Development and Implementation of Cloud Software with SAP for Teaching Evaluation and Performance

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Abstract

In Lima, Peru, there is a massive impunity or misconduct on the part of university teachers towards their classes, being these one of the main causes that contribute to a bad education of the population. In this work, a new method was developed for coding and the SAP tools that were used, having specific simple activities and an order in them. In this case study, two parts were determined (Design-Development) of the mobile system and a part of what each classroom carried. The results of this study showed that the web application would have a positive impact with respect to improving the punctuality of the teacher. These results could help individual and state universities monitor teacher attendance.

Keywords: Cloud application; Mobile Application teaching assistance; SCP application.

1. Introduction

Despite the fact that there is no close relationship between productivity and working hours. Many organizations still often impose minimum working hours and expect their employees to be punctual in their assigned shifts or working time [1]. This is because educational institutions are important between the learning of students and the teaching time of the teacher; taking into account the quality of teaching, the basic requirement for learning to take place is that the teacher is present [2], if it is not found at the indicated time, its level of learning will be reduced, affecting the student. Thus, students associate impunity and non-attendance with lack of respect and irresponsibility on the part of teachers. [3]. In addition, the method of taking assistance and then feeding assistance into a computer system for assistance becomes laborious and increases the labor force. [4]. Even the absences worsen as we have existence of traditions or customs in a community not only affecting young people but also children being absences for customs something already daily in life, it is important to note that throughout the school year absences are given by the different events [5].

In Lima a responsive web system with attendance logging capabilities per QR reader to enter your rooms is not available. For this necessity, a solution was proposed, already given in another place (Ecuador, UDLA), for it we will use the tool Build me, with the purpose of designing the prototype given that unlike other tools this one has a tab of data that, allows to accede to the editor of data [6]. Once the prototype and flow have been created, we will develop the web system in SAP HCP because, unlike other tools, it is aimed at integrating your applications in the cloud and in the installations without problems [7], plus SAP S/4 HANA lets you meet IT landscape goals with hybrid scenarios [8]. The latter is what we used to create a responsive web system for mobile adaptation.

In this research article, a web-based attendance registration system will be developed and the impact of the monetary incentive system on teachers' monthly and annual attendance patterns will be evaluated [9], because the company will sanction teachers' tardiness.

The goal is to design and implement a responsive web system that allows teacher users to record their attendance in their class schedule with an online database.

This work is divided as follows: In section I there will be an introduction, section II will explain the methodologies, section III the application, in section IV Results and discussions and in section V conclusions.

2. Methodology

The research will apply the development and implementation of web applications, to plan, organize, verify and validate the development processes in the Web Application System, in this case will show the design of development methods that are more adaptable to the development of the application.

2.1 Phase I: Analysis

In this phase, we address the problem, the main one being the repeated tardiness that the teacher has to the classroom, causing a decrease in learning in the classroom. In addition, we will see the following: requirements, classifications, benefits.

2.2 Phase II: Design

In this phase we clarify the needs that the application needs to the client. For this we use the tool Build me.

2.3 Phase III: Development

The application was created for a responsive web system, which indicates that it can be used both on the web and on cell phones, the latter being accessed through a url, It is here that we will use the tools of SAP and java.

2.4 Buildme

As an important factor in a Project, Build Me is a comprehensive SAP tool with a catalogue of Fiori prototypes for referencing and remixing, to meet the needs of end users [10]. When we refer to a catalogue, we are talking about sketches of defined prototypes, this particular case for a responsive web application, which allows us not only the operation and design but also as it adapts for both web and mobile.

- **Advantager of the herramienta Build me tool:** Allows stakeholders and users to visualize the design and help shape the front-end before any development begins.

- **Disadvantages of the Build me tool:** The components are limited for all the tools that SAP UI5/ Fiori has. The canvas is dynamic, but sometimes does not set the components well so you should refresh the page.

2.5 HTML

Specifically, HTML5, this being the fifth revision of the HTML language, is one of the important factors for this project since it is used to develop web pages. HTML is a reference standard for software on web pages that connect.

2.6 JavaScript

JavaScript is a programming language for the web [11]. This indicates that JavaScript is an interpreted language and that it is implemented as part of a web browser allowing to improve the interface and at the same time make web pages dynamic.

2.7 SAPUI

SAPUI5 enables the development and design of responsive SAP business web applications, based on HTML5.It is a programming framework that facilitates the development of web applications, The UI5 core provides a solid foundation that simplifies your work by managing many aspects of the modern development behind it [12].

2.8 SAP HANA CLOUD PLATAFORM

SAP HCP is a service platform, this is in order to use SAPUI5 and together SAP S4 HANA. Being this an open business platform designed to help innovate, integrate and expand applications with agility, flexibility and options [13].

- **SAP S4 HAN:** This tool marks a step beyond the Data Logging Transaction System. Understanding that it is the exclusive database of SAP ERP and SAP Business Suite.

3. APPLICATION

3.1 Design Prototype

Build Me, offers us all the components and elements to make web applications, giving us the tools that are more efficient, also allows unrestricted access to the components of SAPUI5 Fiori. With Build we will elaborate all the views and the flow that the application will follow, see Fig. 1.
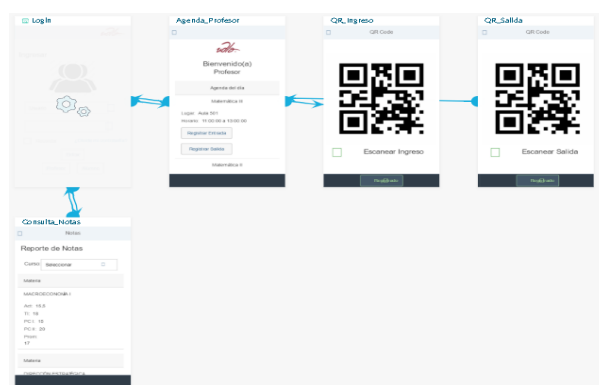

Fig. 1. Build me, creation of views and flow.

3.2 Web System development for users

The application was created for a responsive web system, which indicates that it can be used both on the web and on cell phones, the latter being accessed through a url, this system has the function of recording the attendance of teachers to their respective classrooms in the universities of Lima, with the intention of attending the classes that will develop.

We will use SAP HCP (contains html5, SAPUI5, SAP S4 HANA and JavaScript tools) to create the main views: The logo and the login of the institution will be displayed on the screen (Fig. 2). The institutional mail and your main password will go on the main screen, which will take us to the information screen of your class schedule (Fig. 3) in their respective classrooms, which will take us to the next user function (Fig.3.).
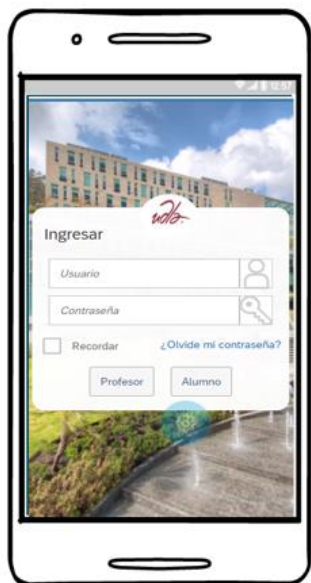

Fig. 2. SAP HCP , input view

Fig. 3. SAP HCP , Class time

Shows the functions of the teaching user (Fig. 3) in Table I, and Fig. 4. shows the design screen of the main functionality.

Table 1 . USER FUNCTION TEACHER

User	Description
Schedule time	Displays the time of admission to a respective room
Classroom	The user will be able to see which salon to go to.
Code course	Functionality that allows you to differentiate from other courses.
Reader QR	Here we will have the QR code reader whose main function is to read the QR code and mark its attendance according to the room that corresponds to it.

Fig. 4. Code reader QR 1

3.3 Development of the web system for the classrooms

In the same way as point B we will develop the Web System to generate the QR code that will be read by the system for teachers Fig. 5.

Fig. 5. Code reader QR 2

4. RESULTS AND DISCUSSION

This system has already been implemented in the University of Ecuador, requiring a service for the control of its teachers, due to the usual absence of these.

4.1 On the case study

In this section we began to investigate in institutions where their record of teaching attendance is traditional; in this section, as an example, the system was implemented in a university in Ecuador; giving good results with indicators that tell us that the system can be implemented in the universities of Lima Peru, this software has been designed for application with results in the quality of study. The system is executed when the

teacher in real time has to attend a class in a specific classroom Fig 6. Before that the teacher only enters his registration when he enters the university through a bacht see Fig. 7.

Fig. 6. Lounge Entrance / UDLA computer science-

Headquarters Granados

Fig. 7. Entrance door 1 / UDLA Headquarters

Granados

As a result, class attendance improved, marking their income punctually, according to the comparison between the table where the entry is recorded, see Fig.8. of the teacher compared with the date of entry of the teacher see Fig.9.

ID del profesor	NRC	ID del aula	Fecha y hora de la asistencia	Fecha y hora programada de inicio de curso	Nombre del docente	Nombre del curso
1194	7539	S/S	2019-09-02 21:20:26	2019-08-27 18:30:00	Jaime Francisco Gia	D-UP-IR CIRUGIA
1194	7539	S/S	2019-09-02 21:30:59	2019-08-27 18:30:00	Jaime Francisco Gia	D-UP-IR CIRUGIA
1271	7156	367	2019-09-03 17:11:50	2019-09-03 19:50:00	Marco Antonio Lalama	SISTEMA DE CTRL DE GESTION
1247	7539	S/S	2019-09-04 17:45:56	2019-09-02 07:00:00	Diego la Torre	D-UP-IR CIRUGIA
1194	7539	S/S	2019-09-04 17:52:12	2019-09-02 21:20:26	Jaime Francisco Gia	D-UP-IR CIRUGIA
887	207	S/S	2019-09-04 18:03:04	2019-09-04 07:01:00	Byron Santiago Condor Chano	PRACTICAS CLINICO QUIRURGICA
887	207	S/S	2019-09-04 18:07:34	2019-09-04 07:01:00	Byron Santiago Condor Chano	PRACTICAS CLINICO QUIRURGICA

Fig. 8. Teacher registration table

BlockDate	TeacherI	TeacherDisplayName	TeacherEmai	TeacherPers	BlockPlann
6/08/2019	17	NAVARRO VASQUEZ M	marco.navar	1709130767	1330
6/08/2019	118	ORTIZ PROCEL ENRIQU	enrique.orti:	601296650	1435
6/08/2019	128	ESPINOSA HERRERA FE	fernando.es;	1711191260	805
6/08/2019	798	PALOMINO LAZO CARL	carlos.palom	1710635234	1850
6/08/2019	937	CHICAIZA VIVANCO TE	teresa.chicai	1716721624	910
6/08/2019	1296	BALAREZO LASLUISA A	andrea.balar	1718904855	805
6/08/2019	1655	ZAMBRANO CARRASC(	leslie.zambr	1704133402	805
6/08/2019	1924	TOSCANO ROMERO JO	jose.toscano	1715195283	1435
6/08/2019	1992	HENRIQUEZ TRUJILLO A	aquiles.henr	1720261641	1435
6/08/2019	2717	ABAD RIVERA TANIA A	tania.abad@	1708089634	805
6/08/2019	2661	ARCE SALCEDO CARME	marlene.arc	1714435904	805

Fig. 9. Teacher registration table

Unlike other research articles such as "Attendance recording and consolidation system using Arduino and Raspberry Pi"[4], Attendance registration does not require an arduino board or external circuits, but only a mobile phone (which is already common among teachers) and a tablet for registration, another example is that unlike the research article "Attendance Management System using a Mobile Device and a Web Application" [14] this requires a card reader unlike this research article that does not require it.

4.2 About the methodology

The main advantage of the methodology and tools used in this research article is the dynamism at the time of making the project, given that SAP tools are in the cloud allows programming without the need for program downloads, in addition that the data is stored in RAM memory which allows a better response time, unlike other systems that after entering RAM memory have to look for the hard disk making the system slower an example of this is the method in the research article "Student Attendance Management System with Bluetooth Low Energy Beacon and Android Devices" [15]. This last mentioned is vital because if any change occurred it could be made from any computer with the

shortest waiting time which is what other scientific articles cannot do.

5. CONCLUSIONS

In this research article we were able to design and implement an attendance registration software applied in the University of Ecuador, but with positive results for the application in the universities of Lima Peru, also thanks to the method used was efficient as the design of the prototype as a first step is fundamental in any web system, allows the customer to see how the system is and also its functionalities generating that at the time of development changes are minimized. Then the development was seen with effective results in the sense of speed.

With respect to the application was efficient because SAP CLOUD PLATAFORM allowed a dynamic and interactive development also with direct access to the cloud this gives the ability to be in real time and in turn fast response.

References

1. ICSITech 3. 2017 Bandung, L. S. Riza, A. Pranolo, Institute of Electrical and Electronics Engineers. Indonesia Section, ICSITech 3 2017.10.25-26 Bandung, and International Conference on Science in Information Technology 3 2017.10.25-26

2. Bandung, *"Dissecting University Employee Attendance Log: A Case Study," proceeding : 2017 3rd International Conference on Science in Information Technology (ICSITech) : October 25-26, 2017, Bandung, Indonesia.* .

3. A. Winkler and A. C. Rubio, "Impacto a corto plazo del absentismo docente en el desempeño escolar chileno," 2015.

4. G. J. M. García and S. A. Medécigo, "Los criterios que emplean los estudiantes universitarios para evaluar la in-eficacia docente de sus profesores," *Perfiles Educ.*, vol. 36, no. 143, pp. 124–139, 2014.

5. D. Sunehra and V. S. Goud, "Attendance recording and consolidation system using Arduino and Raspberry Pi," *Int. Conf. Signal Process. Commun. Power Embed. Syst. SCOPES 2016 - Proc.*, pp. 1240–1245, 2017.

6. E. Calvo, "La inasistencia a causa de costumbres y tradiciones en la comunidad indígena purepecha de ahuiran michoacan en el nivel de preescolar," p. 294.

7. "SAP Fiori Elements (Smart Templates) - SAP Help Portal." [Online]. Available: https://help.sap.com/viewer/acb8ee53fa0e448f9b4a4125591f5d5a/Cloud/en-US/b02f509d805e428e9b282af43638312c.html. [Accessed: 18-Sep-2019].

8. "Overview | SAP Cloud Platform." [Online]. Available: https://cloudplatform.sap.com/index.html. [Accessed: 18-Sep-2019].

9. "SAP S / 4HANA ERP | En la memoria Business Suite." [Online]. Available: https://www.sap.com/products/s4hana-erp.html. [Accessed: 18-Sep-2019].

10. S. Cueto, M. Torero, J. León, and J. Deustua, *Asistencia docente y rendimiento escolar: el caso del programa META*, vol. 53. 2008.

11. "Build beautiful apps | BUILD.me." [Online]. Available: https://www.build.me/. [Accessed: 18-Sep-2019].

12. "What is JavaScript." [Online]. Available: https://www.w3schools.com/whatis/whatis_js.asp. [Accessed: 18-Sep-2019].

13. "Inicio - Kit de demostración - SAPUI5 SDK." [Online]. Available: https://sapui5.hana.ondemand.com/#. [Accessed: 18-Sep-2019].

14. "¿Qué es SAP S/4HANA? 13 preguntas contestadas - SAP News Center Latinoamérica." [Online]. Available: https://news.sap.com/latinamerica/2015/05/que-es-sap-s4hana-13-preguntas-contestadas/. [Accessed: 18-Sep-2019].

15. J. Iio, "Attendance Management System Using a Mobile Device and a Web Application," *NBiS 2016 - 19th Int. Conf. Network-Based Inf. Syst.*, pp. 510–515, 2016.

16. S. Noguchi, M. Niibori, E. Zhou, and M. Kamada, "Student attendance management system with bluetooth low energy beacon and android devices," *Proc. - 2015 18th Int. Conf. Network-Based Inf. Syst. NBiS 2015*, pp. 710–713, 2015.

17. modelling techniques for genomics. Nature Reviews Genetics, 20(7), 389-403.

18. Fröhlich, H., Balling, R., Beerenwinkel, N., Kohlbacher, O., Kumar, S., Lengauer, T., ... & Schmidt, H. H. (2018). From hype to reality: data science enabling personalized medicine. BMC Medicine, 16(1), 150.

19. Khera, A. V., Chaffin, M., Aragam, K. G.,Haas, M. E., Roselli, C., Choi, S. H., ... & Kathiresan, S. (2018). Genome-wide polygenic scores for common diseases identify individuals

with risk equivalent to monogenic mutations. Nature Genetics, 50(9), 1219-1224.

20. Libbrecht, M. W., & Noble, W. S. (2015). Machine learning applications in genetics and genomics. Nature Reviews Genetics, 16(6), 321-332.

21. Maher, B. (2008). Personal genomes: The case of the missing heritability. Nature News, 456(7218), 18-21.

22. Manolio, T. A., Collins, F. S., Cox, N. J., Goldstein, D. B., Hindorff, L. A., Hunter, D. J.,... & Visscher, P. M. (2009). Finding the missing heritability of complex diseases. Nature, 461(7265), 747-753.

23. Märtens, K., Hallin, J., Warringer, J., Liti, G., & Parts, L. (2016). Predicting quantitative traits from genome and phenome with near perfect accuracy. Nature Communications, 7(1), 1-8.

24. Min, S., Lee, B., & Yoon, S. (2017). Deeplearning in bioinformatics. Briefings in Bioinformatics, 18(5), 851-869.

25. Montañez, C. A. C., Fergus, P., Hussain, A., Al-Jumeily, D., Abdulaimma, B., Hind, J., & Keight, R. (2018). Machine learning approaches for the prediction of obesity using publicly available genetic profiles. In 2018 International Joint Conference on Neural Networks (IJCNN) (pp. 1-8). IEEE.

26. Nagai, A., Hirata, M., Kamatani, Y., Muto, K.,Matsuda, K., Kiyohara, Y., ... & Kubo, M. (2017). Overview of the BioBank Japan Project: study design and profile. Journal of Epidemiology, 27(3S), S2-S8.

27. Okser, S., Pahikkala, T., Airola, A., Salakoski, T., Ripatti, S., & Aittokallio, T. (2014). Regularized machine learning in the genetic prediction of complex traits. PLoS Genetics, 10(11), e1004754.

28. Poplin, R., Chang, P. C., Alexander, D.,Schwartz, S., Colthurst, T., Ku, A., ... & DePristo, M. A. (2018). A universal SNP and small-indel variant caller using deep neural networks. Nature Biotechnology, 36(10), 983-987.

29. Ritchie, M. D., Holzinger, E. R., Li, R., Pendergrass, S. A., & Kim, D. (2015). Methods of integrating data to uncover genotype–phenotype interactions. Nature Reviews Genetics, 16(2), 85-97.

30. Schrider, D. R., & Kern, A. D. (2018). Supervised machine learning for population genetics: a new paradigm. Trends in Genetics, 34(4), 301-312.

31. Sundaram, L., Gao, H., Padigepati, S. R.,McRae, J. F., Li, Y., Kosmicki, J. A., ... & Batzoglou, S. (2018). Predicting the clinical impact of human mutation with deep neural networks. Nature Genetics, 50(8), 1161-1170.

32. Visscher, P. M., Wray, N. R., Zhang, Q., Sklar,P., McCarthy, M. I., Brown, M. A., & Yang, J. (2017). 10 years of GWAS discovery: biology, function, and translation. The American Journal of Human Genetics, 101(1), 5-22.

33. Wainberg, M., Merico, D., Delong, A., & Frey,B. J. (2018). Deep learning in biomedicine. Nature Biotechnology, 36(9), 829-838.

34. Zhou, J., & Troyanskaya, O. G. (2015). Predicting effects of noncoding variants with deep learning–based sequence model. Nature Methods, 12(10), 931-934.

35. Zou, J., Huss, M., Abid, A., Mohammadi, P., Torkamani, A., & Telenti, A. (2019). A primer on deep learning in genomics. Nature Genetics, 51(1), 12-18.