



Using Highchart to Implement Business Intelligence on Attendance Assessment System based on Yii Framework

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Abstract

Today's students keep track of their attendance, and advisors can easily access that data. However, there are three (three) challenges that the advisor must overcome, one of which is submitting information in the form of a table that must be compared with great care and correctness. To facilitate the registration and measurement of advisor attendance for student advice An information form chart will be submitted by PenA (Attendance Assessment) using Highchart. Nim, Advisor, and Time of guidance are the information categories presented in the PenA (Attendance Assessment) chart. A comparison of the time guidance information in the chart may be used to assess how willingly the student is following the instructions. enA (Attendance Assessment) uses a Yii Framework-based website because it makes developing web apps easier and has a sufficient level of security. There are five (5) gains and one (1) deficit on PenA in this study (Attendance Assessment). It has been anticipated that PenA (Attendance Assessment) will improve the caliber of students' attendance in the University of Raharja's supervision procedure.

Keywords: Highchart, Attendance, Business Intelligence.

1. Introduction

The requirement for correct information is crucial, particularly in daily life because it might be a judgment and have an impact on the person receiving it. Changes are indeed very necessary in all respects, including in the presentation of information, from conventional methods to more modern ones so as to make it easier for readers to understand the information presented. It is essential to have a method for disseminating knowledge that is effective and simple to grasp, especially in the very complicated world we live in today [1].

In recording student absenteeism, The correct medium must be used for lecturer-led tutoring as well, because the supervisor's attendance records will contain data that might influence how the pupils under his supervision are evaluated. putting the student's name and nim into the computer (Student Identification Number) and supervisor into the guiding attendance table study one at a time, Then, in order to evaluate the attendance of his tutored pupils, the supervisor must manually recapitulate the attendance by looking at each part of the table individually. This



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process takes a lot of time, and it also calls for focus to evaluate the data and turn it into information that is simple to understand[2].

With new developments, data or information on guidance student attendance will be poured into graphs, giving them a clear, reliable, and appealing look to increase their use and make them simpler to grasp. Additionally, the graph offers a variety of forms that may be customized to meet individual demands, making it simpler for a supervisor to assess student activity levels and review attendance. Highchart is a charting library built entirely on JavaScript that seeks to enhance online applications by integrating interactive charting features. Pie Chart is only one of the many chart styles that Highchart offers[3]. The usage of Highcharts can help with the installation of Business Intelligence on the PenA (Attendance Assessment) system, and supervisors can present images on web pages with a more appealing interface when using them[4], [5]. This is one method of gathering data, storing it, organizing it, reshaping it, providing information that can be put into graphs, making the information or data simpler to grasp[6]. Information system-based business intelligence is a recent development in the field of education. Business intelligence, in general, is the process of doing analysis to extract currently available operational data and gather it into a data repository[7].

The study that was conducted on the use of Highchart for the display of Business Intelligence data. The following six (six) literature evaluations from earlier studies will serve as references for this development: specifically: Studying Dashboard Optimization for Student Exam Assessment System as Higher Education Information Medium. In this study, it is discussed how information concerning mid-semester goals (UTS) and final semester tests is delivered manually (UAS), and overall tasks utilizing a wall magazine in one class that were autonomous (MADING). To the point where it is challenging for students to discover their values in the table one by one due to the manual method's large-scale collection of value data from all classes[8].

Additional investigation into the use of QR Code Attendance for Student Guidance on websites built on the Yii Framework. This research describes the manual lack of tutoring, a strategy that typically allows students to cheat but still has issues. Due to this, tutoring sessions are not effectively supervised in terms of student behavior[9]. Furthermore, study on the use of viewboards in higher education to provide artificial informatics and support information dissemination[10]. In this article, the information system used at Raharja College is discussed. Some of the system's outputs still take the form of information system reports, which show data as tables and numbers. As a result, the leadership has challenges since it takes a long time to comprehend the data. The report also describes Viewboard as an application system that presents information as a pane[11]. and is crucial for educational institution leaders, who can be compared to organizational drivers in this context, in managing and bringing their organizations to achieve the goals, objectives, vision, and mission that have been established[12].

a later study on the usage of dashboards to manage employee performance with regard to attendance in order to improve staff PT[13]. Sinarmas Land Properties is professional. There are numerous employees who frequently arrive late and take breaks that are not in line with their duties since the system for adequately monitoring employee attendance is not yet in place[14]. In order to shift the present data about service outcomes into the dashboard and display it graphically in the form of graphs and interactive graphics, the service to customers will no longer be giving the full level of service. The following study covers XYZ Bank Report Management and the Utilizing business intelligence[14]. This research discusses the It becomes difficult for businesses to handle data and recover information quickly and efficiently when there is an abundance of data within the organization, which slows down the information retrieval process. Utilizing biometrics, developing an attendance management system is the next area of worldwide study[15]. In this study, It is now fairly difficult to control the number of students present during lectures[16]. Calculating attendance percentages by hand is time-consuming and prone to inaccuracy.

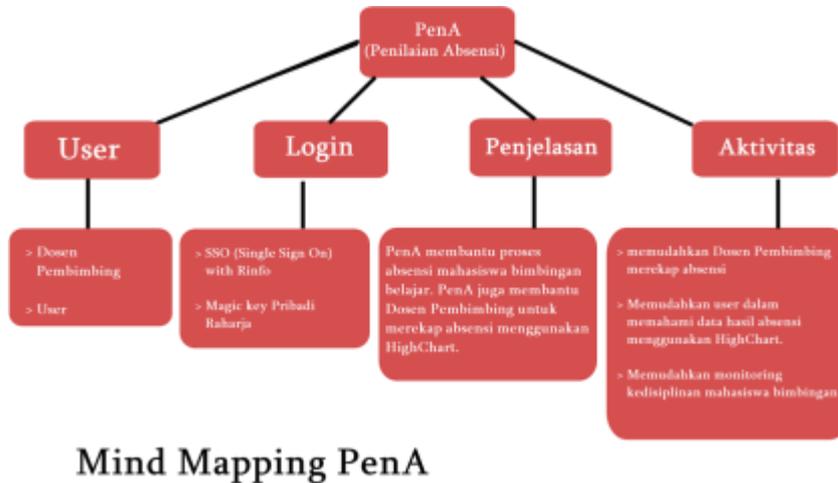


Figure 1 . PenA's Attendance Data Mind Mapping

The image above is a mind-mapping display or image that illustrates the PenA. (Attendance Assessment). The image above is described in the sentences that follow.

Information :

1. Explanation

Describe the purpose of the PenA (Attendance Assessment), which can facilitate teaching students in the attendance process and make it simpler for supervisors to summarize attendance and show data using Highchart[17].

2. Login

The PenA system allows users to logSSO (Single Sign On/Out) is used with Rinfo, which implies that just one key—a unique account controlled by Pribadi Raharja as Magic Keys—can be used.

3. User

The supervisor and a college student are the only two users of the PenA (Attendance Assessment) system.

4. Activities

After the incoming attendance is recapitulated, users can do tutoring attendance on the PenA (Attendance Assessment) system. To make the information simpler to grasp and to keep track of student behavior, the information is then displayed using Highchart.

2. Research Method

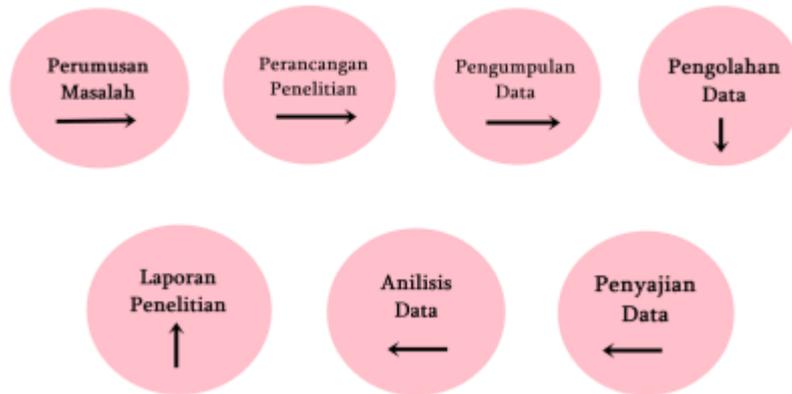


Figure 2. Research Method

Seven (seven) factors must be taken into account while building a system in order to address any issues or flaws it may have. As a result, numerous research methodologies are used throughout the process[18]. In this study, the problem formulation research method is utilized in the first phase to conduct observations intended to identify issues or flaws in the system that was previously in place. The next stage is research design, which aims to create a prototype of the PenA (Attendance Assessment) system to make it simpler to comprehend when it is implemented on a website built using the Yii Framework[19]. The following phase is data collection, which entails gathering the student data, demographic information, and other data required for constructing a PenA (Attendance Assessment), Advisory Lecturer data, and also Room data which will later be saved into a database. Following that, data processing is carried out, namely integrating data from the database using a website built on the Yii Framework, with Xampp acting as the web server, PHP[18] serving as the scripting language, and MySQL serving as the Database Management System (DBMS). To assist with the layout of the PenA website (Attendance Assessment). The following phase is Presentation of Data, where processed data is shown in relevant information that is also simple to grasp for students and instructors for tutoring. Diagrams or graphs will be filled with the information[8]. The following stage is data analysis, when the results from the initial issue formulation process are analyzed to determine the problem's causes. The next step is to create a study report that will summarize all findings in-depth and help find a solid solution to the issues that remain.

3. Finding

In this section, 3 (three) problems will be discussed which will be solved in 6 (six) ways, namely analyzing the system requirements to be designed. After the results of the analysis, it will be continued with a design consisting of system design, database design and system interface design. In the last step of implementing the system and displaying a screenshot of the attendance percentage of tutoring students[9].

3.1 Problem Analysis

Raharja College's display of guidance attendance statistics is pretty impressive, but by utilizing tables to maintain student counseling attendance data and manually searching for each record is since it requires a lot of time, it is regarded as less efficient. Therefore, it is challenging for lecturers to conduct recaps and to show the level of involvement of each

student who is being mentored. [10].

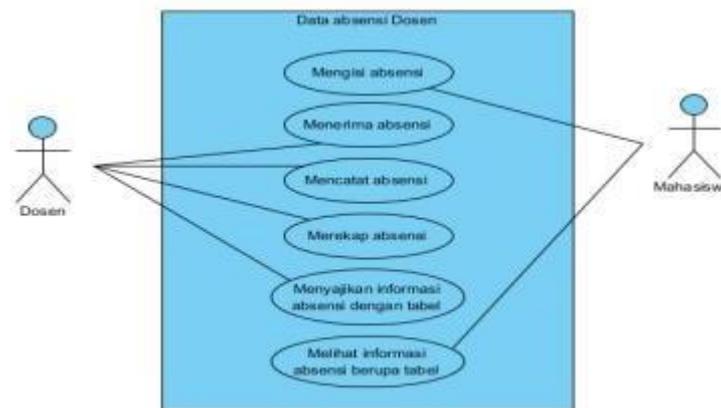


Figure 3. Use Case Diagram for the System in Use

The tutoring attendance system starts by manually reporting absent students to the supervisor and continues until students can see and understand the attendance summary information [11]. Beginning with students who report their attendance to the supervisor, who then logs it back into the table, the picture above shows two actors playing various roles. During that time, certain supervisors will sift the existing data one by one to summarize attendance. The procedure is over. Although this technique is less effective since it needs precision and takes a lot of time, the supervising lecturer will deliver attendance information to students in the form of tables [12].

Figure 4. Table of Student Attendance Data

As seen in the image above, the supervisor may find it challenging to enter the current attendance data due to the enormous number of student data in the table. Since there are a lot of student attendance records accessible for tutoring, the information in the table above comes from students who have entered into the PenA (Attendance Assessment) system. Since instructors must manually record and rate material, it takes a while for the knowledge to become understandable [13].

3.2 Troubleshooting

Upon explaining the issues with how the tutoring attendance procedure operates goes There is a technique that can lessen present issues because the information that is now available is quite thorough[20].

3.3 Program Listing

```
jQuery Chart
$sql2 = "SELECT count(AoPulang.NIM) as kehadiran, Mahasiswa.NamaLengkap
FROM AoPulang
JOIN Mahasiswa ON AoPulang.NIM= Mahasiswa.NIM GROUP BY AoPulang.NIM order by kehadiran desc limit 5";
$total1 = Yii::$app->db->createCommand($sql2)->queryAll();
```

Figure 5. Query to Display Data

The query displayed above is used to produce the Pie Chart; it combines two tables based on their same primary key, Nim.

```
<script src="https://code.highcharts.com/highcharts.js"></script>
<script src="https://code.highcharts.com/modules/data.js"></script>
<script src="https://code.highcharts.com/modules/exporting.js"></script>
```

Figure 6. Query to display Data

The image up above shows a representation of three javascript queries that were retrieved from the Highchart website.

```
<table id="datatable" style="display:none">
  <thead>
    <tr>
      <th>Pembirbing</th>
      <th>Jumlah</th>
    </tr>
  </thead>
  <tbody>
    <? foreach ($total1 as $data)[
      ?>
      <tr>
        <td><?php echo $data['NamaLengkap'];></td>
        <td><?php echo $data['kehadiran'];></td>
      </tr>
    <?php
      }
    ?>
  </tbody>
</table>
```

Figure 7. Query to Insert Graph

The script shown in the image above uses Highchart to produce a Pie Chart and instructs it to utilize the table insert technique to depict the data.

```
Highcharts.setOptions({
  colors: ['#458888', '#538888', '#7AC5CD', '#EE8A88', '#FF3030']
});

Highcharts.chart('container', {
  data: {
    table: 'datatable'
  },
  chart: {
    plotBackgroundColor: null,
    plotBorderWidth: null,
    plotShadow: false,
    type: 'pie'
  },
  plotOptions: {
    pie: {
      allowPointSelect: true,
      cursor: 'pointer',
      dataLabels: {
        enabled: false
      },
      showInLegend: true
    }
  }
});
```

Figure 8. Using JavaScript, ask

A JavaScript query to construct a pie chart and give it color may be seen in the image above.

```
<div id="container" style="min-width: 318px; height: 488px; margin: 0 auto" align="center"></div>
```

Figure 9. Graphic Display Query

3.4 Implementation

The PenA (Attendance Assessment) program is intended to assist the online attendance procedure in tutoring by using the attendance input method, attendance summary, to the distribution of online attendance ranking data in a method that is unquestionably simpler and more visually appealing for students who follow instruction the majority of the time.

a. Main page



Figure 10. Pen Home Page

The main page of the PenA (Attendance Assessment) website, located at <http://pena.raharja.ac.id>, is displayed below.

b. PenA Viewboard View (Attendance Assessment)

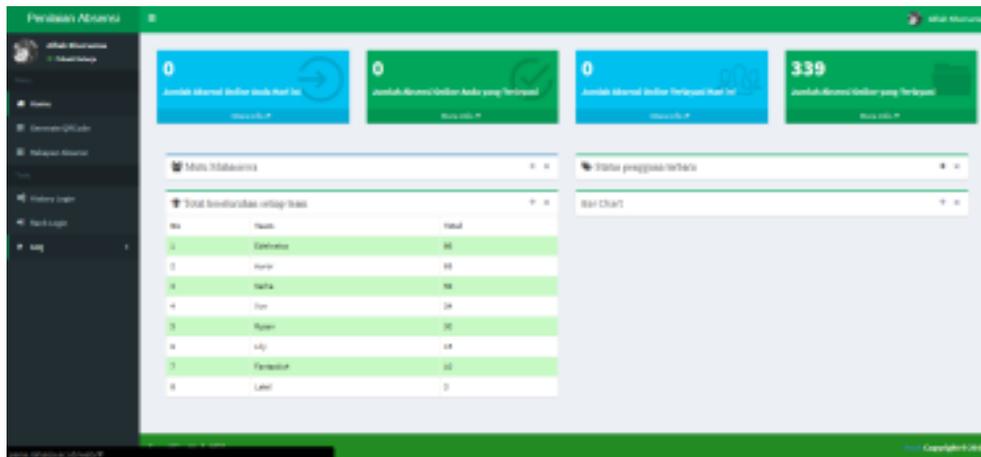


Figure 11. PenA Viewboard Display (Attendance Assessment)

The Viewboard display from the PenA (Attendance Assessment) website is seen in the image above, where there is information on how many online attendance requests have been fulfilled and the information comprises information that will be summarized by the supervisor and displayed as a graph.

c. Display attendance record



Figure 12 . Absence Recap Results Ranking Chart

The image above illustrates that all students who complete guidance will have their work recapitulated by the supervisor using the online attendance data, and the display that results when the data is poured into a pie chart using the online attendance data

is shown below. The Pie Chart's contents show that, of all the students that participate in online attendance, 5 (five) pupils hold the top spot.

4. Conclusion

Three (three) conclusions may be reached when the YII Framework-based attendance evaluation system was put into use using business intelligence utilizing highcharts.as follows:

- a. The PenA (Attendance Assessment) system's availability is thought to make it easier for supervisors to enter attendance into the system's tables. Data from the attendance table may also be immediately inserted into the highchart to make it more effective.
- b. Xampp serves as the web server, PHP serves as the programming language, and MySQL serves as the database management system for the PenA (Attendance Assessment) system (DBMS).
- c. Supervisors may more easily keep track of attendance thanks to the usage of highcharts, which organize and show data in a way that is simpler for consumers to grasp. This, naturally, can offer time efficiency in the processing of data that will be shown as a pie chart.

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