

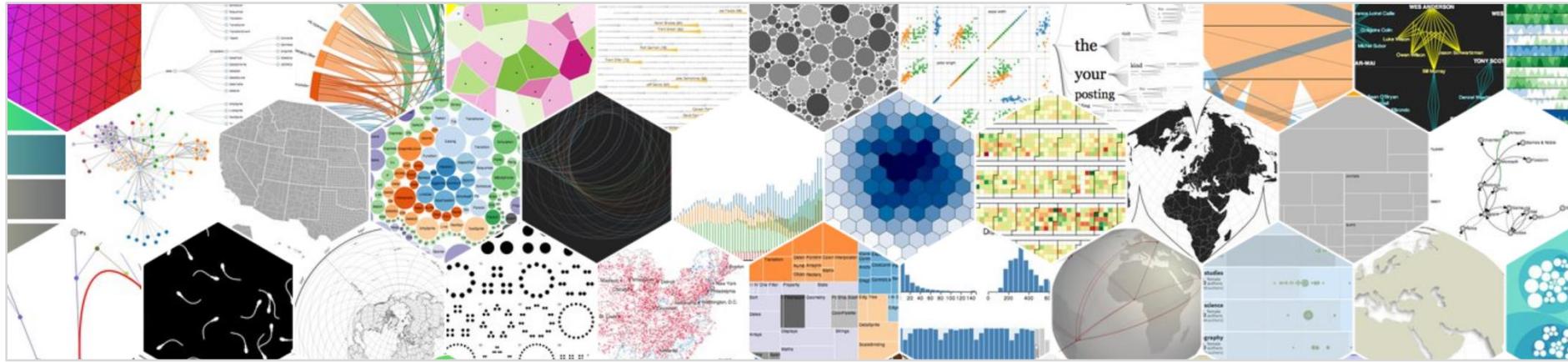


# Taller de Programación

## Clase 16

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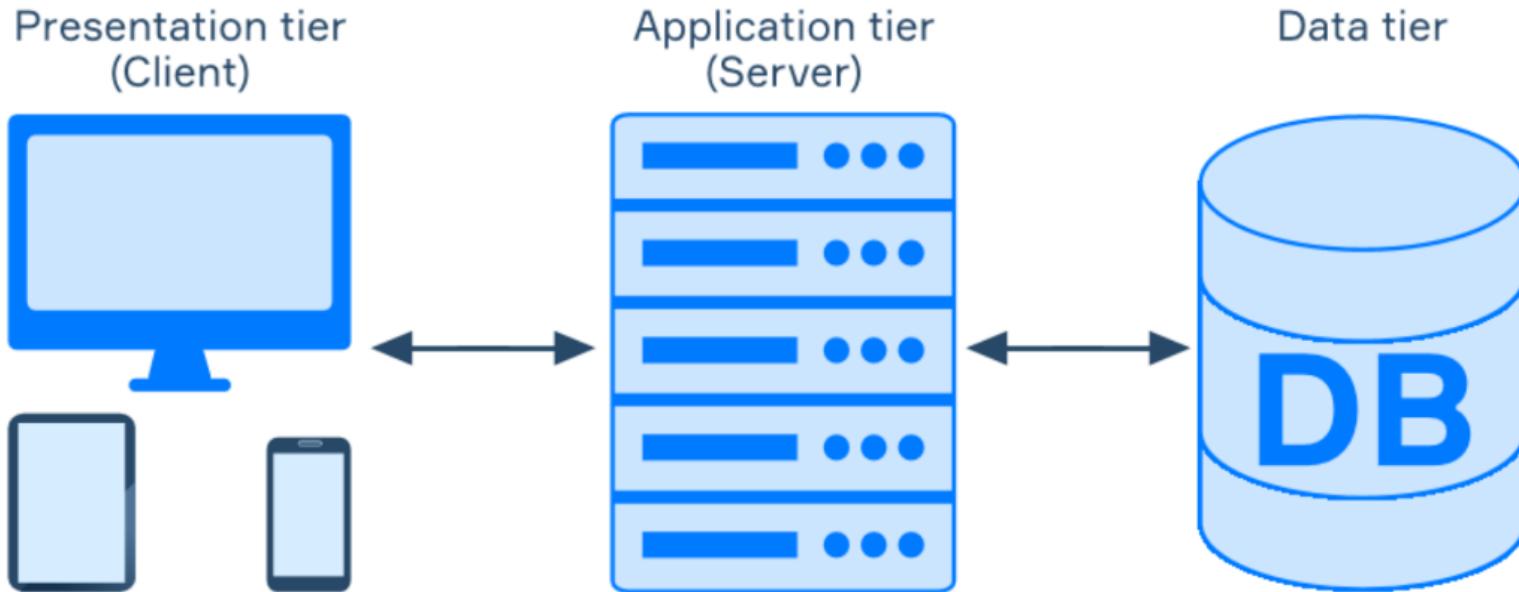
# Temario

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- Arquitecturas web en la Nube
- Implementación de Base de datos en la Nube
- Implementación de Backend en la Nube
- Conexión a Bases de Datos entre Nubes

# Arquitectura de tres niveles



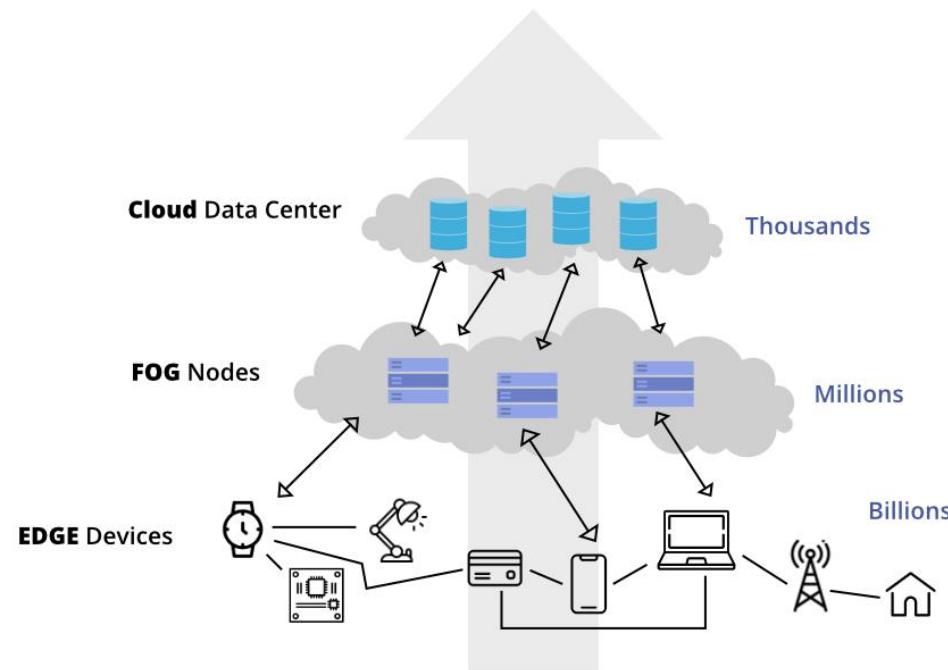
# Arquitecturas web en la Nube

- El "cloud computing" (computación en la nube) es la entrega de recursos informáticos por Internet, y en el desarrollo web, se refiere a utilizar estos servicios para crear, alojar y gestionar aplicaciones web.
  - Escalabilidad y flexibilidad
  - Reducción de costos
  - Innovación acelerada



# Arquitecturas web en la Nube

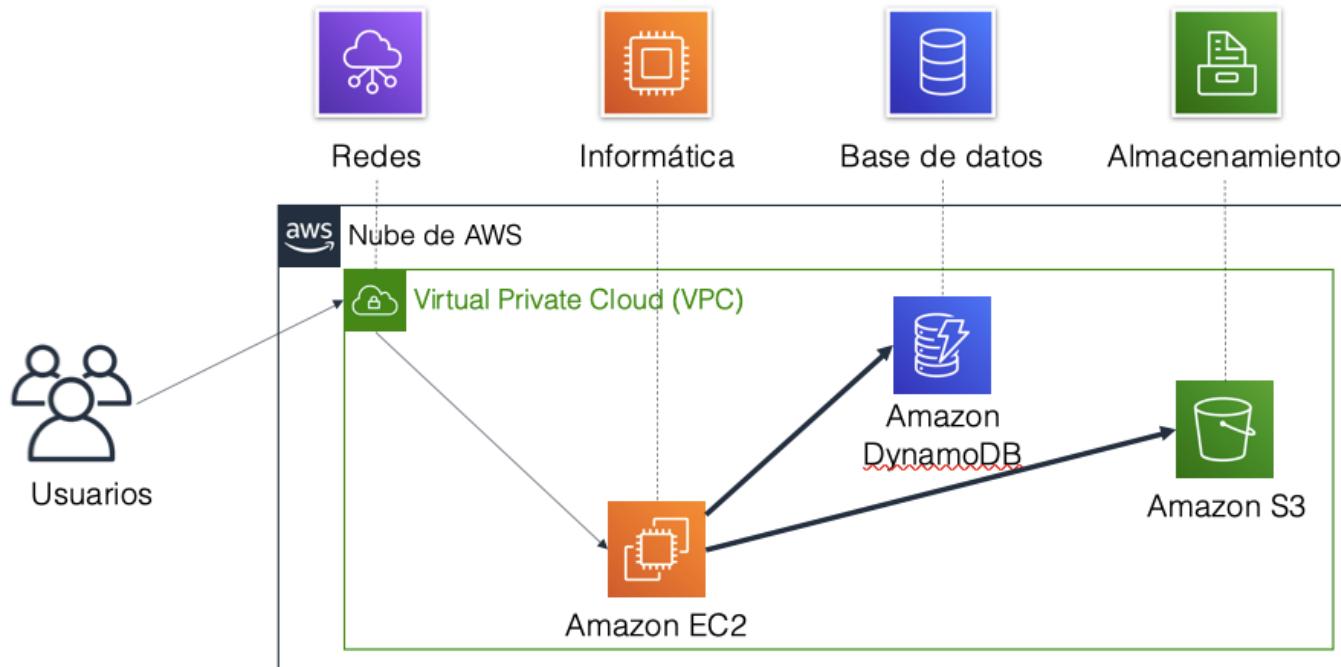
- Cada recurso está en una nube disponible a diferentes niveles de acceso y permite replicar la arquitectura web de 3 capas.
- La capa de Datos almacenada en una nube dedicada.
- La capa de Negocios almacenada en diferentes nodos.
- La capa de presentación es accedida desde internet.



# Arquitecturas web en la Nube

## ➤ Ejemplo AWS:

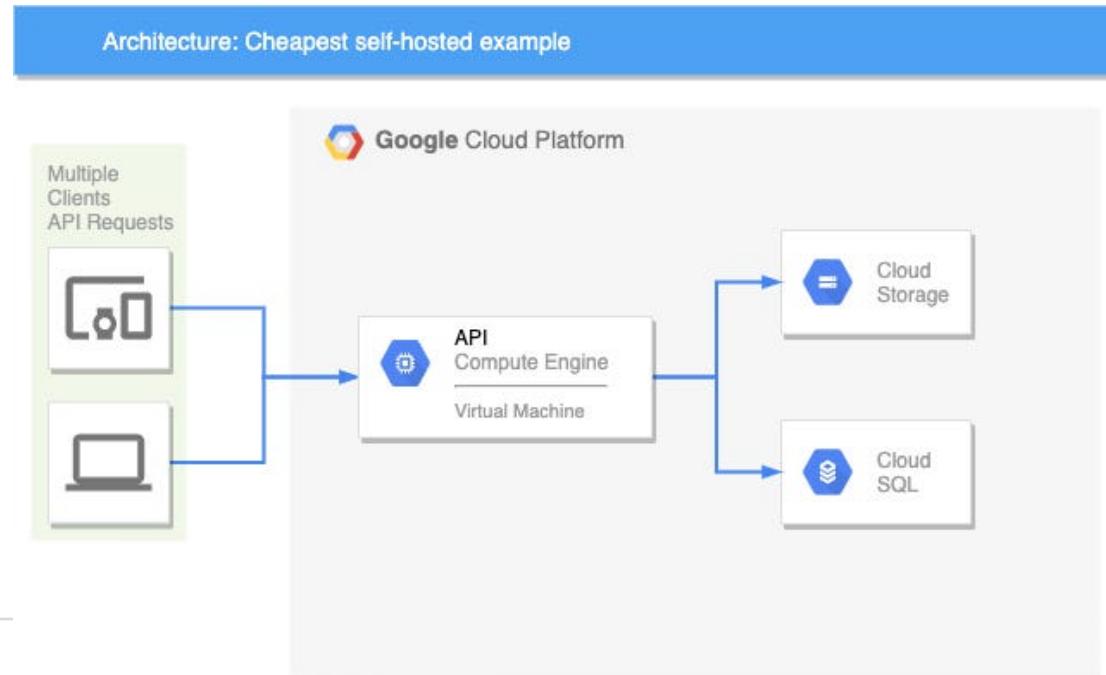
Ver calculadora de servicios: <https://calculator.aws>



# Arquitecturas web en la Nube

- Ejemplo GCP:

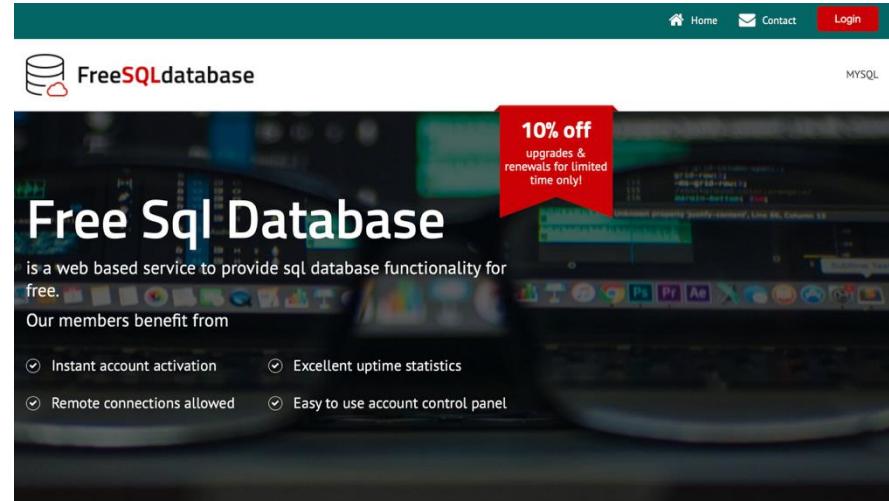
Ver calculadora de servicios: <https://cloud.google.com/products/calculator>



# Implementación de Base de datos en la Nube

- FreeSQLDatabase es una nube que tiene una opción gratuita suficiente para trabajar con una base de datos pequeña.
- Es ideal para presentar una Plataforma de prueba o Producto Mínimo Viable.
- Es compatible con los software clientes de bases de datos como MySQL Workbench.

<https://www.freesqldatabase.com>



The screenshot shows the homepage of FreeSQLDatabase. At the top, there is a navigation bar with links for Home, Contact, and Login. The main header reads "Free SQL Database". Below it, a sub-header states "is a web based service to provide sql database functionality for free.". A red banner on the right side offers "10% off upgrades & renewals for limited time only!". A list of benefits follows, each preceded by a checked checkbox:

- Instant account activation
- Excellent uptime statistics
- Remote connections allowed
- Easy to use account control panel

Welcome to FreeSQLdatabase

# Implementación de Base de datos en la Nube

- Crear una cuenta:
- Completa los datos
- Se creará la cuenta y se enviará un email con la confirmación de la cuenta.

*Most popular*

Prices	
<b>MySQL Free</b>	<b>MySQL Full</b>
<b>Free</b>	<b>\$21.15/£13.49/16,82€ per year</b>
Instant account activation	Instant account activation
Number of databases 1	Number of databases 5
Database Space Starting from 5MB	Database Space Starting from 100MB
phpMyAdmin	phpMyAdmin
Multiple Server Locations	30 day money back guarantee
24 hour support	Multiple Server Locations
24 hour support	24 hour support
<a href="#">Sign Up</a>	<a href="#">Sign Up</a>

 FreeSQLdatabase

### Register For This Site

Email

No soy un robot reCAPTCHA cumplirá sus Condiciones del Servicio. [Toma medidas.](#)  reCAPTCHA  
Privacidad - Condiciones

Registration confirmation will be emailed to you.

[Register](#)

Log in  
Lost your password?

 FreeSQLdatabase

MYSQL

New password  

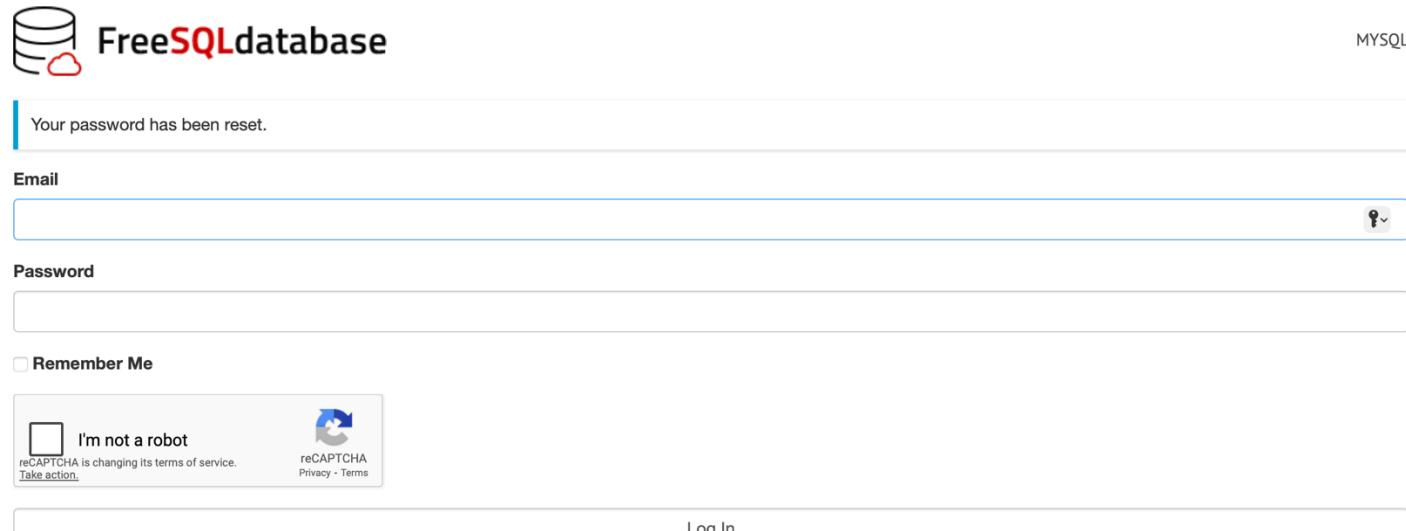
Confirm new password

Hint: The password should be at least twelve characters long. To make it stronger, use upper and lower case letters, numbers, and symbols like ! \* ? \$ % ^ & ).

[Save Password](#)

# Implementación de Base de datos en la Nube

- Ingresa a la plataforma:



Your password has been reset.

Email

Password

Remember Me

I'm not a robot reCAPTCHA is changing its terms of service. [Take action!](#)

Log In

Register  
Lost your password?

# Implementación de Base de datos en la Nube

- Configuración de la plataforma:



FreeSQLdatabase

MYSQL

## Registration

Thank you for registering for your free database. So we can provide a better service, please tell us where you are from

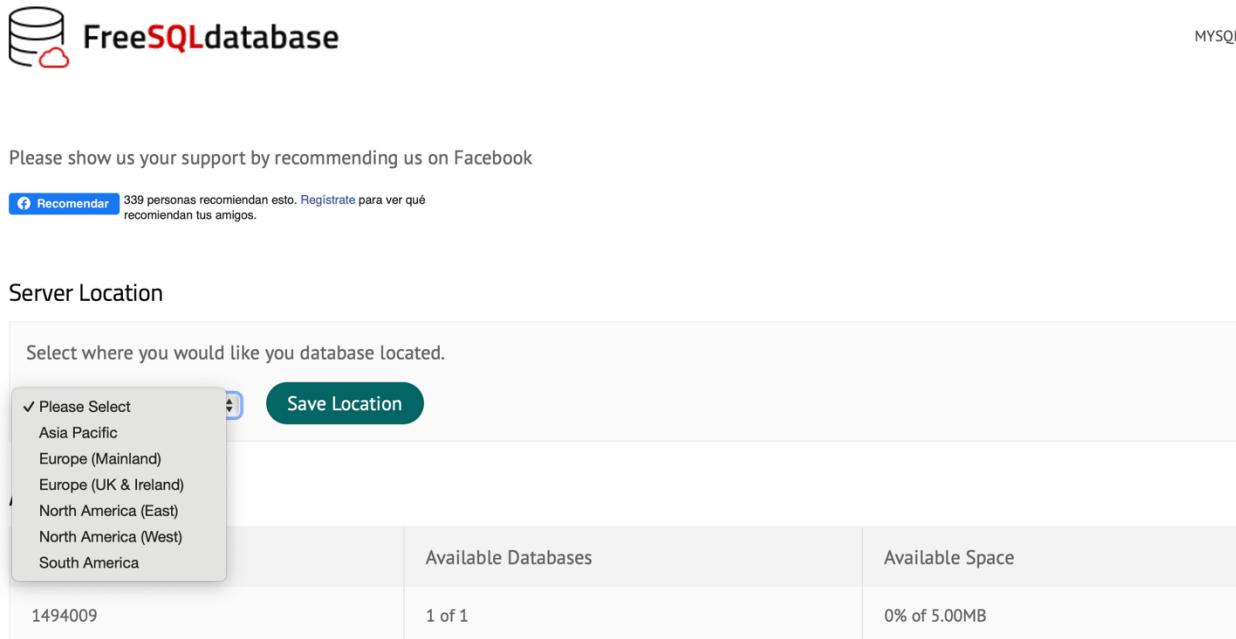


Complete my registration

Our monthly newsletter contains news, tutorials, special offers and more so uncheck this box to let us know you would not like to receive this?

# Implementación de Base de datos en la Nube

## ➤ Configuración de la plataforma:



The screenshot shows the FreeSQLdatabase configuration interface. At the top, there's a logo for "FreeSQLdatabase" with a red cloud icon. To the right, it says "MYSQL". Below the logo, there's a message: "Please show us your support by recommending us on Facebook" with a "Recomendar" button that says "339 personas recomiendan esto. [Regístrate para ver qué recomiendan tus amigos.](#)".

The main section is titled "Server Location" and contains the message: "Select where you would like your database located." A dropdown menu is open, showing options: "Please Select", "Asia Pacific", "Europe (Mainland)", "Europe (UK & Ireland)", "North America (East)", "North America (West)", and "South America". A "Save Location" button is next to the dropdown. Below this, there's a table with three columns: "Available Databases" and "Available Space". The table has two rows. The first row shows "1494009" in the first column, "1 of 1" in the second, and "0% of 5.00MB" in the third. The second row is partially visible.

# Implementación de Base de datos en la Nube

## ➤ Configuración de la plataforma:

### Database Details

Database Host	Database Name	Database Username	Database Password	Size	Status	Delete

[Start new database](#)

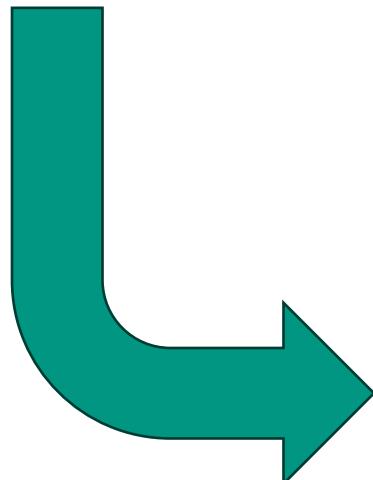
### Database Details

Database Host	Database Name	Database Username	Database Password	Size	Status	Delete
sql10.freesqldatabase.com	sql10806249	sql10806249	Check your emails	0.00MB	Live	<input type="checkbox"/>

[Delete database](#)

# Implementación de Base de datos en la Nube

- Configuración de la plataforma:
  - Se enviarán los datos al email para realizar la conexión al software de bases de datos.



Your Database is setup External Recibidos x

freesqldatabase.com <support@freesqldatabase.com>  
para mí ▾

Las imágenes de este mensaje están ocultas. Este mensaje parece sospechoso el mensaje.

[Mostrar imágenes](#) [Denunciar spam](#)

No se muestran las imágenes. [Mostrar las imágenes a continuación](#) -

Hi

Your account number is: 1493146

Your new database is now ready to use.

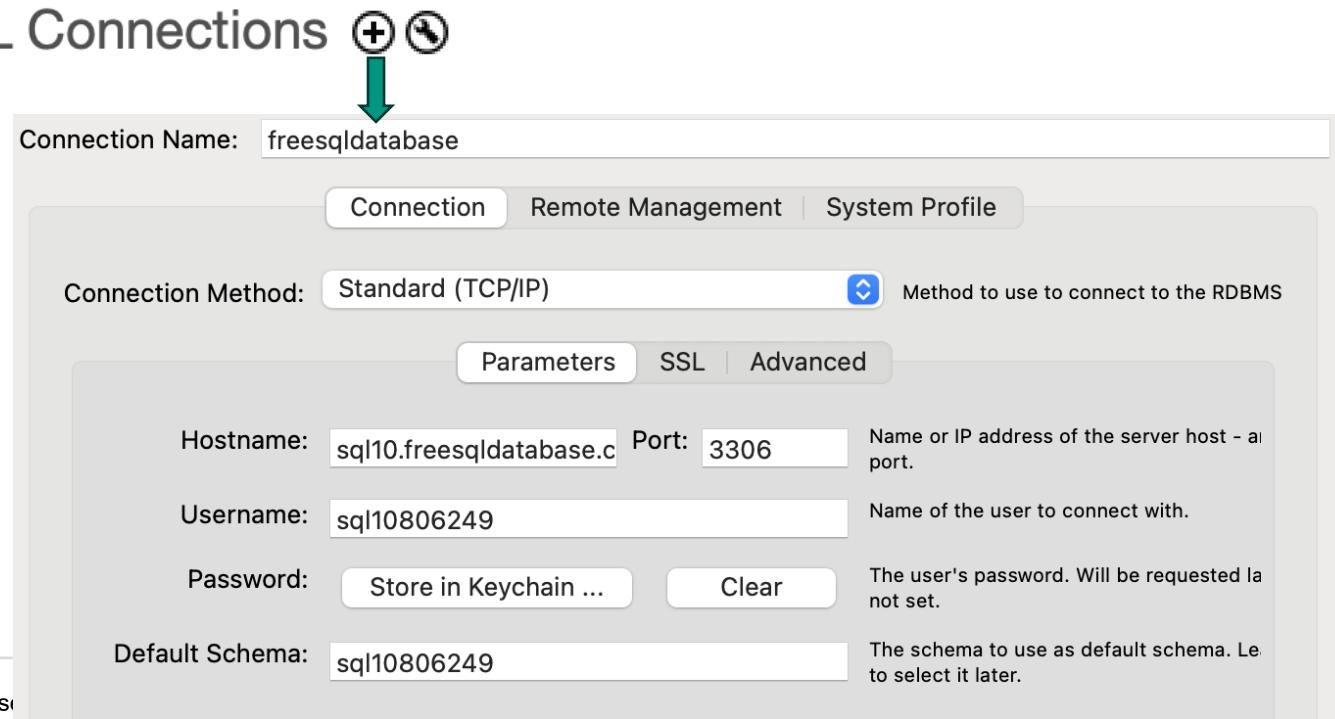
To connect to your database use these details;

**Host:** [sql10.freesqldatabase.com](http://sql10.freesqldatabase.com)  
**Database name:** sql10806249  
**Database user:** sql10806249  
**Database password:** 9vlKnyqvS1  
**Port number:** 3306

# Implementación de Base de datos en la Nube

- Configuración en MySQL Workbench:

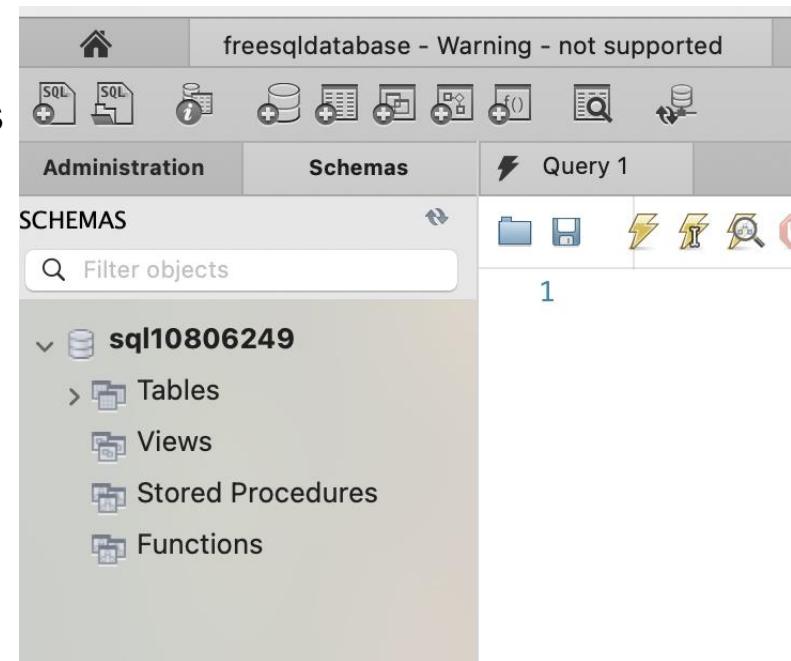
## MySQL Connections



A screenshot of the MySQL Workbench 'Connections' interface. A green arrow points from the 'Add connection' icon down to the 'Connection Name' field. The field contains the text 'freesqldatabase'. Below the field is a tab bar with 'Connection' selected, followed by 'Remote Management' and 'System Profile'. Underneath, the 'Connection Method' is set to 'Standard (TCP/IP)'. A tooltip for this field states: 'Method to use to connect to the RDBMS'. Below the method selection are three tabs: 'Parameters', 'SSL', and 'Advanced', with 'Parameters' currently active. The 'Parameters' section contains fields for 'Hostname' (set to 'sql10.freesqldatabase.c'), 'Port' (set to '3306'), 'Username' (set to 'sql10806249'), 'Password' (with options to 'Store in Keychain ...' or 'Clear'), and 'Default Schema' (set to 'sql10806249'). To the right of these fields are descriptive subtitles: 'Name or IP address of the server host - a port.', 'Name of the user to connect with.', 'The user's password. Will be requested if not set.', and 'The schema to use as default schema. Left to select it later.'

# Implementación de Base de datos en la Nube

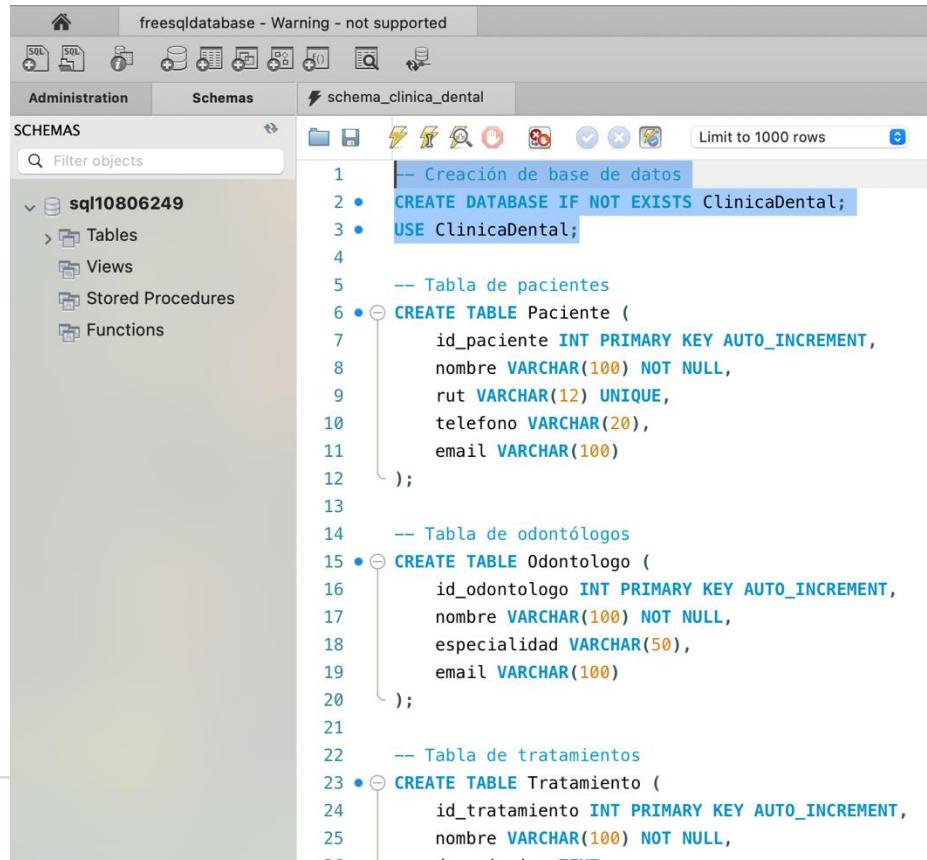
- Configuración en MySQL Workbench:
  - El servidor es accedido
  - Tiene restricción de creación de nuevos esquemas. (solo acepta 1 DB)
  - Se puede crear el esquema con el SQL y los datos de inserción.



# Implementación de Base de datos en la Nube

## ➤ Actividad 1:

- Crear esquema de base de datos de Clinica dental.
- Se deben eliminar las referencias a las creación de nueva DB.



The screenshot shows a SQL editor interface with the title "freesqldatabase - Warning - not supported". The left pane displays the "SCHEMAS" tree, which includes a schema named "sql10806249" containing "Tables", "Views", "Stored Procedures", and "Functions". The right pane shows the SQL code being typed into the editor. The code creates a database "ClinicaDental", selects it, and then defines three tables: "Paciente", "Odontologo", and "Tratamiento". Each table has an auto-incrementing primary key and specific column definitions for patient and treatment details.

```
-- Creación de base de datos
CREATE DATABASE IF NOT EXISTS ClinicaDental;
USE ClinicaDental;

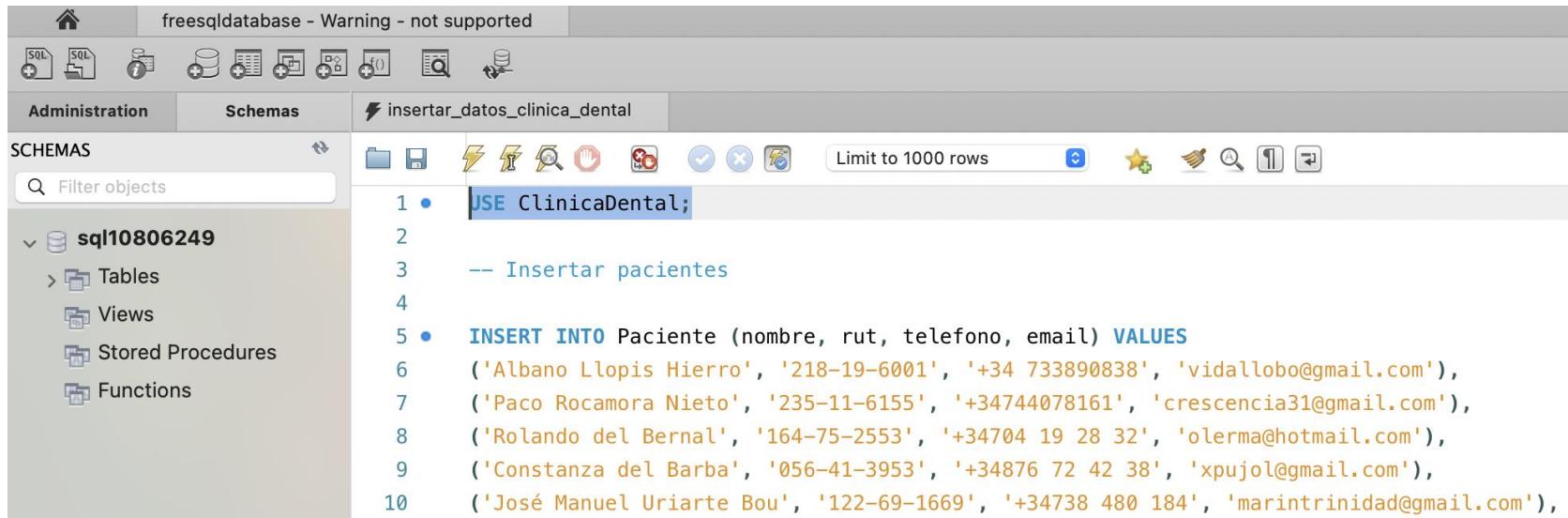
-- Tabla de pacientes
CREATE TABLE Paciente (
    id_paciente INT PRIMARY KEY AUTO_INCREMENT,
    nombre VARCHAR(100) NOT NULL,
    rut VARCHAR(12) UNIQUE,
    telefono VARCHAR(20),
    email VARCHAR(100)
);

-- Tabla de odontólogos
CREATE TABLE Odontologo (
    id_odontologo INT PRIMARY KEY AUTO_INCREMENT,
    nombre VARCHAR(100) NOT NULL,
    especialidad VARCHAR(50),
    email VARCHAR(100)
);

-- Tabla de tratamientos
CREATE TABLE Tratamiento (
    id_tratamiento INT PRIMARY KEY AUTO_INCREMENT,
    nombre VARCHAR(100) NOT NULL,
    duracion TIME,
```

# Implementación de Base de datos en la Nube

- Actividad 1:
  - Insertar los nuevos datos al esquema.



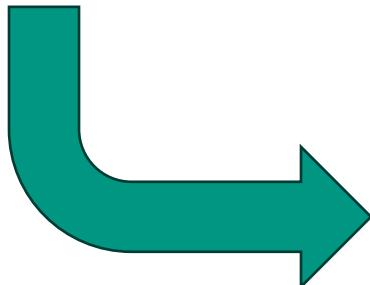
The screenshot shows a database management interface for a MySQL database named 'freesqldatabase'. The left sidebar shows the schema 'sql10806249' with 'Tables', 'Views', 'Stored Procedures', and 'Functions'. The main window displays an SQL query titled 'insertar\_datos\_clinica\_dental'. The query is:

```
USE ClinicaDental;
-- Insertar pacientes
INSERT INTO Paciente (nombre, rut, telefono, email) VALUES
('Albano Llopis Hierro', '218-19-6001', '+34 733890838', 'vidallobo@gmail.com'),
('Paco Rocamora Nieto', '235-11-6155', '+34744078161', 'crescencia31@gmail.com'),
('Rolando del Bernal', '164-75-2553', '+34704 19 28 32', 'olerma@hotmail.com'),
('Constanza del Barba', '056-41-3953', '+34876 72 42 38', 'xpujol@gmail.com'),
('José Manuel Uriarte Bou', '122-69-1669', '+34738 480 184', 'marintrinidad@gmail.com'),
```

**En este punto la DB es accessible desde cualquier parte del mundo.**

# Implementación de Base de datos en la Nube

- Acceso a DB Online en PHP
  - Debe incluir los datos del servidor de base de datos.



```
index.php db.php M X
crud_paciente > db.php

1 <?php
2 // $host = "localhost";
3 // $user = "root";
4 // $pass = "q1w2e3r4.";
5 // $db = "ClinicaDental";
6
7
8 $host = "sql10.freesqldatabase.com";
9 $user = "sql10806249";
10 $pass = "9vlKnyqvS1";
11 $db = "sql10806249";
12
13 $conn = new mysqli($host, $user, $pass, $db);
14 if ($conn->connect_error) {
15     die("Conexión fallida: " . $conn->connect_error);
16 }
17 ?>
18
```

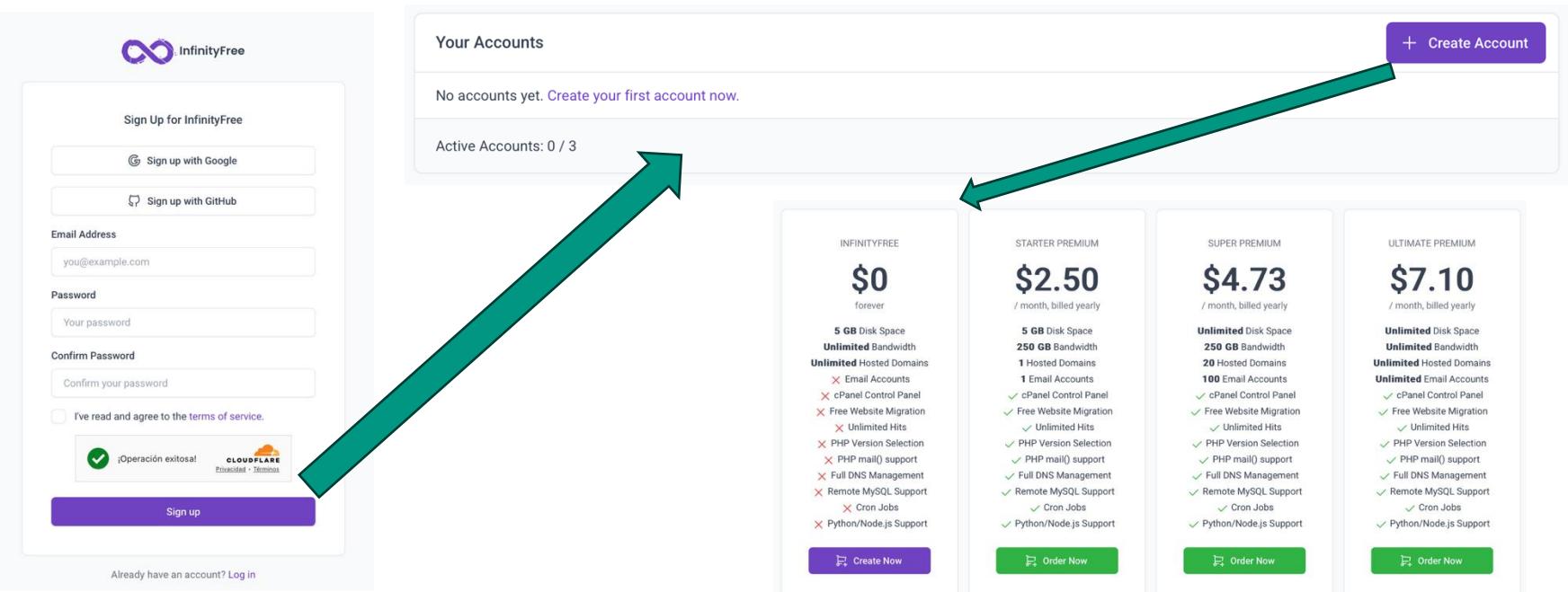
# Implementación de Backend en la Nube

- InfinityFree es una nube que tiene una opción gratuita suficiente para disponer de un servidor web PHP.
- Es ideal para presentar una Plataforma de prueba o Producto Mínimo Viable.
- Es compatible con los software clientes de bases de datos como MySQL Workbench.



# Implementación de Backend en la Nube

## ➤ Crear una cuenta:



The image shows two screenshots of the InfinityFree website. On the left, the sign-up page displays fields for Google and GitHub logins, an email address (you@example.com), and a password. A large teal arrow points from this page up towards the account management interface on the right. On the right, the 'Your Accounts' page shows a message: 'No accounts yet. Create your first account now.' Below this, it displays 'Active Accounts: 0 / 3'. A purple button '+ Create Account' is visible. A smaller teal arrow points down from the 'Create Now' button on the InfinityFree plan to the 'Order Now' buttons for the Starter, Super, and Ultimate Premium plans.

**Your Accounts**

No accounts yet. [Create your first account now.](#)

Active Accounts: 0 / 3

**+ Create Account**

**INFINITYFREE**

**\$0**  
forever

- 5 GB Disk Space
- Unlimited** Bandwidth
- Unlimited** Hosted Domains
- ✗ Email Accounts
- ✗ cPanel Control Panel
- ✗ Free Website Migration
- ✗ Unlimited Hits
- ✗ PHP Version Selection
- ✗ PHP mail() support
- ✗ Full DNS Management
- ✗ Remote MySQL Support
- ✗ Cron Jobs
- ✗ Python/Node.js Support

**Starter Premium**

**\$2.50**  
/ month, billed yearly

- 5 GB Disk Space
- 250 GB Bandwidth
- 1 Hosted Domains
- 1 Email Accounts
- ✓ cPanel Control Panel
- ✓ Free Website Migration
- ✓ Unlimited Hits
- ✓ PHP Version Selection
- ✓ PHP mail() support
- ✓ Full DNS Management
- ✓ Remote MySQL Support
- ✓ Cron Jobs
- ✓ Python/Node.js Support

**Super Premium**

**\$4.73**  
/ month, billed yearly

- Unlimited** Disk Space
- 250 GB Bandwidth
- 20 Hosted Domains
- 100 Email Accounts
- ✓ cPanel Control Panel
- ✓ Free Website Migration
- ✓ Unlimited Hits
- ✓ PHP Version Selection
- ✓ PHP mail() support
- ✓ Full DNS Management
- ✓ Remote MySQL Support
- ✓ Cron Jobs
- ✓ Python/Node.js Support

**Ultimate Premium**

**\$7.10**  
/ month, billed yearly

- Unlimited** Disk Space
- Unlimited** Bandwidth
- Unlimited** Hosted Domains
- Unlimited** Email Accounts
- ✓ cPanel Control Panel
- ✓ Free Website Migration
- ✓ Unlimited Hits
- ✓ PHP Version Selection
- ✓ PHP mail() support
- ✓ Full DNS Management
- ✓ Remote MySQL Support
- ✓ Cron Jobs
- ✓ Python/Node.js Support

# Implementación de Backend en la Nube

- Crear Dominio:
  - Debe revisar si el nombre ya está registrado.

Choose a Domain Name

Please choose a free subdomain to setup your hosting account. You can add more domains later, and remove this domain if you want to change it.

Subdomain	Domain Extension
clinica-dental-uach-2025	free.nf

**(i)** You can add more domains after your account is setup!  
Have your own domain? Add it after creating your account, along with additional free subdomain options.

← Back

Check Availability

# Implementación de Backend en la Nube

## ➤ Configuración de Dominio

Additional Information

Account Label

Website for clinica-dental-uach-2025-2.free.nf

A short description to help you identify the account.

Account Username

(generated automatically)

Used to login to FTP, MySQL, etc.

Account Password

.....

A unique password, between 8 and 15 characters, letters and numbers only.

Email Consent

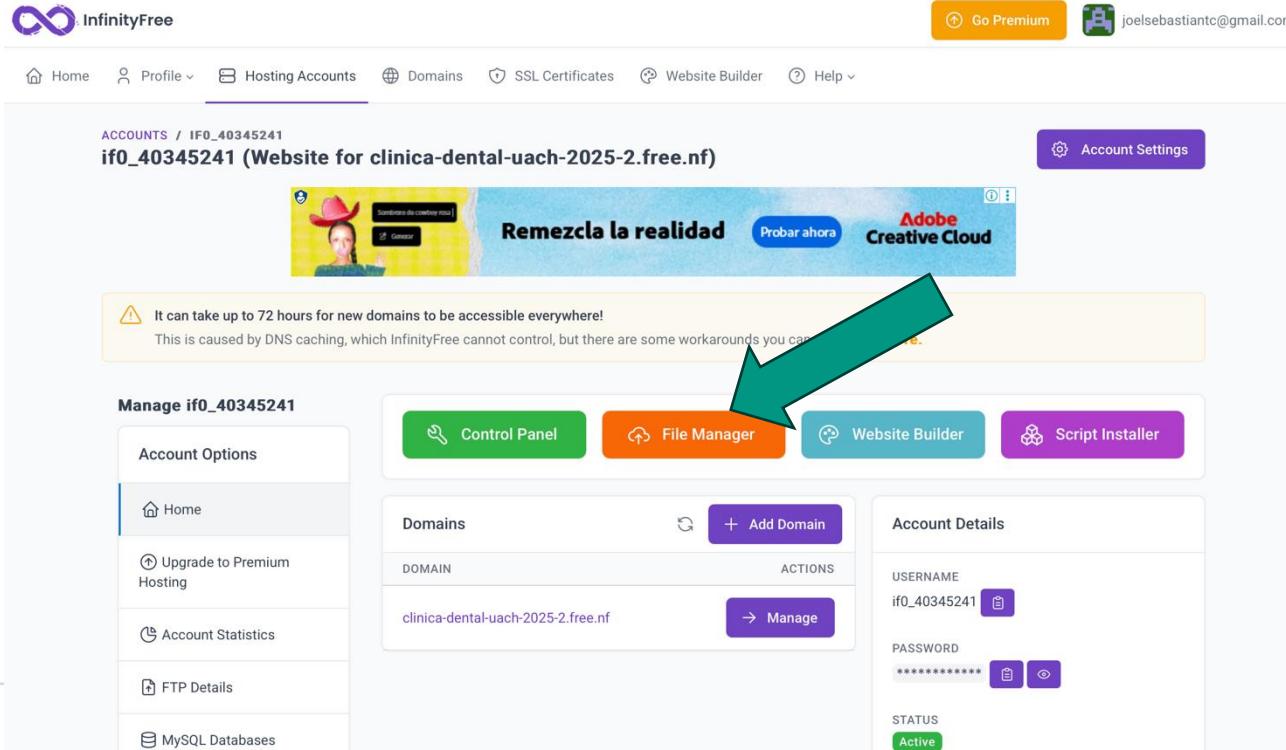
(please select)

I Approve

I Do Not Approve

# Implementación de Backend en la Nube

## ➤ Configuración de Dominio



The screenshot shows the InfinityFree web hosting control panel interface. At the top, there's a navigation bar with links for Home, Profile, Hosting Accounts, Domains, SSL Certificates, Website Builder, and Help. A yellow "Go Premium" button and a user email "joelsebastiantc@gmail.com" are also visible.

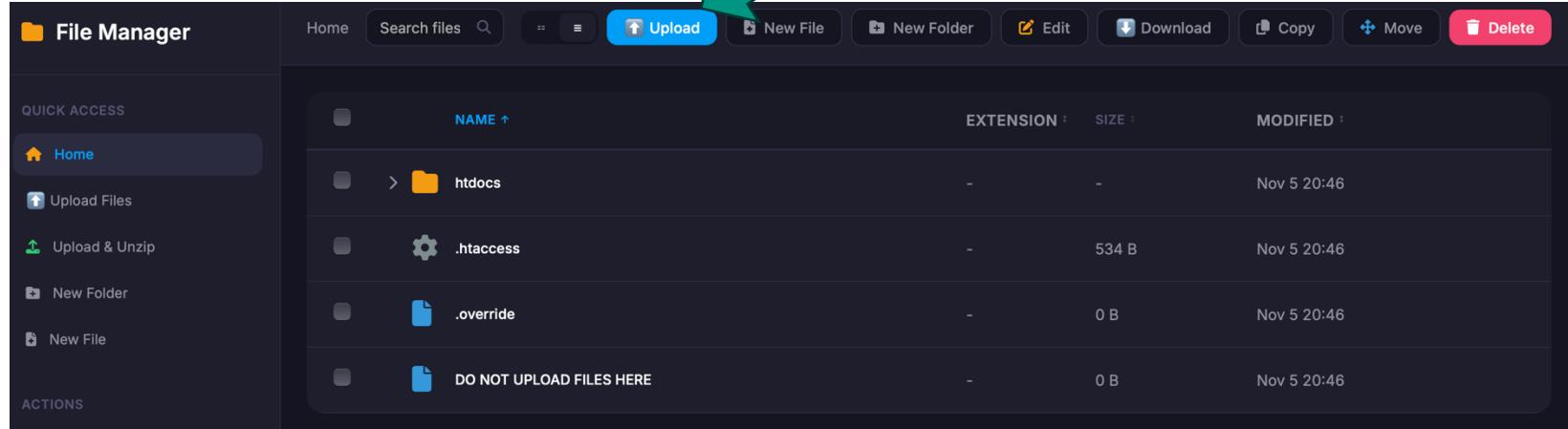
The main area displays account information: "ACCOUNTS / if0\_40345241" and "if0\_40345241 (Website for clinica-dental-uach-2025-2.free.nf)". To the right is a purple "Account Settings" button. Below this, there's a warning message: "⚠ It can take up to 72 hours for new domains to be accessible everywhere! This is caused by DNS caching, which InfinityFree cannot control, but there are some workarounds you can try." A large green arrow points from this message towards the "File Manager" button.

The central part of the screen features four main buttons: Control Panel (green), File Manager (orange, highlighted by the green arrow), Website Builder (purple), and Script Installer (pink). To the left is a sidebar titled "Manage if0\_40345241" with sections for Account Options (Home, Upgrade to Premium Hosting, Account Statistics, FTP Details, MySQL Databases) and Domains (listing "clinica-dental-uach-2025-2.free.nf" with a "Manage" button).

On the right, there's an "Account Details" section with fields for USERNAME ("if0\_40345241") and PASSWORD (redacted), and a STATUS field showing "Active".

# Implementación de Backend en la Nube

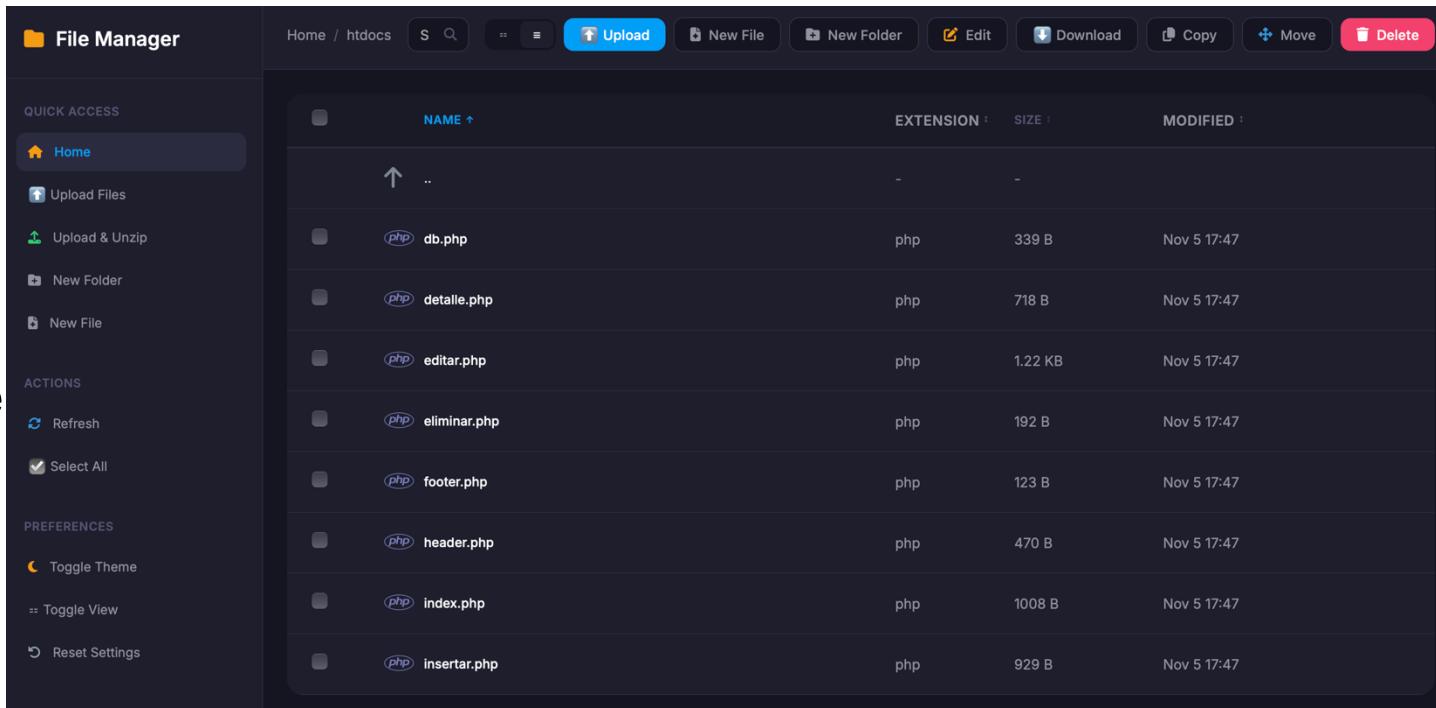
## ➤ Configuración de Archivos:



➤ Los archivos se deben subir a la carpeta **htdocs**.

# Implementación de Backend en la Nube

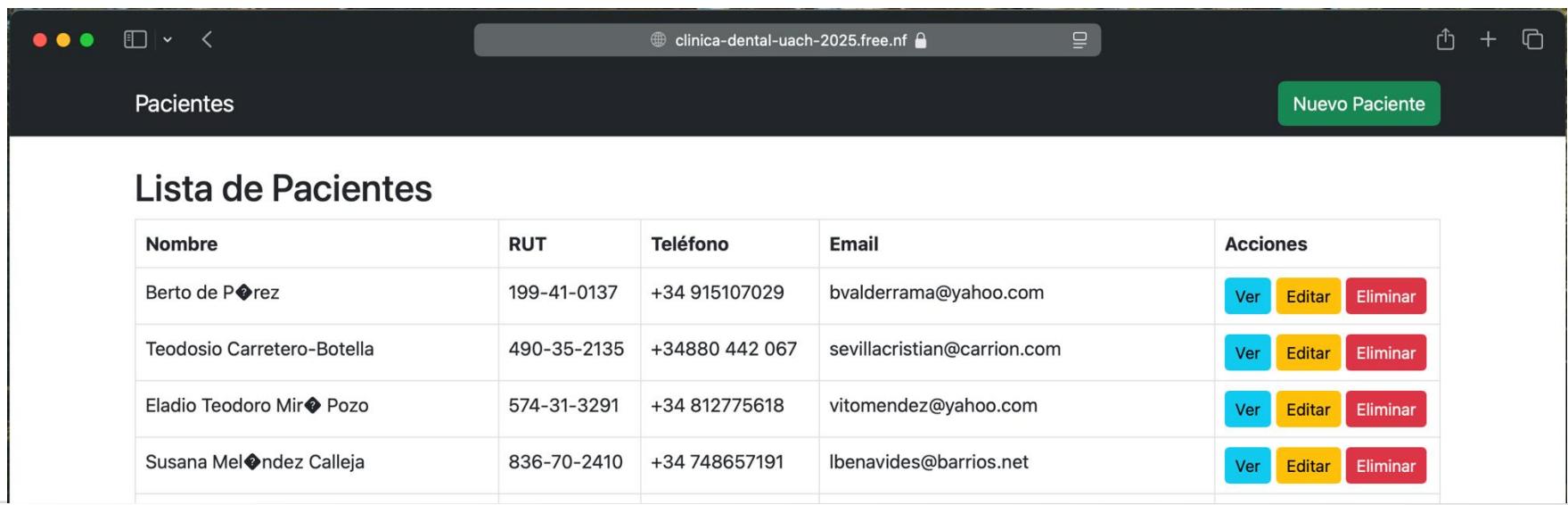
- Actividad 2:
- Subir la carpeta del Proyecto de **crud\_clinica**
- El primer archive que se revisará es **index.php**



# Implementación de Backend en la Nube

- Ahora la Plataforma está disponible en la ruta que se ha establecido:

**clinica-dental-uach-2025.free.nf**



Nombre	RUT	Teléfono	Email	Acciones
Berto de Pérez	199-41-0137	+34 915107029	bvalderrama@yahoo.com	<button>Ver</button> <button>Editar</button> <button>Eliminar</button>
Teodosio Carretero-Botella	490-35-2135	+34880 442 067	sevillacristian@carrión.com	<button>Ver</button> <button>Editar</button> <button>Eliminar</button>
Eladio Teodoro Miró Pozo	574-31-3291	+34 812775618	vitomendez@yahoo.com	<button>Ver</button> <button>Editar</button> <button>Eliminar</button>
Susana Meléndez Calleja	836-70-2410	+34 748657191	lbenavides@barrios.net	<button>Ver</button> <button>Editar</button> <button>Eliminar</button>

# Actividad Final:

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- Implemente su Proyecto semestral actual en los servidores en la Nube:
  - FreeSQLDatabase para la base de datos
  - InfinityFree para el servidor Web.



# Taller de Programación

## Clase 16

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