

Apex Media

Feasibility Study of a Web based Attendance Marking System

For

Deakin University

By

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Not for Distribution



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Executive Summary

The report outlines a feasibility study prepared for a proposed attendance marking system to Deakin University. The feasibility study covers background information about the current attendance marking method, the proposed solution and its benefits to the university. Further it analyses the cost effecting with the new system, the other costs which can be brought down by the new system. Finally the report summarises the functionality and the layout design of the proposed system.

Background Information

Deakin is one of Australia's largest universities, with more than 32 000 students and over 1000 staff members. Deakin has five main campuses located in Melbourne, Geelong and in Warrnambool. Established in the 1970s as one of the new generation of Australian universities, Deakin combines a university's traditional focus on excellent teaching and research with a desire to seek new ways of developing and delivering courses. Deakin provides access to the latest industry-standard facilities such as Deakin's Motion-Lab at the Melbourne Campus at Burwood and the Geelong Technology Precinct at the Geelong Campus at Waurm-Ponds.

As a way of mounting Deakin's facilities and services the University has requested the design, development and implementation of a web based Tutorial Marking System which will comply with the current Deakin Web tools. This tool will enable the University to provide a more effective service to the tutors in marking Tutorial/Practical attendance and a better view for the students who wants to look at their academic progress through out the semester.

Being a leader in introducing new technologies to the academic field the university is demanding for the use of new web 2.0 technologies such as XML and to include graphical figures rather than text based figures in the system to make it more user-friendly.

Proposed System

Description of the Proposed System

The new system will be a fully automated attendance marking system which also includes the marking of practical/tutorial Task Marks. These figures could be viewed later on in graphical figures. After doing research we found SVG as the best way to dynamically generate graphical figures and currently it's the best in the market and would also be the most popular graph generator in the future.

Scalable Vector Graphics (SVG) is a XML mark-up language which uses for rendering rich, interactive graphics and multimedia applications. Scalable means the image can be transform without loosing the quality. Vector means lines which uses to create the image. In other words SVG images consist of line graphics, not dots or pixels like raster images.

As a growing media type, SVG is mostly use for web graphics with other W3C standards such as XML, CSS, XSL, Logo creation, Online Maps such as Google maps etc., designing Graphical User Interface for Web based applications, Data visualization such as drawing charts. Further SVG is using in many different areas such as internet, intranet and mobile phones.

Since SVG is based on XML language, it can be use with dynamic data such as database driven data. This can be done by using server side languages such as PHP and a MYSQL Database. SVG can be used with dynamically generated data, and it is rare to find such applications witch generate graphics/graphs/charts using dynamic data and this could be a great opportunity for Deakin University to have this application running in their system.

Therefore APEX Media decided to research and develop a project which allows generating SVG charts/graphs using database driven data. This project will provide the educational institution an effective online attendance marking system which also generates progress charts as well as increasing the universities reputation.

Goals

The major goal of this project is to provide a completely automated attendance marking system with dynamically generating charts for Deakin University.

The charts include:

- Class attendance progress
- Progress of students marks
- Progress of individual student marks
- Projected class attendance
- Projected marks
- Progress of the marks for the semester
- Progress of the attendance for the semester

The system will provide an interface to manage students, tutors, subjects and enrolments.

Advantages and Disadvantages of the system

There are two main parties who will benefit from this system, first it's the tutors who has to keep track of the attendance in class and then mark if the student has done the tutorial questions or the practical task, sometimes the students can cheat and mark attendance for earlier weeks or mark attendance for other students but with this system it will be 99% secured the students wont have access to marking attendance or changing any of the attendance for earlier absences. This is done by giving user level access where student will only be granted access to view their progress.

Students will be benefited from this system because they get a chance to look back and see where they stand at the moment in each subject. Also it is important for the International students to have an 80% attendance in their tutorials/practicals so it's a better chance for them to keep track of their attendance level. The other main benefit is to look at their marks and compare it with what other student in that class has achieved. Seeing other student who has done well in the subjects will motivate others to do well in practicals and have competition with in a class to achieve better marks.

Then the Unit Chair will have access to view the progress of attendance in each subject and also the progress of each student which will allow them to personally contact students who are poor in their academic work and consult them if needed.

Having an automated system means having to maintain it; main disadvantages over the current system would be to have a person maintaining the system and take regular backup's of student records. Compared to the pen and paper based attendance marking method this automated system would need a computer for the marking of attendance, therefore a computer with internet access would be needed in every class where a practical or a tutorial will held.

System Requirements

Minimum Requirements:

Hardware

Pentium III 1.0Gz or higher Bus Speed

512MB SD Ram

100MB HD Space

32MB, 16Bit PCI VGA Adapter

Software

Windows 9X or Higher

Morzila Firfox with Adobe SVG Plug-in

Internet Connection Dialup 56 K or Higher (Broadband Connection Recommended)

Costs affecting the new system

Deakin University is a institution with a large scale Computer / IT usage, there fore the new system would not affect in much added costs. The main costs affecting will be in maintaining the system which would be an added work load for the IT technicians currently working for the university. The system will need to be backed up once a week and depending on the file complexity it will take up to two hours for the

process. Apart from that runtime technical faults will need to be handled as well and this will effect in costs.

Maintenance

2Hrs p/week @ Hr. Rate 25\$

50\$ p/week → 2600 p/year

Deakin currently has technical staff working on their other web tools there fore it would not be necessary to employee any new staff for the maintaining of the web tool.

Runtime Breakdowns

Runtime breakdowns in the system could be varied from a very small runtime error to a large scale bug in the system. These type of errors cannot be predicted and depending on the skills of the technicians the bug can be fixed easily or it will need help from Apex Media. Apex Media gives a bug free guarantee to their clients but unpredictable bugs in the system will not be covered and onsite application maintenance would cost the University.

\$30 p/hr maintenance fee

Apex media will charge a minimum of \$500 for any errors to the system which is not covered by our guarantee

Skill Requirement

Advance PHP Knowledge is needed for maintaining the system and basic SVG and XML language skill will be required for changing the charts. Since SVG and XML are open source languages, they are not hard to learn and XML is very similar to HTML language therefore Deakin will have sufficient skills within their staff to handle the system and APEX Media will provide a free 2 Day training work shop for few staff members at Deakin who will be directly involved with the system.

Costs for Skills → \$0.00

Comparisons to the Current and Proposed Systems

The Current attendance marking system is done by the traditional pen & paper based method and at the end of each class/week tutors or the unit chair insert these data to the system. If one tutor takes 30Mins after each class for this insertion, it would cost

\$20 p/Hr → \$10 half hr

\$10 x 24 weeks → \$240 p/year for a tutor

There are currently about 150 tutors in all of Deakin Campuses and this would be a cut down of,

\$240 x 150 → \$36000+ per year on attendance marking.

Therefore the University will have a profit of over 30,000 per year in projected 10 Years. With the development of new technologies the current system could only be secured to be a useful way of marking attendance for the next Ten years. Therefore the university will gain a minimum of

\$36000 x 10 → \$360,000 in the next 10 Years by implementing this new system.

There will not be any added costs if the university expand its campuses or introduce new courses in the upcoming years. Since the system is running on the University Intranet with other web tools, no specific effort will be necessary to make this work.

Project Schedule

The following is a rough outline of the Project schedule at the current stage

Task	To be completed by
Project Proposal	29 th August 2007
Feasibility Study with site functionality and design	29 th August 2007
Client Sign-off	30 th August 2007
System Analysis and design	7 th September 2007
System Prototype	15 th October 2007
Development SVG Charts PHP Web Pages Database	1 st October 2007
Testing & Debugging	5 th October 2007
Documentation & Training	10 th October 2007
Client Sign-off	11 th October 2007

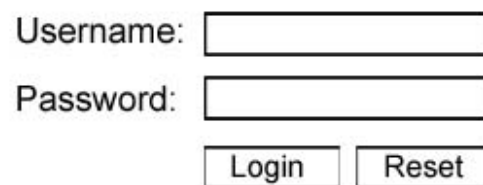
Site content

The website will contain html/php pages and text file with instructions to install the system. The tool contains 7 main web pages, these are:

1. Login page

The tutor or system administrator has to log in to the system by using the tutor/administration id and the password (**Fig 1**). When the tutor successfully log on to the system it will redirect to the home page.

The options of the system will be vary to the person. The tutors will be able to mark attendance enrol students, view chars. The system administrator will be able to add new students, tutors to the system or delete students, tutors from the system.



Username:

Password:

Fig 1

2. Home page

The Home page of the system will give a brief description about overall system.

3. Attendance Page

The Attendance page will allow tutors to select the subject and the week number to mark attendance. There is a dropdown list with all the subjects related to the tutor and week numbers (**Fig 2**). When the user select the subject and the week number and press the Submit button, the page will redirect to another page to mark attendance. The new page will consist of a table with all student information enrolled in to the selected subject. The tutor will be able to mark attendance and give marks for the class tasks from this table (**Fig 3**).

Class Code	Week No
SIT362 - Advances in Interactive Media ▼	1 ▼
Submit	Reset

Fig 2

Subject Id	Week No	Student Id	Student Name	Attendance	Marks	Status
SIT301 ▼	1 ▼	600312547 ▼	Prabhath Perera	1 ▼		Submit
SIT362 ▼	1 ▼	607456877 ▼	Hashantha Mendis	1 ▼	85	Updated

Fig 3

4. Class page

Tutor View

The tutors will be able to view a list of classes offered by the faculty with subject id, subject name and the tutor name (Fig 4).

Subject Id	Subject Name	Tutor Name
SIT301	IT Practice	Nick Pen
SIT349	Multimedia Systems	Sophie Adams

Fig 4

Administrators View

The administrator will be able to delete a subject from the system (**Fig 5**) or add new subject to the system (**Fig 6**).

Subject Id	Subject Name	Tutor Name	Delete
SIT301	IT Practice	Nick Pen	<input type="button" value="Delete"/>
SIT349	Multimedia Systems	Sophie Adams	<input type="button" value="Delete"/>

Fig 5

Subject Code:	<input type="text"/>
Subject Name:	<input type="text"/>
<input type="button" value="Submit"/> <input type="button" value="Reset"/>	

Fig 6

5. Charts page

The Charts page will contain a table of graphs types (**Fig 7**). When the user click on the “View Graph” button it will open new page will open with the requested graph (**Fig 8**).

Graph	Subject
Weekly attendance percentage of a subject	SIT301 - IT Practice <input type="button" value="View Graph"/>
Weekly practical marks average	SIT301 - IT Practice <input type="button" value="View Graph"/>
Expected Attendance Average Percentage	SIT301 - IT Practice <input type="button" value="View Graph"/>
Subject Demand	<input type="button" value="View Graph"/>

Fig 7

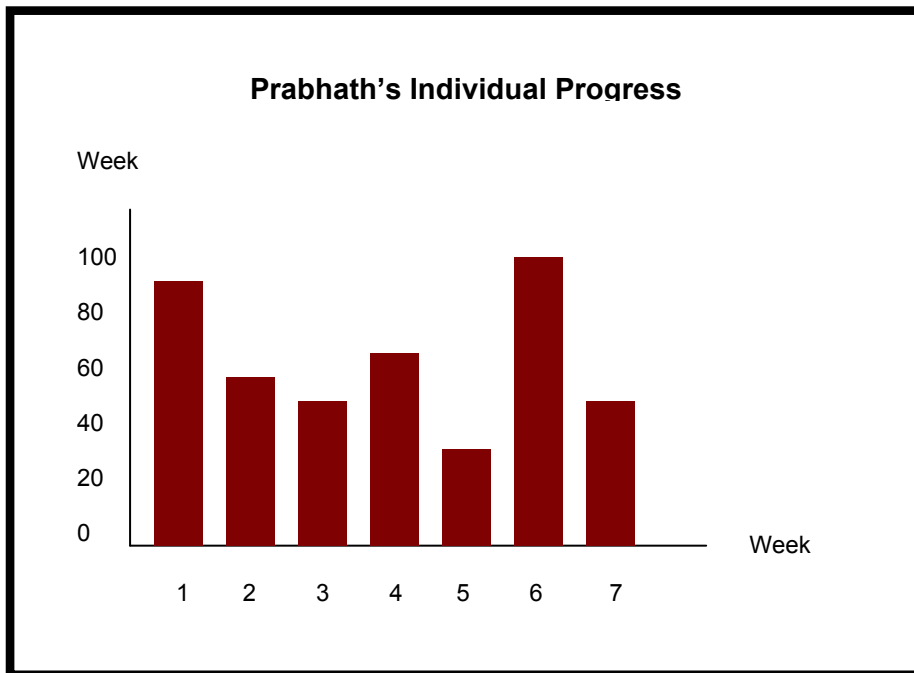


Fig 8

6. Students Page

Administrator View

The administrator can use the Students page to add new students, delete students or remove subjects that the student has been enrolled from the system. There is a form to be filled to add new students which includes the student id and name or the administrator can simply upload a Microsoft Excel or Access file with student names and Id's (**Fig 9**).

When deleting a student or an enrolled subjects, the administrator can search for the student by student's Id number and delete the student or subjects from the system (**Fig 10**).

Student Id	Student Name
<input type="text" value="600258456"/>	<input type="text" value="Chris Mendes"/>
<input type="button" value="Submit"/>	<input type="button" value="Reset"/>
Please upload a Microsoft Excel or Access file with all student names	
<input type="text"/>	<input type="button" value="Browse"/>
	<input type="button" value="Upload"/>

Fig 9

Student Id:

First Name: Brad
Last Name: Ford
Tutor Id: 654789158

Subject(s) Enrolled	
SIT 301 - IT Practice	<input type="button" value="Remove"/>
SIT 349 - Multimedia Sytems	<input type="button" value="Remove"/>

Fig 10

Tutor View

The tutor can use the Students page to enrol new student or students to a subject. There is a form to be filled which includes the student id, name and the subject or the tutor can simply upload a Microsoft Excel or Access file with student names, Id's and subjects (**Fig 11**).

Student Name	Subject
<input type="text" value="600258456 - Dami Mel"/>	<input type="text" value="SIT301 - IT Practice"/>
<input type="button" value="Submit"/>	<input type="button" value="Reset"/>
Please upload a Microsoft Excel or Access file with all student names <input type="text"/> <input type="button" value="Browse"/> <input type="button" value="Upload"/>	

Fig 11

7. Tutors Page

The administrator can use the Tutors page to add new tutors, delete tutors, enrol tutors or remove enrolled subjects from the system. There is a form to be filled to add new tutors which includes the tutors id and name or the administrator can simply upload a Microsoft Excel or Access file with tutor names and Id's (**Fig 12**).

The administrator will be able to enrol tutors to subjects by select the tutor name and the subject or simply uploading a Microsoft Excel or Access file with tutor names, Id's and subjects (**Fig 13**).

When deleting a tutor or enrolled subjects, the administrator can search for the tutor by tutor's Id number and delete the tutor or enrolled subjects from the system (**Fig 14**).

Tutor Id	Tutor Name
<input type="text" value="524589654"/>	<input type="text" value="Ricky Sinclair"/>
<input type="button" value="Submit"/>	<input type="button" value="Reset"/>
Please upload a Microsoft Excel or Access file with all tutor names <input type="text"/> <input type="button" value="Browse"/> <input type="button" value="Upload"/>	

Fig 12

Tutor Name	Subject
523125478 - Nick Smith ▼	SIT301 - IT Practice ▼
<input type="button" value="Submit"/>	<input type="button" value="Reset"/>
Please upload a Microsoft Excel or Access file with all tutor names	
<input type="text"/>	<input type="button" value="Browse"/>
Subject: SIT301 - IT Practice ▼	<input type="button" value="Upload"/>

Fig 13

Tutor Id:

First Name: Bruce
Last Name: Cage
Tutor Id: 456789159

Subject(s) Enrolled	
SIT 301 - IT Practice	<input type="button" value="Remove"/>
SIT 349 - Multimedia Sytems	<input type="button" value="Remove"/>

Fig 14

Site structure

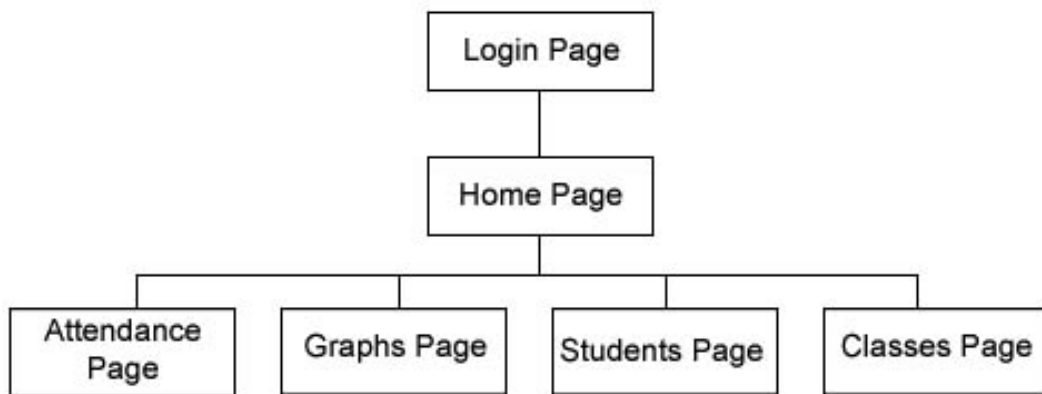
The website will be organised into a hierarchical structure, though this will not be evident to the user. There will be two types of user privileges. The system administrator and tutors (including lectures and unit chair if a subject) will be authorized to access the system.

Site structure summary

The site structure will vary to the users of the system. As mentioned above there are two main types of users in the system.

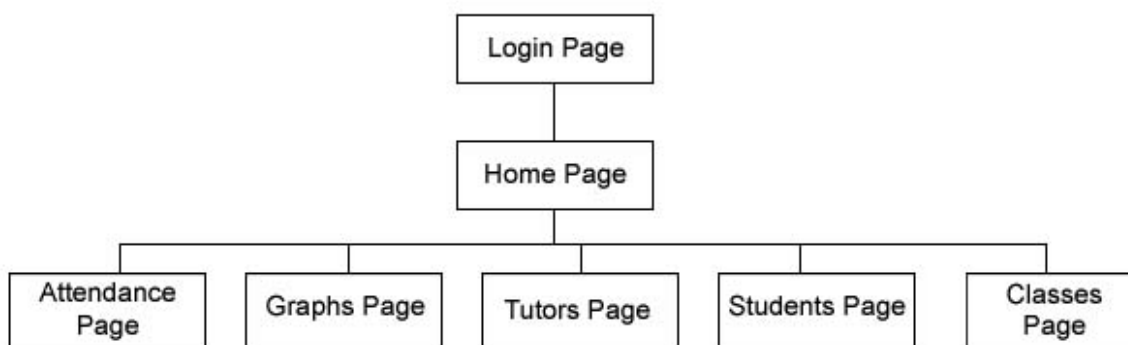
Tutors

The structure of the website will be relatively simple, containing five main pages extending from the "Login" page.



The System Administrator

The structure contains six main pages extending from the "Login" page.



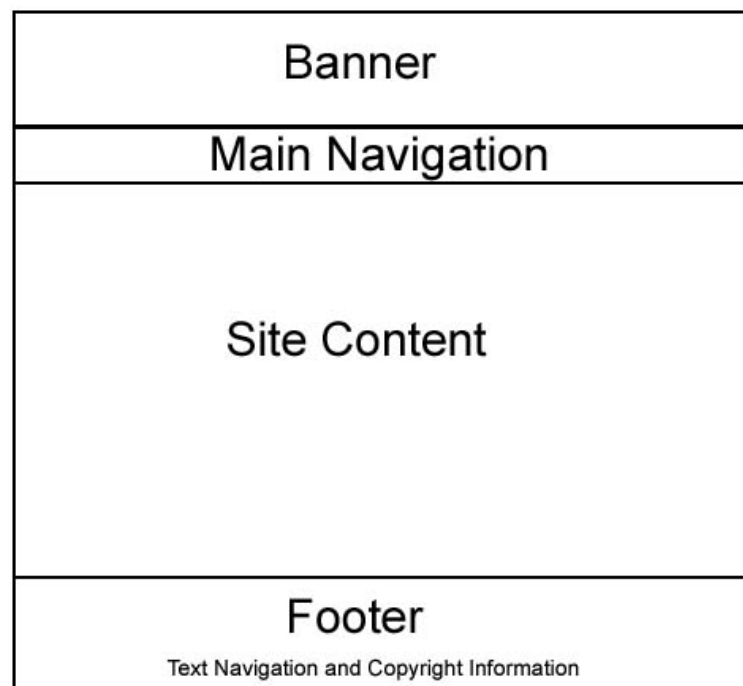
Visual Design

The visual design metaphor for the website will consist of several graphic images. The banner at the top of each page will contain an graphical image which related to the project.

Four major regions are visible on each page:

1. Top banner – this will include the banner animation.
2. Horizontal navigation bar – The main navigation will be placed underneath of the banner area in each page except for the login page.
3. Content area. This will be different for each page; however templates will be used to ensure consistency of the layout throughout the website
4. Text navigation – The text navigation and copyright information will be placed on the bottom of the website.

Layout grid



Fonts and colour scheme

The font used for the main headings and text will be a sans-serif font – ‘Verdana’.

The font sizes and colours used to display the main content will be:

- Heading 1 – 1em; # 081B42; (Dark Green)
- Heading 2 – 0.9em; #2D63D3; (Bright Blue)

- Heading 3 – 0.8em; #FF0000; (Bright Red)
- Heading 4 – 0.8em; #5085B6; (Light Blue)
- Paragraph text – 0.8em; #000000; (black)
- Text links – 0.8em; #333333; (Ash)
- Interface - #000000; (Black)
- Interface - #1B1B1B; (Ash)
- Navigation menu - #CB7C15; (Orange)
- Page background colour - #303131; (Light Ash)

Final Recommendation

The current marking method is in a very poor condition where the paper based method can get very complex and is not accurate and the new system will be much more efficient and error free which, therefore the newly planned project is technically feasible rather than keeping the current one.

There are readymade softwares in the market to over come this situation but those will not include all necessary features and functions such as graphical progress reporting available to the user rather than a custom built system which will be more user friendly and functioning, and since there are other web tools used by the university adding one more tool under its belt would not be very costly on the server side compared to the company built software which can be very hard to customise and sometimes impossible and therefore it would be more economically feasible to have a new system up and running in the Deakin Intranet for attendance marking and progress reporting.

After developing the new system, operating it would only need basic computer skills which could be found in many university students and almost every tutor and as web authors our task is to maintain the system to keep it's functionally to a 100% and make it bug free and therefore the new system is operationally feasible for the client.