Sistema Notificacions Android per a Aules Moodle

Vidal Joven Montull

**Resum** — Actualment, l’ús de les noves tecnologies en l’àmbit educatiu s’ha vist incrementat gràcies a tots els avantatges que ha aportat a tots els sectors de la comunitat educativa. Una d’aquestes avantatges és el fet de poder fer arribar als usuaris finals, alumnes i professors, tota la informació que desitgen amb un moviment senzill, obrir el dispositiu mòbil. Basant-nos en aquesta idea s’ha portat a terme aquest projecte.

L’aplicació respon a la necessitat de tenir una eina que permeti amb molta facilitat a l’usuari saber la nota obtinguda en l’entrega d’una tasca en els Sistemas d’Aules Moodle.

AppNotify, és l’aplicació fruit de la realització d’aquest treball final de Grau, la qual permetrà als alumnes rebre les notificacions, que es produeixin en les retroaccions per part dels professors en la qualificació de les entregues realitzades, en els seus dipositius Android.

La motivació del projecte va ser millorar la idea original de l’aplicactiu natiu de Moodle, de tal manera que l’alumne sàpigues de primera mà quina ha set la seva qualificació en l’entrega realitzada, sense la necessitat d’entrar a l’Aula Moodle.

**Paraules Clau** — Moodle, Notificacions Push, Android, qualificacions, alumnes, professors.

**Abstract —** CurrentlyThe use of new technologies in education has been increased thanks to everyone who has contributed benefits to all sectors of the educational community. One of these advantages is being able to reach end users, students and teachers, all the information you want with a simple movement, open the mobile device. Based on this idea has been carried out this project.

The application responds to the need for a tool that allows the user to very easily find the mark obtained in the delivery of work in Moodle Classroom Systems.

AppNotify, the application is the result of the completion of this final level, which will allow students to receive notifications that occur in feedback mechanisms by teachers in grade deliveries made in its Android dipositius .

The motivation of the project was to improve the original idea aplicactiu native Moodle, so that students know firsthand what their qualifications are set in the delivery done without the need to enter the Moodle classroom

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**Index Term — Moodle, Notificacions Push, Android, qualificacions, alumnes, professors.**

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1. E-mail contacte: [vijom14@gmail.com](mailto:vijom14@gmail.com)
2. Menció: Enginyeria Software
3. Treball tutoritzat per: Daniel Ponsa (dEIC)

• Curs 2015/16

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# 1 Introducció

L’

Objectiu del present article és presentar la solució per a la implementació d’una aplicació per a rebre les notificacions que es produeixen en les Aules Moodle[xxx] dels alumnes com a resposta a les necessitats que aquets han mostrar en l’estudi realitzat.

En l’actualitat podem trobar al mercat diverses varietats d’aplicacions que faciliten la tasca als alumnes, en podem trobar algun exemple més endavant, però cap ofereix una solució exacte pel problema que s’ha plantejat com a base del projecte, oferir a l’alumne una notificació personalitzada, molt més útil que les actuals.

Per tant des de la anàlisis del problema, les necessitats i altres factors es presentarà una solució aplicada en un cas concret i específic.

La motivació d’aquest projecte era crear una aplicació alternativa a l’actual aplicatiu que hi ha sobre l’antic Campus Virtual i sobre l’actual aplicació nativa de Moodle, ja que l’any vinent l’antic Campus serà obsolet i es realitzarà una migració a les Aules Moodle.

* 1. **Objectius**

L’objectiu principal del treball és poder crear un sistema propi de Notificacions Push[xxx] per a poder rebre les qualificacions de les tasques entregades en les Aules Moodle.

Aquets objectius estan directament relacionats amb els diferents entregables, els quals haurem de implementar en diferents entorns sobre els quals treballarà l‘aplicatiu:

* Entorn Servidor: Serà l’encarregat de connectar l’aplicació amb Google Cloud Message (GCM) [xxx]. Aquest servei serà l’encarregat d’enviar les notificacions als usuaris finals.
* Entorn Client: Format per l’aplicació Android, donarà la informació necessària de l’usuari al servidor per tal de poder-la tractar i enviar les notificacions.

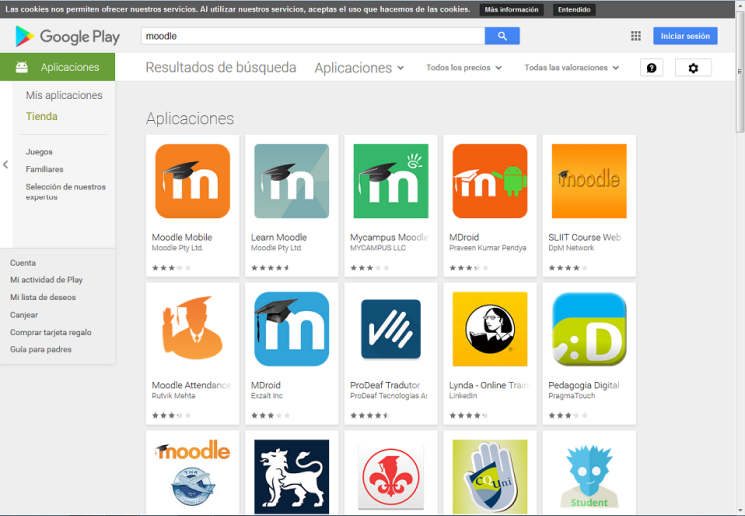
Es pot obtenir una visió més detallada dels objectius observant l’arbre d’objectius en l’Annex A1. Arbre d’Objectius.

Aquest article està estructurat de la següent manera. A la Secció2 es presenten les experiències i aplicacions prèvies que s’han considerat més rellevants en els sistemes existents, les quals s’han tingut en compte per desenvolupar el nou aplicatiu web. La metodologia seguida pel desenvolupament de l’aplicació s’exposa a la Secció 3. La Secció 4 recull els resultats i els elements generats al llarg del desenvolupament del projecte. Finalment, la Secció 5 presenta les conclusions i futures línies de treball.

# 2 Estat de l’art

E

n l’actualitat les aplicacions mòbil s’estan convertint en un model de negoci molt extens. Això provoca que existeixin una gran varietat d’aplicacions en el Google Play[xxx] per a dispositius Android, tal i com es pot veure a la imatge que hi ha a continuació.



Imatge 1: Aplicacions disponible a Google Play

Totes les aplicacions que trobem al Google Play ofereixen les següents característiques:

* Navegar pel contingut dels cursos de l’alumne
* Rebre notificacions instantànies de missatges i altres events.
* Buscar de maner ràpida persones i contactar amb elles.
* Veure les qualificacions dels cursos.

En el cas de los notificacions, s’han analitzat diverses aplicacions i s’han comprovat quines són aquestes notificacions i que notifiquen en tot moment.

Basant-nos en els requeriments recollits entre els Stakeholders s’ha pogut recollir els aspectes que més importància tenen i s’ha realitzat el projecte en base a ells. Aquest document és pot trobar en la referencia que hi ha la Bibliografia [xxx].

En l’estudi que s’ha portat a terme sobre les aplicacions existents ens centrarem en l’aplicació oficial de Moodle, Moodle Mobile, sobre la que s’han pogut obtenir les següents conclusions:

* Es genera una notificació quan un alumne realitza l’entrega d’una tasca. Es pot veure en la imatge de l’Annex A2, quina notificació rep l’alumne al seu dispositiu.
* Es genera una notificació quan es qualifica l’entrega per part del professor. Es pot veure en la imatge de l’Annex A3, quina notificació rep l’alumne al seu dispositiu.

Es realitzen més notificacions en els dispositius, però el projecte es basarà en el segon punt, el qual gràcies als requeriments recollits es millorarà per obtenir la satisfacció del Stakeholders.

# 3 Metodologia

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continuació s’exposarà la metodologia que s’ha seguit per dur a terme el projecte, fent èmfasi en les fases d’anàlisi, disseny i implementació.

* 1. **Elicitació i anàlisi de requeriments.**

En aquest projecte s’ha desenvolupat una aplicació des de zero i no s’havia especificat cap restricció prèvia-ment. Per tant, observant i analitzant els sistemes existents es va elaborar un primer llistat amb els requisits necessaris per poder definir un sistema que millorés als que ja existien. A partir de reunions setmanals amb el tutor, el qual és un dels Stakeholdersprincipals, es valoraven els requeriments proposats i es triaven els més prioritaris per ajustar la complexitat de l’aplicació amb el temps de desenvolupament disponible.

Simultàniament es va realitzar el sondeig de diferents Stakeholders, en aquest cas alumnes, usuaris de l’aplicació mòbil. En aquest cas es van obtenir els requeriments necessàries per poder dur a terme el projecte i que pogués satisfer als usuaris.

En un principi vàrem decidir conjuntament amb el tutor centrar-nos en les notificacions que rebrien els alumnes i els professors. Per qüestions de temps i desconeixement de l’entorn Moodle es va decidir retallar el projecte i centrar-nos bàsicament en les notificacions que rebrien els alumnes quan es realitzes la publicació de les qualificacions, per part del professor, sobre les tasques que haguessin entregat.

* 1. **Disseny del sistema**

Donat l’anàlisi de requeriments i l’arbre d’objectius s’ha organitzat el projecte en diferents sistemes o apartats de la següent manera, els quals s’explicaran a continuació.

* + 1. **Estudi Base de Dades Moodle.**

L’estudi de la base de dades és un element imprescindible per entendre el comportament de les Aules Moodle, ja que sense aquest estudi seria molt difícil saber d’on podem obtenir la informació necessària que mostrarem als usuaris.

* + 1. **Estudi Aules Moodle.**
  1. **Implementació**
     1. **Mòdul Android**
     2. **Mòdul Servidor**

# 4 Resultats

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# 5 Conclusions

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TABLE 1  
Units for Magnetic Properties



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aGaussian units are the same as cgs emu for magnetostatics; Mx = maxwell, G = gauss, Oe = oersted; Wb = weber, V = volt, s = second, T = tesla, m = meter, A = ampere, J = joule, kg = kilogram, H = henry.

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**Acknowledgment**

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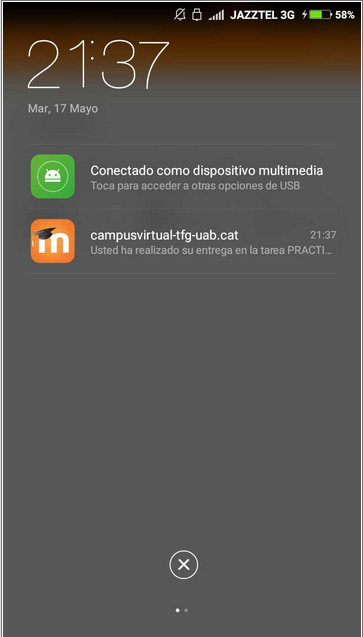
**References**

1. J.S. Bridle, “Probabilistic Interpretation of Feedforward Classification Network Outputs, with Relationships to Statistical Pattern Recognition,” *Neurocomputing—Algorithms, Architectures and Applications,* F. Fogelman-Soulie and J. Herault, eds., NATO ASI Series F68, Berlin: Springer-Verlag, pp. 227-236, 1989. (Book style with paper title and editor)
2. W.-K. Chen, *Linear Networks and Systems.* Belmont, Calif.: Wadsworth, pp. 123-135, 1993. (Book style)
3. H. Poor, “A Hypertext History of Multiuser Dimensions,” *MUD History,* http://www.ccs.neu.edu/home/pb/mud-history.html. 1986. (URL link \*include year)
4. K. Elissa, “An Overview of Decision Theory,"unpublished. (Unpublished manuscript)
5. R. Nicole, "The Last Word on Decision Theory," *J. Computer Vision,* submitted for publication. (Pending publication)
6. C. J. Kaufman, Rocky Mountain Research Laboratories, Boulder, Colo., personal communication, 1992. (Personal communication)
7. D.S. Coming and O.G. Staadt, "Velocity-Aligned Discrete Oriented Polytopes for Dynamic Collision Detection," *IEEE Trans. Visualization and Computer Graphics*, vol. 14,  no. 1,  pp. 1-12,  Jan/Feb  2008, doi:10.1109/TVCG.2007.70405. (IEEE Transactions )
8. S.P. Bingulac, “On the Compatibility of Adaptive Controllers,” *Proc. Fourth Ann. Allerton Conf. Circuits and Systems Theory*, pp. 8-16, 1994. (Conference proceedings)
9. H. Goto, Y. Hasegawa, and M. Tanaka, “Efficient Scheduling Focusing on the Duality of MPL Representation,” *Proc. IEEE Symp. Computational Intelligence in Scheduling* *(SCIS ’07)*, pp. 57-64, Apr. 2007, doi:10.1109/SCIS.2007.367670. (Conference proceedings)
10. J. Williams, “Narrow-Band Analyzer,” PhD dissertation, Dept. of Electrical Eng., Harvard Univ., Cambridge, Mass., 1993. (Thesis or dissertation)
11. E.E. Reber, R.L. Michell, and C.J. Carter, “Oxygen Absorption in the Earth’s Atmosphere,” Technical Report TR-0200 (420-46)-3, Aerospace Corp., Los Angeles, Calif., Nov. 1988. (Technical report with report number)
12. L. Hubert and P. Arabie, “Comparing Partitions,” *J. Classification,* vol. 2, no. 4, pp. 193-218, Apr. 1985. (Journal or magazine citation)
13. R.J. Vidmar, “On the Use of Atmospheric Plasmas as Electromagnetic Reflectors,” *IEEE Trans. Plasma Science*, vol. 21, no. 3, pp. 876-880, available at http://www.halcyon.com/pub/journals/21ps03-vidmar, Aug. 1992. (URL for Transaction, journal, or magzine)
14. J.M.P. Martinez, R.B. Llavori, M.J.A. Cabo, and T.B. Pedersen, "Integrating Data Warehouses with Web Data: A Survey," *IEEE Trans. Knowledge and Data Eng.*, preprint, 21 Dec. 2007, doi:10.1109/TKDE.2007.190746.(PrePrint)

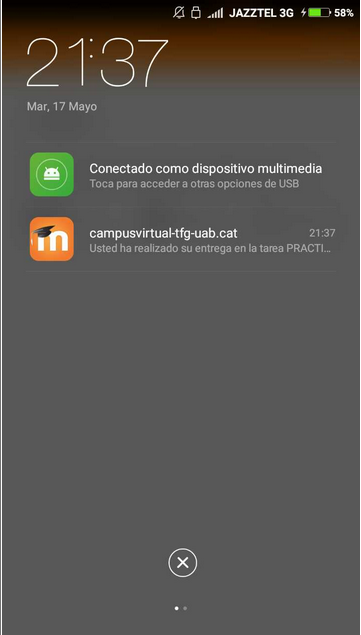
# Annex

**A1.**

**A2.**



**A3.**



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