

Implementation of Business Intelligence Using Highlights in the YII Framework based Attendance Assessment System



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Abstract

Attendance information conducted by students can now be easily accessed by a supervisor. However, there are 3 (three) difficulties faced by supervisors, one of which is presenting information with tables requiring considerable time and very high accuracy to measure the comparison of information contained within it. In order to facilitate the supervisor in recording and measuring attendance of student tutoring students handled, the Attendance Rating system will present information in the form of graphics using Highchart. Presentation of information in the form of a graph on Attendance Assessment will present information in the form of Nim (Student Registration Number), supervisor, and guidance time. Information on the guidance time in the graph can be used as a comparison to measure the level of student activity in following the guidance. The Attendance Rating System uses the YII Framework-based website because it is also easy to develop web applications and the YII Framework has a good level of security. In this study, there are 5 (five) advantages and 1 (one) deficiency in the Attendance Assessment system. With this research, it is expected that the Attendance Assessment system can improve the quality of student attendance in the tutoring process at Raharja College.

Keywords: Highchart, Business Intelligence, Attendance

1. Introduction

The need for accurate information is really needed especially for everyday life, because accurate information can be an assessment and will affect the recipient of that information. Change is really needed in all things including in the presentation of forms of information, from conventional ways to being more modern so that it can facilitate readers in understanding the information presented. Especially in today's sophisticated life, there is a need for efficient and easily understood information delivery media in its delivery. In carrying out the recording of attendance for student tutoring conducted by the lecturer also requires the right media, because the results of the absenteeism conducted by the supervisor will be an information that can influence the assessment of the student's guidance. Enter data consisting of student names, nim (Student Identification Number), and supervising lecturers one by one into the tutoring attendance table, after which the supervisor must also recap the attendance manually by examining the tables one by one to get an assessment of student attendance his guidance. This method certainly requires a very long time, and also requires concentration to analyze the data so that it becomes easy to digest information. With new innovations, data or information on student attendance, existing guidance will be poured into the graph, with a concise, compact and attractive display that makes the

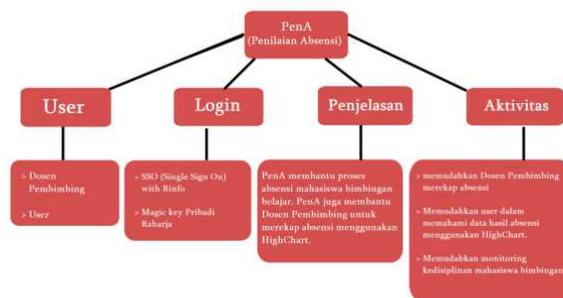
graph more widely used and also which the graph can facilitate the supervisors to recapitulate attendance and measure the level of activity of students handled. Highchart is a pure charting library based on

JavaScript that aims to improve web applications by adding interactive charting capabilities, the Highchart supports various types of graphics, one of which is Pie Chart [1]. With Highchart supervisors can display graphics on web pages with more attractive interfaces, using Highchart can help in the implementation of Business Intelligence in the Assessment System Attendance is one way to collect, store, organize, reshape, summarize data and provide information that can be poured into the graph so that the data or information is more easily understood. Business Intelligence based on information systems is new in the world of education. In general, Business Intelligence is a process of conducting analysis to extract operational data that is available and collected into a data warehouse [2].

The research that has been done regarding the presentation of Business Intelligence information using Highchart. Here are 6 (six) literature reviews of previous research to be a reference in this development, namely: Research on the Optimization of Dashboards in Student Examination Assessment Systems as a Media for Higher Education Information. In this study, the manual is still explained on how to deliver information about midterm goal assessment (UTS), final semester examinations (UAS), and overall independent (TM) assignments in one class using a wall magazine (MADING). Which where by manual method causes the accumulation of a lot of value data from all classes, thus making it difficult for students to find the value in the table one by one [3].

Further research regarding the Application of Student Guidance QRCode Attendance on YII Framework-based Websites. This study describes the still manual absence of tutoring where the method still has weaknesses with no small amount of fraud committed by students. This makes the discipline of students not well monitored when conducting scheduled tutoring [4]. Next is the research on Viewboard Implementation in Supporting Information Dissemination by Presenting Artificial Informatics at Higher Education. This study discusses the information system that runs on Raharja College, some of its output is still in the form of information system reports that are displayed in the form of tables and data in the form of numbers. This creates an obstacle for the leadership because it requires not a little time to understand the data. The study also explained that Viewboard is an application system that displays information in the form of panels that are very important for leaders of educational institutions (which can be analogized here as organizational drivers) in controlling and bringing their organizations to achieve their intended goals, objectives, vision and mission [5].

Subsequent research on the use of dashboards to control employee attendance performance to improve the professionalism of employees at PT. Sinarmas Land Property. The absence of proper control of employee attendance makes many employees often present late and use work breaks that are not in accordance with their portion, making service to consumers not providing maximum service, and will change existing service results data into the dashboard so that they can be displayed visually in the form of interactive charts [6]. The next study discusses the Implementation of Business Intelligence in XYZ Bank Report Management. In this study explaining the abundance of data in the company causes the information retrieval process to be very slow, it becomes a challenge for companies to be able to manage data and retrieve information quickly and efficiently [7]. Next is international research, which is about the Development of Attendance Management System using Biometrics. In this study discussed the management of student attendance during college has become a difficult challenge. The ability to calculate the percentage of attendance in a manual way can lead to the possibility of errors and spend a lot of time [8].



Mind Mapping PenA

Figure 1. Mind Mapping Attendance Data

The picture above is a display of Mind Mapping or an overview of mind mapping that explains Attendance Assessment. The following is a description of the image above.

1. Explanation

Explain the Attendance Assessment function which can help attendance process for tutoring students and facilitate the supervisor in recapitating attendance and presenting information using Highchart.

2. Login

The Attendance Rating System provides logins using SSO (Single Sign On / Out) with Info which means that you can only use one key, the account that is only owned by Personal Raharja as a Magic Key.

3. User

There are 2 users in the Attendance Assessment system, namely supervisors and students.

4. Aktivitas

Users can attend attendance at the Attendance Assessment system after which attendance will be recapitulated after which information will be presented using Highchart to make it easier to understand and also monitor student discipline.

2. Research Method

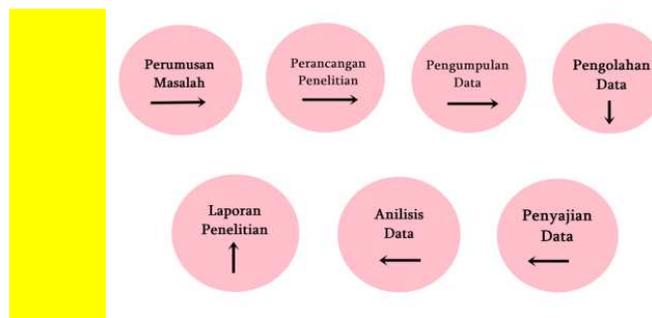


Figure 2. Research Method

In designing a system there are 7 (seven) things that need to be considered to be able to overcome problems or shortcomings that exist in the system, so in the research process several methods are applied. In this study, the research method used in the first step was done, namely the Formulation of the Problem to make observations that aim to find out the problems or shortcomings in the existing system. Furthermore, the Research Design stage is intended to design a system of Time Attendance Assessment in the form of a prototype to make it easier to understand when it will be applied to the YII Framework-based website. The next step is Data Collection, which means collecting data needed in the process of designing Attendance Assessments such as Student data, Supervisor data, and Room data which will be stored in a

database. After that, it continued with Data Processing, namely integrating data in the database, using websites based on Yii Framework, with Xampp as a web server, PHP as a scripting language, and MySQL as a Database Management System (DBMS). To support website design Attendance Rating. The next step is Presentation Data from processed data will be presented as useful and easily understood information for students and also tutors, the information will be poured into a Diagram or Graph. The next stage is Data Analysis to analyze the results from the beginning of the problem formulation process and find out what are the causes of the problem. Then in the last stage of the Research Report is to report all the results of the research in detail and detail that will eventually get a good solution to the problems.

Problem

Presentation of guidance attendance data at Raharja College is quite good, but with the recording of attendance guidance data students use tables and search data one by one is considered less efficient because it requires a long time. So that it makes it difficult for lecturers to do the recording and also to display the percentage of activities of each student who is guided.

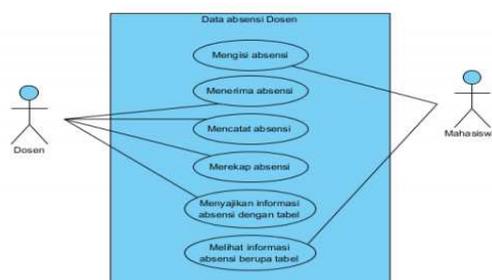


Figure 3. Use Case System diagram that runs

The system that runs on the attendance of tutoring, which begins with the absence of students manually to the supervisor until the presentation of attendance record information can be seen and understood by students. From the picture above there are 2 actors who have different roles, starting with students who attend attendance to the supervisor after that the supervisor records back into the table, in a certain period the supervisor will recap attendance by sorting the data in one by one. After the process the supervisor will present attendance information in the form of tables to be given as information to students where the method is certainly not efficient because it requires accuracy and a long enough time.

No	Mahasiswa	Email	Status	Penilaian	Team	Absensi
1	Arini Dwi Lestari	arini.dwi@raharja.ac.id		Dr. H. Lintang Raharja, MEd, Ph.D	Saling	Temp 5
2	Shyvia Ratna Dewi	shyvia@raharja.ac.id		Dr. H. Lintang Raharja, MEd, Ph.D	Saling	Temp 6
3	Lina Nabila Nisma	lina.nabila@raharja.ac.id		Dr. H. Lintang Raharja, MEd, Ph.D	Bosom	Temp 6
4	Amalia Nur Rizki	amalia.nur@raharja.ac.id		Dr. H. Lintang Raharja, MEd, Ph.D	Saling	Temp 5
5	Muhammad Sandi Alhamid	muhammad.sandi@raharja.ac.id		Dr. H. Lintang Raharja, MEd, Ph.D	Fantastic	Temp 5
6	Bella Dhea Dinda	bella@raharja.ac.id		Dr. H. Lintang Raharja, MEd, Ph.D	Saling	Temp 6
7	Rezi Rahmawati	rezi.rahmawati@raharja.ac.id		Dr. H. Lintang Raharja, MEd, Ph.D	Fantastic	Temp 5
8	Muthya Setya Wardana	muthya.setya@raharja.ac.id		Dr. H. Lintang Raharja, MEd, Ph.D	Fantastic	Temp 5
9	Marsella Handika	marsella@raharja.ac.id		Dr. H. Lintang Raharja, MEd, Ph.D	Bosom	Temp 6
10	Aulia Nisabandi	aulia.nisabandi@raharja.ac.id		Dr. H. Lintang Raharja, MEd, Ph.D	Saling	Temp 6

Figure 4. Student Attendance Data Table

It can be seen from the picture above, the large number of student data in the table can make it difficult for the supervisor to do the recording of existing attendance data. The table above is the attendance data from students who login to the Attendance Assessment system, so from the many attendance data of tutoring students that there are lecturers, they have to do manual recording and ranking so that it takes a long time to become easily understood information.

Research and Finding

From the explanation of the problems that exist in the way in which the attendance process of tutoring is currently available is very detailed, therefore there is a system that can reduce the existing problems. With Assessment Attendance data attendance will be easier to input, recap, and also presented in a way that is easier and with a more attractive appearance.

```
//query Chart
$sql2 = "SELECT count(Aspulang.NIM) as kehadiran, Mahasiswa.NamaLengkap
FROM Aspulang
JOIN Mahasiswa ON Aspulang.NIM= Mahasiswa.NIM GROUP BY Aspulang.NIM order by kehadiran desc limit 5";
$total2 = Yii::$app->db->createCommand($sql2)->queryAll();
```

Figure 5. Query for Displaying Data

The appearance of the query above serves to display Pie Chart, from the above queries consisting of 2 tables combined based on the 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 picture above is a display of 3 javascript queries taken from the Highchart web.

```
<table id="datatable" style="display:none">
  <thead>
    <tr>
      <th>Pembimbing</th>
      <th>Jumlah</th>
    </tr>
  </thead>
  <tbody>
    <? foreach ($total2 as $data){
      <tr>
        <td><?php echo $data['NamaLengkap'];></td>
        <td><?php echo $data['kehadiran'];></td>
      </tr>
    <?php
    }
  </tbody>
</table>
```

Figure 7. Query for Entering Graphs

The picture above is a script for making Pie Chart using Highchart, to make it use the insert table method as the data to be visualized.

```
<script>
Highcharts.setOptions({
  colors: ['#458888', '#53868D', '#7AC5CD', '#EE9A00', '#FF3838']
});

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. Query in JavaScript

In the picture above there is a JavaScript query to create Pie Chart and give color to Pie Chart.

```
<div id="container" style="min-width: 310px; height: 400px; margin: 0 auto" align="center"></div>
```

Figure 9. Query for Graph Display

The picture above is an html display to display the Pie Chart that has been created.

The application of the Attendance Assessment system is attempted to help the online attendance process in tutoring from the attendance input process, attendance recap, to the delivery of online attendance information ranking students who most often do guidance in a way that is certainly easier and a more attractive appearance.



Figure 10. Main Attendance Rating Page

The following is the main page display on the Attendance Rating website, namely <http://pena.raharja.ac.id/>.



Figure 11. Attendance Rating Viewboard View

In the picture above is the Viewboard display on the Attendance Rating website, where there are data on the number of online attendance that has been served and the data contains data that will be recapitulated by the supervisor to be presented in the graph.



Figure 12. Recap Chart Results Time Attendance Chart

The picture above explains from the online attendance data that all students who conduct guidance will be recapitulated by the supervisor and the following is the display after doing online

attendance recording which has been poured into Pie Chart. Where the contents of Pie Chart explain that all students who do online attendance have 5 (five) students who are in the top rank.

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