/home/dev/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7/api/app.yaml]
source:              [/home/dev/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7/api]
target project:      [prueba321-398923]
target service:      [default]
target version:      [20230913t183938]
target url:          [https://prueba321-398923.uc.r.appspot.com]
target service account: [prueba321-398923@appspot.gserviceaccount.com]

Do you want to continue (Y/n)? Y

Beginning deployment of service [default]...
Created .gcloudignore file. See `gcloud topic gcloudignore` for details.

[Progress bar: Uploading 5 files to Google Cloud Storage]

File upload done.
Updating service [default]...done.
Setting traffic split for service [default]...done.
Deployed service [default] to [https://prueba321-398923.uc.r.appspot.com]

You can stream logs from the command line by running:
$ gcloud app logs tail -s default

To view your application in the web browser run:
$ gcloud app browse
dev@dev-ThinkPad-T530:~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7/api$
```

* En el caso que se presenten inconvenientes con los permisos al ejecutar **gcloud app deploy**, una posible solución sería validar la asociación del usuario con el proyecto donde se desea hacer el despliegue. Para ello, se puede ejecutar **gcloud init**, el cual serviría tanto para comprobar los datos como para reiniciar o reconfigurar gcloud.

```
dev@dev-ThinkPad-T530: ~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7/api
dev@dev-ThinkPad-T530:~/Desktop/Bootcamp DevOps/Desafios/Solucion_Desafios/Solucion_Desafio_7/api$ gcloud init
Welcome! This command will take you through the configuration of gcloud.

Settings from your current configuration [default] are:
core:
  account: sistemas20170@gmail.com
  disable_usage_reporting: 'True'
  project: prueba321-398923

Pick configuration to use:
[1] Re-initialize this configuration [default] with new settings
[2] Create a new configuration
Please enter your numeric choice: ^[C

Command killed by keyboard interrupt
```

13. Finalmente, se comprueba el funcionamiento de la API.



Repositorio de GitHub donde se encuentra el código:

https://github.com/BambooThink/BootcampDevOps2023/tree/main/Solucion_Desafio_7