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Overview

Casibase is a Open-Source [Domain Knowledge](#) Database & IM & Forum Software powered by [ChatGPT](#).

You need to enable JavaScript to run this app.

Casibase features

1. Front-end and back-end separate architecture, developed by Golang,

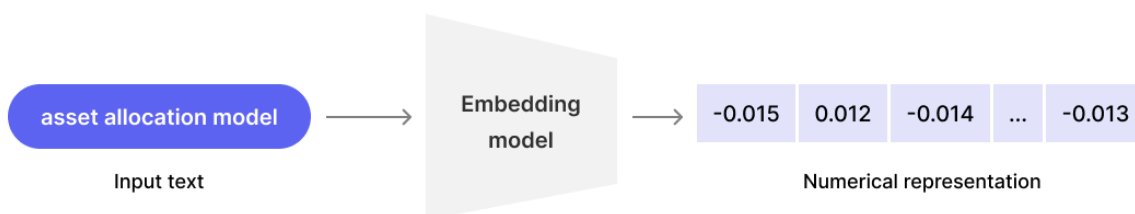
Casibase supports high concurrency, provides web-based managing UI and supports multiple languages(Chinese, English).

2. Casibase supports third-party applications login, such as GitHub, Google, QQ, WeChat, etc., and supports the extension of third-party login with plugins.
3. Based on embedding and prompt engineering for knowledge management, Casibase supports customized embedding methods and language models.
4. Casibase supports integration with existing systems by db sync, so users can transition to Casibase smoothly.
5. Casibase supports mainstream databases: MySQL, PostgreSQL, SQL Server, etc., and supports the extension of new databases with plugins.

How it works

Step 0 (Pre-knowledge)

Casibase's knowledge retrieval process is based on Embedding and Prompt engineering, so it is highly recommended that you take a brief look at how Embedding works. An [introduction](#) to Embedding.



Step 1 (Importing Knowledge)

To get started with Casibase, users need to follow these steps to import knowledge and create a domain-specific knowledge database:

1. **Configure Storage:** In the Casibase dashboard, users should first configure the storage settings. This involves specifying the storage system to be used for storing knowledge-related files, such as documents, images, or any other relevant data. Users can choose from a variety of storage options based on their preferences and requirements.
2. **Upload Files to Storage:** Once the storage is set up, users can proceed to upload files containing domain-specific knowledge into the configured storage system. These files can be in various formats, such as text documents, images, or structured data files like CSV or JSON.
3. **Select Embedding Method for Knowledge Generation:** After the files are uploaded, users have the option to choose the embedding method for generating knowledge and corresponding vectors. Embeddings are numerical representations of textual or visual content, which facilitate efficient similarity search and data analysis.



提示

How knowledge is embedded?

- For textual data: Users can choose from various embedding methods, such as Word2Vec, GloVe, or BERT, to convert the textual knowledge into meaningful vectors.
- For visual data: If the uploaded files contain images or visual content,

users can select image embedding techniques like CNN-based feature extraction to create representative vectors.

- More methods coming soon...

By following these steps, users can populate their domain knowledge database with relevant information and corresponding embeddings, which will be used for effective searching, clustering, and retrieval of knowledge within Casibase. The embedding process allows the system to understand the context and relationships between different pieces of knowledge, enabling more efficient and insightful knowledge management and exploration.

Step 2 (Retrieving Knowledge)

After importing your `domain knowledge`, Casibase transforms it into `vectors` and stores these vectors in a `vector database`. This vector representation enables powerful functions like `similarity search` and `efficient retrieval of related information`. You can quickly find relevant data based on context or content, enabling advanced querying and uncovering valuable insights within your domain knowledge.

Step 3 (Building the Prompt)

Casibase performs a similarity search on the stored knowledge vectors to find the closest match to the user's query. Using the search results, it creates a `prompt template` to frame a specific question for the `language model`. This ensures accurate and contextually relevant responses, delivering comprehensive answers based on the domain knowledge in Casibase.

Step 4 (Achieving the Goal)

At this stage, using Casibase, you have successfully acquired the knowledge you sought. Through the innovative combination of domain knowledge transformed into vectors and powerful language models like ChatGPT, Casibase provides you with accurate and relevant responses to your inquiries. This enables you to efficiently access and utilize the domain-specific information stored in Casibase, meeting your knowledge requirements with ease.

Step 5 (Optional Fine-tuning)

If you find that the results are not entirely satisfactory, you can try to get better results by doing the following:

- Tweaking Language Model Parameters
- Asking multiple questions
- Optimizing the original files

By utilizing these fine-tuning options, you can improve the efficiency of your knowledge management in Casibase, ensure that the system is better aligned with your goals, and provide more accurate and insightful information.

HINTS

Other ways to optimize results (may require source code changes):

- Updating `Embedding` Results: Refine the knowledge representation by adjusting the embedding results of your domain knowledge.

- Modifying `Prompt` Templates: By customizing the prompts, you can elicit more precise responses from the language model.
- Exploring Different `Language Models`: Experiment with different models to find the one that best suits your requirements for generating responses.

Online demo

Casibase

Here is an online demo deployed by Casbin.

- [Casibase official demo](#)

Global admin login:

- Username: `admin`
- Password: `123`

Architecture

Casibase contains 4 parts:

| Name | Description | Language | Source code |
|----------|---|-----------------------|---|
| Frontend | User interface for the casibase application | JavaScript + React | https://github.com/casbin/casibase/tree/master/web |

| Name | Description | Language | Source code |
|----------------|---|------------------------|---|
| Backend | Server-side logic and API for casibase | Golang + Beego + MySQL | https://github.com/casbin/casibase |
| AI Model | Artificial intelligence model | Python + OpenAI | https://github.com/casbin/casibase/tree/master/ai |
| Knowledge Base | Storage for casibase application domain knowledge | pgvector | https://github.com/casbin/casibase/tree/master/ai |

Core Concepts

As Casibase's user, you should get familiar with at least 4 core concepts:

Provider, Storage, Chat and Vector.

Provider

Providers are the backbone of Casibase, offering essential services and integration with external systems. The Provider class definition is shown as follows:

```
type Provider struct {
    Owner      string `xorm:"varchar(100) notnull pk"
    json:"owner"`
    Name       string `xorm:"varchar(100) notnull pk" json:"name"`
    CreatedTime string `xorm:"varchar(100)" json:"createdTime"`

    DisplayName string `xorm:"varchar(100)" json:"displayName"`
    Category     string `xorm:"varchar(100)" json:"category"`
    Type         string `xorm:"varchar(100)" json:"type"`
    ClientId     string `xorm:"varchar(100)" json:"clientId"`
    ClientSecret string `xorm:"varchar(2000)" json:"clientSecret"`
    ProviderUrl  string `xorm:"varchar(200)" json:"providerUrl"`
}
```



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There are two primary types of providers in Casibase:

- **Storage Provider:**The Storage Provider facilitates the storage and retrieval of data within Casibase. It supports various storage options, including:
 - AWS
 - Azure
 - Local File System
- **AI Provider:**The AI Provider is responsible for handling AI-related tasks and services in Casibase. It supports multiple AI models and technologies, including:
 - OpenAI
 - ChatGLM
 - InternLM

Vectors

Vectors in Casibase represent numerical representations of different types of data. These vectors enable efficient processing and analysis of information. Some of the vector types available are:

- Text Vector
- Image Vector
- ... (other vector types)

The Provider class definition is shown as follows:

```
type Vector struct {
```

Chats

Chats are at the core of interactive communication between users and the AI models in Casibase. They consist of three essential components:

- Question: The user's input or query, seeking information or assistance.
- Query Prompt: A formatted version of the user's question, prepared for processing by the AI models.
- Answer: The AI-generated response to the user's question, providing relevant information or solutions.

The Chat class definition is shown as follows:

```
type Chat struct {
    Owner      string    `xorm:"varchar(100) notnull pk"
    json:"owner"`
    Name       string    `xorm:"varchar(100) notnull pk"
    json:"name"`
    CreatedTime string    `xorm:"varchar(100)" json:"createdTime"`
    UpdatedTime string    `xorm:"varchar(100)" json:"updatedAt"`

    DisplayName string    `xorm:"varchar(100)" json:"displayName"`
    Category     string    `xorm:"varchar(100)" json:"category"`
    Type         string    `xorm:"varchar(100)" json:"type"`
    User1        string    `xorm:"varchar(100)" json:"user1"`
    User2        string    `xorm:"varchar(100)" json:"user2"`
    Users        []string  `xorm:"varchar(100)" json:"users"`
    MessageCount int       `json:"messageCount"`
}
```

Embedding

Embedding is the process of transforming various types of data, such as text and images, into dense vector representations. This step is crucial for facilitating efficient data processing and analysis within Casibase.

提示

- By embedding, the questions in chat and the knowledge files in storage will be turned into vectors and used in the next step of knowledge search.
- Casibase's default embedding method is provided by OpenAI at a rate of up to three calls per minute. We propose to minimize the knowledge file coupling as much as possible to facilitate embedding and further processing.

Server Installation

Requirements

OS

All major operating systems including Windows, Linux and macOS are supported.

Environment

- [Go 1.17+](#)
- [Node.js LTS \(18\)](#)
- [Yarn 1.x](#)

ⓘ 信息

The use of Casibase is divided into two steps:

- step1: [Deploy and run Casdoor](#)
- step2: [Deploy and run Casibase](#)

We strongly suggest you use [Yarn 1.x](#) to run & build Casdoor&Casibase frontend, using NPM might cause UI styling issues, see more details at: [casdoor#294](#)

⚠ 警告

For Chinese users, in order to download the Go dependency packages

successfully, you need to use a Go proxy by Configuring the GOPROXY environment variable. We strongly recommend: <https://goproxy.cn/>

Database

Casibase uses [XORM](#) to talk to the database. Based on [Xorm Drivers Support](#), Casibase currently provides support for following databases:

- MySQL
- MariaDB
- PostgreSQL
- CockroachDB
- SQL Server
- Oracle
- SQLite 3
- TiDB

Download

The source code of Casibase is hosted at GitHub: <https://github.com/casbin/casibase>. Both the Go backend code and React frontend code are inside the single repository.

| Name | Description | Language | Source code |
|----------|------------------------------|--------------------|---|
| Frontend | Web frontend UI for Casibase | JavaScript + React | https://github.com/casbin/casibase/tree/master/web |

| Name | Description | Language | Source code |
|---------|----------------------------------|-----------------------|---|
| Backend | RESTful API backend for Casibase | Golang + Beego + XORM | https://github.com/casbin/casibase |

Casibase supports `Go Modules`. To download the code, you can just simply clone the code via git:

```
cd path/to/folder
git clone https://github.com/casbin/casibase
```

Configuration

Configure Casdoor

Please refer to: <https://casibase.org/docs/basic/casdoor-sso> to configure Casdoor.

Remember your `clientId`、`clientSecret`、`organization`、`application` and so on in Casdoor configuration, we will use them later.

Configure Database

Casibase supports mysql, mssql, sqlite3, postgres. Casibase uses mysql by default.

MySQL

Casibase will store its users, nodes and topics information in a MySQL database named: `casibase`. If the database does not exist, it needs to be created manually. The DB connection string can be specified at: <https://github.com/casbin/casibase/blob/master/conf/app.conf>

```
driverName = mysql
dataSourceName = root:123456@tcp(localhost:3306)/
dbName = casdoor
```

PostgreSQL

Since we must choose a database when opening Postgres with xorm, you should prepare a database manually before running Casibase.

Let's assume that you have already prepared a database called `casibase`, then you should specify `app.conf` like this:

```
driverName = postgres
dataSourceName = "user=postgres password=postgres host=localhost
port=5432 sslmode=disable dbname=casibase"
dbName =
```

❗ 信息

For PostgreSQL, make sure `dataSourceName` has non-empty `dbName` and leave the standalone `dbName` field empty like the above example.

CockroachDB

You can also use cockroachdb with postgres driver. It has same configuration as postgresSQL.

```
driverName = postgres
dataSourceName = "user=postgres password=postgres host=localhost
port=5432 sslmode=disable dbname=casibase
serial_normalization=virtual_sequence"
dbName =
```

❗ 信息

For CockroachDB, don't forget to add `serial_normalization=virtual_sequence` to the `dataSourceName` like the above example. otherwise you will get error regarding existed database, whenever the service started or restarted. Notice, this must be added before the database created.

Sqlite3

You should specify `app.conf` like this:

```
driverName = sqlite
dataSourceName = "file:casibase.db?cache=shared"
dbName = casibase
```

Custom configuration

Casibase supports custom configuration, you can modify the configuration file `conf/app.conf` to change the configuration.

- Backend (casibase\conf\app.conf)

```
casdoorEndpoint = http://localhost:8000
clientId = <Your_clientId_in_Casdoor_configuration>
clientSecret = <Your_clientSecret_in_Casdoor_configuration>
casdoorOrganization = casibase
casdoorApplication = app-casibase
```

- Frontend (casibase\web\src\Conf.js)

```
serverUrl: "http://localhost:7001"
clientId: "<Your_clientId_in_Casdoor_configuration>"
appName: "app-casibase"
organizationName: "casibase"
```

Run

There are currently two methods to start, you can choose one according to your own situation.



Casibase requires Casdoor to provide access control and some back-end services, so you must make sure Casdoor is running properly before running Casibase.

How to install and run Casdoor:

- [Casdoor Installation](#)

Development mode

Backend

Casibase's Go backend runs at port 14000 by default. You can start the Go backend with the following command:

```
go run main.go
```

After the server is successfully running, we can start the frontend part.

Frontend

Casibase's frontend is a very classic [Create-React-App \(CRA\)](#) project. It runs at port `13001` by default. Use the following commands to run the frontend:

```
cd web  
yarn install  
yarn start
```

Production mode

Backend

Build Casibase Go backend code into executable and start it.

For Linux:

```
go build  
./casibase
```

For Windows:

```
go build  
casibase.exe
```

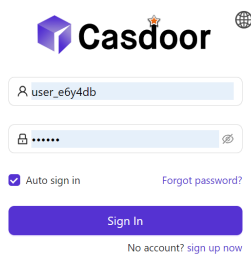
Frontend

Build Casibase frontend code into static resources (.html, .js, .css files):

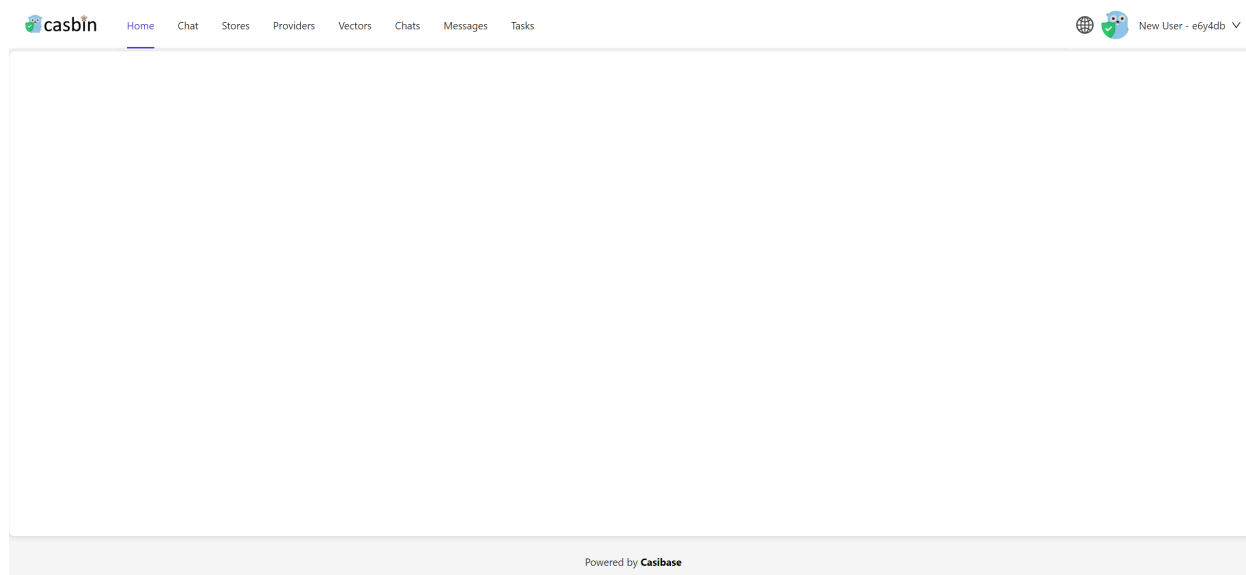
```
cd web  
yarn install  
yarn build
```

Preview

Visit: `http://localhost:13001` in your browser. Login into Casibase dashboard with the user account you have just registered in Casdoor:



Then you will go to the home page of Casibase:



💡 提示

To use another port, please edit `conf/app.conf` and modify `httpport`, then restart the Go backend.

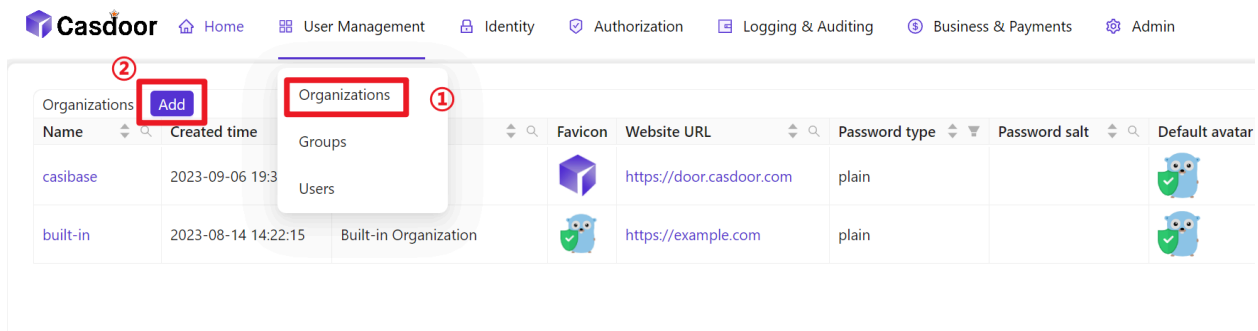
Casdoor-SSO

Casibase uses Casdoor as its backend service, so make sure to deploy it in advance.

Please refer to: <https://casdoor.org/docs/basic/server-installation> to install and configure Casdoor.

Follow these steps to setup Casdoor for casibase:

- Create an Organization




- Configure information about the Organization

Casdoor [Home](#) [User Management](#) [Identity](#) [Authorization](#) [Logging & Auditing](#) [Business & Payments](#) [Admin](#)

Edit Organization Save Save & Exit

Name : casibase

Display name : Casibase

Favicon :
URL : <https://cdn.casbin.org/img/favicon.png>
Preview: 

Website URL : <https://door.casdoor.com>



Password type : plain

- Create a new Application

Casdoor [Home](#) [User Management](#) [Identity](#) [Authorization](#) [Logging & Auditing](#) [Business & Payments](#) [Admin](#)

Applications Add

Applications

| Name | Created time | Display name | Logo | Organization | Providers |
|--------------|---------------------|--------------|--|--------------|--|
| app-casibase | 2023-09-06 19:38:54 | Casibase |  | casibase | provider_captcha_default |
| app-built-in | 2023-08-14 14:22:15 | Casdoor |  | built-in | provider_captcha_default |

- Configuring Application Information (Remember Name, ClientID and ClientSecret)

Casdoor Home User Management Identity Authorization Logging & Auditing Business & Payments Admin


All

Edit Application Save **Save & Exit** ④

Name ①: app-casibase

Display name ②: Casibase

Logo ③:
 URL: https://cdn.casbin.org/img/casdoor-logo_1185x256.png

Preview: 

Home:
 Description:
 Organization: casibase

Tags:
 Client ID: 548c8b9c7431d2621db1

Client secret: 2bc7640d487fc4dea6f4b77f07f1bf4433e4ad40





Cert: cert-built-in

- Add a member to the newly created organization

Casdoor Home User Management Identity Authorization Logging & Auditing Business & Payments Admin

All ? 🌐 ⚙️ 👤 Adm


Organizations **Add**

| Name | Created time | Display name | Favicon | Website URL | Password type | Password salt | Default avatar | Soft deletion | Action |
|----------|---------------------|-----------------------|---|--------------------------|---------------|---------------|---|--------------------------|---------------------------------|
| casibase | 2023-09-06 19:34:53 | Casibase |  | https://door.casdoor.com | plain | |  | <input type="checkbox"/> | Groups Users Edit Delete |
| built-in | 2023-08-14 14:22:15 | Built-in Organization |  | https://example.com | plain | |  | <input type="checkbox"/> | Groups Users Edit Delete |

2 in total < 1 > 10 / pag

Casdoor Home User Management Identity Authorization Logging & Auditing Business & Payments Admin

Users **Add** Upload (.xlsx)

| Organization | Application | Name | Created time | Display name | Avatar | Email | Phone | Affiliation |
|--------------|--------------|-------------|---------------------|-------------------|---|--------------------|-------------|--------------|
| casibase | app-casibase | user_e6y4db | 2023-09-06 19:37:26 | New User - e6y4db |  | e6y4db@example.com | 83359893102 | Example Inc. |

- Configure member information (remember its Name as well as Password)

Casdoor

Home

User Management

Identity

Authorization

Logging & Auditing

Business & Payments


Admin

All

?

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⚙️

Admin

Edit User

Save

Save & Exit

4

Organization

casibase

ID

97a6ce88-be20-4840-b8d4-b2ebb255d0ee

Name

user_e6y4db


1

Display name

New User - e6y4db

Avatar

Preview:



Upload a photo...

User type

normal-user

Password

Modify password...

2

Email

e6y4db@example.com

Phone

+1

83359893102

Homepage

Bio

Tag

staff

Language

Gender

Birthday

Education

Score

0

Karma

0

Ranking

1

Signup application

app-casibase

3

Groups

T