

An Experimental On Time Table Generator

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ABSTRACT

This project introduces a practical timetabling algorithm capable of taking care of both strong and weak constraints effectively, used in an automated timetabling system. So that each teacher and student can view their timetable once they are finalized for a given semester but they can't edit them. Timetable Generation System generates timetable for each class and teacher, in keeping with the availability calendar of teachers, availability and capacity of physical resources (such as classrooms, laboratories and computer room) and rules applicable at different classes, semesters, teachers and subjects level. Even though most college administrative work has been computerized, the lecture timetable scheduling is still mostly done manually due to its inherent difficulties. The manual lecture-timetable scheduling demands considerable time and efforts. The lecture-timetable scheduling is a Constraint satisfaction problem in which we find a solution that satisfies the given set of constraints. A college timetable is a temporal arrangement of a set of lectures and classrooms in which all given constraints are satisfied. Creating such timetables manually is complex and time-consuming process. By automating this process with computer assisted timetable generator can save a lot of precious time of administrators who are involved in creating and managing course timetables.

KEYWORDS:-My sql ,Php, Xamp ,Database.

I. INTRODUCTION

A schedule or a timetable, as a basic time-management tool, consists of a list of times at which possible tasks, events, or actions are intended to take place, or of a sequence of events in the chronological order in which such things are intended to take place. The process of creating a schedule - deciding how to order these tasks and how to commit resources between the varieties of possible tasks - is called scheduling, and a person responsible for making a particular schedule may be called a scheduler. Making and following schedules is an ancient human activity. Some scenarios associate "this kind of planning" with learning "life skills".^{[4][5]} Schedules are necessary, or at least useful, in situations where individuals need to know what time they must be at a specific location to receive a specific service, and where people need to accomplish a set of goals within a set time period.Schedules can usefully span both short periods, such as a daily or weekly schedule, and long-term planning with respect to periods of several months or years. They are often made using a calendar, where the person making the schedule can note the dates and times at

which various events are planned to occur. Schedules that do not set forth specific times for events to occur may instead list algorithmically an expected order in which events either can or must take place. In some situations, schedules can be uncertain, such as where the conduct of daily life relies on environmental factors outside of human control.^[7] People who are vacationing or otherwise seeking to reduce stress and achieve relaxation may intentionally avoid having a schedule for a certain period of time.

1.1 Publicly available schedules

Certain kinds of schedules reflect information that is generally made available to the public, so that members of the public can plan certain activities around them. These may include things like:

- Hours of operation of businesses, tourist attractions, and government offices, which allow consumers of these services to know when they can obtain them.
- Transportation schedules, such as airline timetables, train schedules, bus schedules, and various public transport timetables are published to allow commuters to plan their travels. From the perspective of the organization responsible for making transportation available, schedules must provide for the possibility of schedule delay, a term in transport modeling which refers to a difference between a desired time of arrival or departure and the actual time. Despite the use of "delay", it can refer to a difference in either the early or late direction.

1.2 Internal Schedules

An internal schedule is a schedule that is only of importance to the people who must directly abide by it. It has been noted that "groups often begin with a schedule imposed from the outside, but effective groups also develop an internal schedule that sets goals for the completion of micro-tasks". Unlike schedules for public events or publicly available amenities, there is no need to go to the time and effort of publicizing the internal schedule. To the contrary, an internal schedule may be kept confidential as a matter of security or propriety.

1.3 Project Management Scheduling

A schedule may also involve the completion of a project with which the public has no interaction public prior to its completion. In project management, a formal schedule will often be created as an initial step in carrying out a specific project, such as the construction of a building, development of a product, or launch of a program. Establishing a project management schedule involves listing milestones, activities, and deliverables with intended start and finish dates, of which the scheduling of employees may be an element. A production process schedule is used for the planning of the production or the operation, while a resource schedule aids in the logistical planning for sharing resources among several entities.

Chapter – II

LITERATURE REVIEW

The Time Table Problem

During the time table generation process, numerous aspects have to be taken into consideration. Almost a week of work of an experienced person is needed to produce a timetable for even a moderately sized institution and the result is often not reasonable i.e. It does not meet all the requirements. What is more, when the preconditions change, the whole work becomes unusable, and has to be restarted from scratch. The informal definition of timetable can be stated as “Timetabling is the allocation, subject to constraints, of given resources to objects being placed in space time, in such a way as to satisfy as nearly as possible a set of desirable objectives “. These problems are subject to many constraints that are usually divided into two categories: "hard" and "soft".

Time Table Constraints

- 1) Hard constraints: - Hard constraints have to be taken into consideration very strictly, because the timetables that violate just one of these are unusable. The finite “resources” belong to this group. The constraint that one person cannot be in two places at once or that there is a maximum number of people that can be accommodated in a particular room.[Burke and Newall(2002)] Many systems designed to treat mainly the hard constraints have been proposed, some noteworthy of them are constraint based reasoning to timetable generation [Banks(1998)] , hybrid approach based on heuristic [Abdullah & Hamden (2008)],based on ordering heuristics [Rehman et al.] ,based on genetic algorithms [Colomi et al(1990)] etc.
- 2) Soft Constraints: - The timetable that violates these constraints is still usable, but it is not convenient for either students or teachers, and it also makes more difficult to understand the lessons. The constraints under this category are teacher’s soft availability, capability of teacher to handle two or more consecutive lessons, to name a few.

Chapter - III

TECHNOLOGY

3.1 PHP (Preprocessor Hypertext)

PHP is a server-side scripting language designed for web development but also used as a general-purpose programming language. Originally created by Rasmus Lerdorf in 1995, the reference implementation of PHP is now produced by The PHP Group. While PHP originally stood for Personal Home Page, it now stands for PHP: Hypertext Preprocessor, a recursive acronym.

PHP code is interpreted by a web server with a PHP processor module, which generates the resulting web page: PHP commands can be embedded directly into an HTML source document rather than calling an external file to process data. It has also evolved to include a command-line interface capability and can be used in standalone graphical applications.

3.1.1 History of PHP

PHP development began in 1994 when the developer Rasmus Lerdorf wrote a series of Common Gateway Interface (CGI) Perl scripts, which he used to maintain his personal homepage. Zeev Suraski and Andi Gutmans rewrote the parser in 1997 and formed the base of PHP 3, changing the language's name to the recursive acronym PHP: Hypertext Preprocessor. Afterwards, public testing of PHP 3 began, and the official launch came in June 1998. Suraski and Gutmans then started a new rewrite of PHP's core, producing the Zend Engine in 1999. They also founded Zend Technologies in Ramat Gan, Israel. On May 22, 2000, PHP 4, powered by the Zend Engine 1.0, was released. As of August 2008 this branch reached version 4.4.9. PHP 4 is no longer under development nor will any security updates be released.

3.1.2 Functioning and Implementation

The PHP interpreter only executes PHP code within its delimiters. Anything outside its delimiters is not processed by PHP (although non-PHP text is still subject to control structures described in PHP code). The most common delimiters are `<?php` to open and `?>` to close PHP sections. `<script language="php">` and `</script>` delimiters are also available, as are the shortened forms `<?` or `<?=` (which is used to echo back a string or variable) and `?>` as well as ASP-style short forms `<%` or `<%=and %>`. While short delimiters are used, they make script files less portable as support for them can be disabled in the PHP configuration, and they are therefore discouraged. The purpose of all these delimiters is to separate PHP code from non-PHP code, including HTML.

`$_SERVER` - is a PHP super global variable which holds information about headers, paths, and script locations.

`$_REQUEST` - is used to collect data after submitting an HTML form.

`$_POST` - is widely used to collect form data after submitting an HTML form with `method="post"`. `$_POST` is also widely used to pass variables. Information sent from a form with the POST method is **invisible to others** (all names/values are embedded within the body of the HTTP request) and has **no limits** on the amount of information to send.

`$_GET` - can also be used to collect form data after submitting an HTML form with `method="get"`. `$_GET` can also collect data sent in the URL. Information sent from a form with the GET method is **visible to everyone** (all variable names and values are displayed in the URL). GET also has limits on the amount of information to send.

`$_FILES` - An associative array of items uploaded to the current script via the HTTP POST method.

`$_ENV` - These variables are imported into PHP's global namespace from the environment under which the PHP parser is running. Other environment variables include the CGI variables, placed there regardless of whether PHP is running as a server module or CGI processor.

`$_COOKIE` - It is often used to identify a user. This is stored on the user's computer so that every user will be identified if who are they. You can create and get the value of a cookie. `setCookie()` function is the function used to create a cookie.

3.1.3 Advantages of PHP

- A) **Open Source** - PHP is freely available for use. The community of open source PHP developers provides technical support and is constantly improving updating the core PHP functionalities. PHP is available at free of cost under PHP General Public License and most of its associative required software's like MySQL, Text Editors and Apache Server are also freely available, so it proves very cost effective for the developers.
- B) **Cross-Platform** - PHP provides high compatibility with leading operating systems and web servers such as thereby enabling it to be easily deployed across several different platforms. PHP scripts can run across operating systems such as Linux, Windows, Solaris, OpenBSD, Mac OSX etc. and also provide support for all major web servers such as Apache, IIS, iPlanet etc
- C) **Power** - Several web tasks can now be easily performed using PHP. For example now we can develop from small websites to giant business and organizational websites, informative forums, chatting platforms, CRM solutions, e-commerce shopping, community websites, e-business and gigantic database driven sites.
- D) **User Friendly** - Designed in a user friendly manner, PHP gives more flexibility than C, C++ and ASP and overall helps in increasing traffic to the site.
- E) **Object Oriented** - PHP actually has the ability to call Java and Windows COM objects. In addition to this, you can create custom classes. Other classes can actually borrow from those custom classes as well which extends the capabilities of PHP even further.

- F) **Quick** - PHP is designed to work well with the web, and so things like accessing the GET and POST and working with HTML and URLs are built-ins in the PHP language. This makes it really concise and straightforward to make a website.
- G) **Extensions** - Being an open source language, a large number of libraries and extensions, to extend its core functionalities, are available for download. The source code of PHP can be modified to include custom created extensions and components thereby increasing its extensibility.
- H) **Scalability** - In the world of IT, the word scalability is like gold. Whether you're dealing with databases, hosting, or in this case, programming, scalability is never a bad thing. Due to the way PHP is built, you can easily increase your cluster size by adding more servers as your mini projects grow. There are many hosting companies that will, for a few dollars a month, give you a server running PHP so you can make a website really easily.
- I) **Automatically Refreshes** - Nowadays developing dynamic websites are in the huge demand due to its specific characteristics like it automatically refreshes and does not need to make many changes manually.
- J) **Community Support** - A huge advantage that PHP offers is its community. If you are looking for a particular script, chances are another user has already created something similar. Check within the PHP community for availability. Likewise, if you have created a function that others might enjoy, be sure to post the code for others.
- K) **Easier to fix problems** - When it comes to web application development, you're bound to run into issues and come across the occasional "fail". But the benefit you get with PHP is that problems aren't as difficult to find and fix as they are with other languages. This is because with each request, PHP cleans up and starts over. So an issue with one request will not necessarily disrupt another.
- L) **Security** - PHP offers security as well that helps prevent malicious attacks. These security levels can be adjusted in the .ini file.
- M) **Sessions** - PHP provides extensive session and cookie management features and functions enabling the creation and development of personalized web pages.
- N) **Graphics** - PHP can be used to generate images and graphics dynamically. Using the image functionalities available with PHP, the header information of images can be accessed and manipulated. The library of PHP includes a host of features and functionalities that can be used to create images in various formats, such as gif, jpeg and png.

3.2 Java Script

Java script originally supported by Netscape navigator is the most popular web scripting language today. Java script lets you embedded programs right in your web pages and run these programs using the web browser. You place these programs in a <SCRIPT> element, usually with in the <HEAD>element. If you want the script to write directly to the web page, place it in the <BODY>element. Java script is mainly used for client side validation, i.e., we can verify whether the entered credentials are in the required format or not..

3.3 MySQL

MySQL is the world's second most widely used open-source relational database management system. MySQL is named after co-founder Monty Widenius's daughter: My. MySQL is a popular choice of database for use in web applications, and is a central component of the widely used LAMP open source web application software stack. Free-software-open source mini projects that require a full-featured database management system often use MySQL. MySQL is also used in many high-profile, large-scale websites, including Wikipedia, Google.

MySQL is a relational database management system, and ships with no GUI tools to administer MySQL databases or manage data contained within the databases. Users may use the included command line tools, or use MySQL "front-ends", desktop software and web applications that create and manage MySQL databases, build database structures, back up data, inspect status, and work with data records. The official set of MySQL front-end tools, MySQL Workbench is actively developed by Oracle, and is freely available for use.

Queries - A query is a question or a request. With MySQL, we can query a database for specific information and have a record set returned.

Create a connection to a database -Before accessing data from a database, we must open a connection to the MySQL server.

In PHP, this is done with the `mysql_connect()` function. The syntax is

```
mysql_connect(server-name, username, password);
```

Parameter	Description
<i>Server-name</i>	Optional. Specifies the server to connect to Default value is "localhost:3306".
<i>Username</i>	Optional. Specifies the username to log in and the default value is the name of the user that owns the server process.

Password Optional. Specifies the password to log in with Default is “”.

There are more available parameters, but these are the most important. The connection will be closed automatically when the script ends.

Closing a Connection - To close the connection before, we can use the `mysql_close()` function. The connection will also be closed automatically when the script ends.

Create a Database - The ‘create database’ statement is used to create a database in MySQL. To get PHP to execute the statement above we must use the `mysql_query ()` function. This function is used to send a query or command to a MySQL connection.

```
CREATE DATABASE database_name
```

Create a Table

The CREATE TABLE statement is used to create a table in MySQL

Syntax

```
CREATE TABLE table_name  
(  
    column_name1 data_type,  
    column_name2 data_type,  
)
```

MySQL Functions

`mysql_affected_rows` — get number of affected rows in previous MySQL operation

`mysql_change_user` — Change logged in user of the active connection

`mysql_client_encoding` — Returns the name of the character set

`mysql_close` — Close MySQL connection

`mysql_connect` — Open a connection to a MySQL Server

`mysql_create_db` — Create a MySQL database

`mysql_data_seek` — Move internal result pointer

`mysql_db_name` — Get result data

`mysql_db_query` — Send a MySQL query

`mysql_drop_db` — Drop (delete) a MySQL database

`mysql_errno` — Returns the numerical value of the error message from previous MySQL operation

`mysql_error` — Returns the text of the error message from previous MySQL operation

mysql_escape_string — escapes a string for use in a mysql_query

.

mysql_select_db — Select a MySQL database

mysql_set_charset — sets the client character set

mysql_stat — Get current system status

mysql_tablename — Get table name of field

mysql_thread_id — Return the current thread ID

mysql_unbuffered_query — Send an SQL query to MySQL, without fetching and buffering the result.

Chapter - IV

TESTING

Testing is a process, which reveals errors in the program. It is the major quality measure employed during software development. During testing, the program is executed with a set of test cases and the output of the program for the test cases is evaluated to determine if the program is performing as it is expected to perform.

The objectives of testing are: To see that when correct inputs are fed to the system the outputs are correct, to verify that the controls incorporated in the same system as intended. Testing is a process of executing a program with the intent of finding an error. A good test case is one that has a high probability of finding an as yet undiscovered error

Chapter – 5

REQUIREMENTS

XAMPP Installation Process

XAMPP is an easy to install Apache distribution containing MySQL, PHP and Perl. There are packages for Windows, Mac, and Linux.

This article will walk you through the steps to install XAMPP on your computer.

Note: These are the Windows installation instructions – see the Apache Friends website for the Mac and Linux installation instructions.

1. Download the installer file for the latest version of XAMPP, and save the file to your computer.

XAMPP for Windows 1.8.1, 30.9.2012		
Version	Size	Content
XAMPP Windows 1.8.1		Apache 2.4.2, MySQL 5.5.27, PHP 5.4.7, OpenSSL 1.0.1c, phpMyAdmin 3.5.2.2, XAMPP Control Panel 3.1.0, Webalizer 2.23-04, Mercury Mail Transport System v4.62, FileZilla FTP Server 0.9.41, Tomcat 7.0.30 (with mod_proxy_ajp as connector), Strawberry Perl 5.16.0.1 Portable For Windows 2000, XP, Vista, 7.
☞ Installer	99 MB	Installer MD5 checksum: 2c067c31725fda3c71c6d43483b4df4c
☞ ZIP	184 MB	ZIP archive MD5 checksum: 924e9cdc0fc49984e0c4916aa8f31c18
☞ 7zip	84 MB	7zip archive MD5 checksum: 462f6bc3c9e96a8c9228927ff8e0d217

Fig 5.1: XAMPP Welcome Window

- Next, you need to open the folder where you saved the file, and double-click the installer file.

You will be prompted to select the language you wish to use in XAMPP. **Click the arrow** in the dropdown box, **select your language** in the list, then **click OK** to continue the installation process.

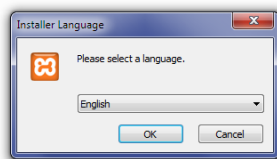


Fig 5.2: XAMPP Language Selection

- For Windows 7 users, you will see a window pop up, warning you about User Account Control (UAC) being active on your system. Click OK to continue the installation.

Next you will see the Welcome To The XAMPP Setup Wizard screen. **Click Next** to continue the installation.



Fig 5.3: XAMPP UAC Message



Fig 5.4: XAMPP Wizard Starting Window

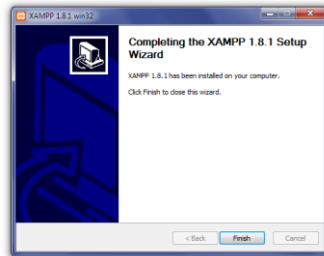


Fig 5.8: XAMPP Installation Finished Window

The Installation Complete screen will now appear. **Click Finish** to begin using XAMPP.

After clicking Finish in the previous screen, you will be asked if you want to open the XAMPP Control Panel. **Click Yes**

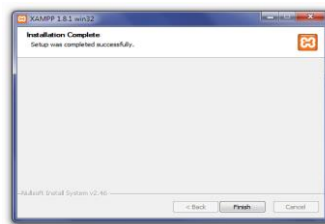


Fig 5.9: XAMPP Installation Completed Window

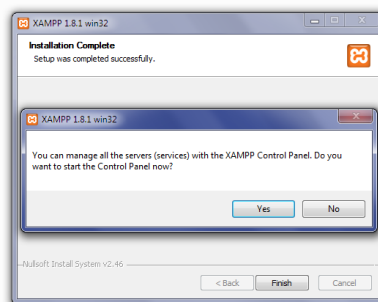


Fig 5.10: XAMPP Prompting To Start XAMPP Control Panel

The XAMPP Control Panel allows you to manually start and stop Apache and MySQL, or install them as services

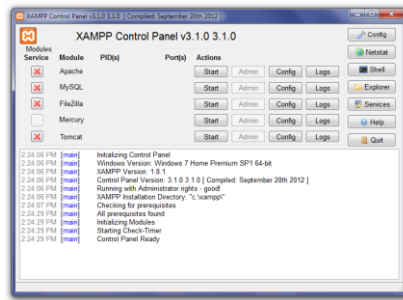


Fig 5.11: XAMPP Control Panel

To start Apache or MySQL manually, **click the Start button** under **Actions** next to that module.

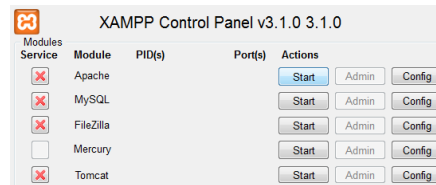


Fig 5.12: XAMPP Control Panel With Installed Services

Depending on your security settings, Windows 7 users will probably have a small window open, asking if you want to allow **xampp-control.exe** to make modifications to your computer. **Click Yes** to allow Apache or MySQL to start.

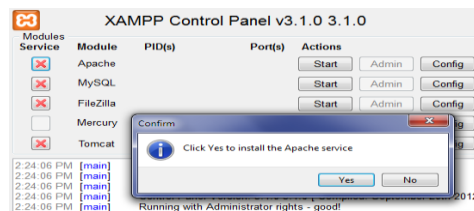


Fig 5.13: XAMPP Prompting to install Apache Service

Once again, you may have a security window open, asking if you want to allow the modifications to your computer. **Click Yes** to allow it.

SYSTEM ANALYSIS & DESIGN

SOFTWARE REQUIREMENT SPECIFICATION

A Software requirements specification (SRS), is a complete description of the behavior of a system to be developed and may include a set of use cases that describe interactions the users will have with the software. In addition it also contains non-functional requirements. Non-functional requirements impose constraints on the design or implementation (such as performance, engineering requirements, quality standards, or design constraints).

The software requirements specification document enlists all necessary requirements that are required for the project development. To derive the requirements we need to have clear and thorough understanding of the products to be developed. This is prepared after detailed communications with the project team and customer.

Role of SRS

The purpose of the document is to collect and analyze all assorted ideas that have come up to define the system, its requirements with respect to consumers. Also, we shall predict and sort out how we hope this product will be used in order to gain a better understanding of the project, outline concepts that may be developed later, and document ideas that are being considered, but may be discarded as the product develops.

Chapter – VII

IMPLEMENTATION AND SCREEN SHOTS



Chapter – VII

CONCLUSION

Separate timetable for the individual class, faculty and labs are generated automatically by this system. Various slot combinations can be acquired so that another timetable is generated as of need. The project reduces time consumption and the pain in framing the timetable manually. The project is developed in such a way that, no slot clashes occur providing features to tailor the timetable as of wish. Additional features that are included in the project is that faculty replacement is also made possible by listing out the available faculty who are eligible to be assigned as temporary faculty until a replacement faculty is assigned. The future enhancement that can be developed from the project is to generate the master timetable for the departments and to the entire college. This enhancement can be achieved by making further modifications keeping the approach and techniques used for this project.

REFERENCES

1. See Hojjat Adeli, Asim Karim, Construction Scheduling, Cost Optimization and Management (2003), p. 54.

2. ^ Jump up to: [a](#) [b](#) [c](#) [d](#) Ofer Zwikael, John Smyrk, Project Management for the Creation of Organisational Value (2011), p. 196: "The process is called scheduling, the output from which is a timetable of some form".

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