

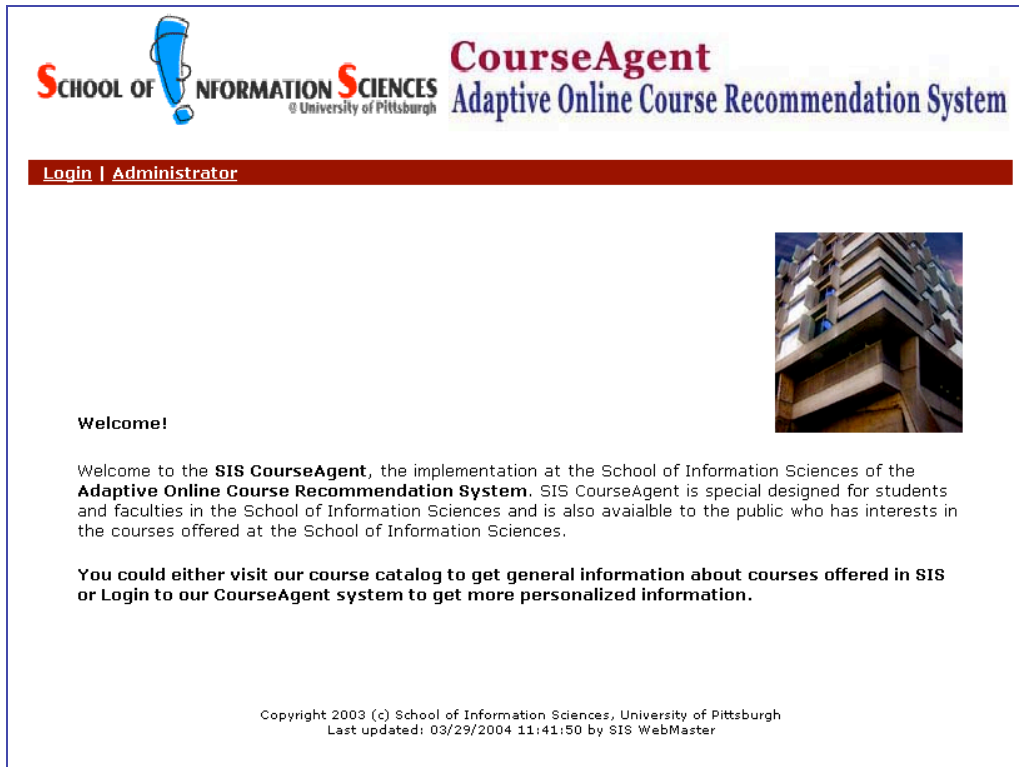
TABLE RELATIONS & DATA ANALYSIS

(*Bold & Italic* indicates Primary Key, *Italic* indicates Foreign Key)

- **Table Name: tbl_program**
Attributes: ***p_id char (15)***, p_title varchar2 (60), p_abv char (10)
Sample Data: IST, Information Science and Telecommunications, INFSCI
- **Table Name: tbl_program_area**
Attributes: ***p_id char (15)***, ***p_area varchar2 (100)***
Sample Data: IST, Cognitive Science Area
- **Table Name: tbl_course**
Attributes: ***c_no char (20)***, c_title varchar2 (60), c_credit int, c_des varchar2 (1000), c_note varchar2 (200)
Sample Data: INFSCI 2470, Interactive System Design, 3, The environments that can or should be....., C
- **Table Name: tbl_course_area**
Attributes: ***c_no char (20)***, ***c_area varchar2 (100)***
Sample Data: INFSCI 2470, Cognitive Systems Area
- **Table Name: tbl_interest**
Attributes: ***interest varchar2 (50)***
Sample Data: Data Warehouse Specialist
- **Table Name: tbl_faculty**
Attributes: ***f_id char (20)***, f_fname char (20), f_lname char (20), f_title varchar2 (40), f_pwd char (20), f_email varchar2 (40), f_web varchar2 (100), ***f_dept char (15)***
Sample Data: vz, Vladimir, Zadorozhny, Associate Professor, vz, vladimir@mail.sis.pitt.edu, <http://www.sis.pitt.edu/~vladimir>, IST
- **Table Name: tbl_term**
Attributes: ***t_id char (10)***, t_section char (15), t_year int, t_start date, t_end date
Sample Data: 04-1, fall, 2003, 25-AUG-03, 13-DEC-03
- **Table Name: tbl_user**
Attributes: ***u_id char (20)***, u_fname char (20), u_lname char (20), u_pwd char (20), u_email varchar2 (40), ***advisor char (20)***, ***u_program char (15)***, u_degree char (10), ***start_term char (10)***, ***end_term char (10)***
Sample Data: LMao, Li-Chen, Mao, Lmao, maolichen@hotmail.com, peterb, IST, master, 03-1, 04-2

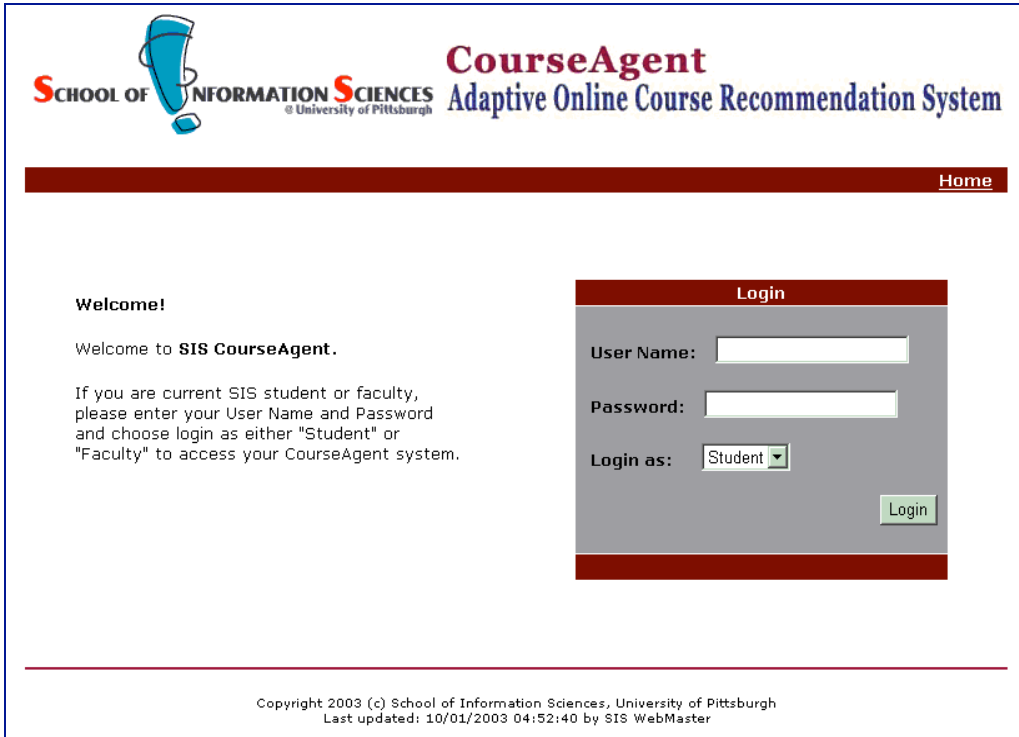
- **Table Name: tbl_user_interest**
Attributes: *u_id char (20), u_interest varchar2 (50)*
Sample Data: LMao, System Analyst
- **Table Name: tbl_schedule**
Attributes: *crn int, c_no char (20), day char (15), time char (20), location char (20), instructor char (20), courseweb varchar2 (100), t_id char (10), p_id char (15), duration char (15), date_modified date, note char (30)*
Sample Data: 43274, INFSCI 2160, mon, 6:00 – 8:50pm, IS 403, hirtle, 04-1, IST, semester
- **Table Name: tbl_course_taken**
Attributes: *u_id char (20), c_no char (20), crn int, grade char (5)*
Sample Data: LMao, INFSCI 2000, 2894
- **Table Name: tbl_course_eval**
Attributes: *u_id char (20), c_no char (20), crn int, overall int, workload int, comment varchar2 (2000)*
Sample Data: LMao, INFSCI 2000, 2894, 3, 2, good introduction course
- **Table Name: tbl_goal_eval**
Attributes: *u_id char (20), c_no char (20), crn int, interest varchar2 (50), meet_goal int*
Sample Data: LMao, INFSCI 2710, 14743, System Analyst, 2
- **Table Name: tbl_course_result**
Attributes: *c_no char (20), oa_rate int, wl_rate int*
Sample Data: INFSCI 2470, 2, 3
- **Table Name: tbl_goal_result**
Attributes: *c_no char (20), interest varchar2 (50), meet_rate int*
Sample Data: INFSCI 2470, GUI Programmer, 3
- **Table Name: tbl_advise**
Attributes: *u_id char (20), f_id char (20), c_no char (20)*
Sample Data: qqmo, peterb, INFSCI 2510
- **Table Name: tbl_user_plan**
Attributes: *u_id char (20), t_id char (10), c_no char (20), c_area varchar2 (100)*
Sample Data: qqmo, INFSCI 2120, Mathematical and Formal Foundations Area

INTERFACE DESIGN



The screenshot shows the home page of the CourseAgent system. At the top left is the logo for the School of Information Sciences, University of Pittsburgh, featuring a stylized blue exclamation mark. To the right of the logo, the text reads "SCHOOL OF INFORMATION SCIENCES © University of Pittsburgh" and "CourseAgent Adaptive Online Course Recommendation System". Below this is a red navigation bar with the text "Login | Administrator". On the right side, there is a photograph of a modern building. The main content area contains a "Welcome!" message, followed by a paragraph explaining the system's purpose for students and faculty. Below that, it offers two options: visiting the course catalog for general information or logging in for personalized information. At the bottom, there is a copyright notice: "Copyright 2003 (c) School of Information Sciences, University of Pittsburgh. Last updated: 03/29/2004 11:41:50 by SIS WebMaster".

Figure 1. System Home



The screenshot shows the login page of the CourseAgent system. At the top left is the same logo as in Figure 1. To the right, the text reads "SCHOOL OF INFORMATION SCIENCES © University of Pittsburgh" and "CourseAgent Adaptive Online Course Recommendation System". Below this is a red navigation bar with the text "Home". The main content area contains a "Welcome!" message, followed by a paragraph explaining the login process for current students and faculty. To the right of the text is a login form with a red header and footer. The form has three input fields: "User Name:", "Password:", and "Login as:" with a dropdown menu currently set to "Student". A "Login" button is located at the bottom right of the form. At the bottom of the page, there is a copyright notice: "Copyright 2003 (c) School of Information Sciences, University of Pittsburgh. Last updated: 10/01/2003 04:52:40 by SIS WebMaster".

Figure 2. Login

SCHOOL OF INFORMATION SCIENCES **CourseAgent**
© University of Pittsburgh **Adaptive Online Course Recommendation System**

My CourseAgent | Schedules | Career Scope | Study Plan | Course Catalog | Faculties

Profile | Career Intrests | Courses Taken | Advisor | QQ 's CourseAgent | Log off

Hi, QQ !

Welcome to the **SIS CourseAgent**, the implementation at the School of Information Sciences of the **Adaptive Online Course Recommendation System**.
 SIS CourseAgent is special designed for students and faculties in the School of Information Sciences and is also available to the public who has interests in the courses offered at the School of Information Sciences.

The SIS CourseAgent is a good tool to give you recommendation on courses that might interests you or has the most benefit to you.
 Based on advisor's recommendation and students' evaluations about each course, you could have a snap shot about what courses are good to you according to your personal career goals and your progress of taking courses relevant to your personal career goals.

This Adaptive Online Course Recommendation System is still under developing and testing stage.
 With your participating in testing this system, your opinion is highly important to make this system more reliable, more practical to meet your needs. Please do not hesitat to share your opinions with us. We would appreciate it if you e-mail your thoughts to lim9@pitt.edu.Thanks! **Let's make this system better.**

Copyright 2003 (c) School of Information Sciences, University of Pittsburgh
 Last updated: 04/27/2004 01:42:21 by CourseAgent WebMaster

Figure 3. Course Agent

My CourseAgent | Schedules | Career Scope | Study Plan | Course Catalog | Faculties

Profile | Career Intrests | Courses Taken | Advisor | QQ 's CourseAgent | Log off

Course V.S. Career Interests

Please evaluate the following course based on your personal experience with the material prepared by the instructor.

CRN: 15169
 Course No: INFSCI 2000
 Instructor: pmunro
 Term: 04-1

- How would you say about the worklaod of this course: Average ▾

How relevant is this course to each of your career goals:

Position Title	Rate it
Database Administrator :	Not Relevant ▾
Database Analyst :	Not Relevant ▾
Graphical User Interface (GUI) Programmer :	Relevant ▾
Web Application Developer :	Relevant ▾
Web Designer :	Relevant ▾

Comment:

Figure 4. Course Evaluation

My CourseAgent Schedules Career Scope Study Plan Course Catalog Faculties

QQ 's CourseAgent Log off

2002 fall List

Schedule of fall 2004

* Gray: Course Taken : Recommend by Advisor : Degree of Relevance to Career Goals

	CRN	Course No	Day	Time	Location	Instructor	Evaluation
	14014	INFSCI 2000	wed	6:00-8:50pm	169 Crawf	Michael Spring	Review
	33362	INFSCI 2100	tue	12:00-2:50pm	IS 411	Marek Druzdzal	Review
	21665	INFSCI 2140	tue	6:00-8:50pm	IS 404	Peter Brusilovsky	Review
	33356	INFSCI 2160	mon	6:00-8:50P	IS 404	Stephen Hirtle	Review
	14647	INFSCI 2300	tue	6:00-8:50P	A214 Langy	Douglas Metzler	Review
	42557	INFSCI 2410	mon	6:00-8:50P	IS 405	TBA	Review
	25863	INFSCI 2470	tue	6:00-8:50P	IS 411	Michael Lewis	Review
	1849	INFSCI 2510	wed	3:00-5:50P	IS 403	Ken Sochats	Review
	42561	INFSCI 2540	thu	3:00-5:50P	IS 404	Hassan Karimi	Review
	42566	INFSCI 2550	tue	3:00-5:50P		Peter Brusilovsky	Review
	25184	INFSCI 2610	thu	3:00-5:50P	IS 403	Roger Flynn	Review
	2710	INFSCI 2710	tue	3:00-5:50P	IS 405	Vladimir Zadorozhny	Review
	42574	INFSCI 2906	mon	3:00-5:50P	IS 501	Douglas Metzler	Review
	1876	INFSCI 2940	appointment	By appointment		Martin Weiss	Review

Figure 5. Adaptive Schedule View

SCHOOL OF INFORMATION SCIENCES CourseAgent Adaptive Online Course Recommendation System
© University of Pittsburgh

My CourseAgent Schedules Career Scope Study Plan Course Catalog Faculties

QQ 's CourseAgent Log off

Review Course Evaluation

Course No: INFSCI 2710
 Title: DATABASE MANAGEMENT
 Instructor: Vladimir Zadorozhny

Evaluation
 Workload:

Relevance to qqmo's career goals
 Database Administrator:
 Database Analyst:
 Graphical User Interface (GUI) Programmer:
 Web Application Developer:
 Web Designer:

Back to Schedule List

Figure 6. Adaptive Class Rating

My CourseAgent | Schedules | Career Scope | Study Plan | Course Catalog | Faculties

QQ 's CourseAgent [Log off](#)

Career vs. Courses Taken

No. of Courses Taken: 10 No. of Courses Evaluated: 8

Database Administrator	View Recommended Courses ----- <input type="button" value="Plan"/>
INFSCI 2711 DATABASE ANALYSIS AND DESIGN My rating: ★★☆☆	
Database Analyst	View Recommended Courses ----- <input type="button" value="Plan"/>
INFSCI 2711 DATABASE ANALYSIS AND DESIGN My rating: ★★☆☆	
Graphical User Interface (GUI) Programmer	View Recommended Courses ----- <input type="button" value="Plan"/>
INFSCI 2300 HUMAN INFORMATION PROCESSING My rating: ★★☆☆	
INFSCI 2470 INTERACTIVE SYSTEM DESIGN My rating: ★★☆☆	
INFSCI 2550 CLIENT-SERVER AND WORKSTATION SYSTEMS My rating: ★★☆☆	
Web Application Developer	View Recommended Courses ----- <input type="button" value="Plan"/>
INFSCI 2550 CLIENT-SERVER AND WORKSTATION SYSTEMS My rating: ★★☆☆	
INFSCI 2710 DATABASE MANAGEMENT My rating: ★★☆☆	
Web Designer	View Recommended Courses ----- <input type="button" value="Plan"/>

Figure 7. Adaptive Career vs. Courses Taken View

My CourseAgent | Schedules | Career Scope | Study Plan | Course Catalog | Faculties

Profile | Career Intrests | Courses Taken | Advisor QQ 's CourseAgent [Log off](#)

List of Course Taken

Course No	CRN	Grade	Evaluation
INFSCI 2000	15169	N/A	Evaluate
INFSCI 2100	43279	N/A	Evaluate
INFSCI 2300	15879	N/A	Evaluate
INFSCI 2470	20176	N/A	Evaluate
INFSCI 2550	13783	N/A	Evaluate
INFSCI 2710	14833	N/A	Evaluate
INFSCI 2711	42623	N/A	Evaluate
INFSCI 2720	21998	N/A	Evaluate
INFSCI 2770	21993	N/A	Evaluate
TELCOM 2000	15572	N/A	Evaluate

*** Please make sure the course you selected is offered in the selected term ***

Select a term.....
 Select a course taken.....

Figure 8. Adding Course Taken & Evaluation View

SCHOOL OF INFORMATION SCIENCES **CourseAgent**
 © University of Pittsburgh **Adaptive Online Course Recommendation System**

My AdviseAgent | Schedules | Course Catalog | Faculties

Profile | Teaching History | Advising Student | Prof. Zadorozhny 's AdviseAgent | Log off

Hi, Prof. Zadorozhny !

Welcome to the **SIS CourseAgent**, the implementation at the School of Information Sciences of the **Adaptive Online Course Recommendation System**.

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This Adaptive Online Course Recommendation System is still under developing and testing stage. With your participating in testing this system, your opinion is highly important to make this system more reliable, more practical to meet your needs. Please do not hesitate to share your opinions with us. We would appreciate it if you e-mail your thoughts to lim9@pitt.edu.Thanks! **Let's make this system better.**

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 Last updated: 04/27/2004 01:48:56 by CourseAgent WebMaster

Figure 9. Advise Agent

My AdviseAgent | Schedules | Course Catalog | Faculties

Profile | Teaching History | Advising Student | Prof. Brusilovsky 's AdviseAgent | Log off

List of Advising Students

First Name	Last Name	E-mail	Degree	Start	End	Details	Advise
Li-Chen	Mao	maolichen@hotmail.com	master	03-2	04-1	View	View
QQ	Mo	qqmo@hellokitty.com	master	04-1	05-2	View	View
Vincent	Hsiu	vincent@hotmail.com	master	03-1	04-1	View	View
Ivy	Gentile	igentile@bc.pitt.edu	master	03-1	05-1	View	View
Polina	Hristozova	antonh@earthlink.net	master	03-1	05-2	View	View
Adamo	Mosca	mosca125@hotmail.com	master	03-2	04-3	View	View
Ying-Ying	Shih	ysisst1@pitt.edu	phd	03-1	05-2	View	View
Guoliang	Xiang	xianggl@yahoo.com	master	03-1	03-1	View	View
Yuko	Asano	yua2@pitt.edu	master	04-1	05-1	View	View
Melanie	Bazzano	melbazzano@yahoo.com	master	04-1	03-1	View	View
Susan	Fineman	susan.fineman@verizon.net	master	04-2	05-3	View	View
Eric	Garcia	ericg@sis-tek.com	master	04-1	03-1	View	View
Ivy	Gentile	igentile@bc.pitt.edu	master	03-1	03-1	View	View
Sheela	Ghosal	ghosal@nsabp.pitt.edu	master	03-3	03-1	View	View
Eriko	Iwata	eri3@pitt.edu	master	04-1	03-1	View	View
Laurie	King	lking@kiski.net	master	04-1	03-1	View	View
Li-Chen	Mao	maolichen@hotmail.com	master	03-2	03-1	View	View

Figure 10. Advising Students

FUTURE IMPROVEMENTS

For over a year, I kept working on this *Adaptive Online Course Recommendation System - CourseAgent* for two of my independent study practices. Although the pace of the development is not as efficient as expected, and the system is still far away from complete, some basic features of *CourseAgent* have been developed gradually.

To develop the system, I put together everything I learned, and gained more experience and knowledge through self-study and discussions with Dr. Brusilovsky. This project has lightened up my interests in adaptive systems, and I would like to put more efforts in researches about it. Maybe it is the end of my independent studies, but the development of *CourseAgent* will keep going no matter where I am. I hope some day this system could be applied through out the school or even the university.

Up to now, I would say about 60% of features are there in the system already. Some of them still need to be modified or changed and the rest 40% of features are geared to be implemented. Here are some future-improvements are suggested:

- *Apply the interface design to AdminAgent and improve system features*
- *Improve adaptive functionalities to AdviseAgent*
- *Apply more adaptive functionalities in depth and different phases*
- *Better presentation for adaptive features, such as meaningful and clear indications for courses taken, courses suggested by advisor, courses related to career goals and so on*
- *Enhanced error-handling features through out the system, such as the system would be able to prompt appropriate messages according to errors occur*
- *Necessary modification to database structure to meet system functionalities*
- *Remove spelling errors and incorrect information*

SAMPLE SOURCE CODES

SAMPLE CODE 1 – COURSEAGENT.CGI

```
#!/opt/bin/perl
use DBI;
use functions;
use CGI qw( :standard );
use CGI::Cookie;

#-----Parsing Passed Parameter-----#
$name = param("name");
$as = param("as");

#-----Oracle Database Connection Setting-----#
$ENV{ORACLE_HOME} = "/opt/local/sources/packages/oracle/product/8.1.7";
$ENV{TWO_TASK} = "sis";
$ENV{LD_LIBRARY_PATH} = "/opt/local/sources/packages/oracle/product/8.1.7/lib";

$user = "cagent";
$password = "Orange34";

$dbh = DBI->connect("DBI:Oracle:sis", $user, $password)
    || die "Couldn't connect to database: " . DBI->errstr;

#-----Checking Login Cookie -----#
my %cookies = CGI::Cookie->fetch;
if(%cookies){
    my $user = $cookies{signin}->value;
    my $usertype = $cookies{signas}->value;
}else{
    print "Location: http://www.sis.pitt.edu/~cagent/login.html \n\n";
}

#-----Variables & Statements Initialization-----#
$at = '@';
$email = 'lim9' . $at . 'pitt.edu';
```

```

#-----Start HTML Output-----#

print (qq
{
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">
<html>
<head>
  <title>SIS CourseAgent - Adaptive Online Course Recommendation System</title>
  <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
</head>

<body link="#FFFFFF" vlink="#FFFFFF" alink="#CCCCCC">
  <p align="center"> 
});

#-----If-Else Statement - Status as Student - Menu Setting-----#

if($as eq 'student'){
  $statement = "select u_fname from tbl_user where u_id = \"\$name\"";
  $sth = $dbh->prepare($statement);
  $sth->execute;
  while(@res = $sth->fetchrow){
    foreach(@res){
      $fname = $_;
    }
  }
  $greeting = 'Hi, '.$fname.'!';
  $color = '#990000';

print (qq
{
<fieldset style="padding: 2; border-color: #9E0B0E; font: 2pt">
  <legend>
    <a href="../cgi-bin/courseagent.cgi?name=$name&as=$as"></a>
    <a href="../cgi-bin/schedule.cgi?name=$name&as=$as"></a>

```



```

        <strong><a href="logout.cgi?name=$name&as=$as">Log off</a>&nbsp;&nbsp;&nbsp;&nbsp;</strong>
    </td>
</tr>
</table><p>
});
}

#-----Printing Main Window Output-----#

print (qq
{
<table width="95%" border="0" align="center" cellpadding="0" cellspacing="0">
<tr>
<td width="80%">
<blockquote>
<p align="left"><strong><font size="2" face="Verdana">$greeting</font></strong></p>

<p><font size="2" face="Verdana">
Welcome to the <strong>SIS CourseAgent</strong>,
the implementation at the School of Information Sciences of the<strong>
Adaptive Online Course Recommendation System</strong>. <br>
SIS CourseAgent is special designed for students and faculties in the School of Information
Sciences and is also avaiable to the public who has interests in the courses offered at the School of
Information Sciences.
</font></p>

<p><font size="2" face="Verdana"><strong>
The SIS CourseAgent is a good tool to give you recommendation on courses
that might interests you or has the most benefit to you. </strong><br>
Based on advisor's recommendation and students' evaluations about each course,
you could have a snap shot about what courses are good to you according to your personal career
goals
and your progress of taking courses relevant to your personal career goals.
</font></p>

<p><font size="2" face="Verdana" linkcolor = "#555555"><strong>

```

This Adaptive Online Course Recommendation System is still under developing and testing stage.

With your participating in testing this system, your opinion is highly important to make this system more reliable,

more practical to meet your needs. Please do not hesitate to share your opinions with us.

We would appreciate it if you e-mail your thoughts to

\$email.Thanks! Let's make this system better.

</p>

</blockquote>

</td>

<td width="20%"><p> </p>

</td>

</tr>

<tr>

<td height="2" colspan="2" bgcolor = \$color>

</td>

</tr>

</table>

<!----- Copyright & Modification Time Stamp ----->

<p align="center">

Copyright 2003 (c) School of Information Sciences, University of Pittsburgh

<script language="javascript" type="text/JavaScript">document.write("Last updated: " + document.lastModified); </script>

by CourseAgent WebMaster</p>

</body>

</html>

});

SAMPLE CODE 2 – S-LIST.CGI

```
#!/opt/bin/perl
use DBI;
use functions;
use CGI qw( :standard );

#-----Parsing Passed Parameter-----#
my $term = param("term");
my $name = param("name");
my $as = param("as");
my $section;
my $year;

#-----Oracle Database Connection Setting-----#
$ENV{ORACLE_HOME} = "/opt/local/sources/packages/oracle/product/8.1.7";
$ENV{TWO_TASK} = "sis";
$ENV{LD_LIBRARY_PATH} = "/opt/local/sources/packages/oracle/product/8.1.7/lib";

$user = "cagent";
$password = "Orange34";

$dbh = DBI->connect("DBI:Oracle:sis", $user, $password)
    || die "Couldn't connect to database: " . DBI->errstr;

#-----Variables & Statements Initialization-----#
$statement4 = "select t_section, t_year from tbl_term where t_id = \"\$term\"";
$sth = $dbh->prepare($statement4);
$sth->execute;
while (@res = $sth->fetchrow){
    $count = 0;
    foreach(@res){
        if ($count == 0){
            $section = $_;
        }elseif($count == 1){
            $year = $_;
        }
    }
}
```



```

    }
    $count++;
}
$statement7 = "select S.crn, S.c_no, S.day, S.time, S.location, F.f_fname, F.f_lname
              from tbl_schedule S, tbl_faculty F where S.t_id = \"\$term\" and S.instructor = F.f_id";
}

#-----Start HTML Output-----#
print (qq
{
<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 4.01 Transitional//EN">
<html>
<head>
  <title>SIS CourseAgent - Adaptive Online Course Recommendation System</title>
  <meta http-equiv="Content-Type" content="text/html; charset=iso-8859-1">
</head>

<body link="#FFFFFF" vlink="#FFFFFF" alink="#CCCCCC">
  <p align="center"> 
});

#-----If-Else Statement - Status as Student - Menu Setting-----#
if($as eq 'student'){
  $statement = "select u_fname from tbl_user where u_id = \"\$name\"";
  $sth = $dbh->prepare($statement);
  $sth->execute;
  while(@res = $sth->fetchrow){
    foreach(@res){
      $fname = $_;
    }
  }
  $color = '#990000';
print (qq
{
<fieldset style="padding: 2; border-color: #9E0B0E; font: 2pt">
<legend>

```



```

#-----Printing Main Window Output-----#

print (qq
{
<table width="97%" border="0" align="center" cellpadding="0" cellspacing="0">
  <tr>
    <td width="100%" align="center">
      <form name="Form" method="post" action=" ../cgi-bin/s-list.cgi?name=$name&as=$as">
        <select name="term">
}});

$statement5 = "select distinct S.t_id, T.t_section, T.t_year
              from tbl_schedule S, tbl_term T
              where S.t_id = T.t_id";
$sth = $dbh->prepare($statement5);
$sth->execute;

while(@res = $sth->fetchrow){
  $count = 0;
  foreach(@res){
    if($count == 0){
      $tid = $_;
    }elseif($count == 1){
      $tsection = $_;
    }elseif($count == 2){
      $tyear = $_;
    }
    $count++;
  }
  print "<option value = \"\$tid\">$tyear $tsection</option>";
}

print (qq
{
  </select>&nbsp;
  <input type="submit" name="Submit" value="List" >
}

```

```

        <input type="hidden" name="name" value=$name>
        <input type="hidden" name="as" value=$as>
    </form>
</td>
</tr>
<tr>
<td width="100%"> <blockquote>
});

$statement1 = "select c_no from tbl_advise where u_id = '$name'";
$sth = $dbh->prepare($statement1);
$sth->execute;
$i=0;
while(@res = $sth->fetchrow){
    foreach(@res){
        @advise[$i] = $_;
    }
    $i++;
}

$statement2 = "select c_no from tbl_course_taken where u_id = '$name'";
$sth = $dbh->prepare($statement2);
$sth->execute;
$j=0;
while(@res = $sth->fetchrow){
    foreach(@res){
        @taken[$j] = $_;
    }
    $j++;
}

$statement6 = "select u_interest from tbl_user_interest where u_id = \'$name\'";
$sth6 = $dbh->prepare($statement6);
$sth6->execute;
$z=0;

```

```

while(@res = $sth6->fetchrow){
    foreach(@res){
        $statement3 = "select distinct c_no from tbl_goal_result where interest = '$_' and meet_rate >=
3";
        $sth3 = $dbh->prepare($statement3);
        $sth3->execute;
        while(@res = $sth3->fetchrow){
            foreach(@res){
                @career_rate[$z] = $_;
            }
            $z++;
        }
    }
}

$sth = $dbh->prepare($statement7);
$sth->execute;

print "<center><b>Schedule of $section $year</b></center>";
print "<p>";
print "* <font color =\"#AAAAAA\">Gray</font>: Course Taken
    <img src=\"../image/lightbulb.gif\" alt = \"Recommend by Advisor\">: Recommend by Advisor
    <img src=\"../image/thumbs_up.gif\" alt = \"Relevant to Your Career Goal\">: Degree of Relevance to
Career Goals";
print "<TABLE border= 1 width = 95%>" ;
print "<TR><TD></TD><TD><b>CRN</b></TD><TD><b>Course No</b></TD>
    </TD><TD><b>Day</b></TD><TD><b>Time</b></TD><TD><b>Location</b></TD>
    <TD><b>Instructor</b></TD><TD bgcolor=\"#999999\"><b>Evaluation</b></TD></TR>";

while(@res = $sth->fetchrow){
    print "<TR>";
    $count =0;
    foreach(@res){
        if ($count == 0){
            $crn = $_;
        }elseif ($count == 1){
            #print "<TD>$_</TD>";

```

```

        $cno = $_;
    }elseif ($count == 2){
        $day = $_;
        #print "<TD>$_</TD>";
    }elseif ($count == 3){
        $time = $_;
    }elseif ($count == 4){
        $loc = $_;
    }elseif ($count == 5){
        $f_fname = $_;
    }elseif ($count == 6){
        $f_lname = $_;
    }
    $count++;
}
$show_taken = 0;
for($flag=0; $flag <= $j; $flag++){
    if ($cno eq $taken[$flag]){
        print "<TD>";
        for($flag1=0; $flag1 <= $i; $flag1++){
            if ($cno eq $advise[$flag1]){
                print "<img src='../image/lightbulb.gif' alt = \"Recommend by Advisor\">";
                break;
            }
        }

        for($flag2=0; $flag2 <= $z; $flag2++){
            if ($cno eq $career_rate[$flag2]){
                print "<img src='../image/thumbs_up.gif' alt = \"Degree of Relevance to Your
Career Goals\">";
                break;
            }
        }
        print "</TD>";
        print "<TD><font color =\"#AAAAAA\">$crn</font></TD>";
        print "<TD><font color =\"#AAAAAA\">$cno</font></TD>";
    }
}

```

```

print "<TD><font color =\"#AAAAAA\">$day</font></TD>";
print "<TD><font color =\"#AAAAAA\">$time</font></TD>";
print "<TD><font color =\"#AAAAAA\">$loc</font></TD>";
print "<TD><font color =\"#AAAAAA\">$f_fname $f_lname</font></TD>";
print "<TD bgcolor=\"#999999\">
    <a href=\"../cgi-bin/c-eval-
review.cgi?name=$name&as=$as&term=$term&cno=$cno&crn=$crn\">
        Review</a></TD>";
    $show_taken = 1;
    break;
}
}

if ($show_taken == 0){
    print "<TD>";
    for($flag1=0; $flag1 <= $i; $flag1++){
        if ($cno eq $advise[$flag1]){
            print "<img src=\"../image/lightbulb.gif\" alt = \"Recommend by Advisor\">";
            break;
        }
    }

    for($flag2=0; $flag2 <= $z; $flag2++){
        if ($cno eq $career_rate[$flag2]){
            print "<img src=\"../image/thumbs_up.gif\" alt = \"Degree of Relevance to Your
Career Goals\">";
            break;
        }
    }
    print "</TD>";
    print "<TD>$crn</TD>";
    print "<TD>$cno</TD>";
    print "<TD>$day</TD>";
    print "<TD>$time</TD>";
    print "<TD>$loc</TD>";
    print "<TD>$f_fname $f_lname</TD>";

```



```

        print "<TD bgcolor=\`#999999\`">
            <a href=\`c-eval-review.cgi?name=$name&as=$as&term=$term&cno=$cno&crm=$crm\`">
                Review</a></TD>";
    }
print "\n";
print "</TR>";
}
print "</TABLE>";
print "<p>";

print (qq
{
</td></tr>
<tr>
    <td><center>
    <br>
    <form name="Form" method="post" action=" ../cgi-bin/s-list.cgi?name=$name&as=$as">
    <p><select name="term">
});

$sth = $dbh->prepare($statement5);
$sth->execute;
while(@res = $sth->fetchrow){
    $count = 0;
    foreach(@res){
        if($count == 0){
            $tid = $_;
        }elseif($count == 1){
            $tsection = $_;
        }elseif($count == 2){
            $tyear = $_;
        }
        $count++;
    }
    print "<option value = \`$tid\`">$tyear $tsection</option>";
}
}

```

```

print (qq
{
    </select>&nbsp;
    <input type="submit" name="Submit" value="List" >
    <input type="hidden" name="name" value=$name>
    <input type="hidden" name="as" value=$as>
    </p>
    </form></center></td>
    <p>&nbsp;</p>
    <p>&nbsp;</p>
    </blockquote><div align="right"></div></td>

</tr>
<tr>
    <td height="2" colspan="2" bgcolor = $color>
    </td>
</tr>
</table>

<!------- Copyright & Modification Time Stamp ----->

<p align="center"><font size="1" face="Verdana">
    Copyright 2003 (c) School of Information Sciences, University of Pittsburgh<br>
    <script language="javascript" type="text/JavaScript">document.write("Last updated: " +
document.lastModified); </script>
    by CourseAgent WebMaster</font></p>
</body>
</html>
});

```