

Reporte de Validación y Pruebas Técnicas

Proyecto: User Management API

Entorno: Google Cloud Platform (Producción)

Candidato: Jordán Heredia

1. Pruebas de Integración Continua (CI/CD)

Se validó la automatización completa del despliegue mediante Cloud Build.

- Disparador: Push automático desde la rama `main` de GitHub.
 - Control de Calidad: El pipeline está configurado para abortar el despliegue si los tests unitarios fallan en el Paso 0.
 - Trazabilidad: Se implementó la opción `logging: CLOUD_LOGGING_ONLY` para auditoría completa de los pasos de compilación.

Evidencia:

```
Project: se-challenge
File: crud.py

def create_user(db: Session, user: schemas.UserCreate):
    db.add(user)
    db.commit()
    db.refresh(user)
    return user

def update_user(db: Session, user_id: int, user_update: schemas.UserUpdate):
    """Realiza una actualización parcial de un usuario existente."""
    db_user = get_user(db, user_id)
    if db_user:
        update_data = user_update.model_dump(exclude_unset=True)
        for key, value in update_data.items():
            setattr(db_user, key, value)
        db.commit()
        db.refresh(db_user)
    return db_user

def delete_user(db: Session, user_id: int) -> bool:
    """Elimina un usuario y retorna True si todo exito."""
    db_user = get_user(db, user_id)
    if db_user:
        db.delete(db_user)
        db.commit()
    return True
    return False

|***Comentario de prueba CI/CD***
```

Terminal Local Local (2)

```
(.venv) PS C:\Proyectos\Python\se-challenge> pytest
platform win32 -- Python 3.12.10, pytest-9.0.2, pluggy-1.6.0
rootdir: C:\Proyectos\Python\se-challenge
plugins: hypothesis-4.12.1
collected 7 items

test\test_users.py .....
```

7 passed in 1.20s [100%]

```
jorda@Jordan MINGW64 /c/Proyectos/Python/se-challenge (main)
$ git add app/crud.py

jorda@Jordan MINGW64 /c/Proyectos/Python/se-challenge (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.

Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    modified:   app/crud.py

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
    modified:   .idea/workspace.xml
    modified:   app/.__pycache__.crud.cpython-312.pyc
    modified:   test.db

jorda@Jordan MINGW64 /c/Proyectos/Python/se-challenge (main)
$ git commit -m "Commit de prueba y validación de pipeline"
[main a594142] Commit de prueba y validación de pipeline
 1 file changed, 3 insertions(+), 2 deletions(-)

jorda@Jordan MINGW64 /c/Proyectos/Python/se-challenge (main)
$ git push origin main
Enumerating objects: 7, done.
Counting objects: 100% (7/7), done.
Delta compression using up to 10 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (4/4), 406 bytes | 406.00 KiB/s, done.
Total 4 (delta 3), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (3/3), completed with 3 local objects.
To https://github.com/Jheredia123/SE_Challenger.git
  fd0936f..a594142 main -> main

jorda@Jordan MINGW64 /c/Proyectos/Python/se-challenge (main)
$ |
```

The screenshot shows the Google Cloud Build History page. The left sidebar has a 'Historial' tab selected. The main area displays a single build log entry:

Estado	Compilación	Región	Fuente	Ref	Confirmar	Nombre del activador	Fecha de creación	Duración	Estadísticas de s
<input type="checkbox"/>	55a420a4	global	Jheredia123/SE_Challeng...	main	a594142	deploy-user-api	18/2/26, 5:54 p.m.	13 s	—

The screenshot shows the Google Cloud Build details page for a build ID of 55a420a4-dff9-4bd9-a893-cc1f1da80b15. The build was initiated on February 18, 2026, at 5:54:54 p.m. The build status is active. The build summary indicates 4 steps completed in 00:02:20. The registration log shows the following steps:

```

1 starting build "55a420a4-dff9-4bd9-a893-cc1f1da80b15"
2
3 FETCHSOURCE
4 From https://github.com/Jheredia123/SE_Challenger
5 * branch           a5941421aa57425abcac14fa2d0fe2f92684 -> FETCH_HEAD
6 HEAD is now at a594142 Commit de prueba y validacion de pipeline
7 GitCommit:
8 a5941421aa57425abcac14fa2d0fe2f92684
9 BUILD

```

A red box highlights step 9: BUILD.

The screenshot shows the Google Cloud Build details page for a build ID of 55a420a4-dff9-4bd9-a893-cc1f1da80b15. The build was initiated on February 18, 2026, at 5:54:54 p.m. The build status is correct. The build summary indicates 4 steps completed in 00:04:36. The registration log shows the following steps:

```

1 Starting Step #0
2 Pulling image: python:3.12-slim
3 3.12-slim: Pulling from library/python
4 0e8d55a45c0d: Already exists
5 690eafffcf69: Pulling fs layer
6 9395e1d7be50: Pulling fs layer
7 4948ee383266: Pulling fs layer
8 690eafffcf69: Verifying Checksum
9 690eafffcf69: Download complete
10 4948ee383266: Verifying Checksum
11 4948ee383266: Download complete
12 9395e1d7be50: Verifying Checksum
13 9395e1d7be50: Download complete
14 690eafffcf69: Pull complete
15 9395e1d7be50: Pull complete
16 4948ee383266: Pull complete
17 Digest: sha256:9eb1bf1ae5db7649a236da7be1e94ffbbdd7a93f867dd8d85720d9ef89fab

```

A red box highlights step 825: DONE.

2. Pruebas Unitarias y de Integración (Backend)

Las pruebas se realizaron utilizando **Pytest** para asegurar la integridad de la lógica de negocio.

- Resultado: 7 tests pasados (100% de éxito).
- Casos de prueba:
 1. Creación de usuario con datos válidos.
 2. Validación de esquemas con Pydantic.

3. Persistencia de datos en base de datos.

The screenshot shows the PyCharm IDE interface. The left sidebar displays a project structure for a Python application named 'se-challenge'. The 'test' directory contains a file named 'testUsers.py'. The main editor window shows a portion of this test script. The code is written in Python and uses the pytest framework to test database interactions. It includes assertions for user creation and deletion. The bottom terminal window shows the command 'pytest' being run, and the output indicates 7 passed tests in 1.20s. The status bar at the bottom right shows the Python version as 3.12.10.

```
Project: se-challenge C:\Proyectos\Python\se-challenge
File: testUsers.py
117 def test_delete_user():
118     & Jordan
119     # Verificamos que no existe
120     verify_response = client.get(f"/users/{user_id}")
121     assert verify_response.status_code == 404
122
123 def test_create_user_duplicate_username():
124     & Jordan
125     """
126         Prueba que no se permite crear dos usuarios con el mismo username.
127         Debe retornar un error 400.
128     """
129
130     payload = {
131         "username": "duplicado",
132         "email": "original@ex.com",
133         "first_name": "Orig",
134         "last_name": "User",
135         "role": "user"
136     }
137
138     # Primer registro
139     client.post(url="/users/", json=payload)
140
141     # Segundo registro con el mismo username
142     payload["email"] = "otro@ex.com" # Cambiamos el email para evitar el error de username
143     response = client.post(url="/users/", json=payload)
144
145     assert response.status_code == 400
146     assert response.json()["detail"] == "El nombre de usuario ya está registrado."
147
148
149
150
151
152
153
154
```

```
(venv) PS C:\Proyectos\Python\se-challenge> pytest
=====
platform win32 -- Python 3.12.10, pytest-9.0.2, pluggy-1.6.0
rootdir: C:\Proyectos\Python\se-challenge
plugins: anyio-4.12.1
collected 7 items

test/test_users.py ......

===== 7 passed in 1.20s =====
[100%]
```

```
test> test > testUsers.py
```

3. Pruebas de Endpoints en Producción (E2E)

Una vez desplegado en **Cloud Run**, se verificaron los endpoints públicos.

The screenshot shows a detailed API documentation page for the 'User Management API'. At the top, it says 'User Management API 1.0.0 OAS 3.1'. Below this, there's a brief description: 'API robusta para la gestión de usuarios - Challenge Software Engineer'. The main content is organized under a 'default' section, which lists several endpoints:

- POST /users/** Create User
- GET /users/** Read Users
- GET /users/{user_id}** Read User
- PUT /users/{user_id}** Update User
- DELETE /users/{user_id}** Delete User

Below the endpoints, there's a 'Schemas' section which currently shows an 'HTTPValidationError' with an 'object' field. The entire page has a clean, modern design with a light blue header and white background.

Google Cloud advana-challenge-jordan

Cloud Run

Detalles del servicio

Servicio de actualización Ocultar estado

Actualizando el servicio Completado

Enrutando tráfico Completado

user-management-api Región: us-central1 URL: https://user-management-api-538368715894.us-central1.run.app Escalamiento: automático (mín.: 0, máx.: 20)

Observabilidad Revisiones Fuente Activadores Redes Seguridad YAML

Revisões Administrar el tráfico

Filtro Filtrar revisiones

Nombre	Traffic	Implementada	Acciones
user-management-api-00002-86r	100% (a la versión más reciente)	hace 9 minutos	⋮
user-management-api-00001-lzw	0%	hace 28 minutos	⋮

user-management-api-00002-86r

Implementación realizada por 538368715894-compute@developer.gserviceaccount.com using gcloud

Contenedores Redes Seguridad YAML

General

- Facturación Basada en solicitudes
- Aumento de CPU de inicio Habilitada
- Simultaneidad 80
- Tiempo de espera de la solicitud 300 seconds
- Entorno de ejecución Predeterminada

Escalado automático

- Cantidad máxima de instancias de revisión 20

Imagen us-central1-docker.pkg.dev/advana-challenge-jordan/cloud-run-source...

Puerto 8080

Compilación (no hay información disponible sobre la creación) ⋮

Fuente (no hay información disponible sobre la fuente) ⋮

Comandos y argumentos (punto de entrada del contenedor)

Límite de CPU 1

Límite de memoria 512MB

default

POST /users/ Create User

Crea un nuevo usuario validando que no existan duplicados.

Args: user (schemas.UserCreate): Datos del nuevo usuario. db (Session): Sesión de base de datos injectada.

Returns: schemas.User: El usuario creado exitosamente.

Raises: HTTPException: Si el username o email ya están registrados (400).

Parameters

No parameters

Request body (required)

application/json

```
{
  "username": "Jordán Heredia",
  "email": "jordan.heredia@gmail.com",
  "first_name": "Jordan",
  "last_name": "Heredia",
  "role": "admin",
  "active": true
}
```

Execute

Request URL

https://user-management-api-538368715894.us-central1.run.app/users/

Server response

Code Details

201 Response body

```
{
  "username": "Jordán Heredia",
  "email": "jordan.heredia@gmail.com",
  "first_name": "Jordan",
  "last_name": "Heredia",
  "role": "admin",
  "active": true,
  "id": 1,
  "created_at": "2026-02-18T21:14:22.283118",
  "updated_at": "2026-02-18T21:14:22.283125"
}
```

Download

Response headers

```
alt-svc: h3=":443"; ma=2592000,h3-29=:443; ma=2592000
content-length: 22
content-type: application/json
date: Wed, 18 Feb 2026 21:14:22 GMT
server: Google Frontend
x-cloud-trace-context: 28bbd1ce2259d519bbef76d78ec15b8;o=1
```

Responses

> ● 2026-02-18 18:08:32.776 CLST INFO: 169.254.169.126:38242 - "GET /users/?skip=0&limit=100 HTTP/1.1" 200 OK
> ● 2026-02-18 18:14:22.173 CLST POST 281 330 B 34 ms Chrome 144 https://user-management-api-538368715894.us-central1.run.app/users/
> ● 2026-02-18 18:14:22.193 CLST INFO: app.main:Intentando crear usuario: Jordán Heredia
> ● 2026-02-18 18:14:22.208 CLST INFO: 169.254.169.126:56446 - "POST /users/ HTTP/1.1" 201 Created
ⓘ No se encontraron entradas más recientes que coincidan con el filtro actual.

GET /users/ Read Users ^

Obtiene la lista de usuarios con soporte para paginación.

Parameters Cancel

Name	Description
skip integer (query)	0
limit integer (query)	100

Execute Clear

Responses

Curl

```
curl -X 'GET' \
  'https://user-management-api-538368715894.us-central1.run.app/users/?skip=0&limit=100' \
  -H 'accept: application/json'
```

Request URL

<https://user-management-api-538368715894.us-central1.run.app/users/?skip=0&limit=100>

Server response

Code	Details
200	Response body <pre>[{"username": "Jord\u00e1n Heredia", "email": "jord\u00e1nheredia@gmail.com", "first_name": "Jord\u00e1n", "last_name": "Heredia", "role": "admin", "is_active": true, "id": 1, "created_at": "2026-02-18T21:14:22.203118", "updated_at": "2026-02-18T21:14:22.203125"}]</pre> Download
	Response headers <pre>alt-svc: h3=":443"; ma=2592000,h3-29=":443"; ma=2592000 content-length: 231 content-type: application/json date: Fri, 18 Feb 2026 21:16:45 GMT server: Google Frontend x-cloud-trace-context: 7356eb155b4683fbe8cad62f0f4c98f18;o=1</pre>

Responses

Code	Description	Links
200	Successful Response	No links

GET /users/{user_id} Read User

Obtiene un usuario específico por su ID único.

Parameters

Name	Description
user_id * required integer (path)	1

Execute **Cancel** **Clear**

Responses

Curl

```
curl -X 'GET' \
'https://user-management-api-538368715894.us-central1.run.app/users/1' \
-H 'accept: application/json'
```

Request URL

<https://user-management-api-538368715894.us-central1.run.app/users/1>

Server response

Code	Details
200	Response body <pre>{ "username": "Jordán Heredia", "email": "jordan.heredia@gmail.com", "first_name": "Jordán", "last_name": "Heredia", "role": "admin", "active": true, "id": 1, "created_at": "2026-02-18T21:14:22.203118", "updated_at": "2026-02-18T21:14:22.203125" }</pre> <div style="text-align: right;"> Copy Download </div> Response headers <pre>alt-svc: h3=::443; ma=2592000,h3-29=::443; ma=2592000 content-length: 229 content-type: application/json date: Wed, 18 Feb 2026 21:18:30 GMT server: Google Frontend x-cloud-trace-context: fec1f047fec3730eadae318acccdf6df9;o=1</pre>

Responses

Code	Description	Links
200	Successful Response	No links

Media type

application/json

Controls Accept header.

[Example Value](#) [Schema](#)

```
{
  "username": "string",
  "email": "user@example.com",
  "first_name": "string",
```

Logs

```
> ⓘ 2026-02-18 18:14:22.193 CLST INFO:app.main:Intentando crear usuario: Jordán Heredia
> ⓘ 2026-02-18 18:14:22.208 CLST INFO: 169.254.169.126:56446 - "POST /users/ HTTP/1.1" 201 Created
> ⓘ 2026-02-18 18:16:45.859 CLST GET 200 332 B 5 ms Chrome 144 https://user-management-api-538368715894.us-central1.run.app/users/?skip=0&limit=100
> ⓘ 2026-02-18 18:16:45.865 CLST INFO: 169.254.169.126:28276 - "GET /users/?skip=0&limit=100 HTTP/1.1" 200 OK
> ⓘ 2026-02-18 18:18:30.618 CLST GET 200 330 B 6 ms Chrome 144 https://user-management-api-538368715894.us-central1.run.app/users/1
> ⓘ 2026-02-18 18:18:30.626 CLST INFO: 169.254.169.126:44906 - "GET /users/1 HTTP/1.1" 200 OK
```

PUT /users/{user_id} Update User

Actualiza parcialmente los datos de un usuario existente.

Parameters

Name	Description
user_id <small>* required</small>	integer (path)
	1

Request body required

application/json

Edit Value | Schema

```
{
  "username": "Jordán Heredia González",
  "email": "jordan.heredia@gmail.com",
  "first_name": "Jordan",
  "last_name": "Heredia",
  "role": "admin",
  "active": true
}
```

Execute

Responses

Request URL

<https://user-management-api-538368715894.us-central1.run.app/users/1>

Server response

Code	Details
200	Response body <pre>{ "username": "Jordán Heredia González", "email": "jordan.heredia@gmail.com", "first_name": "Jordan", "last_name": "Heredia", "role": "admin", "active": true, "id": 1, "created_at": "2026-02-18T21:14:22.203118", "updated_at": "2026-02-18T21:22:04.270149" }</pre> <p>Copy Download</p> Response headers <pre>alt-svc: h3=":443"; ma=2592000,h3-29=":443"; ma=2592000 content-length: 239 content-type: application/json date: Wed, 18 Feb 2026 21:22:04 GMT server: Google Frontend x-cloud-trace-context: 933020082c4378ebfc6c2f807f20dbbe;o=1</pre>

Responses	Code	Description	Links
	200	Successful Response	No links

Media type

application/json

Controls Accept header.

Example Value | Schema

```
{
  "username": "string",
  "email": "user@example.com",
  "first_name": "string",
  "last_name": "string",
  "role": "admin",
  "active": true,
  "id": 0,
  "created_at": "2026-02-18T21:22:04.659Z",
  "updated_at": "2026-02-18T21:22:04.659Z"
}
```

Detalles del servicio [Editar e implementar una nueva revisión](#) [Conectar al repositorio](#) [Probar](#) [Más información](#) [Actualizar](#)

user-management-api Región: us-central1 URL: <https://user-management-api-538368715894.us-central1.run.app> Escalamiento: automático (mín.: 0, máx.: 20)

Observabilidad [Revisores](#) [Fuente](#) [Activadores](#) [Redes](#) [Seguridad](#) [YAML](#)

Métricas **Registros** Gravedad: Predefinido Filtro: Buscar en todos los campos y valores

Registros Resumen

SLO

Errores

```
> ⓘ 2026-02-18 18:01:45.743 CLST GET 403 0 B 0 ms Chrome 144 https://user-management-api-538368715894.us-central1.run.app/favicon.ico
> ⓘ 2026-02-18 18:03:11.810 CLST GET 403 0 B 0 ms Chrome 144 https://user-management-api-538368715894.us-central1.run.app/docs
> ⓘ 2026-02-18 18:03:12.194 CLST GET 403 0 B 0 ms Chrome 144 https://user-management-api-538368715894.us-central1.run.app/favicon.ico
> ⓘ 2026-02-18 18:03:15.765 CLST GET 403 0 B 0 ms Chrome 144 https://user-management-api-538368715894.us-central1.run.app/docs
> ⓘ 2026-02-18 18:03:16.021 CLST GET 403 0 B 0 ms Chrome 144 https://user-management-api-538368715894.us-central1.run.app/favicon.ico
> ⓘ 2026-02-18 18:04:20.545 CLST Cloud Run ReplaceService user-management-api jordan.heredia@gmail.com {type: type.googleapis.com/google.cloud.audit.AuditLog, authenticationInfo: {}, authorizationInfo: {}}
> ⓘ 2026-02-18 18:04:22.886 CLST Cloud Run ReplaceService user-management-api {type: type.googleapis.com/google.cloud.audit.AuditLog, methodName: /Services.ReplaceService, resourceName: namespaces/advan...
> ⓘ 2026-02-18 18:04:26.190 CLST GET 200 1.1 KB 3 ms Chrome 144 https://user-management-api-538368715894.us-central1.run.app/docs
> ⓘ 2026-02-18 18:04:26.196 CLST INFO: 169.254.169.126:30240 - "GET /docs HTTP/1.1" 200 OK
> ⓘ 2026-02-18 18:04:26.643 CLST GET 200 5.59 KB 48 ms Chrome 144 https://user-management-api-538368715894.us-central1.run.app/openapi.json
> ⓘ 2026-02-18 18:04:26.699 CLST INFO: 169.254.169.126:24822 - "GET /openapi.json HTTP/1.1" 200 OK
> ⓘ 2026-02-18 18:08:32.749 CLST GET 200 101 B 34 ms Chrome 144 https://user-management-api-538368715894.us-central1.run.app/?skip=0&limit=100
> ⓘ 2026-02-18 18:08:32.776 CLST INFO: 169.254.169.126:30242 - "GET /users/?skip=0&limit=100 HTTP/1.1" 200 OK
> ⓘ 2026-02-18 18:14:22.179 CLST POST 201 330 B 34 ms Chrome 144 https://user-management-api-538368715894.us-central1.run.app/users/
> ⓘ 2026-02-18 18:14:22.193 CLST INFO:app.main:Intentando crear usuario: Jordán Heredia
> ⓘ 2026-02-18 18:14:22.298 CLST INFO: 169.254.169.126:56446 - "POST /users/ HTTP/1.1" 201 Created
> ⓘ 2026-02-18 18:16:45.859 CLST GET 200 332 B 5 ms Chrome 144 https://user-management-api-538368715894.us-central1.run.app/users/?skip=0&limit=100
> ⓘ 2026-02-18 18:16:45.865 CLST INFO: 169.254.169.126:28276 - "GET /users/?skip=0&limit=100 HTTP/1.1" 200 OK
> ⓘ 2026-02-18 18:18:38.618 CLST GET 200 339 B 6 ms Chrome 144 https://user-management-api-538368715894.us-central1.run.app/users/
> ⓘ 2026-02-18 18:18:38.626 CLST INFO: 169.254.169.126:44996 - "GET /users/1 HTTP/1.1" 200 OK
> ⓘ 2026-02-18 18:22:04.259 CLST PUT 200 346 B 11 ms Chrome 144 https://user-management-api-538368715894.us-central1.run.app/users/1
> ⓘ 2026-02-18 18:22:04.264 CLST INFO:app.main:Actualizando usuario ID: 1
> ⓘ 2026-02-18 18:22:04.271 CLST INFO: 169.254.169.126:18402 - "PUT /users/1 HTTP/1.1" 200 OK
```

DELETE /users/{user_id} Delete User

Elimina permanentemente un usuario del sistema.

Parameters

Name	Description
user_id * required	integer (path)
	1

Responses

Code	Description	Links
204	Successful Response	No links
422	Validation Error	No links
	Media type: application/json	
	Example Value Schema	
	{ "detail": [{ "loc": ["string", 0], "msg": "string", "type": "string", "input": "string" }] }	
204	Successful Response	No links
422	Validation Error	No links
	Media type: application/json	
	Example Value Schema	
	{ "detail": [{ "loc": ["string", 0], "msg": "string", "type": "string", "input": "string", "ctx": {} }] }	

The screenshot shows the Google Cloud Logging interface for the 'user-management-api' service. At the top, it displays the service name, region (us-central1), URL (https://user-management-api-538368715894.us-central1.run.app), and automatic scaling configuration (min: 0, max: 20). Below this, there are tabs for Overview, Metrics, Log entries, Source, Fuel, Triggers, Networks, Security, and YAML. The Log entries tab is selected, showing a table of log entries. The table has columns for Severity, Time, Method, Path, Status, Duration, and Labels. The logs show various requests and responses, including successful GET requests for Swagger UI and user creation, and a successful DELETE request for a user.

Método	Endpoint	Resultado Esperado	Estado
GET	/docs	Carga de Swagger UI interactivo	EXITOSO
POST	/users	Creación de usuario (201 Created)	EXITOSO
GET	/users	Listado de usuarios registrados	EXITOSO

4. Evidencia de Logs (Cloud Observability)

Se confirmó el correcto funcionamiento de la API mediante el monitoreo de logs en la consola de Google Cloud.

- **Observación:** Las peticiones entrantes fueron procesadas correctamente por el servicio `user-management-api` en la región `us-central1`.
- **Estabilidad:** El historial de compilaciones muestra un estado final "Correcto" tras las correcciones de configuración de la cuenta de servicio.