

# Compact Electronic Logbook System

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## Introduction

Clog is a web-based electronic logbook system, which is developed using Java EE framework, Primefaces component library, MySQL relational database and RESTful web service technologies.

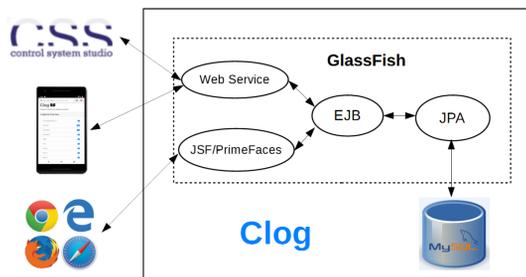


Figure 1: Architecture of Clog.

## Backend Implementation

### Database Design

Clog has five tables in the database, they are entry, log, logbook, log\_logbook and sysuser.

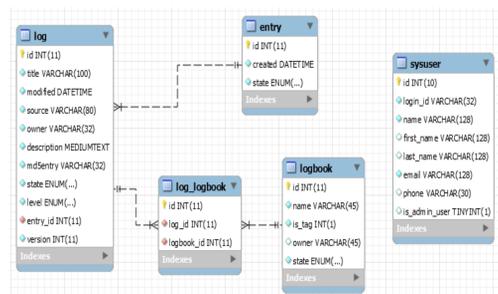


Figure 2: Clog database schema.

### Core Logic Implementation

The core logic, implemented as multiple stateless EJBs, provides log submission, log query as well as logbook, tag and user management functionalities. The EJBs implemented are logEJB, logbookEJB, tagEJB, attachmentEJB and userEJB.

### Attachment Storage

Attachments are stored in the file system with the hierarchy of “year”, “month”, “day” and “logId”. The additional “Thumbnail” directory stores the corresponding thumbnails for image files.

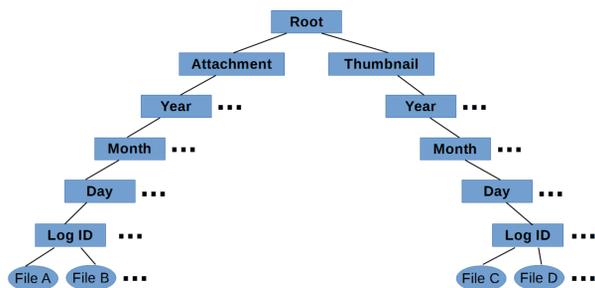


Figure 3: Attachment directory hierarchy.

## Frontend Implementation

### Home Page

The home page lists all the available logbooks, including the logbook name, number of logs in the logbook, the last submission time and user.

Name	Entries	Last submitted at	Last submitted by
CCF Operations 1	3	2019-09-19 14:19	王林
Control	62	2019-09-09 09:10	王林
Control2	13	2019-09-09 09:10	王林
Control3	6	2019-05-24 10:25	王林
标签	0		
test	9	2019-05-24 10:26	王林
test 6	2	2019-05-14 14:42	王林
test 7	0		
test 8	0		
test 9	0		
test4	1	2019-05-07 11:27	王林
test5	0		
测试	1	2019-06-27 10:23	王林
测试	3	2019-05-23 11:25	王林

Figure 4: Clog home page.

### Log Overview Page

The log overview page, is composed of function buttons, search buttons and a log summary table.

Index	Date	Author	Author email	Category	Tag	Subject	Description
1	2019-09-09 09:10	王林	wanglin@ihep.ac.cn	Info	tag2	cs-studio client test	Create a log entry from cs-studio.
2	2019-09-09 09:10	王林	wanglin@ihep.ac.cn	Info	cs-studio attachment test	test 111	
3	2019-09-09 09:10	王林	wanglin@ihep.ac.cn	Info	server	cs-studio test	test test test
4	2019-09-07 00:38	王林	wanglin@ihep.ac.cn	Info	标题	标题	
5	2019-09-07 00:37	王林	wanglin@ihep.ac.cn	Info	subject	subject	test
6	2019-09-07 00:31	王林	wanglin@ihep.ac.cn	Info	subject	subject	test
7	2019-09-27 22:07	王林	wanglin@ihep.ac.cn	Info		test	test111
8	2019-06-17 16:10	周丹	user1@ihep.ac.cn	Info		cs-studio test	
9	2019-06-17 15:59	周丹	user1@ihep.ac.cn	Info		attachment test 1	test
10	2019-06-17 15:56	周丹	user1@ihep.ac.cn	Info		attachment test	test
11	2019-06-17 15:49	周丹	user1@ihep.ac.cn	Suggestion		attachment test	test
12	2019-06-17 15:41	周丹	user1@ihep.ac.cn	Suggestion		attachment test	test
13	2019-06-17 15:39	周丹	user1@ihep.ac.cn	Suggestion		attachment test	test
14	2019-06-15 19:05	黎晓航	admin1@ihep.ac.cn	Suggestion		test test	test test
15	2019-06-14 10:36	王林	wanglin@ihep.ac.cn	Problem	tag2		test 100
16	2019-06-14 08:25	王林	wanglin@ihep.ac.cn	Info		ding test 222	ding test 222
17	2019-06-14 01:19	王林	wanglin@ihep.ac.cn	Info		ding test 111	ding test 111

Figure 5: Log overview page.

### Log Submission Page

The log submission page is used for creating a new log entry in the current logbook. The log information that needs to be filled out includes tag, level, subject, description and attachment.

New Log Entry

Logbook: Control

Tag: None

Level: Info

Subject:

Description:

Attachments: Choose Upload Cancel

Create Cancel

Figure 6: Log submission page.

### Log Detail Page

The log detail page displays all the information of a log entry, which includes creation time, author name, author email, level, tag, subject, description and attachment overview.

Log ID: 24
Entry time: 2019-06-01 22:43:18
Modified at: 2019-05-07 22:38:36
Author: 王林
Author email: wanglin@ihep.ac.cn
Level: Info
Tag: 244
Subject: 244

Attachments:

- 基于Hermes-10 MRFEPICS开发环境搭建.pdf 72.6 KB
- image\_05.jpg 504.1 KB
- MRFEPICS2016 Fall.pdf 747.1 KB
- letter\_a.jpg 19.3 KB
- image\_02.jpg 631.6 KB

Figure 7: Log detail page.

## Web Service Implementation

The Clog web service provides RESTful API to communicate with other frontend client, the available resources are log, logbook, tag and attachment.

The following data types are supported:

- XML: Implemented with JAXB (Java Architecture for XML Binding) package to communicate with CS-Studio.
- JSON: Implemented with FasterXML/Jackson package to communicate with mobile web UI.

## CS-Studio Interface

The SNS fork of CS-Studio is used to interface with Clog. However, in CS-Studio version 4, there is no subject field in the log entry. Therefore, the CS-Studio source code need to be refactored to support the subject field.

After refactoring, the subject input widget is provided in the log submission UI, the subject text is wrapped in the XML data to be sent to Clog web service, and a new log with subject field can be created via CS-Studio successfully.

Create Log Entry

User Name: wanglin Password: \*\*\*\*\*

Date: Sep 17, 2019 Level: Info

Subject: CS-Studio test subject

cs-studio test description

Logbooks: Control

Tags: Select Items ...

Show Details

Submit Cancel

Figure 8: CS-Studio log submission UI.

## Mobile Web UI

In addition to the JSF web UI, Clog also provides mobile web UI with read-only permission for users to conveniently view logs on cell phones. The mobile UI is developed with Vue.js JavaScript framework and Bootstrap responsive CSS library.

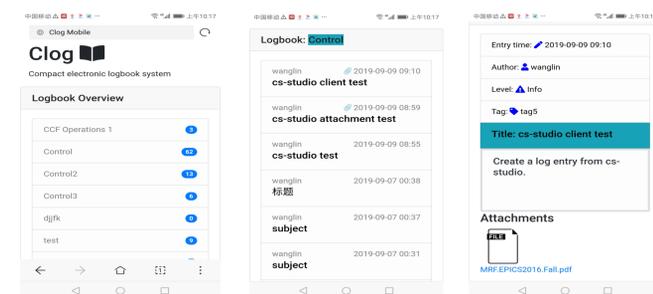


Figure 9: Mobile web page: (a) Home page. (b) Log overview page. (c) Log detail page.

## Conclusion

By now, the development of Clog, including database, backend core logic, web service, JSF web UI, mobile web UI and CS-Studio interface, has been finished. It implements the complete functionalities of electronic logbook and provides multiple user interfaces to improve the user experience, which could meet the requirement of new accelerator facilities.