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Proyecto Fin de Carrera

“Forum Integration for Moodle”



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Título del PFC	Forum Integration for Moodle
Resumen	<p>Los foros de Moodle no integran los correos electrónicos de forma bidireccional. Es decir, las respuestas desde una cuenta de correo electrónico hacia un mensaje de un usuario del foro no aparecen en la plataforma web. Para mejorar la usabilidad de estos foros, re-implementaremos el foro de Moodle de una forma apropiada.</p> <p>Se plantearon varios mecanismos para resolver esta cuestión, como es el caso de de Mailman, una aplicación de software del proyecto GNU, que maneja listas electrotécnicas de correo o simplemente listas de correo.</p> <p>Sin embargo, una vez centrados en las opciones de configuración de Moodle, averiguamos que el mantenimiento y control de los participantes en los foros es llevado a cabo de una forma efectiva a través de la base de datos de Moodle.</p> <p>Haciendo uso de dichas opciones e implementando un proceso en php, llegamos a la solución del problema planteado.</p>
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Contents

1. Introduction	3
2. Moodle	3
3. eCampus in the FH.....	5
4. Framework.....	6
4.1. Forums in eCampus	6
4.2. The modified forum module.....	8
4.3. Technologies used	8
4.4. Moodle database	8
5. Modification of the forum module	9
5.1. Where can we change the “To” in the reply of the users?.....	9
5.2. The support email	11
5.3. How does Moodle send the emails?	12
5.4. Where do we insert the posts?	12
Created and modified	12
Message and subject	13
Userid	13
Discussion and parent.....	13
5.5. Reading emails	14
5.6. Processing emails	15
5.7. Check user	16
5.8. Insert post	17
6. Operating example	18
7. Appendix I. Process.php	26
Bibliography.....	29

List of Figures

Figure 1: Sites Moodle	4
Figure 2: eCampus FH.....	5
Figure 3: Forums in eCampus 1	6
Figure 4: Forums in eCampus 2	7
Figure 5: The modified forum module	8
Figure 6: Forum's tables	8
Figure 7: Forum configuration	10
Figure 8: Email configuration.....	11
Figure 9: Table "mdl_forum_posts"	12
Figure 10: Moodle and course of test	18
Figure 11: Participants.....	19
Figure 12: New discussion	20
Figure 13: Posts from Moodle	21
Figure 14: Email user account	23
Figure 15: Email administrator account	23
Figure 16: Posts with the process.php	25

Abstract

Moodle web forums do not integrate email bidirectional. This is, email responses to forum posts do not appear on the web. To enhance usability, we reimplement the Moodle forum in the appropriate way.

When it's has to solve a problem like this, it raises various possible solutions. One of these likely solutions was through the use of Mailman, a computer software application from the GNU project for managing electronic mailing lists.

Mailman is free software for managing electronic mail discussion and e-newsletter lists. It runs on GNU/Linux and most Unix-like systems, and requires Python 2.1.3 or newer. GNU Mailman works with Unix style mail servers such as Postfix, Sendmail and qmail.

Features include:

- A Web browser interface for list administration, archiving of messages, spam filtering.
- A customizable home page for each mailing list.
- Integrated bounce detection and automatic handling of bouncing addresses.
- Integrated spam filters
- Majordomo-style email based commands.
- Multiple list owners and moderators.
- Per-list privacy features, such as closed-subscriptions, private archives, private membership rosters, and sender-based posting rules.
- Support for virtual domains.
- Web based subscribing and unsubscribing. Users can temporarily disable their accounts, select digest modes, hide their email addresses from other members, etc.

This option was considered at the beginning because it was necessary for a good management of the participants list in the forums and this we would give a good integration with Moodle.

Mailman allows us a flexible and quick reference to the list of participants and the emails sent to them.

However, once we were focused in the configuration options of Moodle, we could know that the management of the participants in the forums is carry out with an effective way with the database of Moodle. The management and storage of users and forums will be explained in various sections of this report, as in the case of the points 4.4 and 6.

Another question that we you had to decide what solutions take is about to send the emails. Moodle, through the Server configuration, it allow us configure our SMTP Server, in an easy way. Section 5.2 of this document.

As well, the sending of the emails to the all users in the forums is automatic when we execute the cron.php. Section 5.3.

For these reasons, we have decided for the no integration of the Moodle application with the software Mailman. Although, I think that we can propose a “future line of investigation” that try to find a good integration of both systems.

1. Introduction

The development of Internet has produced a revolution in the distance education at all levels. It appears the virtual learning teaching or e-learning like a complement and sometimes like a replacement of the education classroom. We can define the virtual learning like the education and the knowledge acquisition and skills through the use technologies based on Internet.

A definition of virtual learning would be the next:

“Distance Education (DE) is a system of education characterized by physical separation between the teacher and the learner in which instruction is delivered through a variety of media including print and other ICTs to learner who may either have missed the opportunity earlier in life or have been denied the face-to-face formal education due to socio-economic, career, family and other circumstances. Jegede, (2003) defined distance education as education provided by a mode other than the conventional face-to-face method whose goals are similar to and just as noble and practical as those of on-campus full time face-to-face education.”

It is a new concept educative that join the use of technology and learning material to achieve the design and evolution of the distance courses. It has to be understood like the result of put in practice the news technologies to the education and learning, tore out his best advantage.

2. Moodle

Moodle is a software package for producing Internet-based courses and web sites. It is a global development project designed to support a social constructionist framework of education.

Moodle is provided freely as Open Source software (under the GNU Public License). Basically this means Moodle is copyrighted, but that you have additional freedoms. You are allowed to copy, use and modify Moodle provided that you agree to: provide the source to others; not modify or remove the original license and copyrights, and apply this same license to any derivative work.

Moodle can be installed on any computer that can run PHP, and can support an SQL type database (for example MySQL). It can be run on Windows and Mac operating systems and many flavors of linux (for example Red Hat or Debian GNU). There are many knowledgeable Moodle Partners to assist you, even host your Moodle site.

The word Moodle was originally an acronym for Modular Object-Oriented Dynamic Learning Environment, which is mostly useful to programmers and education theorists. It's also a verb that describes the process of lazily meandering through something, doing things as it occurs to you to do them, an enjoyable tinkering that often leads to insight and creativity. As such it applies

both to the way Moodle was developed, and to the way a student or teacher might approach studying or teaching an online course. Anyone who uses Moodle is a Moodler.

The Moodle learning environment is based on constructivist pedagogical principles, with a modular design that makes it easy to add content to motivate the student.

The activities are the heart of course management system. Moodle was designed by an educator and computer, based on the principles of "social constructivism". Constructionism asserts that learning is particularly effective when done by sharing with others. This experience can be anything from a spoken sentence or an internet posting, or elements more complex like a painting, a house or a software application.

Nowadays there are 49547 currently active sites that have registered from 213 countries.

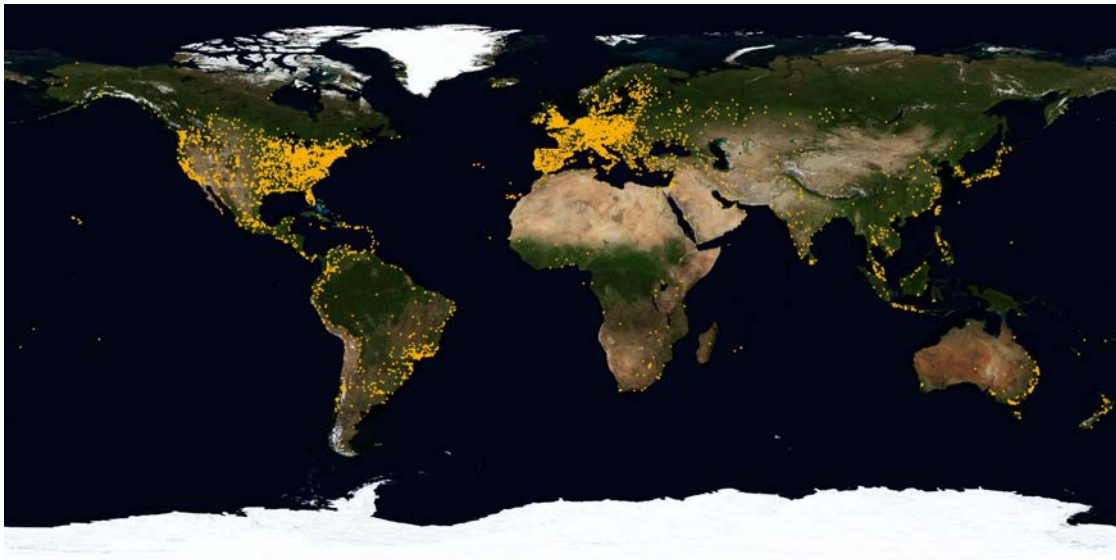


Figure 1: Sites Moodle

Moodle is a virtual learning environment ideal for schools, colleges, universities, businesses, schools, hospitals...

Moodle has a lot of properties that made it like a perfect e-Learning platform. Some of these properties are educational adequacy, adapting teaching, simple installation and maintenance, large support, open source software...

3. eCampus in the FH

The University of Applied Sciences in St. Pölten chose Moodle as their e-Learning Platform. The appearance of this platform in the FH of St. Pölten is:



Figure 2: eCampus FH

It's been a great surprise know that in the FH St. Pölten all community of the university use a lot eCampus. For example, in my university, in Cartagena, use Moodle since September of 2008, and I remember that at the beginning the lectures didn't use so much this platform. Almost of them continued using their own servers to upload the information and the material for the lessons. That was awful for the students because you had to know three or four internet address to get all the things for your subjects. Now it's better because the lectures use Moodle and they've understood that this is the best way for the all university community.

The appearance of FH eCampus made it a interface very easy to use and all university community use this platform no just for learning, you can check a lot information in this eCampus, like sports, events, look for a jobs,...

4. Framework

4.1. Forums in eCampus

Moodle has four kinds of forums each with a slightly different layout and purpose.

The most usual is the standard forum for general use. In this forum type, participants will see the introduction text in a separate space above the discussion field, in which you will see the information such as the title of the discussion (which means the forum's title), its author, the number of replies and the date of the last post.

Thema	Beginnt mit	Antworten	Ungelesen ✓	Letzter Beitrag
The Pure - Musik aus Österreich	 Heinreichsberger Doris	0	1 ✓	Heinreichsberger Doris Di, 1. Dez 2009, 12:31
THE NAPS "CD Release Party"	 Gruber Simon	0	0	Gruber Simon Mi, 25. Nov 2009, 13:37
G N U D L I B - Bildung geht uns alle an!	 Gleich Sarah	15	0	Gleich Sarah Mi, 18. Nov 2009, 18:33
ÖH startet Initiative "Hier brennt's"	 Hollaus Markus	0	0	Hollaus Markus Di, 17. Nov 2009, 13:03
Distributed 26C3	 Fischer Bernhard	0	0	Fischer Bernhard Mo, 16. Nov 2009, 16:23
KARTCHALLENGE WIEN	 Poetschner Roman	0	0	Poetschner Roman So, 15. Nov 2009, 16:55
Labor Beschwerdechor - Festspielhaus St. Pölten	 Zwedorn-CSC Sabine	0	0	Zwedorn-CSC Sabine Do, 12. Nov 2009, 10:51



The screenshot shows the forum post for 'G N U D L I B - Bildung geht uns alle an!'. The main text reads: 'Voraussichtliche Beratungskomitee der Studierendenvertretung (ÖH) gemeinsam mit der "Bildungsgruppe Gruppenbildung" eine Folgeveranstaltung (Diskussionsforum) in einem absehbaren zeitlichen Rahmen zu organisieren (1-2 Wochen). Dazu gilt allerdings zu sagen dass dies vom Interesse aller Studierenden abhängt. Wenn ein allgemeines Interesse an Information oder Diskussion zu den aktuellen Streitigkeiten (siehe Uni Wien) besteht, würden wir uns darüber freuen, auch in Zusammenarbeit mit der ÖH, Rede und Antwort zu stehen. Mit besten Grüßen auch von meiner Seite Daniel BOÖB'. Below the main text, there are two replies. The first reply is from 'Gleich Sarah' and says 'Das Protokoll von der Diskussionsveranstaltung "G N U D L I B - Bildung geht uns alle an!" am 30.10.09 im Anhang'. The second reply is from 'Gleich Sarah' and says 'Die "Bildungsgruppe Gruppenbildung - Auto BOÖB" wird sich heute in Wien mit anderen Privatleuten verabreden - dazu siehe Anhang. Die Flyer dazu werden in der PH von uns persönlich verteilt. LG BOÖB'.

Figure 3: Forums in eCampus 1

When the user writes a message in a Forum, the message is written in the database and sent to the email of the others participants in the forum.

If a person wants reply any post has to introduce in eCampus and reply the post from eCampus.

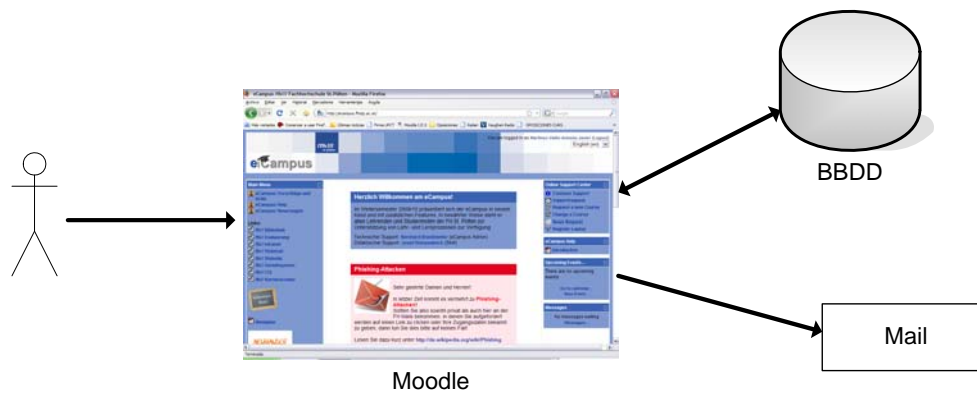


Figure 4: Forums in eCampus 2

Below there are some properties of the forum module:

- Different types of forums are available, such as teacher-only, course news, open-to-all, and one thread per user.
- There are several options for emailing forum posts to members of the course.
- All postings have the author's photo attached.
- Discussion can be viewed nested, flat or threaded, oldest or newest first.
- Robust subscription methods for each forum
 - Individual forums can be subscribed to by each person.
 - Teacher can force subscription for all members of the course, either initially or permanently.
- Group's features allow options for more entry and viewing limitations for students.
- The teacher can choose not to allow replies to their posts.
- Discussion threads can be moved between forums or split by the teacher.
- Attachments can be made to posts and shown as part of message.
- Forum ratings can be used; these can be restricted to a range of dates.

4.2. The modified forum module

We want that the user don't need access to Moodle to reply the entry on the Forums. The users will be able to send the reply from their personal email.

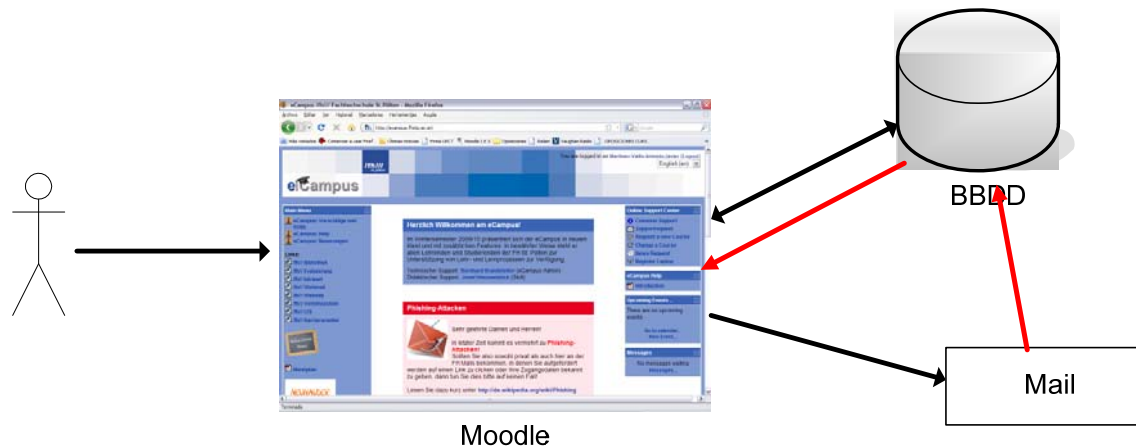


Figure 5: The modified forum module

4.3. Technologies used

- Moodle 1.9.8.
- MySQL.
- PHP.
- Ubuntu.
- VirtualBox.

4.4. Moodle database

Moodle uses a database in MySQL. Moodle has tables for each activity. For example here are the tables used for the forum module activity.

mdl_forum	mdl_forum_ratings
mdl_forum_discussions	mdl_forum_read
mdl_forum_posts	mdl_forum_subscriptions
mdl_forum_queue	mdl_forum_track_prefs

Figure 6: Forum's tables

5. Modification of the forum module

When somebody have to modify something like that, you have to think in every step that you have to do. Then, I will explain all the steps that I've followed.

5.1. *Where can we change the "To" in the reply of the users?*

According with the properties of the forum activity in Moodle, when one user tries to answer an email received from the forum, the receiver of this email is the user who wrote in the forum. We think that the emails should be sent to an administrator account, because we need process every email, and if the emails are sent to the user account we won't be able to get these emails. Our process will access to this administrator account and it will process the received emails.

This has been configured changing the property Modules→Activities→Forum→forum_replytouser, that the default value is "Yes". Unchecking this property, emails will be replied to the administrator account instead to the user account.

The screenshot shows the Moodle Forum configuration page. The left sidebar contains 'Site Administration' with a tree view including Notifications, Users, Courses, Grades, Location, Language, Modules, and Activities. The 'Activities' section is expanded, showing options like Manage activities, Assignment, Chat, Database, Forum, Glossary, Quiz, Resource, and SCORM/AICC. Below this is an 'Admin bookmarks' section with a 'bookmark this page' link. The main content area is titled 'Forum' and contains various settings. The 'Use email address in reply' option is highlighted with a red box. Other settings include Display mode (set to 'Display replies in nested form'), Short post length (300), Long post length (600), Discussions per page (100), Maximum attachment size (500KB), Track unread posts (checked), Read after days (14), Manual message read marking (unchecked), Mark old posts as read hour (2), Enable RSS feeds (disabled at server level), Timed posts (unchecked), Log blocked emails (checked), and Enable AJAX rating (unchecked).

Use email address in reply Default: Yes
forum_replyuser
When a forum post is mailed out, should it contain the user's email address so that recipients can reply personally rather than via the forum? Even if set to 'Yes' users can choose in their profile to keep their email address secret.

Short post Default: 300
forum_shortpost
Any post under this length (in characters not including HTML) is considered short (see below).

Long post Default: 600
forum_longpost
Any post over this length (in characters not including HTML) is considered long. Posts displayed on the site front page, social format course pages, or user profiles are shortened to a natural break somewhere between the forum_shortpost and forum_longpost values.

Discussions per page Default: 100
forum_manydiscussions
Maximum number of discussions shown in a forum per page

Maximum attachment size Default: 500KB
forum_maxbytes
Default maximum size for all forum attachments on the site (subject to course limits and other local settings)

Track unread posts Default: Yes
forum_trackunreadposts
Set to 'yes' if you want to track read/unread for each user.

Read after days Default: 14
forum_oldpostdays
Number of days old any post is considered read.

Manual message read marking Default: No
forum_usermarkread
If 'yes', the user must manually mark a post as read. If 'no', when the post is viewed it is marked as read.

Mark old posts as read hour Default: 2
forum_cleanreadtime
The hour of the day to clean old posts from the 'read' table.

Enable RSS feeds Default: Disabled at server level
forum_enablerrssfeeds
This switch will enable the possibility of RSS feeds for all forums. You will still need to turn feeds on manually in the settings for each forum. RSS feeds are disabled at the server level. You need to enable them first in Server/RSS.

Timed posts Default: No
forum_enableimedposts
Set to 'yes' if you want to allow setting of display periods when posting a new forum discussion (Experimental as not yet fully tested)

Log blocked emails Default: Yes
forum_logblocked
Forum cron may log blocked attempts to send emails to users with disabled email.

Enable AJAX rating Default: No
forum_ajaxrating
AJAX rating is a forum rating usability improvement. If enabled, users can rate forum posts almost instantly without needing to scroll to the bottom of the page and click the 'Send in my latest ratings' button. This setting also requires AJAX to be enabled for the site and in user profiles.

Figure 7: Forum configuration

5.2. The support email

On the other hand, we have to configure the properties for Moodle can send the emails. That is configured in Server→Email.

Moodle FH You are logged in as Admin User (Logout)

moodlefh > Administration > Server > Email Blocks editing on

Site Administration

- Notifications
- Users
- Courses
- Grades
- Location
- Language
- Modules
- Security
- Appearance
- Front Page
- Server
 - System Paths
 - Email**
 - Session Handling
 - RSS
 - Debugging
 - Statistics
 - HTTP
 - Maintenance mode
 - Cleanup
 - Environment
 - PHP info
 - Performance
- Networking
- Reports
- Miscellaneous

Admin bookmarks

Email

SMTP hosts Default: Empty
smtphosts

Give the full name of one or more local SMTP servers that Moodle should use to send mail (eg 'mail.a.com' or 'mail.a.com.mail.b.com'). To specify a non-default port (i.e other than port 25), you can use the [server]:[port] syntax (eg 'mail.a.com:587'. If you leave it blank, Moodle will use the PHP default method of sending mail.

SMTP username Default: Empty
smtpuser

If you have specified an SMTP server above, and the server requires authentication, then enter the username and password here.

SMTP password Unmask
smtppass

If you have specified an SMTP server above, and the server requires authentication, then enter the username and password here.

SMTP session limit Default: 1
smtpmaxbulk

Maximum number of messages sent per SMTP session. Grouping messages may speed up the sending of emails. Values lower than 2 force creation of new SMTP session for each email.

No-reply address Default: noreply@localhost
noreplyaddress

Emails are sometimes sent out on behalf of a user (eg forum posts). The email address you specify here will be used as the "From" address in those cases when the recipients should not be able to reply directly to the user (eg when a user chooses to keep their address private).

Hour to send digest emails Default: 17
digestmailtime

People who choose to have emails sent to them in digest form will be emailed the digest daily. This setting controls which time of day the daily mail will be sent (the next cron that runs after this hour will send it).

Character set Default: UTF-8
siteemailcharset

All the emails generated by your site will be sent in the charset specified here. Anyway, every individual user will be able to adjust it if the next setting is enabled.

Allow user to select character set Default: No
allowuseremailcharset

Enabling this, every user in the site will be able to specify his own charset for email.

Newline characters in mail Default: LF
mainewline

Newline characters used in mail messages. CRLF is required according to RFC 822bis, some mail servers do automatic conversion from LF to CRLF, other mail servers do incorrect conversion from CRLF to CRCLRF, yet others reject mails with bare LF (qmail for example). Try changing this setting if you are having problems with undelivered emails or double newlines.

Support name Default: Admin User
supportname

This is the name of a person or other entity offering general help via the support email or web address.

Support email Default: is090002@fhstp.ac.at
supportemail

This email address will be published to users of this site as the one to email when they need general help (for example, when new users create their own accounts). If this email is left blank then no such helpful email address is supplied.

Support page Default: Empty
supportpage

This web address will be published to users of this site as the one to go to when they need general help (for example, when new users create their own accounts). If this address is left blank then no link will be supplied.

Figure 8: Email configuration

5.3. How does Moodle send the emails?

Next question: How does Moodle send the emails to the users? We don't have to worry about this question because Moodle uses a cron.php. Cron is a program that runs predefined task at regular intervals. When the cron.php is run one of the task that do is send the email from the forum module to the participants of the forum. We can find this file in /opt/lamp/htdocs/moodle/admin/cron.php or we can run it directly from the browser: <http://example.com/moodle/admin/cron.php>.

5.4. Where do we insert the posts?

We must know in what table of the Moodle database the posts written for the users in the forum are inserted, because we will use this table in our process to insert the reply from the email account of the users. The table used for this issue is "mdl_forum_post" that has the following fields.

	Campo	Tipo		Campo	Tipo
<input type="checkbox"/>	id	bigint(10)	<input type="checkbox"/>	subject	varchar(255)
<input type="checkbox"/>	discussion	bigint(10)	<input type="checkbox"/>	message	text
<input type="checkbox"/>	parent	bigint(10)	<input type="checkbox"/>	format	tinyint(2)
<input type="checkbox"/>	userid	bigint(10)	<input type="checkbox"/>	attachment	varchar(100)
<input type="checkbox"/>	created	bigint(10)	<input type="checkbox"/>	totalscore	smallint(4)
<input type="checkbox"/>	modified	bigint(10)	<input type="checkbox"/>	mailnow	bigint(10)
<input type="checkbox"/>	mailed	tinyint(2)			

Figure 9: Table "mdl_forum_posts"

The fields that we have to insert with our program are, "discussion", "parent", "userid", "created", "modified", "subject" and "message".

Created and modified

The fields "created" and "modified", we will insert them using the function UNIX_TIMESTAMP(), that returns a Unix timestamp (seconds since '1970-01-01 00:00:00' UTC) as an unsigned integer.

```
$sqlinsert= "INSERT into mdl_forum_posts
discussion,parent,userid,created,modified,subject,message)
values('$discussion', '$parent', '$userid', UNIX_TIMESTAMP(),
UNIX_TIMESTAMP(), '$subject', '$message')";
```

Message and subject

About the fields “message” and “subject” we will get them using the IMAP functions for PHP.

```
$message = imap_fetchbody($mbox,$i,'1');  
$subject_insert = substr($header->Subject,0,$pos_first);
```

Userid

To get “userid” we’ll do a SQL query using the user email which has sent the mail.

```
$query = sprintf("SELECT * FROM mdl_user WHERE email = '$mail'");  
$result = mysql_query($query);  
if(!$result){  
    die('Invalid query: ' . mysql_error());  
}  
  
$num_rows = mysql_num_rows($result);  
$row = mysql_fetch_assoc($result);  
return $row['id']; //userid
```

Discussion and parent

For the fields “discussion” and “parent”, we have modified the file that compose the email for the forum Moodle. We have inserted these fields in the Subject of the email. Our program will get these fields examining the Subject of the received emails.

The file that we have to modified is /moodle/mod/forum/lib.php. I've concatenated these fields in the email Subject:

```
$postsubject = "$course->shortname: ".  
    format_string($post->subject,true).  
    "?id=" . $post->id .  
    "?dis=" . $post->discussion .  
    "?pa=" . $post->parent .  
    "?usu=" . $post->userid;
```

With the process.php, we will get the fields processing the Subject:

```
$values = strstr($header->Subject,'?');  
$valuesarray = str_split($values);  
  
$eq=0;  
$que=0;
```

```
$valin = "";
$arrayeq = array();
$arrayque = array();
foreach ($valuesarray as $index => $value){
    if($value == "="){
        $arrayeq[$seq] = $index;
        ++$seq;
    }
    if($value == "?"){
        $arrayque[$que] = $index;
        ++$que;
    }
}

//Get discussion
$dis = substr($values, $arrayeq[1]+1,$arrayque[2]-
    $arrayeq[1]-1);

//Get parent
$parent = substr($values, $arrayeq[2]+1,$arrayque[3]-
    $arrayeq[2]-1);
```

5.5. Reading emails

Now, we focus in the issue of read the emails. For that, we'll use the IMAP PHP library. Through the next code lines we can connect to the server and read the server's directories:

```
$host = '{sxstudents.fhstp.ac.at}INBOX/Moodle';
$user = 'is090002';
$pass = '*****';
echo $host;
$mbox = imap_open($host, $user, $pass) or die("can't connect: "
    . imap_last_error());

$list = imap_getmailboxes($mbox, $host, "*");
if (is_array($list)) {
    foreach ($list as $key => $val) {
        echo "($key) ";
        echo "Folder:";
        echo imap_utf7_decode($val->name) . ",";
        echo "" . $val->delimiter . ",";
        echo $val->attributes . "<br />\n";
    }
} else {
    echo "imap_getmailboxes failed: ".imap_last_error(). "\n";
}
```

5.6. Processing emails

After that, we have to examine the emails for get of the necessary fields, that it's been explained in the point 4 of this section. This fields are necessary for insert the new post in the table "mdl_forum_posts". We do that using a "for", that it is executed as many times as the number of messages in the server, obtaining the information of everyone of the received emails:

```

$message_count = imap_num_msg($mbox);
for ($i = 1; $i <= $message_count; ++$i) {
    $header = imap_header($mbox, $i);
    echo "<br />\n";
    echo "USER: ";
    echo $header->fromaddress . "<br />\n";
    echo "SUBJECT: ";
    echo $header->Subject . "<br />\n";
    echo "IMAP_HEADER: ";
    print_r($header->from);
    $mailbox = $header->from[0]->mailbox;
    $host = $header->from[0]->host;
    echo "<br />\n";
    $fromfinal = $mailbox . "@" . $host;
    echo "EMAIL USER: ";
    echo $fromfinal . "<br />\n";

    $compruebausu = check_user("$fromfinal");
    echo "<br />\n";
    echo "Checking User....." . "<br />\n";
    echo "User Id: " . $compruebausu . "<br />\n";

    if($compruebausu){
        echo "The user exists";
        echo "<br />\n";
    }
    if(!$compruebausu){
        echo "The user doesn't exist";
        echo "<br />\n";
    }
    $pos_first = strpos($header->Subject, '?');
    $Subject_insert = substr($header->Subject,0,$pos_first);
    $values = strstr($header->Subject, '?');
    $valuesarray = str_split($values);

    $eq=0;
    $que=0;
    $valin = "";
    $arrayeq = array();
    $arrayque = array() ;
    foreach ($valuesarray as $index => $value){
        if($value == "="){
            $arrayeq[$eq] = $index;
            ++$eq;
        }
        if($value == "?"){
            $arrayque[$que] = $index;
            ++$que;
        }
    }
}

```

```

    }
}

//Get id mdl_forum_post
$id = substr($values, $arrayeq[0]+1,$arrayque[1]-
    $arrayeq[0]-1);
echo "<br />\n";
echo "Id: " . $id;

//Get discussion
$dis = substr($values, $arrayeq[1]+1,$arrayque[2]-
    $arrayeq[1]-1);
echo "<br />\n";
echo "Discussion: " . $dis;

//Get parent
$parent = substr($values, $arrayeq[2]+1,$arrayque[3]-
    $arrayeq[2]-1);
echo "<br />\n";
echo "Parent: " . $parent;

//Get user
$susu = substr($values, $arrayeq[3]+1);
echo "<br />\n";
echo "User post: " . $susu;

//Get Message
$mensaje = imap_fetchbody($mbox,$i,'1');
$message = strstr($mensaje, 'From', true);
echo "<br />\n";
echo "Message: " . $message;
echo "<br />\n";
echo "<br />\n";

if(check_user($fromfinal)){
    insert_post($dis, $parent, $susu,
        check_user($fromfinal),
        $Subject_insert, $message);
}

if(!check_user($fromfinal)){
    echo "THE USER IS NOT IN DDBB";
}
//Delete email
imap_delete($mbox, $i);
}

imap_close($mbox);

```

5.7. Check user

As well, we have created two functions. The first one is the function that check if the user is in Moodle, and also returns us the user id, that we need to insert the register in “mdl_forum_posts”:

```

function check_user($mail){
    $link = mysql_connect('localhost', 'root', '');

```

```
if(!$link){
    die('Could not connect: ' . mysql_error());
}

$db_selected = mysql_select_db('moodle', $link);
if(!$db_selected){
    die('Can\'t use moodle:' . mysql_error());
}

$query = sprintf("SELECT * FROM mdl_user
                WHERE email = '$mail'");
$result = mysql_query($query);
if(!$result){
    die('Invalid query: ' . mysql_error());
}

$num_rows = mysql_num_rows($result);
$row = mysql_fetch_assoc($result);
return $row['id'];
}
```

5.8. *Insert post*

The other function is where it's run the insert of the new record:

```
function insert_post($discussion, $parent, $usu,
                    $userid, $subject, $message){

    echo "Insert.....";
    $link = mysql_connect('localhost', 'root', '');
    if(!$link){
        die('Could not connect: ' . mysql_error());
    }
    $db_selected = mysql_select_db('moodle', $link);
    if(!$db_selected){
        die('Can\'t use moodle:' . mysql_error());
    }
    ++$parent;
    $sqlinsert= "INSERT into
                mdl_forum_posts(discussion,parent,userid,
                created,modified,subject,message)
                values('$discussion','$parent','$userid',
                UNIX_TIMESTAMP(),UNIX_TIMESTAMP(),'$subject','$message')";
    mysql_query($sqlinsert,$link);
    echo "<br />\n";
    echo "INSERTED ROW";
    echo "<br />\n";
    echo "<br />\n";
}
```

6. Operating example

Now we come to explain the Moodle that we have used to do the modification of the forum module. In this point I will explain the configuration of the course with some pictures, as well the adding of the forum and discussion that we'll use to test the program that we have done.

In the first illustration we can see the courses that there are in our Moodle. We can look too, the homepage of the Bakkalaureatsarbeit, in which there are two forum. We will use the forum "Forum for the Bakkalaureatsarbeit". In the other part of the image is viewed the insert of the forum in the table "mdl_forum".

The figure consists of three screenshots from the Moodle system, connected by arrows to show a workflow:

- Moodle FH (Available Courses):** Shows a list of courses. The course "Bakkalaureatsarbeit" is highlighted with a red box. Other courses include "ENG2" and "DSOEK".
- Moodle homepage:** Shows the Moodle logo and the text "Moodle homepage".
- Course Bakkalaureatsarbeit (Topic outline):** Shows the forum structure for the course. The forum "Forum for the Bakkalaureatsarbeit" is highlighted with a red box.
- Table "mdl_forum":** A database table showing forum details. The row for the forum is highlighted with a red box.

id	course	type	name	intro	assessed	assesstimestart	assesstimefinish
8	4	general	Forum for the Bakkalaureatsarbeit	With this forum I'll run then modification for bl...	0	0	0

Figure 10: Moodle and course of test

Another important element in a Moodle course, are the users. In the next image we can look the participants in the Bakkalaureatsarbeit course, and these users will participate in the “Forum for the Bakkalaureatsarbeit” for this operating example. Antonio Javier Martínez Vaillo is the “professor” of the course; Maria José Martínez Belmonte y Thanh Nguyen Huy, are “students”.

Bakkalaureatsarbeit

Participants Blogs Notes

My courses BAKK2 User list Less detailed

Current role All

All participants: 3

(Accounts unused for more than 120 days are automatically unenrolled)

First name : **All** [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)
Surname : **All** [A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

User picture	First name / Surname	City/town	Country	Last access ↑	Select
	Antonio Javier Martínez Vaillo	Torre-Pacheco	Spain	15 secs	<input type="checkbox"/>
	Thanh Nguyen Huy	Hanoi	Viet Nam	52 secs	<input type="checkbox"/>
	Maria José Martínez Belmonte	Maria	Spain	1 min 38 secs	<input type="checkbox"/>

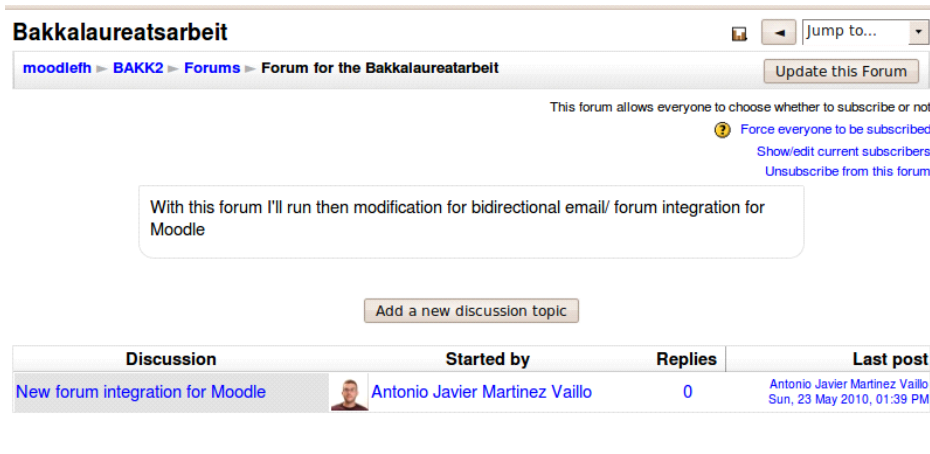
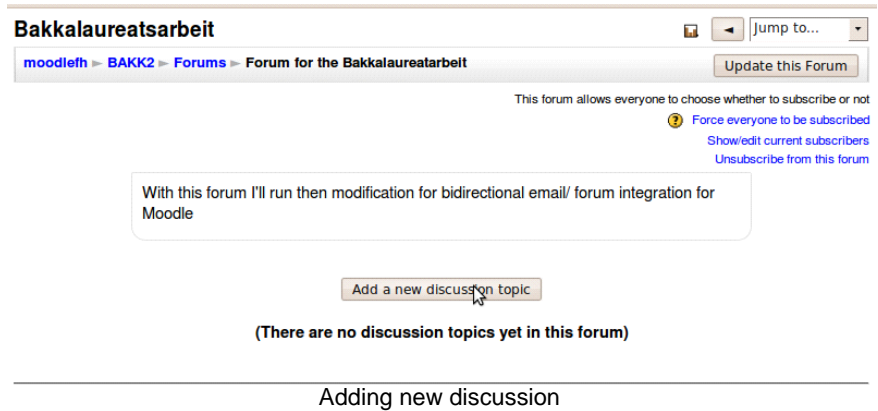
Participants



	id	userid	forum	
<input type="checkbox"/>	13	7	8	Antonio Javier Martínez Vaillo
<input type="checkbox"/>	14	4	8	Maria José Martínez Belmonte
<input type="checkbox"/>	15	8	8	Thanh Nguyen Huy

Table “mdl_user”

Figure 11: Participants

Then we can view how is adding a new discussion in the forum:



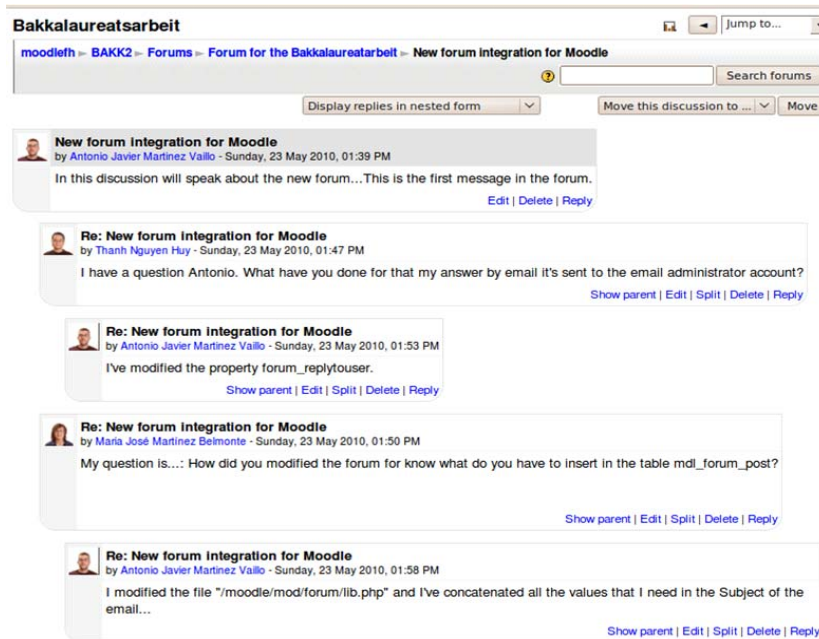
	id	course	forum	name	firstpost	userid
<input type="checkbox"/>  	5	4	8	New forum integration for Moodle	41	7

groupid	assessed	timemodified	usermodified	timestart	timeend
-1	1	1274614764	7	0	0

"Table mdl_forum_discussions"

Figure 12: New discussion

The next step that we have to do is write some posts in the forum for look where are inserted in the database, an important point to know because in this table is where we will insert the received replies in our email account.



Posts inserted from Moodle

	id	discussion	parent	userid	created	modified	mailed	subject	message	format	attachment	totalscore	mailnow
<input type="checkbox"/>	41	5	0	7	1274614764	1274614764	0	New forum integration for Moodle	In this discussion will speak about the new forum....	1		0	0
<input type="checkbox"/>	42	5	41	8	1274615256	1274615256	0	Re: New forum integration for Moodle	I have a question Antonio. What have you done for ...	1		0	0
<input type="checkbox"/>	43	5	41	4	1274615409	1274615409	0	Re: New forum integration for Moodle	My question is...: How did you modified the forum ...	1		0	0
<input type="checkbox"/>	44	5	42	7	1274615629	1274615629	0	Re: New forum integration for Moodle	I've modified the property forum_replytouser.	1		0	0
<input type="checkbox"/>	45	5	43	7	1274615893	1274615893	0	Re: New forum integration for Moodle	I modified the file "/moodle/mod/forum/lib.php" and I've concatenated all the values that I need in the Subject of the email...	1		0	0

Table "mdl_forum_posts"

Figure 13: Posts from Moodle

Looking the table "mdl_forum_posts" the most remarkable thing for our aim, is the field "mailed", whose default value is inserted with "0". This values means that the posts has not been send yet by email to the forum's users. To send the emails we have to run the cron.php and after that, the field "mailed" will have the value "1". The result showed in the browser when we run the cron is:

```
Server Time: Sun, 23 May 2010 14:38:26 +0200

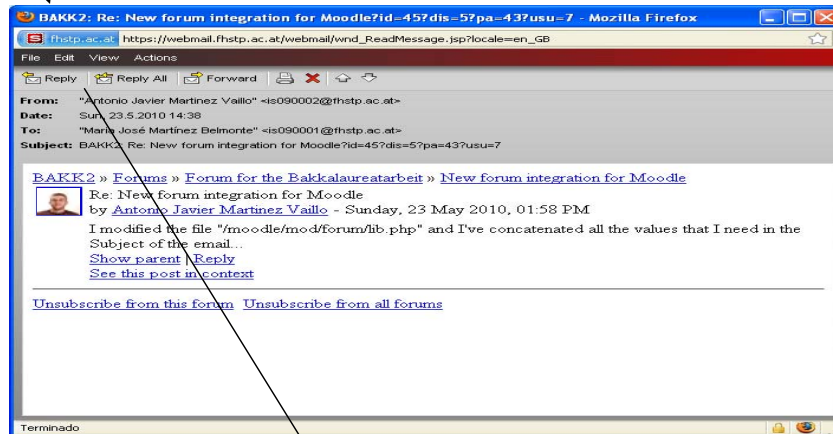
Starting activity modules
Processing module function assignment_cron ...done.
Processing module function chat_cron ...done.
Processing module function forum_cron ...Processing user 7
Sending post 41: New forum integration for Moodle
Sending post 42: Re: New forum integration for Moodle
Sending post 43: Re: New forum integration for Moodle
Sending post 44: Re: New forum integration for Moodle
Sending post 45: Re: New forum integration for Moodle
Processing user 4
Sending post 41: New forum integration for Moodle
Sending post 42: Re: New forum integration for Moodle
Sending post 43: Re: New forum integration for Moodle
Sending post 44: Re: New forum integration for Moodle
Sending post 45: Re: New forum integration for Moodle
```

```
Processing user 8
Sending post 41: New forum integration for Moodle
Sending post 42: Re: New forum integration for Moodle
Sending post 43: Re: New forum integration for Moodle
Sending post 44: Re: New forum integration for Moodle
Sending post 45: Re: New forum integration for Moodle
3 users were sent post 41, 'New forum integration for Moodle'
3 users were sent post 42, 'Re: New forum integration for Moodle'
3 users were sent post 43, 'Re: New forum integration for Moodle'
3 users were sent post 44, 'Re: New forum integration for Moodle'
3 users were sent post 45, 'Re: New forum integration for Moodle'
Starting digest processing...
Cleaned old digest records
done.
Processing module function scorm_cron ...done.
Processing module function wiki_cron ...done.
Finished activity modules
Starting blocks
Processing cron function for rss_client....
0 feeds refreshed (took 0.104046 seconds)
done.
Processing cron function for search....Global searching is not enabled.
Nothing performed by search.
done.
Finished blocks
Starting admin reports
Finished admin reports
Updating languages cache
Removing expired enrolments ...none found
Starting main gradebook job ...
done.
Starting processing the event queue...
done.
Running clean-up tasks...
Deleted old cache_text records
Synchronised metacourses
checking for create_password
Executed tag cron
Cleaned up contexts
Cleaned cache flags
Built context paths
Finished clean-up tasks...
Running backups if required...
    Checking backup status...INACTIVE
Backup tasks finished.
Running auth crons if required...
Cron script completed correctly
Execution took 25.139693 seconds
```

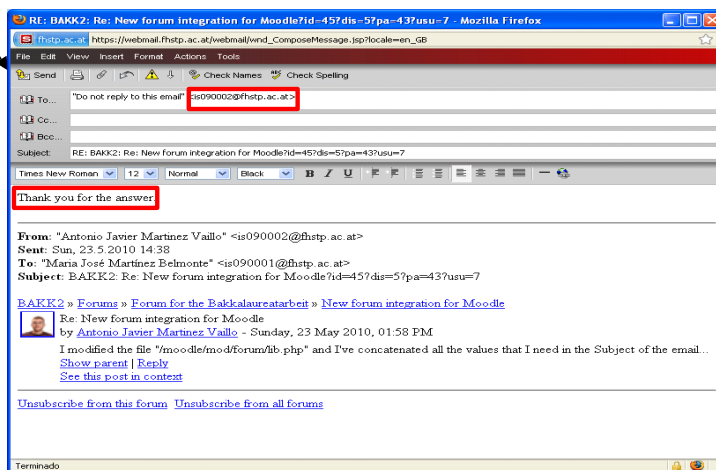
After running the cron.php, the users will receive in their email accounts, the emails. From their email accounts they will be able to reply the post that they want. In this case, we'll show the email account of Maria José Martínez Belmonte. It's possible to see the received emails, an email, and the reply of this email:

From	Subject	Date	Size
Maria José Martínez Belmo	BAKK2: Re: New forum integration for Moodle?id=43?di	Sun, 23.5.2010 12:38	5 KB
Antonio Javier Martínez Vai	BAKK2: Re: New forum integration for Moodle?id=44?di	Sun, 23.5.2010 12:38	5 KB
Thanh Nguyen Huy	BAKK2: Re: New forum integration for Moodle?id=42?di	Sun, 23.5.2010 12:38	5 KB
Antonio Javier Martínez Vai	BAKK2: New forum integration for Moodle?id=41?dis=5	Sun, 23.5.2010 12:38	5 KB
Ruben Bermudez	CF102: Re: El concepto es lo importante?id=40?dis=2?pa=39?i	Sat, 22.5.2010 19:44	5 KB
Maria Belmonte	CF102: Re: El concepto es lo importante?id=39?dis=2?pa=30?i	Sat, 22.5.2010 19:41	5 KB

Email user account



Email received



Email "Reply"

Figure 14: Email user account

As Maria José, the user Thanh will send his answer to the administrator account. In the administrator account we can look these emails:

From	Subject	Date	Size
Huyen-Huy Thanh	RE: BAKK2: Re: New forum integration for Moodle?id=4	Sun, 5.23.2010 13:33	4 KB
Martinez-Belmonte Maria-J	RE: BAKK2: Re: New forum integration for Moodle?id=4	Sun, 5.23.2010 13:26	4 KB

Administrator's account

Figure 15: Email administrator account

After receiving emails from users, we run the process created. In the browser we can see the next result:

```

sxstudents.fhstp.ac.at}INBOX/Moodle (0)
Folder:{sxstudents.fhstp.ac.at}INBOX/Moodle, '/',0

USER: Nguyen-Huy Thanh
SUBJECT: RE: BAKK2: Re: New forum integration for
Moodle?id=44?dis=5?pa=42?usu=7
IMAP_HEADER: Array ( [0] => stdClass Object ( [personal] =>
Nguyen-Huy Thanh [mailbox] => is090004 [host] => fhstp.ac.at ) )
EMAIL USER: is090004@fhstp.ac.at

Checking User.....
User Id: 8
The user exists

Id: 44
Discussion: 5
Parent: 42
Message: thank you!

Insert.....
INSERTED ROW

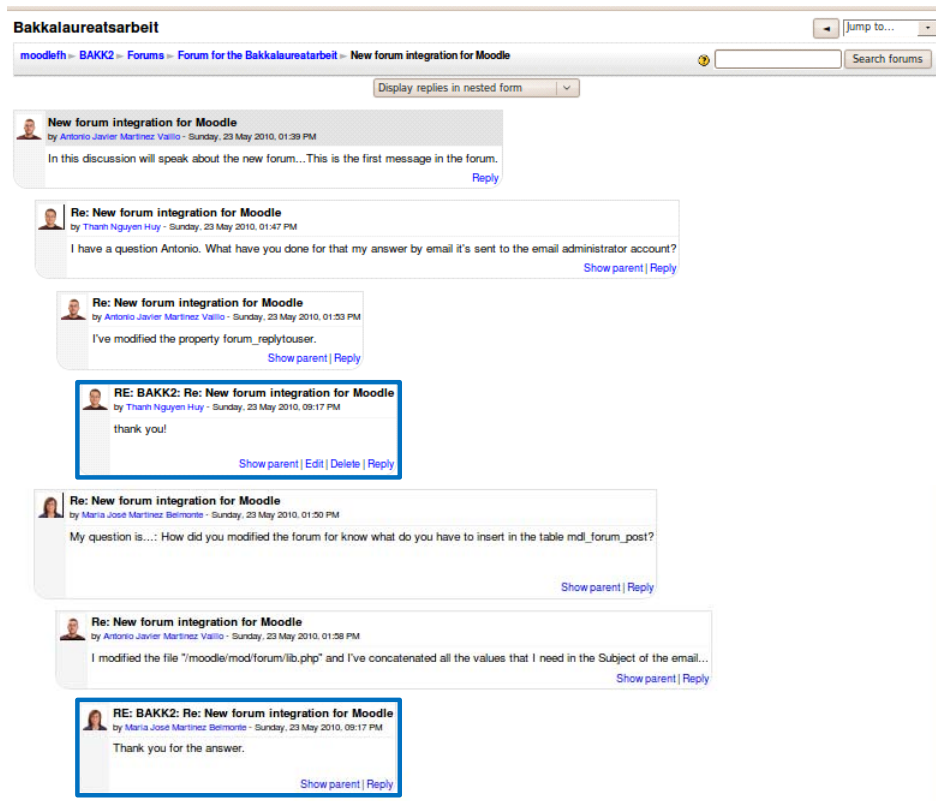
USER: Martinez-Belmonte Maria-Jose
SUBJECT: RE: BAKK2: Re: New forum integration for
Moodle?id=45?dis=5?pa=43?usu=7
IMAP_HEADER: Array ( [0] => stdClass Object ( [personal] =>
Martinez-Belmonte Maria-Jose [mailbox] => is090001 [host] =>
fhstp.ac.at ) )
EMAIL USER: is090001@fhstp.ac.at

Checking User.....
User Id: 4
The user exists

Id: 45
Discussion: 5
Parent: 43
Message: Thank you for the answer.

Insert.....
INSERTED ROW
```

The result in the forum is the adding of two new posts. Also, in this image we can see these posts in the database:



Posts inserted whit the process.php

	id	discussion	parent	userid	created	modified	mailed	subject	message	format	attachment	totalscore	mailnow
<input type="checkbox"/>	68	5	44	8	1274642267	1274642267	0	RE: BAKK2: Re: New forum integration for Moodle	thank you!	0		0	0
<input type="checkbox"/>	69	5	45	4	1274642268	1274642268	0	RE: BAKK2: Re: New forum integration for Moodle	Thank you for the answer.	0		0	0

Table "mdl_forum_posts"

Figure 16: Posts with the process.php

7. Appendix I. Process.php

```
<?php
$host = '{sxstudents.fhstp.ac.at}INBOX/Moodle';
$user = 'is090002';
$pass = '*****';
echo $host;
$mbox = imap_open($host, $user, $pass) or die("can't connect: " .
imap_last_error());

$list = imap_getmailboxes($mbox, $host, "*");
if (is_array($list)) {
    foreach ($list as $key => $val) {
        echo "($key) ";
        echo "Folder:";
        echo imap_utf7_decode($val->name) . ", ";
        echo "' ' . $val->delimiter . ', ";
        echo $val->attributes . "<br />\n";
    }
} else {
    echo "imap_getmailboxes failed: " . imap_last_error() . "\n";
}

$message_count = imap_num_msg($mbox);

for ($i = 1; $i <= $message_count; ++$i) {
    $header = imap_header($mbox, $i);
    echo "<br />\n";
    echo "USER: ";
    echo $header->fromaddress . "<br />\n";
    echo "SUBJECT: ";
    echo $header->Subject . "<br />\n";
    echo "IMAP_HEADER: ";
    print_r($header->from);
    $mailbox = $header->from[0]->mailbox;
    $host = $header->from[0]->host;
    echo "<br />\n";
    $fromfinal = $mailbox . "@" . $host;
    echo "EMAIL USER: ";
    echo $fromfinal . "<br />\n";

    $compruebausu = check_user("$fromfinal");
    echo "<br />\n";
    echo "Checking User....." . "<br />\n";
    echo "User Id: " . $compruebausu . "<br />\n";

    if($compruebausu){
        echo "The user exists";
        echo "<br />\n";
    }
    if(!$compruebausu){
        echo "The user doesn't exit";
        echo "<br />\n";
    }
}
$pos_first = strpos($header->Subject, '?');
$Subject_insert = substr($header->Subject,0,$pos_first);
$values = strstr($header->Subject, '?');
$valuesarray = str_split($values);
```



```
$seq=0;
$que=0;
$valin = "";
$arrayeq = array();
$arrayque = array() ;
foreach ($valuesarray as $index => $value){
    if($value == "="){
        $arrayeq[$seq] = $index;
        ++$seq;
    }
    if($value == "?"){
        $arrayque[$que] = $index;
        ++$que;
    }
}

//Get id mdl_forum_post
$id = substr($values, $arrayeq[0]+1,$arrayque[1]-
    $arrayeq[0]-1);
echo "<br />\n";
echo "Id: " . $id;

//Get discussion
$dis = substr($values, $arrayeq[1]+1,$arrayque[2]-
    $arrayeq[1]-1);
echo "<br />\n";
echo "Discussion: " . $dis;

//Get parent
$parent = substr($values, $arrayeq[2]+1,$arrayque[3]-
    $arrayeq[2]-1);
echo "<br />\n";
echo "Parent: " . $parent;

//Get user
$susu = substr($values, $arrayeq[3]+1);
echo "<br />\n";
echo "User post: " . $susu;

//Get Message
$mensaje = imap_fetchbody($mbox,$i,'1');
$message = strstr($mensaje, 'From', true);
echo "<br />\n";
echo "Message: " . $message;
echo "<br />\n";
echo "<br />\n";

if(check_user($fromfinal)){
    insert_post($dis, $parent, $susu,
        check_user($fromfinal),$Subject_insert, $message);
}

if(!check_user($fromfinal)){
    echo "THE USER IS NOT IN DDBB";
}
//Delete email
imap_delete($mbox, $i);
}

imap_close($mbox);
```

```
function check_user($mail){
    $link = mysql_connect('localhost', 'root', '');
    if(!$link){
        die('Could not connect: ' . mysql_error());
    }

    $db_selected = mysql_select_db('moodle', $link);
    if(!$db_selected){
        die('Can\'t use moodle:' . mysql_error());
    }

    $query = sprintf("SELECT * FROM mdl_user
        WHERE email = '$mail'");
    $result = mysql_query($query);
    if(!$result){
        die('Invalid query: ' . mysql_error());
    }

    $num_rows = mysql_num_rows($result);
    $row = mysql_fetch_assoc($result);
    return $row['id'];
}

function insert_post($discussion, $parent, $usu, $userid, $subject,
$message){
    echo "Insert.....";
    $link = mysql_connect('localhost', 'root', '');
    if(!$link){
        die('Could not connect: ' . mysql_error());
    }
    $db_selected = mysql_select_db('moodle', $link);
    if(!$db_selected){
        die('Can\'t use moodle:' . mysql_error());
    }
    ++$parent;
    $sqlinsert= "INSERT into
        mdl_forum_posts(discussion,parent,userid,
        created,modified,subject,message)
        values('$discussion','$parent','$userid',
        UNIX_TIMESTAMP(),UNIX_TIMESTAMP(),
        '$subject','$message)";
    mysql_query($sqlinsert,$link);
    echo "<br />\n";
    echo "INSERTED ROW";
    echo "<br />\n";
    echo "<br />\n";
}
?>
```

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