

WO 01/01372

PCT/US00/17979

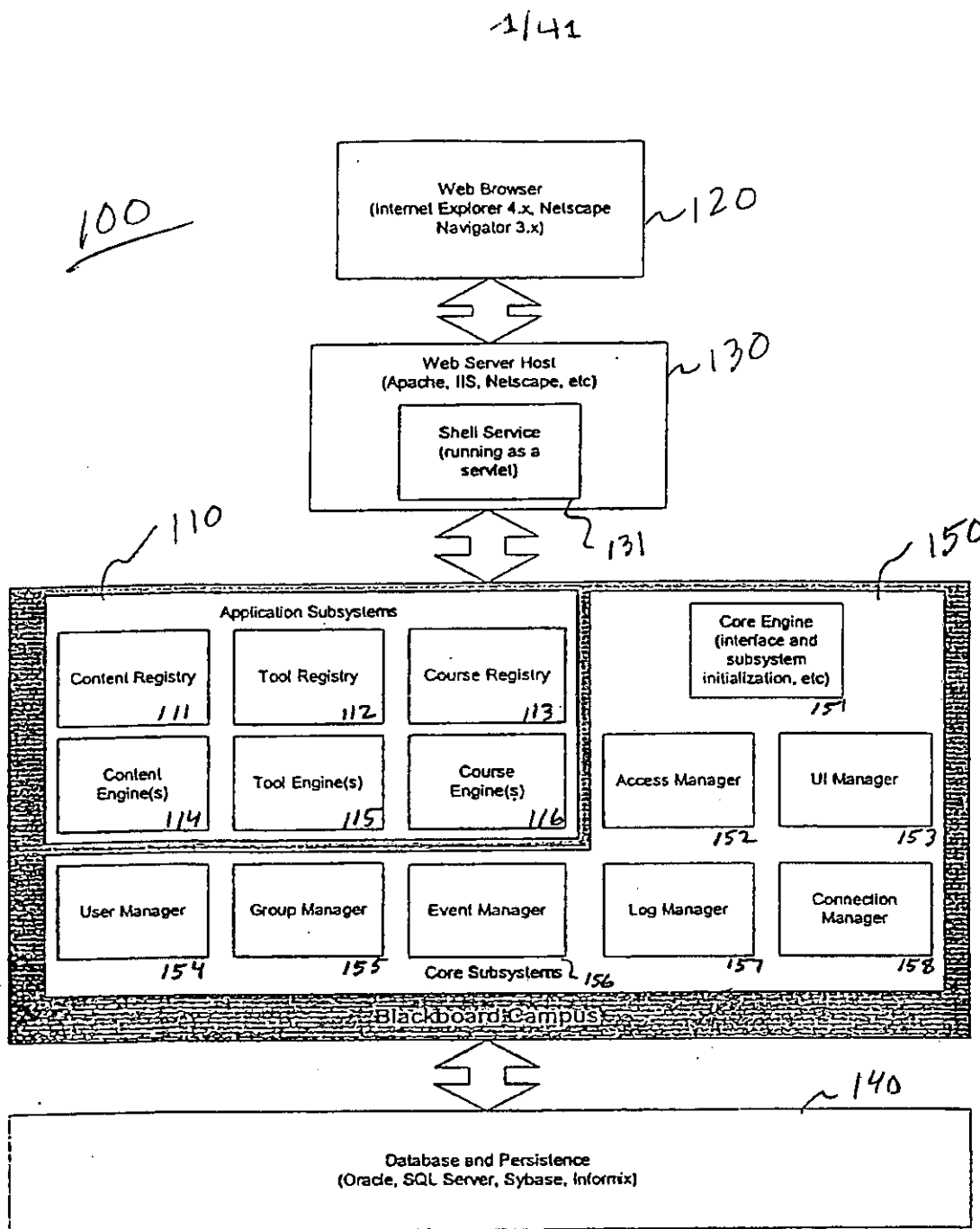


FIGURE 1

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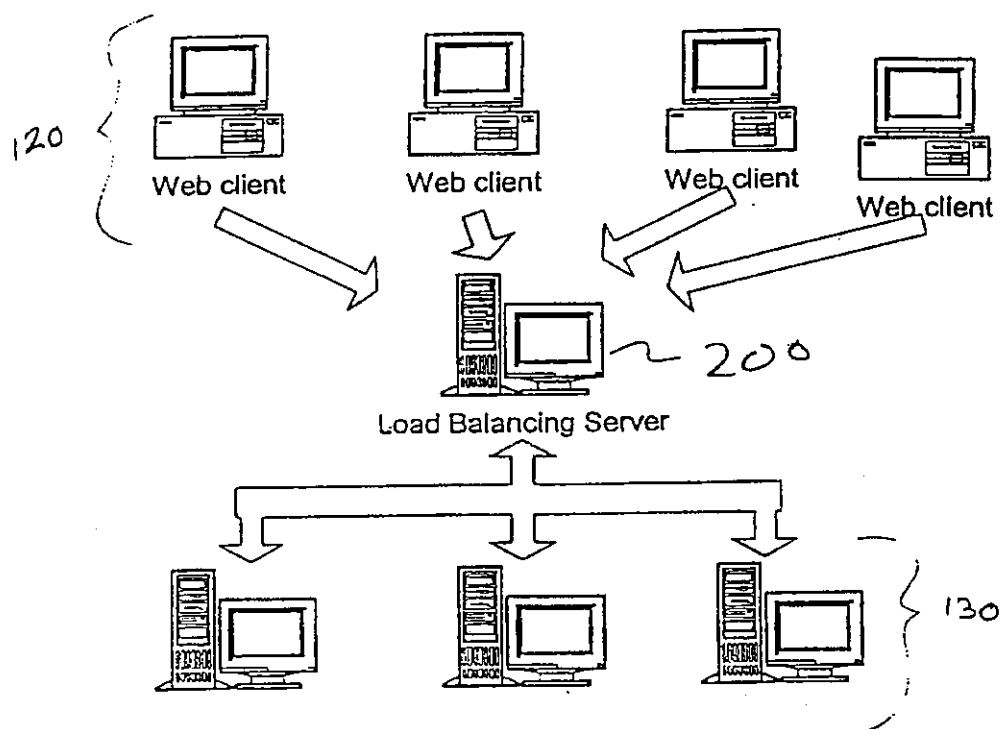


Figure 2 — Machine Scalability Using Load Balancing

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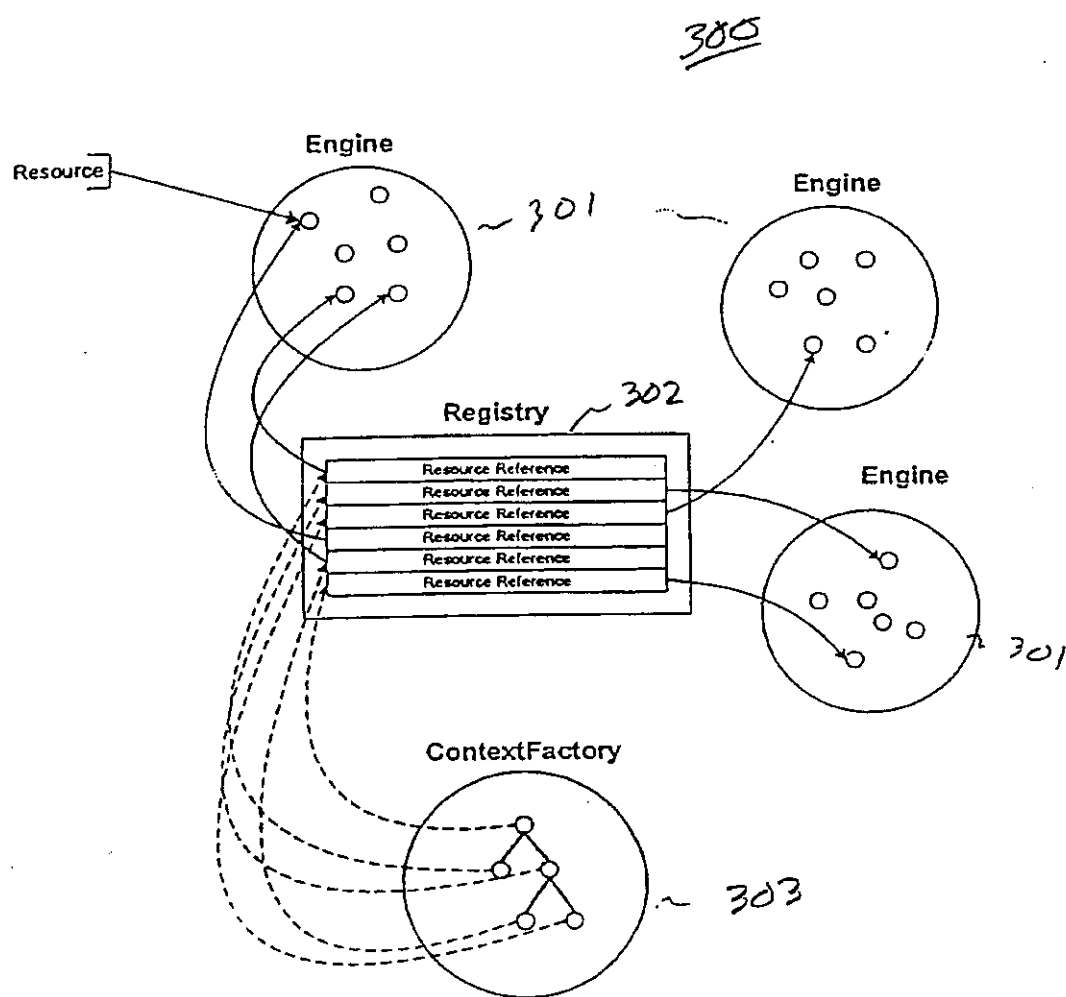


Figure 3 -- Engine/Registry Model

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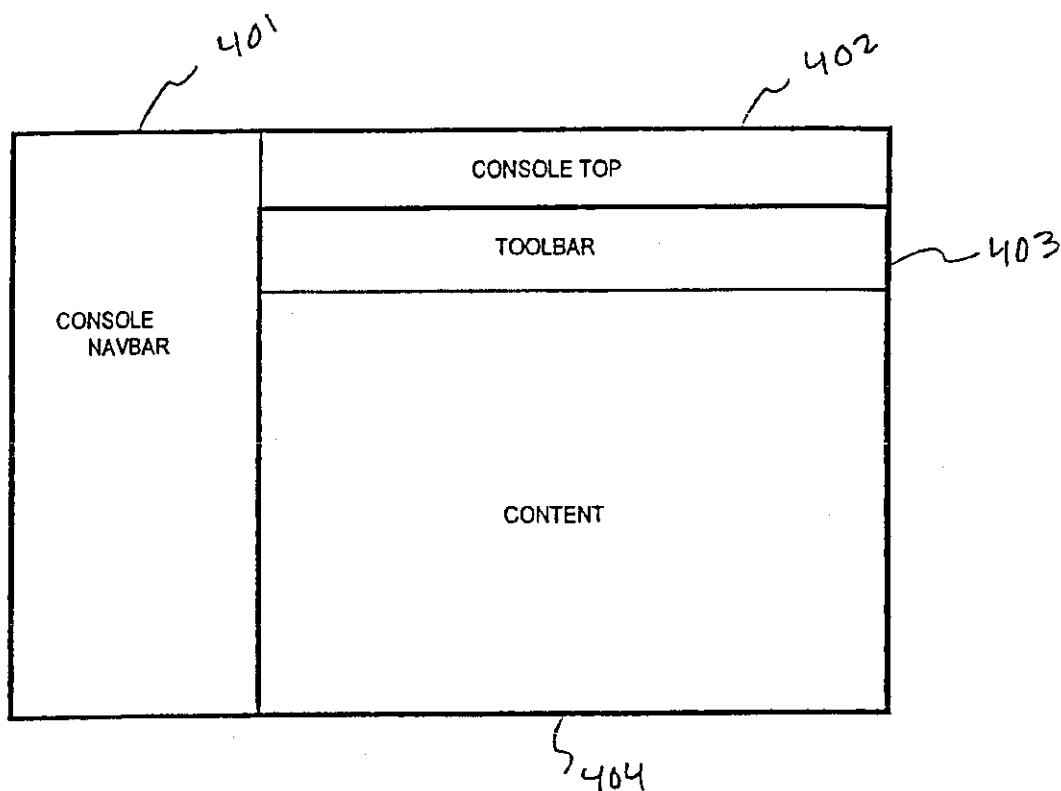


FIGURE 4

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504 502

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Address http://prologtown1/Blackboard_v30r7b_admin/home/frame_enterprise_myblackboard.html Go

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My Institution Courses in Community Services Academic Web Resources

TOOLS

- Home
- e-Mail
- Announcements
- Calendar
- Tasks
- User Directory
- Address Book
- Course Grades
- Personal Info

SEARCH THE WEB

Search the Web:

[advanced search](#)

Welcome, Daniel!

[Personalize](#) [Content](#) [Layout](#)

Today's Announcements [Edit](#) [X](#)

- Introduction to Music
- Mid-term exam tomorrow
- Intro to Space
- Shuttle launch tonight at 6 pm EST.
- [more...](#)

Excite Business News [Edit](#) [X](#)

Business News

- BQ: Too Soon to Be Sure on Recovery
- U.S. Consumers Boost Purchases for Y2K
- Millennium Bug in Hiding, So Far

Today's Tasks [Edit](#) [X](#)

Personal Tasks

- Order new computer Not Started
- Intramural soccer match Not Started

Introduction to Music

- Complete Assignment #4 in Progress more...

Horoscopes [Edit](#) [X](#)

CAPRICORN

Unexpected people find one another at

My Courses [Edit](#) [X](#)

Courses you are teaching:

- ☒ Introduction to Music
- ☒ Art History
- ☒ Intro to Space

Courses in which you are enrolled:

- ☒ Biology 101 more...

Today's Calendar [Edit](#) [X](#)

9:10am - 10:15am

Introduction to Music Lecture #3
Warren B45 - remember to bring your instrument!

10:30am - 11:45am

Art History: Field Trip
Today we are visiting the MOMA. more...

Weather [Edit](#) [X](#)

Washington District of Columbia 51 (F) ☀️ sunny

Bellevue Alaska -25 (F) ☁️ sunny

520

Fig 5

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Your Institution UNIVERSITY

My Institution Courses Community Services Academic Web Resources

COURSE SEARCH
Search for a course:
advanced search

OFF-CAMPUS LEARNING
Keplan
Help prepare for final exams.
Tutoriel
Need a tutor, use the virtual chat 24 hour Tutoriel service.
How
Find out how to do just about anything.
Blackboard.com
Find courses you can take online.

OFF-CAMPUS LEARNING
Search the Web:
advanced search

Course List:

Courses you are teaching:

☒ **Introduction to Music**
Course ID: MUSIC101
Department: Art & Music
Instructor(s): Dr. Lou Pugliese
Online Material: Yes

☒ **American History**
Course ID: AHIST101
Department: Social Science
Instructor(s): Dr. Chasen
Online Material: Yes

Courses in which you are enrolled:

☒ **Accounting 101**
Course ID: ACCT101
Section: 2
Department: Business
Instructor(s): Alan Stewart
Online Material: No

☒ **Space and Beyond**
Course ID: SPACE301
Section: 1
Department: Music
Instructor(s): Laurie Wagnon
Online Material: Yes

☒ **Algebra 2**
Course ID: ALGEBRA2
Section: 2

Course Catalog:

- [Agricultural Sciences & Natural Resources](#)
- [Architecture](#)
- [Arts & Sciences](#)
- [Business Administration](#)
- [Division of Continuing Studies](#)
- [Engineering & Technology](#)
- [Fine & Performing Arts](#)
- [Graduate Studies](#)
- [Great Plains Veterinary Educational Center](#)
- [Human Resources & Family Sciences](#)
- [Journalism & Mass Communications](#)
- [Law](#)
- [Military & Naval Sciences](#)
- [Nebraska College of Technical Agriculture - Curtis](#)
- [Public Affairs & Community Service](#)
- [Special Projects](#)
- [Teachers College](#)

[Browse Course Catalog](#)

600

Fig 6

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Address: http://georgetown/blackout_v30/bb_admin/frames/frame_enterprise_courses.html

Your Institution UNIVERSITY

My Institution Courses Communication Academic Web Resources

COURSES > INTRODUCTION TO MUSIC

MUSIC101: Introduction to Music

Announcements

Course Information

Staff Information

Course Documents

Assignments

Communication

External Links

Student Tools

Resources

Course Map

Control Panel

Introduction to Music

musiC 101

Music Theory Basics
Music Notation
Key Signatures
Time Signatures

Announcements
Posted in the Last Two Weeks

Subject: Course Packets Posted by Rachel

The library has printed an additional 25 course packets. If you have up, please drop by the library and purchase one. They are available!

Subject: Assignment #3 Office Hours Posted by Rachel

Assignment #3 Office Hours have been changed from 2:00-3:00 to 3-4:45

Today Last 2 Weeks Last Month All

Course Contents

(Click on any box to expand)

- Course Information
 - Course Description
 - Course Objectives
 - Course Schedule
 - Course Syllabus
 - Course Materials
 - Course Documents
 - Course Assignments
 - Course Communication
 - Course Links
- Course Documents
 - Course Description
 - Course Objectives
 - Course Schedule
 - Course Syllabus
 - Course Materials
 - Course Documents
 - Course Assignments
 - Course Communication
 - Course Links
- Course Assignments
 - Course Description
 - Course Objectives
 - Course Schedule
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 - Course Schedule
 - Course Syllabus
 - Course Materials
 - Course Documents
 - Course Assignments
 - Course Communication
 - Course Links

Done

Fig 7

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Address http://blackboard.blackboard.com/course/index.htm

Your Institution UNIVERSITY

My Institution Courses Course Management Academic Web Resources Enrollments Admin

John Wayne

Announcements

Course Information

Site Information

Course Documents

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Course Map

My Blackboard

Search Logout

music 101

Announcements

Posted In the Last Two Weeks

Subject: Class location change
We've moved to room 101
Posted by Rita McPherson on May 19, 2000

Subject: Greeting
Welcome MCGD
Posted by Jonathan's Bulletin on May 19, 2000

Subject: A new quiz has been posted.
To begin taking the quiz titled NYCTA click here.
Please answer these questions carefully.
Posted by Rita McPherson on May 19, 2000

Date

Start ANYWHERE. Inclass - MCGD. Enrolling - Doc. Test on BB. Course Content. Fig 0.doc - MCGD. Document2. Document2. Fig P.doc - MCGD. Fig U.doc - MCGD. Course Content.

CourseIndex: My Blackboard - Microsoft Internet Explorer provided by Greenberg Training

File Edit View Favorites Tools Help

Back Search Favorites History

Address http://blackboard.blackboard.com/course/index.htm

Your Institution UNIVERSITY

My Institution Courses Course Management Academic Web Resources Enrollments Admin

Please check your announcements on a daily basis.
Thanks, Stacey

Subject: Course Map
Welcome to your new course
You can navigate your course by using the map below.
Course Contents
(click on any book to expand)
Course Information
Site Information
Course Documents
Assignments
Communication
External Links
Student Tools

Subject: WELCOME TO MUSIC 101!
Use the buttons provided on the left side of your screen to navigate the CourseSite. Begin by clicking the COURSE INFORMATION button to view important information before beginning the course.
Posted by David Carr on Feb 9, 2000

Today Last 2 Weeks Last Month All

Start ANYWHERE. Inclass - MCGD. Enrolling - D. Test on BB. Course Content. Fig 0.doc. Document2. Document2. Fig P.doc. Fig U.doc. Course Cont. Fig C.doc. Document2.

FIG. 8

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10/12

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1006

1008

1010

1000

Course: Physics in Music

Current Location: Assignments

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1016

1018

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3634

3636

3638

3640

3642

3644

3646

3648

3650

3652

3654

3656

3658

3660

3662

3664

3666

3668

3670

3672

3674

3676

3678

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PCT/US00/17979

11/41

Course Ref: My Blackboard - Microsoft Internet Explorer provided by Blackboard Inc.

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss

Address http://georgelown/Blackout_v30/bb_admin/frames/home_enterprise_courses.html Go

Your Institution UNIVERSITY

My Institution Courses **Course Documents** Web Resources

COURSES > INTRODUCTION TO MUSIC

MUSIC101: Introduction to Music

Course Documents

(file)

Current Location: Course Documents

 **Syllabus**
[Link to File](#)

 **Session 1**
The major scale, has no sharps or flats associated with any of the notes in the scale. Here is the C major scale in the treble staff.

(to display options for the animation below, move your mouse pointer atop the image and click the right mouse button)



 **Session 1: Lessons**

 **Session 1: An Atlas of Consonance**
[Link to File](#)
Please print this document and keep it available for fast review.

 **Session 2: Music Notation**

Done Local Internet

1100

Fig 11

WO 01/01372

PCT/US00/17979

12/41

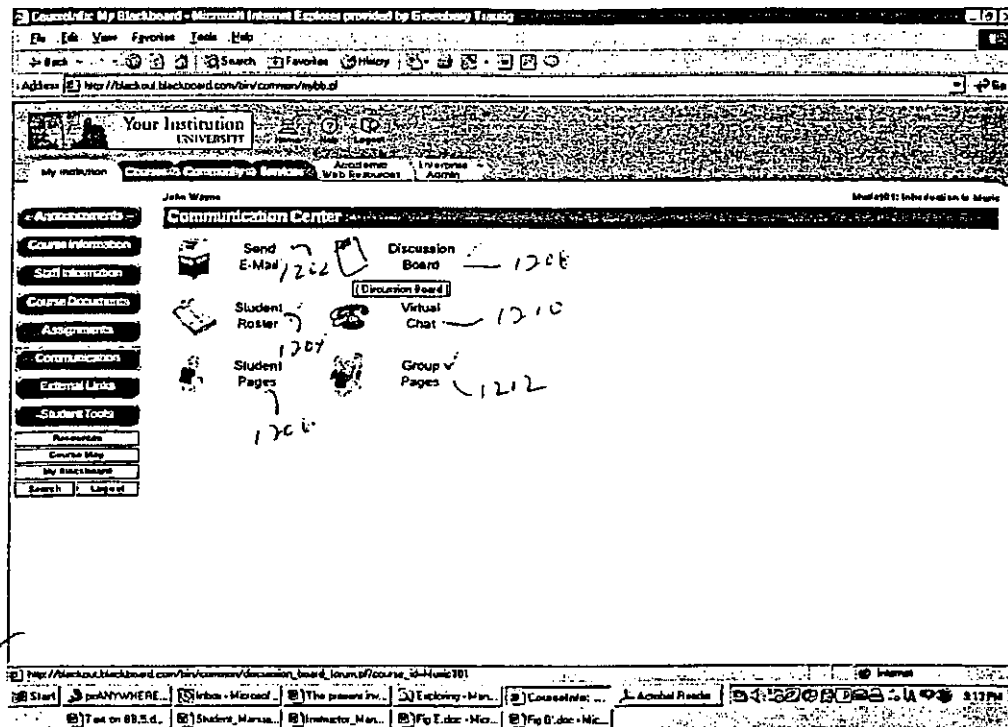


FIG. 12

WO 01/01372

PCT/US00/17979

13/41

Course title: My Blackboard - Microsoft Internet Explorer provided by Blackboard Inc.

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss

Address http://blackboard.blackboard.com/bb_admin/frames/home_enterprise_courses.html

Your Institution UNIVERSITY

My Institution Courses Communication Center Web Resources Action

COURSES > INTRODUCTION TO MUSIC

Blackboard Administrator MUSIC101: Introduction to Music

Announcements Communication Center

Course Information Discussion Board - Thread View

Staff Information

Course Documents

Assignments

Communication

External Links

Student Tools

Resources

Course Map

Control Panel

VIEW UNREAD MESSAGES: EXPAND ALL COLLAPSE ALL SEARCH

OPTIONS

☐ This is a top level thread
☐ This is a reply to your top level thread
☐ This is a top level thread
☐ Hello World!
☐ Re: Hello World!

Cane, Daniel
 Chi, Timothy
 Cane, Daniel
 Klimentko, Anatoliy
 Klimentko, Anatoliy

25-Feb-2000
 26-Feb-2000
 28-Feb-2000
 27-Feb-2000
 28-Feb-2000

New
 New
 New
 New

[Click Here for Archives](#)

Sort By:

Previous

Done Internet

1300

FIG. 13

WO 01/01372

PCT/US00/17979

14/41

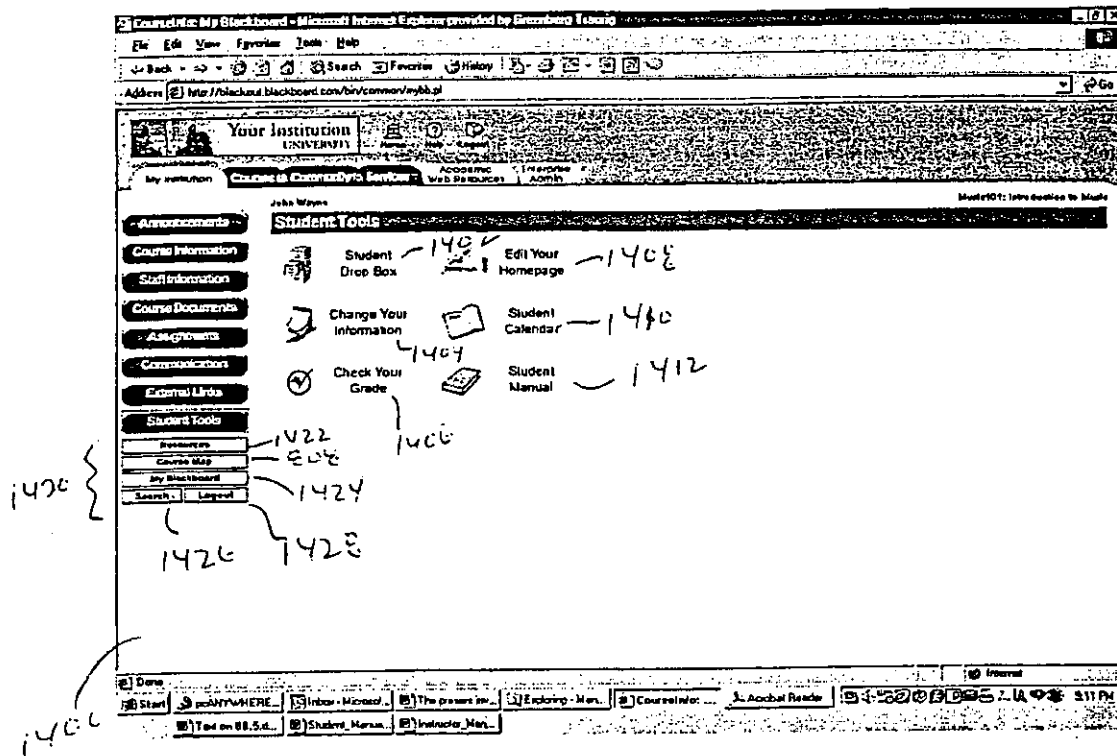


FIG. 14

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PCT/US00/17979

15/41

Student Tools: Student DropBox

John Wayne

Music101: Introduction to Music

Student Tools

Student DropBox

Use your student drop box to submit files to your instructor. Also, your instructor can return your files to you with comments attached.



Current Files in your DropBox

Note: If you want to save a file, right click on the Link Name and choose Save Link As

<u>File Name</u>	<u>Link Name</u>	<u>File Size</u>	<u>Status</u>
none	none	none	none

[Remove Files]



Add File to DropBox

Click the *Browse* button to select the file to attach from your computer. Be sure to specify a linkname for your file.

File to Upload:

Name of Link to File:

(Example: Homework One, Assignment One)

Browse...

Send File to Instructor

◀ Back

1520

FILE 15

WO 01/01372

PCT/US00/17979

16142

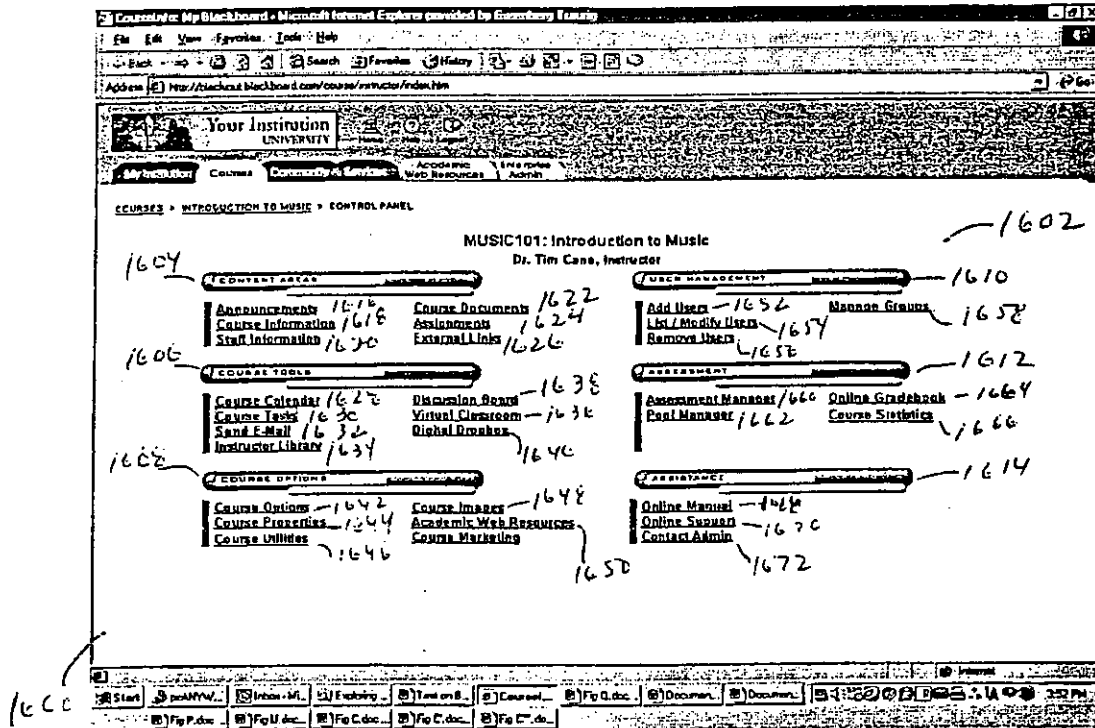


FIG. 16

WO 01/01372

PCT/US00/17979

17/41

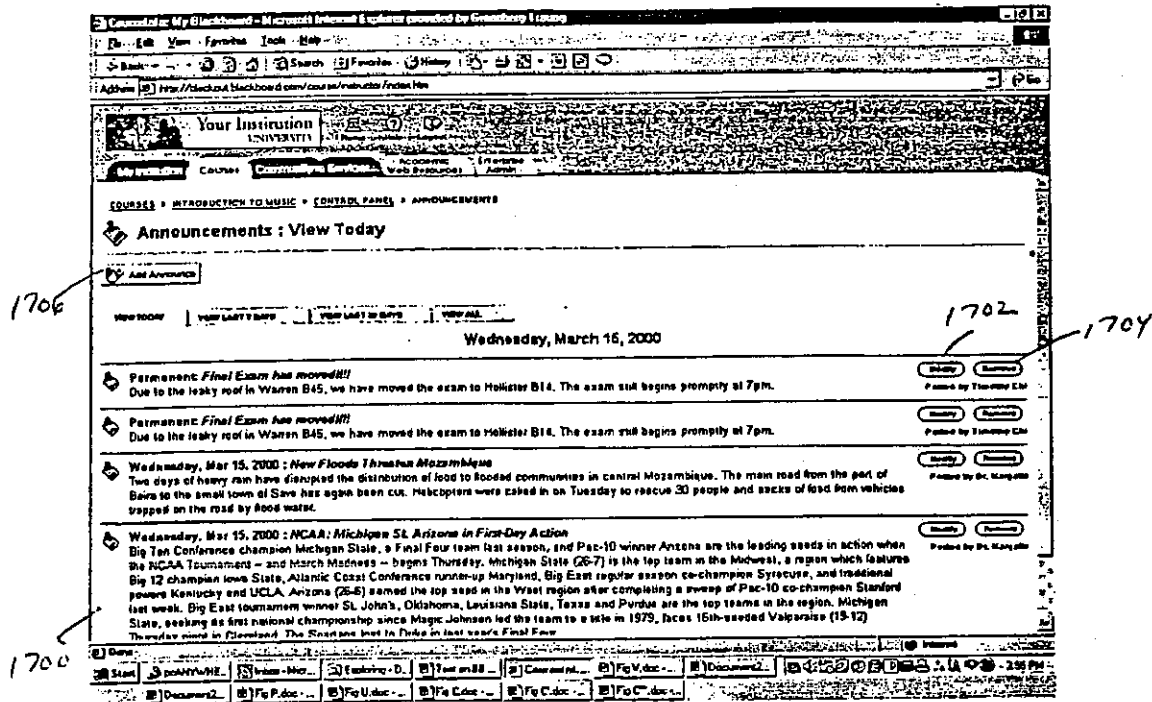


FIG. 17

FIG. 18

WO 01/01372

PCT/US00/17979

19/41

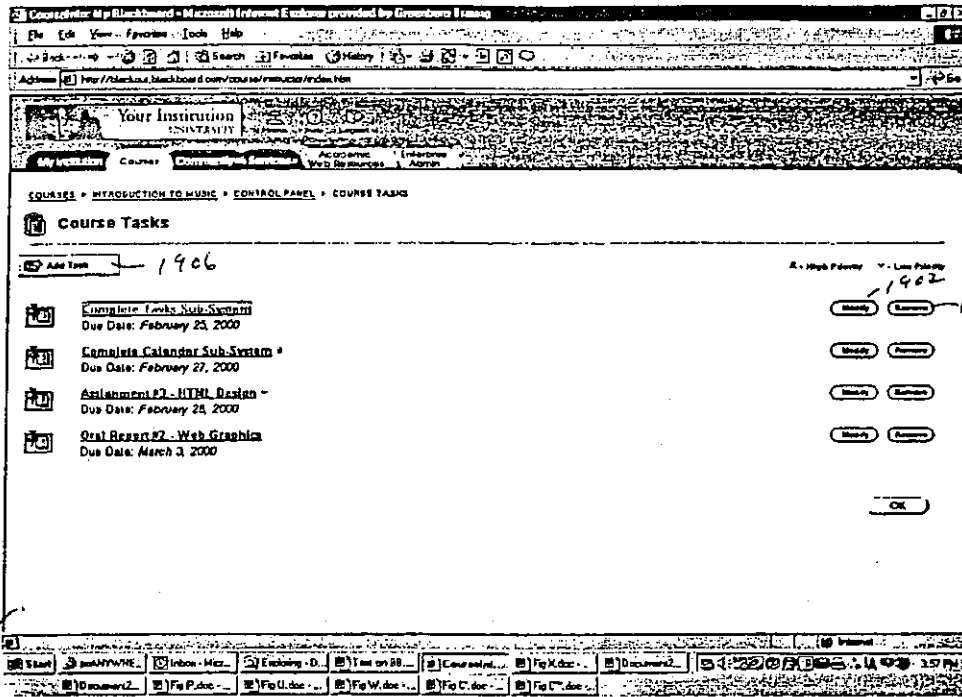


FIG 19

WO 01/01372

PCT/US00/17979

20/42

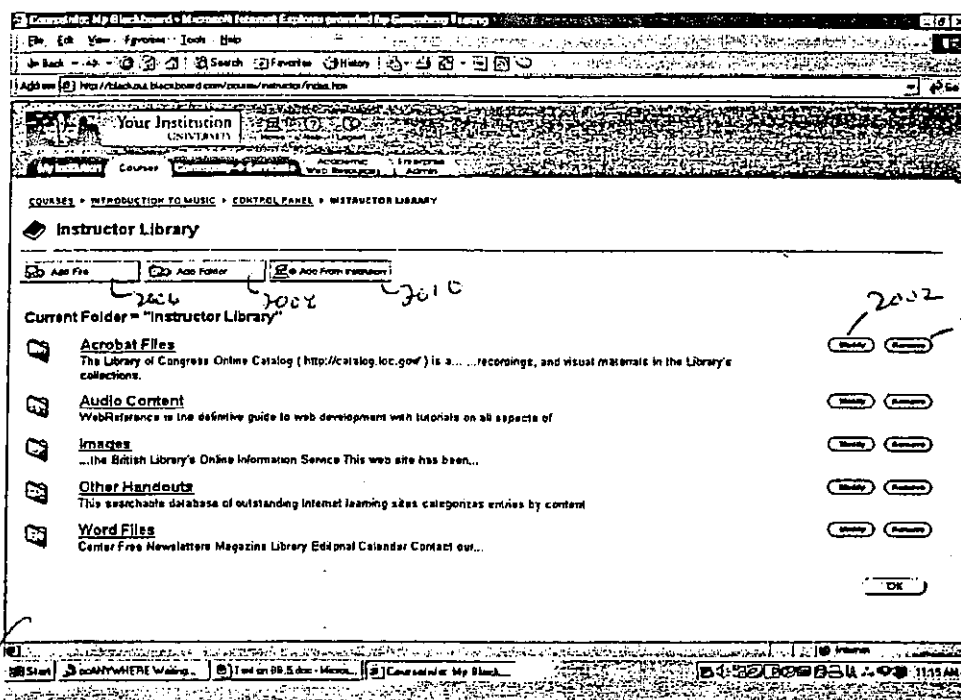


FIG. 20

WO 01/01372

PCT/US00/17979

21/41

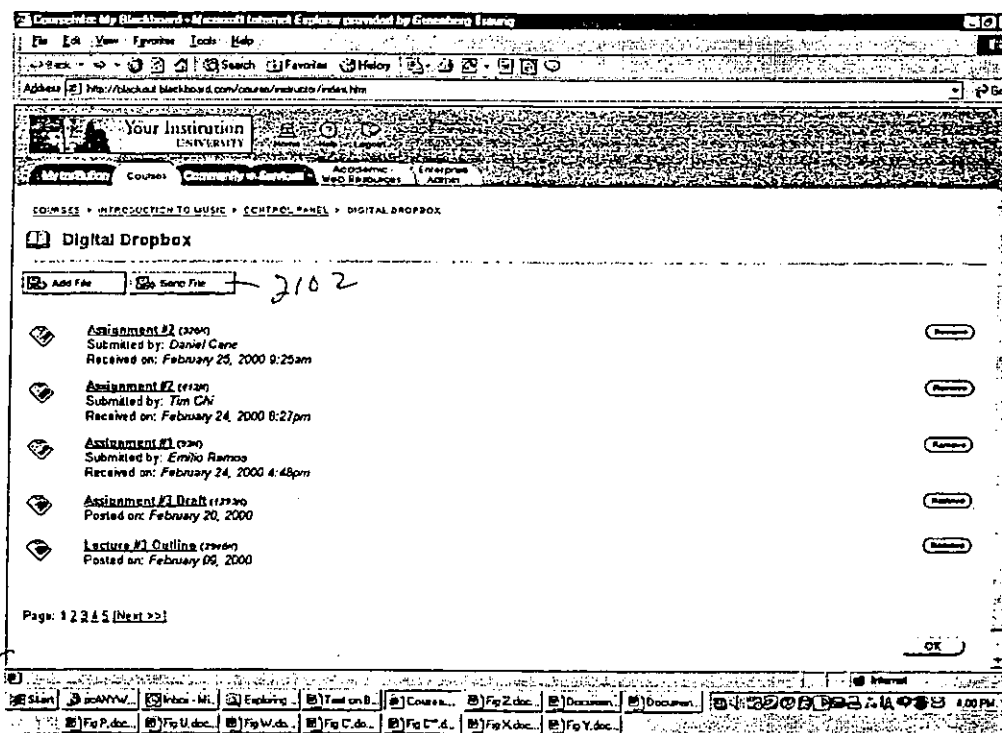


FIG. 21

WO 01/01372

PCT/US00/17979

22/41

CourseInfo: My Blackboard - Microsoft Internet Explorer provided by Blackboard Inc.

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss

Address http://georgetown1/Blackout_v30/bb_admin/frames/frame_enterprise_courses.html Go

Your Institution UNIVERSITY

Home Help Logout

My Institution Courses Community Services Academic Web Resources

COURSES > INTRODUCTION TO MUSIC

MUSIC101: Introduction to Music

Course Gradebook

Students whose last names begin with: Items that are grouped by:

☒ completed	Participation	Space 301-c Quiz	Assignment #1	Total Points
☐ no info	Participation	Quiz	Assignment	
☐ taken, but ungraded	Edit	Edit	Edit	
Arnold, Jeremy	Edit	-	-	0
Baggins, T	Edit	80	50	315
Bell, Norman	Edit	-	10	10
Cane, Jon	Edit	72	25	35
Chasen, Michael	Edit	-	25	-
Chi, Timothy	Edit	92	35	50
Clark, Andrea	Edit	100	20	50
Clark, Jim	Edit	76	-	50
Cox, Mag	Edit	-	25	-
Davies, Greg	Edit	-	-	-
witkowski, francis	Edit	-	10	-
Points Possible	100	35	50	335

Resources Course Map Control Panel

Local intranet

2200

FIG 22

WO 01/01372

PCT/US00/17979

CourseInfo: My Blackboard 23/41

COURSES > INTRODUCTION TO MUSIC > CONTROL PANEL > COURSE STATISTICS > REPORT

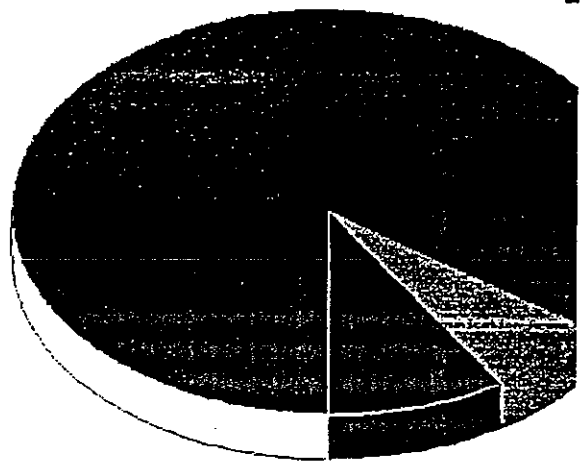
 Course Statistics

Statistics Generated on Thursday, February 24, 2000 11:26:28 AM
 Note: You may have to reload/refresh this page for the images to be correct.

Total Number of Accesses per Area — 2302
 Number of Accesses over Time — 2304
 User Accesses per Hour of the Day — 2306
 User Accesses per Day of the Week — 2306
 Total Accesses by User — 2310

Total Number of Accesses per Area — 2302

Area Name	Hits	Percent
Content Areas	139	83.2 %
Communication Areas	10	5.98 %
Group Areas		0 %
Student Areas	15	8.98 %
Total	167	100 %



Number of Accesses over Time — 2304

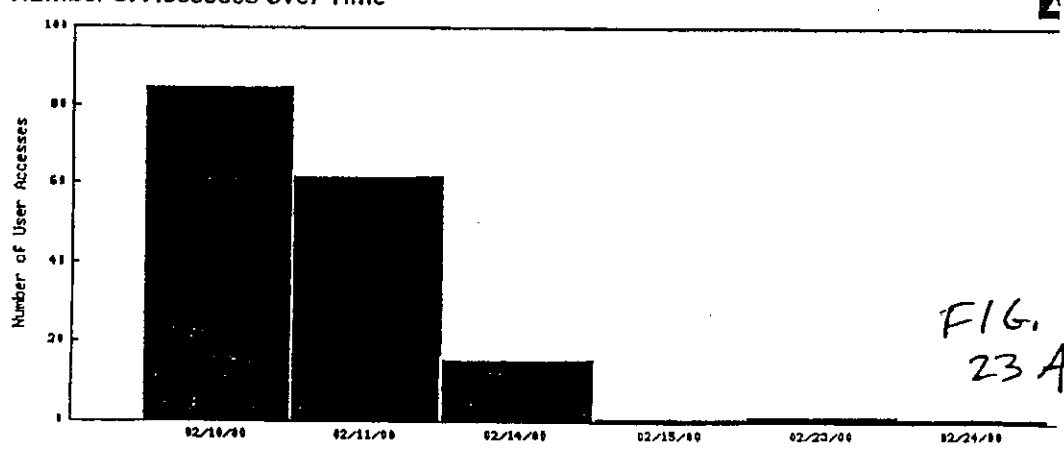


FIG. 23A

WO 01/01372

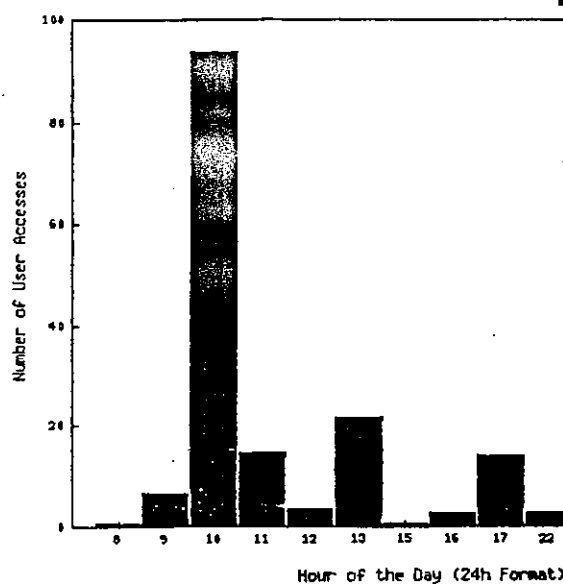
PCT/US00/17979

24/41

CourseInfo: My Blackboard

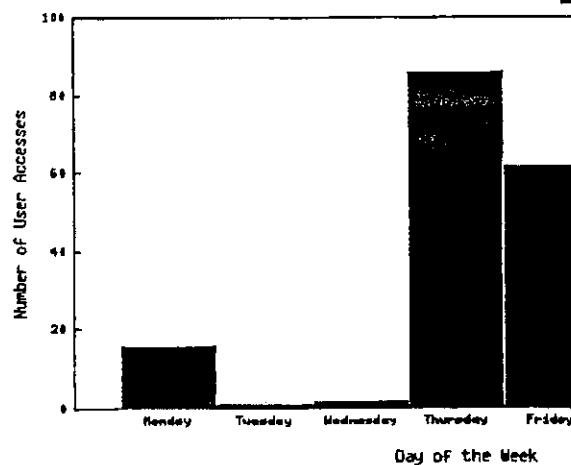
User Accesses by Hour of the Day — 2306

Hour of The Day	Hits	Percent
8	1	0.59 %
9	7	4.19 %
10	94	56.2 %
11	15	8.98 %
12	4	2.39 %
13	22	13.1 %
15	1	0.59 %
16	3	1.79 %
17	14	8.36 %
22	3	1.79 %
23	3	1.79 %
Total	167	100 %



User Accesses by Day of the Week — 2306

Day of The Week	Hits	Percent
Monday	16	9.58 %
Tuesday	1	0.59 %
Wednesday	2	1.19 %
Thursday	86	51.4 %
Friday	62	37.1 %
Total	167	100 %



2306

FIG.
23B

WO 01/01372

PCT/US00/17979

25/41

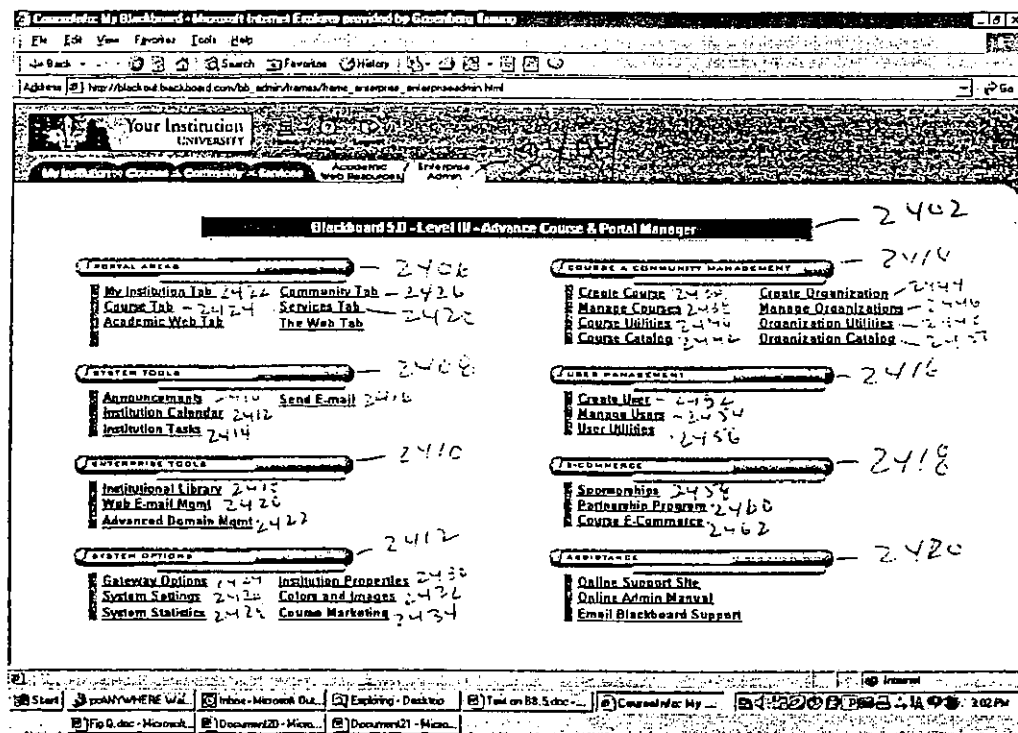


FIG. 24

WO 01/01372

PCT/US00/17979

26/41

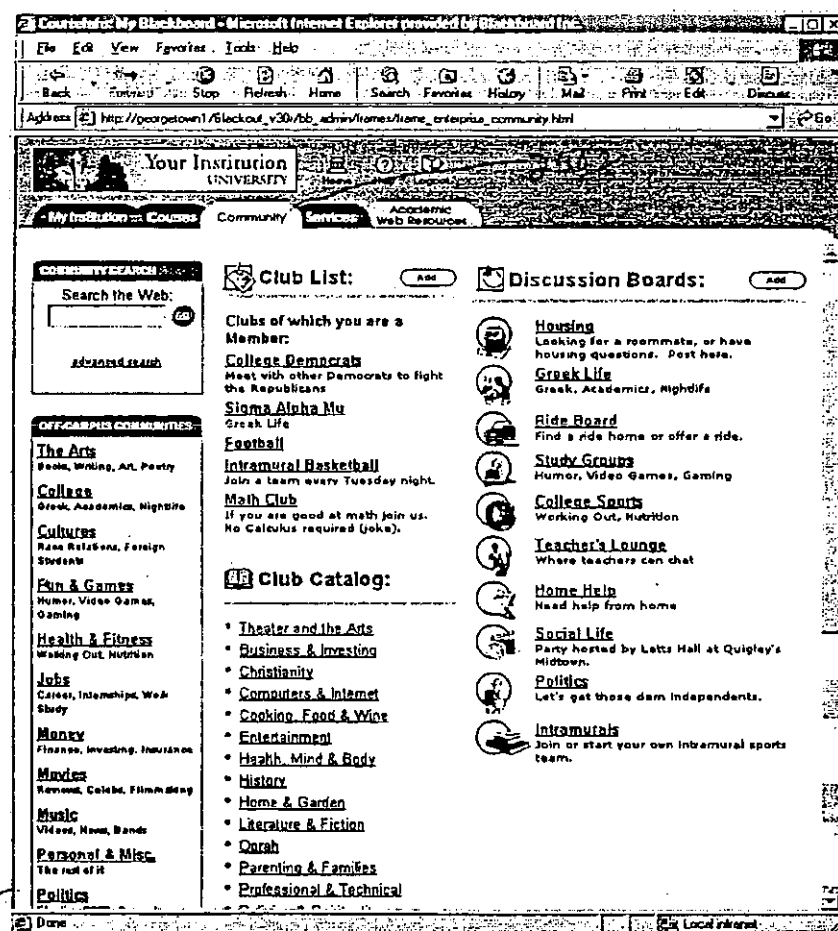
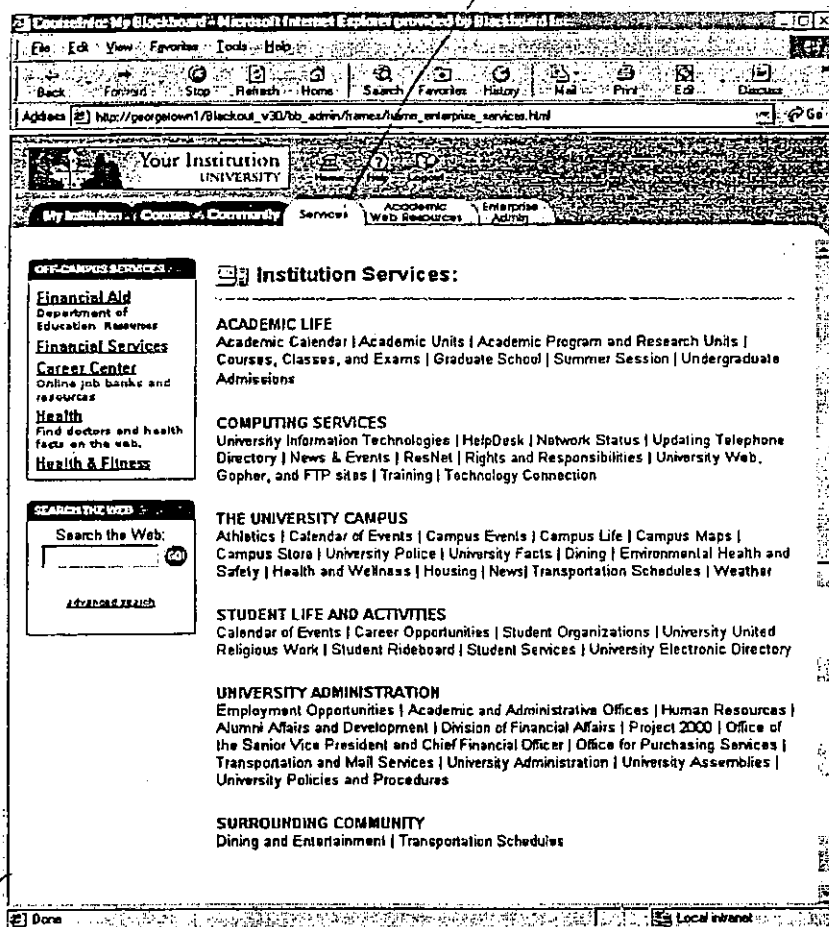


Fig 25

WO 01/01372

PCT/US00/17979

27/41



WO 01/01372

PCT/US00/17979

28/41

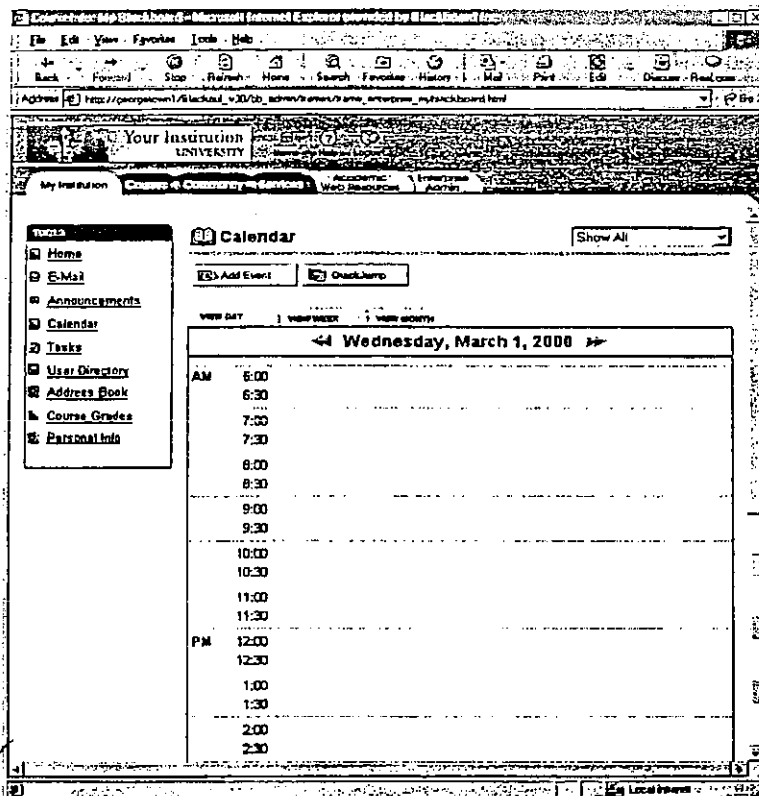


FIG. 27

WO 01/01372

PCT/US00/17979

29/41

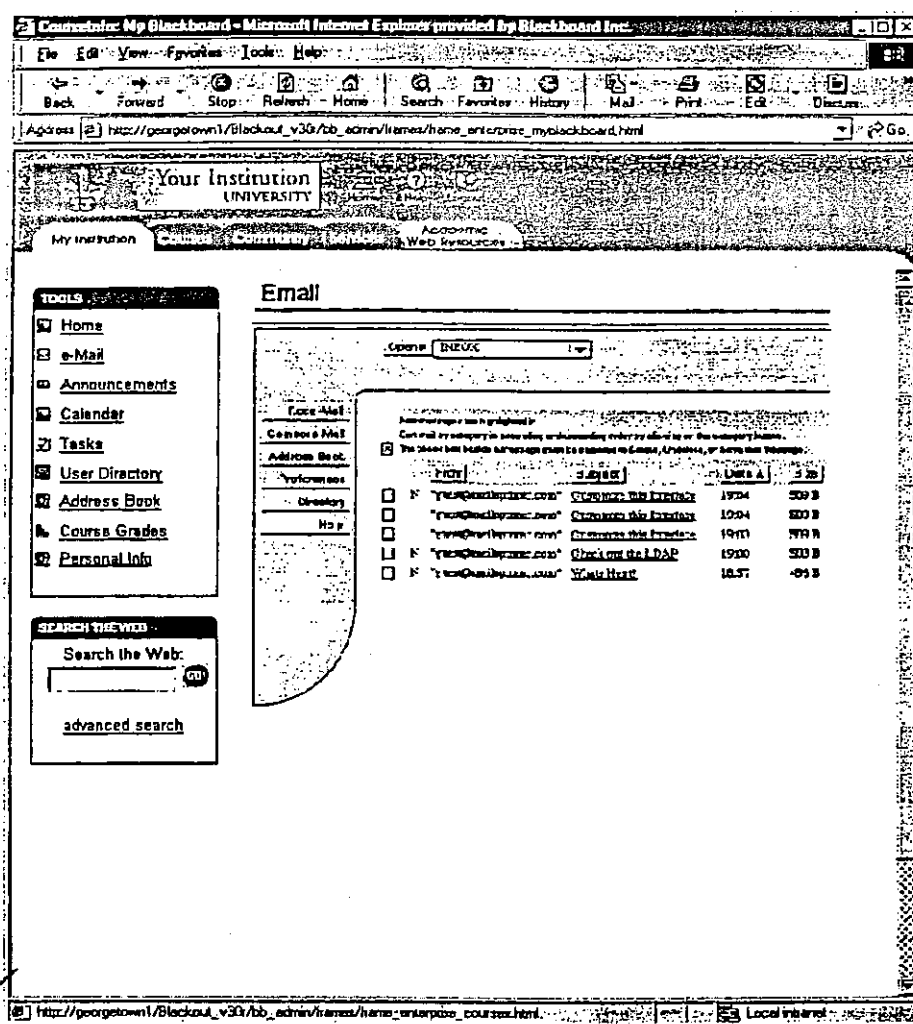


FIG. 28

WO 01/01372

PCT/US00/17979

30/42

3900

1. Create A New Course

2. Course Information

Course Name:

Course ID:

Course Number:

3. Course Design

Section Type:

Section Format:

Section Style:

4. Course Options

Section Type:

Section Format:

Section Style:

5. Course Access

Guest Access:

Available:

Select Course Catalog Category:

Course Catalog (optional):

Please enter your Course Catalog Access Key:

If you do not have an Access Key, please visit www.blackboard.com to locate a Course Catalog.

Instructor:

6. Submit

Click "Submit" to finish. Click "Cancel" to end this process.

FIG. 29

1. Create A New Course

2. Course Information

Course Name:

Course ID:

Course Number:

3. Course Design

Section Type:

Section Format:

Section Style:

4. Course Options

Section Type:

Section Format:

Section Style:

5. Course Access

Guest Access:

Available:

Select Course Catalog Category:

Course Catalog (optional):

Please enter your Course Catalog Access Key:

If you do not have an Access Key, please visit www.blackboard.com to locate a Course Catalog.

Instructor:

6. Submit

Click "Submit" to finish. Click "Cancel" to end this process.

PCT/US00/17979

37/41

The screenshot shows a web browser window displaying a user creation interface. At the top, there's a navigation bar with links like 'Home', 'About Us', 'Contact Us', etc. Below this is a header area with the institution's name 'Your Institution UNIVERSITY' and a logo. The main content area is titled 'ADMINISTRATION PANEL - CREATE USER' and contains three numbered sections:

- 1 Personal Information**: Includes input fields for First Name, Middle Name, Last Name, E-mail, and Student ID.
- 2 Account Information**: Includes input fields for User Name, Password, and Verify Password.
- 3 Other Information**: This section is partially visible at the bottom of the page.

The browser's address bar shows the URL 'http://localhost/blackboard.com/Adm...'. The status bar at the bottom indicates the date and time as '10/20/2009 10:58:16 AM'.

3000

FIG.
30A

[illegible]

3000

PCT/US00/17979

32/41

[illegible]

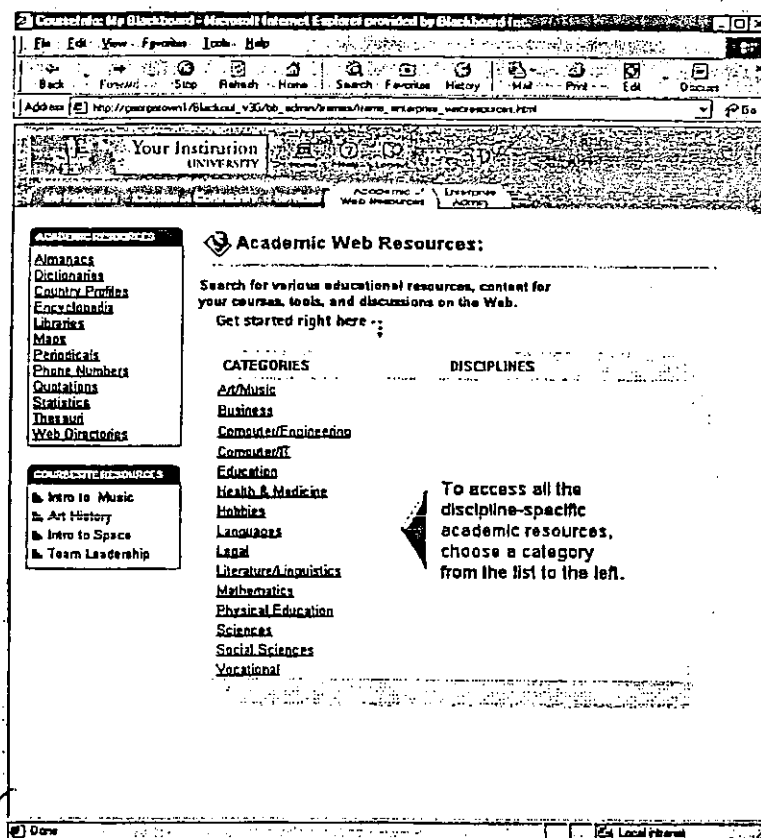
3600

FIG. 30B

WO 01/01372

PCT/US00/17979

33/41



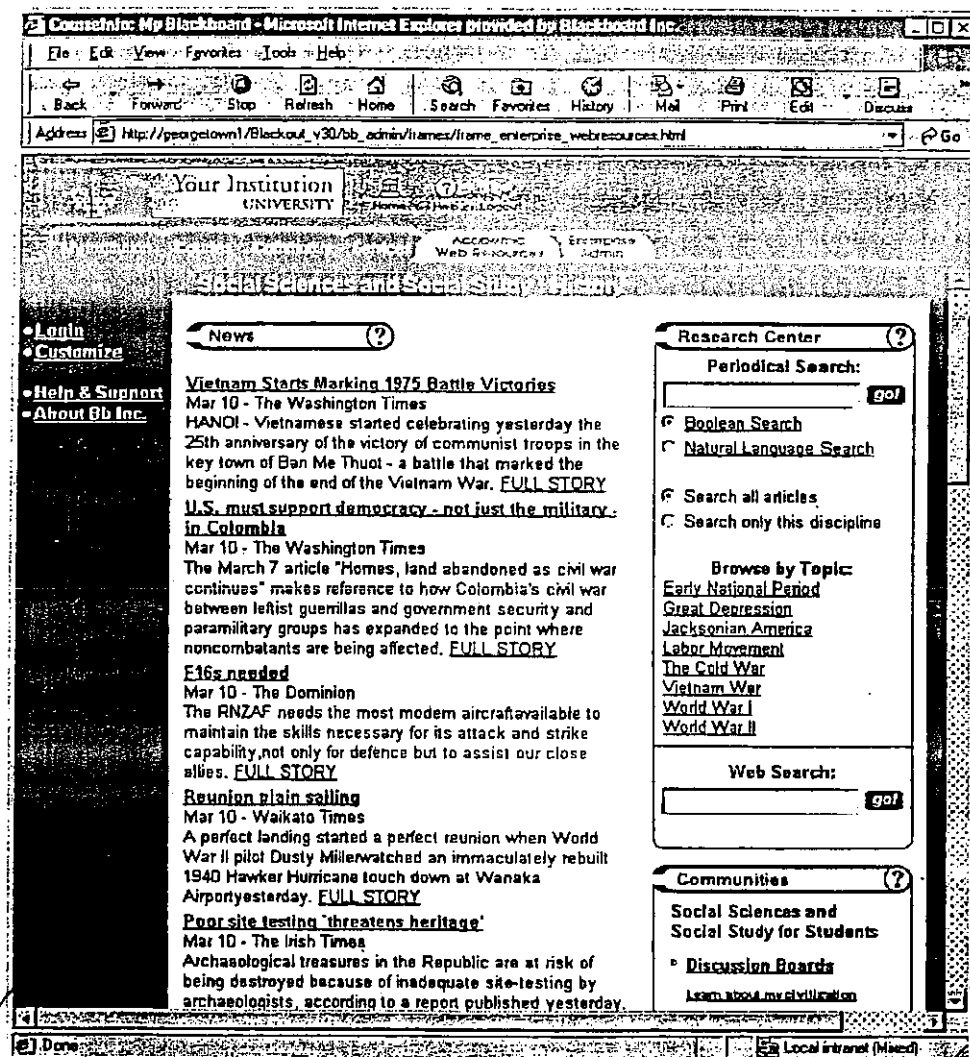
3100

FIG. 31

WO 01/01372

PCT/US00/17979

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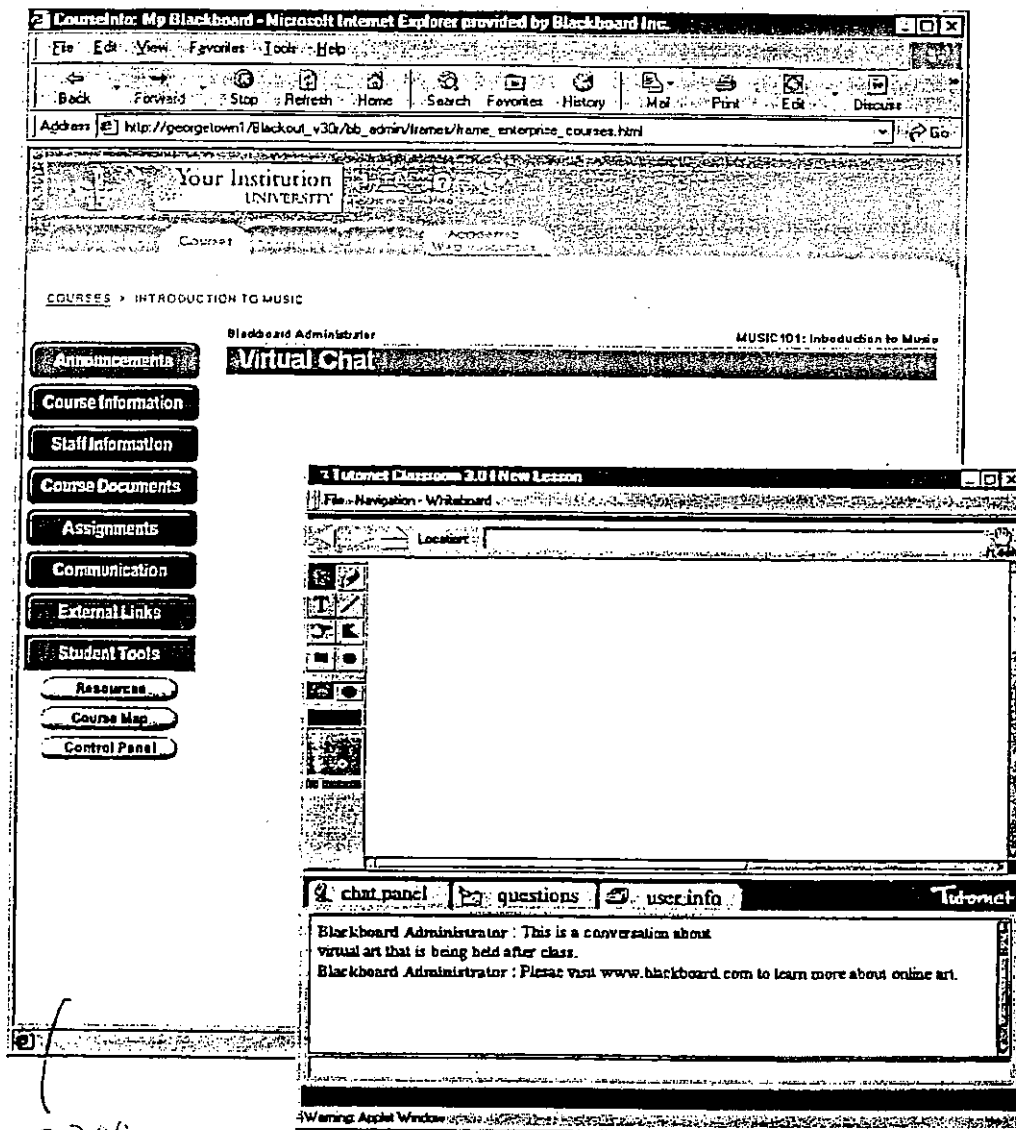
3260

FIG. 32

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3300

FIG. 33

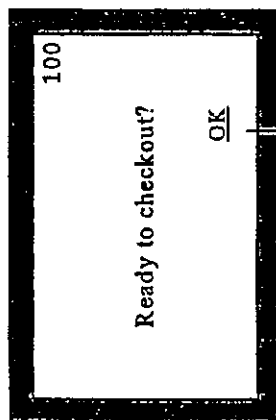
WO 01/01372

PCT/US00/17979

Attorney Docket Number: 27578.012500

Linking to the E-Commerce Server

Myserver.blackboard.com



The link to butter passes the following information:

name: Name of the purchaser
 address_1
 address_2
 city
 state
 zip
 country
 price: price in USD that the user is being asked to pay
 order-id: null if butter should generate an order number (default)
 order-descr: Text description of what the user is buying.
 url: the location the referring server that butter should return the user to after the payment process is complete

hyperlink



Figure 34

36/42

block 120 ?

110

First E-Commerce Screen Display

Butter.blackboard.com

Blackboard.com
About Blackboard.com - Info & Support - Home

Payment Information

The fourth step is to try in the required payment information and click Purchase! After a few seconds, you will be given a receipt confirming your payment. Please note that the Blackboard.com website is not a real e-commerce site. It is only a demo site. It is not intended to be used for actual transactions, so there is no need to worry about entering your credit card number.

Prices listed below are in United States dollars.

Purchase Summary

Chosen Service: Restaurant Course
Purchase Number: 9917100104632
Total Price: \$100.00

Credit Card Information

MainCard

Card Number:
Expiration Date: (mm/yy)
Name as it appears on card:
Billing address:
City:
State or Province:
Zip / Postal Code:
Country:

(Please be patient. It may take up to two minutes to process your credit card)

Figure

35

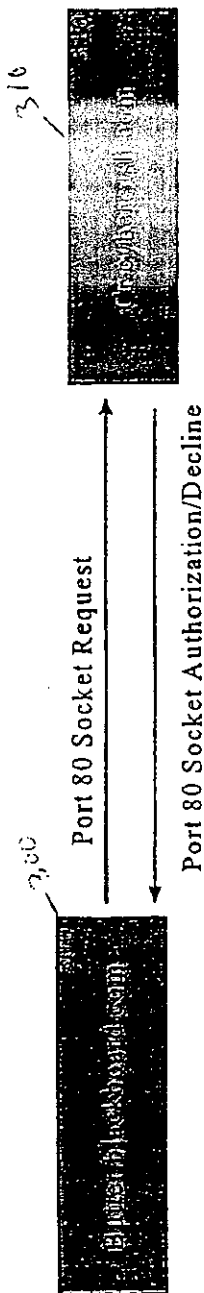
37/41

WO 01/01372

PCT/US00/17979

Attorney Docket Number: 27578.012500

Authorization Process



- The authorization process takes a minute or so.
- If the card is rejected, a page like the one at right is displayed.
- If the card is accepted, the payment goes through, and the page on the next slide is shown.

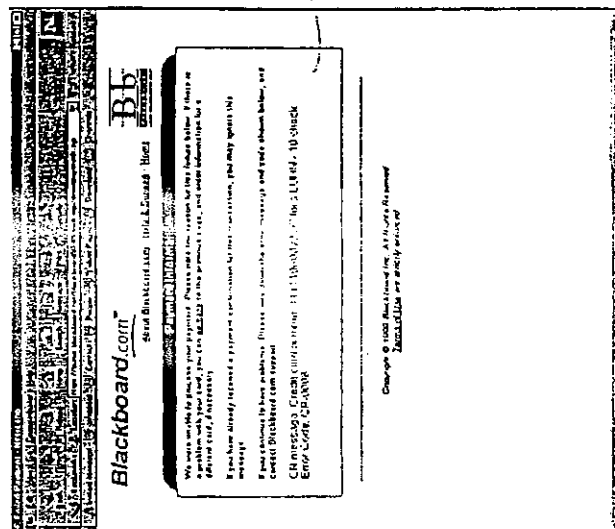


Figure 36

Second E-Commerce Screen Display

Butter.blackboard.com

Blackboard.com
 About Blackboard.com Help & Support Terms

Payment Information

Thank you for your purchase. Please click the 'Pay Now' button to complete your purchase. Please pay the total amount of \$10.00. When you click the 'Pay Now' button, you will be redirected to the payment processor.

Continue With Details	
Card Number	9912 1234 5678 9010
Expiration Date	01/01/01 - 12/31/01
Cardholder Name	John Doe
Card Type	Visa
Total Price	\$10.00

YOU MUST CLICK HERE TO RECEIVE THE SERVICES YOU PURCHASED

PAY NOW

CANCEL

Copyright © 1999 Blackboard Inc. All Rights Reserved.
 Terms & Conditions

Payment is authorized and queued at Cybercash, Inc for processing.

The payment will go through and appear in Blackboard's Cybercash account within 12 hours.

There is no way that the user can back out at this point without Blackboard issuing a manual refund.

No services are provided yet. The user must follow the link at the bottom of the page, or he will receive nothing for his money.

All links on this page are disabled except the one that says "YOU MUST CLICK HERE". This prevents users from failing to get their orders filled.

A authorization code is calculated by the script as a secure hash of the purchase price, the order id, and a secret number.

39641

Figure

37

WO 01/01372

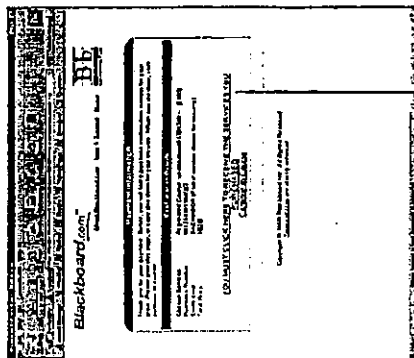
PCT/US00/17979

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Attorney Docket Number: 27578.012500

Returning to the Originating Server

Butter.blackboard.com



- The link at the bottom of the page points back to the referring server using the location passed in the URL parameter to the first butter script.
- The authorization code, the order_id and a subset of the credit card digits (show_card) are passed back as parameters.
- The authorization code should be checked upon return by making an identical hash calculation. If the two hash values match, the order should be fulfilled, otherwise, and error should be shown.



Figure

38

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41/41

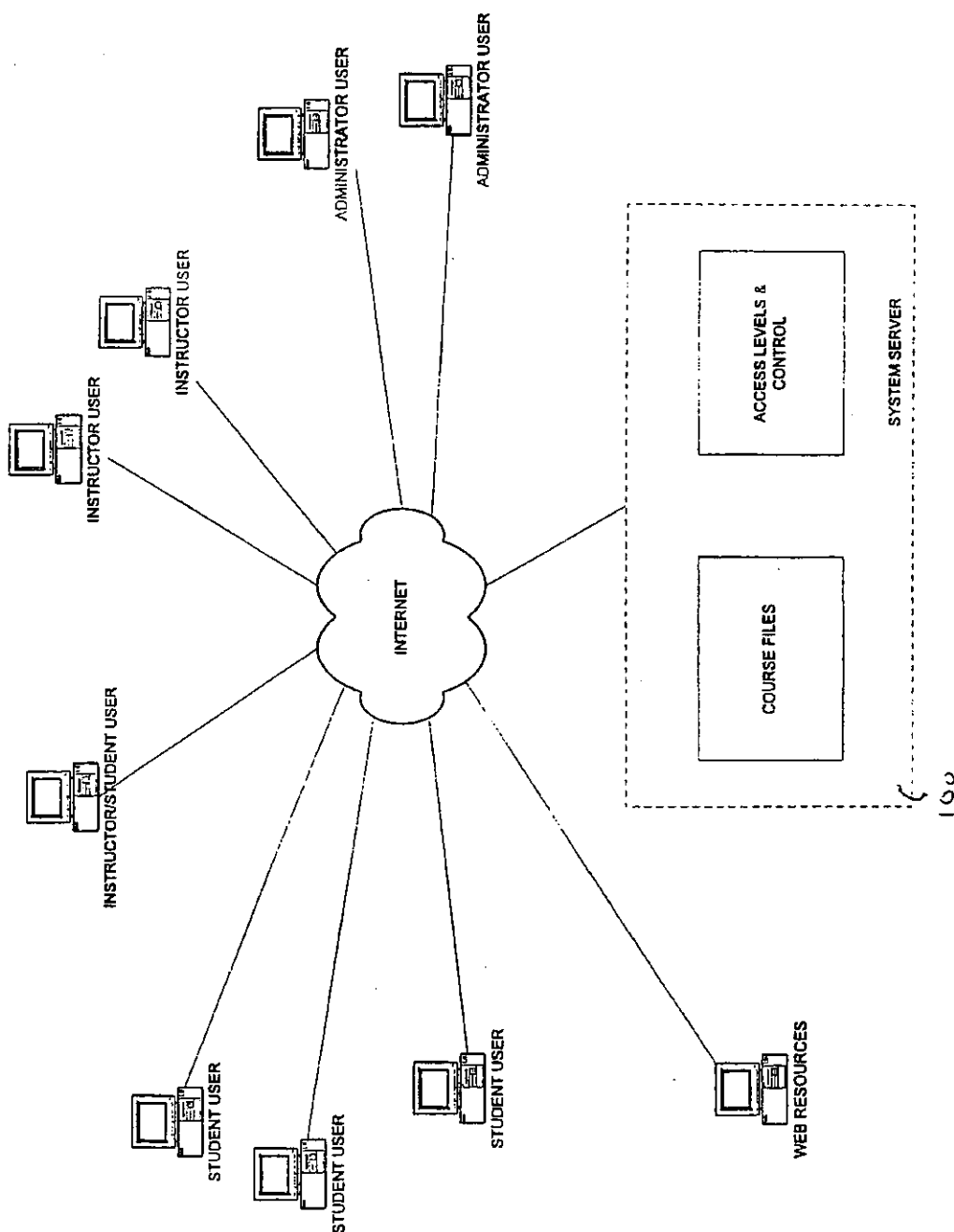


FIG. 39

100