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EMPLOYEE EVALUATION INFORMATION SYSTEM PT. DHL EXPRESS INDONESIA WITH TIMESHEET PARAMETERS / ONLINE ABSENCE WITH OPEN ID AND OAUTH2 SECURITY

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ABSTRACT

PT DHL Express Indonesia (DHL) is a courier and freight forwarding service company between regions in Indonesia. Bearing in mind the vast territory in Indonesia, DHL records 314 thousand shipments per year or 860 shipments per visit. In order to improve the shipping service, DHL took the initiative to request a system that could support the timesheet or the attendance of its couriers properly and safely. Making an absent or online attendance system using two security technologies namely OpenID and Oauth2. Both of these security technologies guarantee timesheet data leakage or absenteeism from the client side ie the couriers by the server side namely the central DHL.

Keywords*:* System, Timesheet, Online, Openid, Oauth2

1. INTRODUCTION

PT DHL Express Indonesia (DHL) is a courier service and freight forwarding company between regions in Indonesia. With a wide coverage area in almost all of Indonesia, DHL records a total of 314 thousand shipments per year or 860 shipments per day. [2] Besides that, DHL has facilities in the form of a service center which is one of the many investments made by the company in Indonesia. Several DHL Express investments include Jakarta Gate Way 530 at Soekarno Hatta Cengkareng International Airport, new service centers in Batam, Solo and Makassar.

With such a large number of goods delivered per day, DHL wants to increase the number of goods delivery services. One strategy used is to increase daily commissions for its couriers. With the increase in daily commissions, it is hoped that the speed of delivery of goods to customers will increase satisfaction and trust in DHL's services. Therefore, DHL took the initiative to want a technology system that can support daily timesheet assessment for its couriers. In addition, DHL is very concerned about the security aspects of the system. DHL hopes that the system can have security from the fraudulent games of its couriers in inputting timesheet data or daily attendance.

1.1 Formulation of the problem

Based on the description of the background, it can be formulated a subject matter in this study as follows:

1. DHL wants an information system that can support the online assessment of the attendance of its couriers.
2. The security aspect of the system needs to be considered properly

1.2 Research purposes

The objectives of this research are as follows:

1. Designing the creation of an online timesheet or attendance information system for goods delivery couriers.
2. Using security technology based on OpenId cert Oauth2 to guard against data leakage gaps.

2. LITERATURE STUDY

2.1 Absence

Time attendance or attendance card is a document that records the attendance hours of each employee in the company. The record of the employee's attendance can be in the form of an ordinary attendance list, or it can also be in the form of an attendance card filled with a time recording machine. The work of recording time can basically be separated into 2 (two) parts, namely attendance time keeping and shop time keeping. [5]

Recording the hours of attendance and attendance on the time card performed by each employee/worker can affect the net salary/take home pay that employees will receive each month. Because if the employee/worker forgets or does not record his/her attendance hours on the attendance card, it will affect the components in the salary, especially in the benefits post, because the benefits provided by the company to each employee/worker depend on how many employees/workers are present at working hours. Like meal and transportation allowances, if an employee/worker does not record their hours of attendance on an attendance card, the meal and transportation allowance received by the employee/worker each month will decrease and will affect the net salary received by the employee/worker.

Recording employee absences can be done in several ways, namely:

1. Attendance Hand Notes.
2. Absence Almano (Clock System)
3. Fingerprint Attendance (Finger Scan)
4. Palm Absence.

2.2 OpenId

OpenID is a decentralized and open standard for user authentication and access control that allows users to log into various services with only one digital identity (ID). Thus, OpenID replaces the common login process which usually uses a username and password.[6]

The original OpenID authentication protocol was first developed in May 2005 by Brad Fitzpatrick (creator of the LiveJournal website) while he was working at Six Apart. Immediately, OpenID was implemented in LiveJournal and followed by the community engine DeadJournal, and quickly gained attention from the digital identity community. JanRain is the first web developer to support OpenID. Jan Rain provides the OpenID software library and develops business around services based on OpenID.

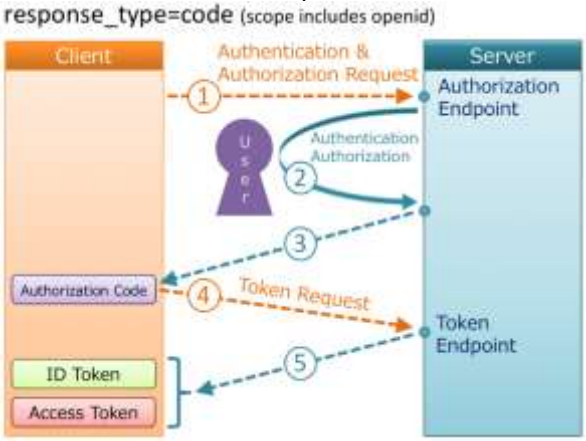

Figure 1. Authentication Flow with OpenID

Currently, OpenID is still in the adoption stage and will become increasingly popular as many large companies begin to accept and become OpenID service providers.[1] It is estimated that more than 160 million OpenIDs use URLs (URL enabled) with around 10,000 sites that support logging in with OpenID. To get an OpenID, one has to go through the registration process on OpenID provider sites.[6] Later, the URL (along with the username in it) from that site will be someone's OpenID.

Table 1 Several OpenID Service Providers

Service Provider	Format URL
Google	Google.com/account/me
Yahoo	openid.yahoo.com
MyOpenId	username.myopenid.com
LiveJournal	username.livejournal.com
AOL	openid.aol.com/username
WordPress	username.wordpress.com
Blogspot	username.blogspot.com
Verisign	username.pip.verisignlabs.com
Google Profile	google.com/profiles/username
Wikia	openid.wikia.com
Blogdetik	username.blogdetik.com
Kompasiana	kompasiana.com/user/profile/username
Baidu	username.baidu.com

2.3 Oauth2

OAuth is an open protocol that allows users to share their personal resources (eg photos, videos, address lists) stored on a website with other sites without the need to give up their username and password. This process is accomplished by providing a token, rather than a username and password, for their data hosted by a particular service provider. Each token grants a specific site (eg a video editing site) access to a specific resource (eg only videos from a specific album) for a specified duration (eg the next two hours). [7]

OAuth allows a user to grant access to third-party sites to access their information stored at other service providers without having to share access permissions or all of their data. The way it works is more or less the same as using a credit card and signing a transaction slip, instead of giving out the ATM card and the PIN.

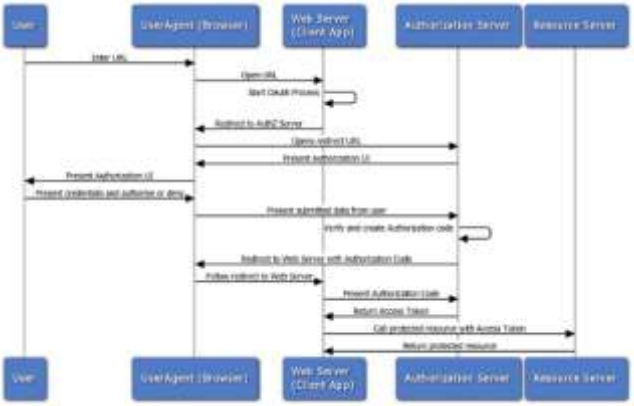

Figure 2. Authorization Code Flow with Oauth2 (Source: Wikipedia (2020)

Figure 2 above explains that when we use OAuth2, we should use 2 servers, one of which is the authorization server, where this server will give access rights to third party applications. While the other server is a resource server or an API provider.

When a third party application will access the API, the API will first ask the authorization server, whether the token sent is valid or not, if it is valid then the resource server will provide the required resource and if it is found to be invalid it will display that the application has no right to do so. access to those resources.

Figure 3. Implicit Flow for Oauth2 (Source: Wikipedia (2020)

Information:

1. Client id : is the id representing 1 client that will access the resource / API
2. Client Secret : is the partner of the client id, also known as the password
3. Access token : token that is generated by the authorization server, this token has mass so it cannot be used for a long time.
4. Refresh token : this token is used to request a new access token because the old access token has expired.
5. Resource server : server that provides data / API.
6. Authorization server: a server that checks authentication and authorization.

3. RESEARCH METHOD

This research method was carried out by collecting data where the explanation is as follows:

1. Study of literature
2. Studying books, journals and references related to use with research.
3. Observation Method
4. In this observation method the researcher collects and examines data through interviews about system requirements at PT DHL Express Indonesia.
5. The system development method is carried out using the SDLC Waterfall methodological approach.

4. RESULT AND DISCUSSION

4.1 System Architecture Design

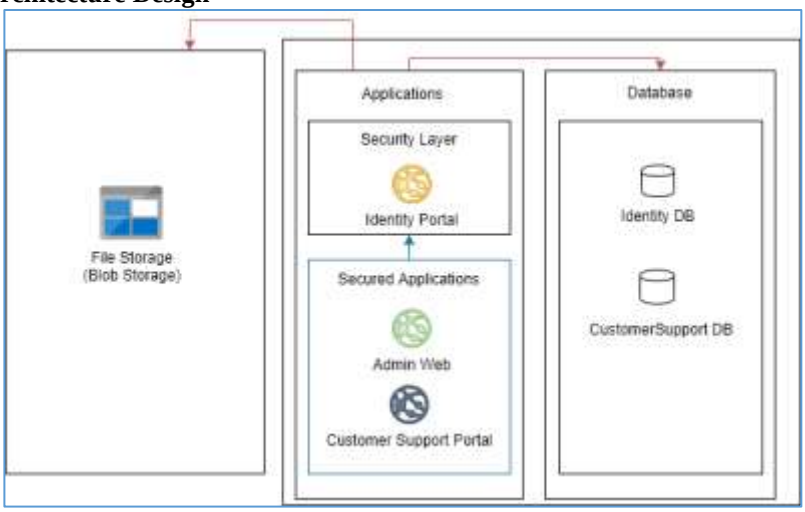

Figure 4. Architecture of DHL Attendance System

1. Components of Web Applications

1. This web application can be accessed from the client side using a modern browser such as Microsoft Edge or
2. Chrome via http or https protocol. References to supported browsers can be found at (http://bootstrapdocs.com/v3.3.6/docs/getting-started/#support) with the exception of IE version 9 and below.
3. Application developed using Microsoft Visual Studio 2019.
4. The run time library is the .NET Core 2.2 framework.
5. Appearance of the application with responsive HTML5 design using Twitter Bootstrap 4 as CSS framework, Vue JS and JQuery as JavaScript Framework and images using font-awesome version 4 and above.
6. The programming language used is C# and with the MVC approach.

2. Databases

Database in this application uses SQL approach.

3. Storage Files

1. Uploaded files will be saved to the selected storage server, either in the form of a private server or file storage service in the cloud
2. Security
3. The Web application uses OpenId based authentication.
4. Communication between applications using Oauth 2 based authentication

4. OpenId Based Authentication

1. This system will implement openid-based authentication for each user and when executed, the following steps will occur:

1. An unauthenticated user will always be redirected to login on the Identity Portal
2. Users fill out the login form.
3. Identity Portal attempts to authenticate the user.
4. If the authentication is successful, the user's authentication will be checked to ensure that the connected role has the appropriate access it needs. If the user is already authorized, the Identity Portal redirects the user to the application using the URL path they previously wanted to access.
5. If authentication fails, the user will remain on the login page.

2. Outh 2 Based Authentication

1. This system will implement Oauth 2 based authentication for communication between applications and when executed, the following steps will occur,
2. The application sends information about itself and which API it wants to access to the Identity portal
3. Identity Portal performs authentication and authorizes whether the Application has access to access the desired api.
4. If the authentication is successful, the Identity portal issues an access token with a lifetime of 30 minutes. If it fails, the access token will not be granted
5. The application will access the API using the given token
6. The API will check with the Identity Portal whether the application that accesses it has a valid access token
7. If it is valid then the application can access it, otherwise the access will fail

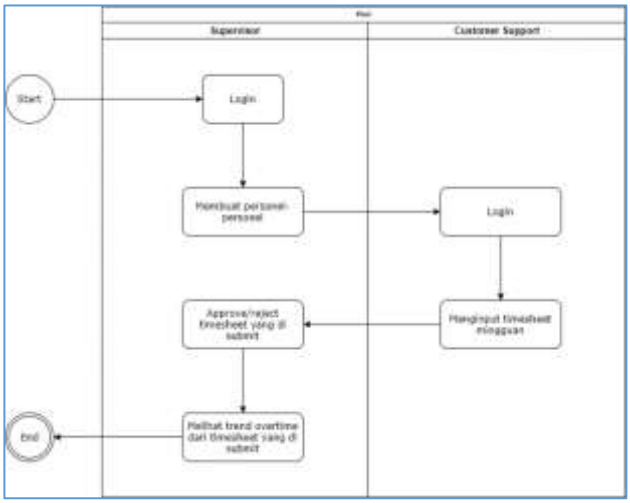

Figure 5. DHL Timesheet Process Flow

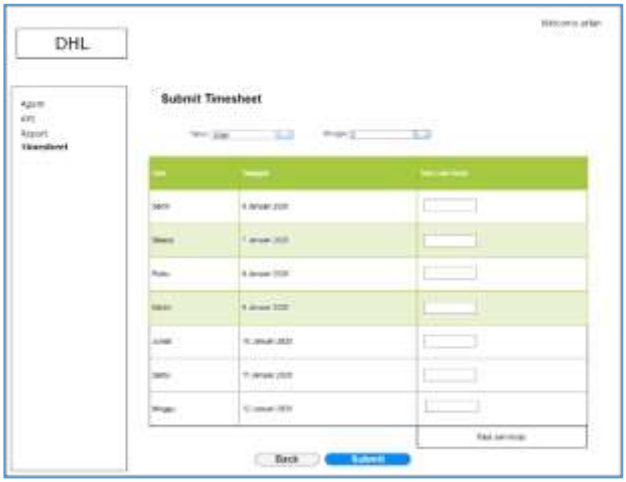

Figure 6. DHL Timesheet / Attendance Data Input Interface Design

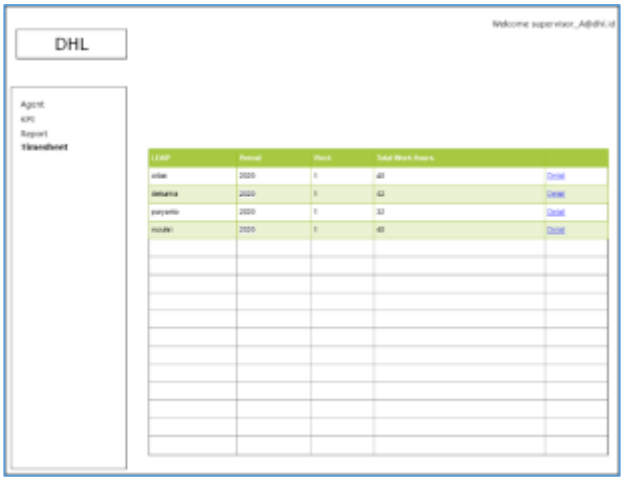

Figure 7. DHL Timesheet / Attendance Data Interface Design

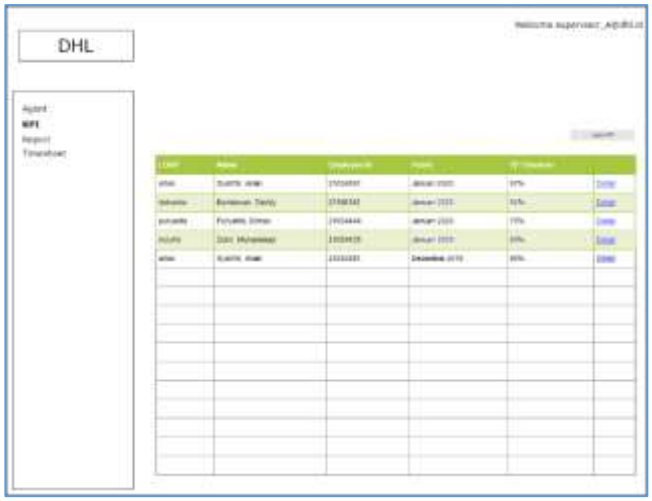

Figure 8 Design of the DHL Timesheet / Attendance Rating Interface

Table 1. GantChart of the Waterfall Stages of DHL Timesheet System Development

Phase/Activity	Resp	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15
Design / Specify Design specifications of the Solution	Tim IT															
Design / Specify Configuration specifications of the Money Delivery	Tim IT															
Review and Approve Design and Configuration Specifications	DHL															
Build / Customization and Configuration	Tim IT															
Test / Prepare System test (test scripts)	Tim IT															
Test / Execute System Test	Tim IT															
Test / Execute User Acceptance Test	Tim IT DHL															
Give Training and complete maintenance contract	Tim IT															
Go Live / Installation of the database and Web Applications in the production environment (DHL server)	Tim IT															
Go Live / Create deployment Apps with connection to the production Database.	Kodehive															
Start operation in production	DHL															

The total development of this system takes 15 weeks or almost 4 calendar months.

5. CONCLUSION

5.1 Conclusion

Based on the results and discussion, this research can conclude several things, namely:

1. Development of an information system that can assist in processing timesheet or attendance data in the field of courier delivery of goods, which has a very wide area coverage.
2. Making an online-based information system requires the use of a fairly good security technology, where OpenID and Oauth2 technologies are the solution for this.

5.2 Suggestions

Suggestions from this research so that in the future it can be corrected if there are unsatisfactory results. In addition, researchers also hope that this research can become one of the literature for research with case studies of system security, especially OpenID and Oauth2 technology.

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