Comparison the processing speed between PHP and ASP.NET

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Abstract—**Nowadays, web applications play an important role for many organizations, and there are many technologies variable in the market and each technology have its own advantage, so choosing the technologies is one important factor. This research studies of performance processing speed of two common technologies for developing web applications namely PHP and ASP.NET. These technologies run on environment as Windows operating system where ASP.NET using IIS will be compared with PHP using IIS as well as the PHP using Apache. The comparison is conducted through five approaches including webpage loading; algorithm processing; database managing; file(s) uploading and reading/writing external file(s). The results from our research demonstrate as ASP.NET is more effective than PHP in various areas such as webpage loading (1.81 times faster), external file(s) reading/writing (3.77 times faster) and Algorithm calculation (Hanoi Tower 14.74 times faster). However, PHP can operating more efficiently in some other areas such as variable datatypes exchanging (adding big numbers PHP is 6.82 times faster), database managing (PHP is 1 .4 5 times faster) and files uploading (PHP is 1.17 times faster).**

Keywords—processing speed; server site scripting; performance comparison; php; ASP.Net

I. INTRODUCTION

Nowadays the internet or the World Wide Web is a very important part of modern day. We are just a click away from the rest of the world and this is all possible because of the presents that we have on our computer. The several of our daily life like online browsing, shopping, booking, managing, communication and business that we conduct by click of the mouse has not only made the world a smaller place to life but simplified our lives amidst hectic schedules and professional and personal commitments in life. The mention above can be done by implement of web application in the computer that extends both across browser base application as well as client base application.

Web applications play an important role for many business purpose activities in the modern world. It has become a platform for the companies to fulfil the needs of their business. web applications there are several techniques and software tool that are used to development of various web applications, also there are many server site programming languages for web application such as PHP, ASP.NET, JSP, Java, Pert, Python... , Each language has its own advantage and disadvantage. Today there are many web hosting in the world support one or more server site programming languages. Some languages are very popular in the web application as mention in the W3Techs – World Wide Web Technology Survey [1].

When use of web or web application of cause user want to use fast application. User do not want to wait for long time especially on web application, if it is slowly user will not wait and will go to other web site. User will not care which technology, sever site programming language used for develop the system and run on which kind of operating system. Then choose the right technology with faster processing speed is one of importance factor for development of web application.

In the recent year, there were many researchers worked on this field of research such as Sneha Prabha Chandran, Mridula Angepat [2], this research was comparison between ASP.NET and PHP. The implementation was done by development of different servers implemented in these platforms comprising the SQL server 2008 for ASP.NET and MySQL for PHP. A real estate web application is developed with three main panels which are the user panel, advertiser panel and admin panel. The same functional requirements are used in two web technologies. The result was ASP. NET is found to be more efficient and reliable than PHP.

Ramesh Nagilla [3], propose comparison of web development technologies (ASP.NET & PHP) by development web application for photo gallery, application is developed using ASP.NET and PHP in order to compare the two web development technologies. Result of this research was mention it is hard to decision which technology is better ASP.NET and PHP. Both can do the same things. ASP.NET is very good when it comes to large applications as there are lot of options available in it to move the phase of development faster. PHP will be useful for both small and large projects. Small projects are more comfortable in PHP.

Timur Mirzoev [4], propose webpage load speed: ASP.NET and PHP by using "lori Firefox extension" was a tool for speed evaluation. Experiment was done on IIS with ASP.NET and Apache with PHP and test on two cases: 1.

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Load page with call external three JavaScript files, one Style sheet, one CSS image, three additional images, and one favicon. 2. Test on retrieved data (text file) 10,000 rows and show on browser. Result on load page ASP.NET was faster, on retrieved data PHP was better.

Md. Ahsan Arif, Mohammad Shahazzat Hossain, Nazmun Nahar and Mst. Dilruba Khatun [5], propose Empirical Analysis of C#, PHP, JAVA, JSP and ASP.Net Regarding performance analysis based on CPU utilization. Research was done on window XP and database oracle 10g, IIS with ASP.net, Apache with PHP, and Apache Tomcat with Java. Experiments test by retrieves from database by use three loops. Loop one retrieve employees data from database, loop two reference to data got from loop one to retrieve attendance date of employees, loop three use data got from loop two to retrieve attendance time. Result Java/JSP was the best performance usage of CPU, Execute time and Memory.

Alok Ranjan, Rajeev Kumar, Joydip Dhar [6], propose a comparative study between dynamic web scripting languages. Research done with ASP.NET, PHP, JSP on Windows XP and test in four cases: 1. Finding factorial of 100, 2. Check word with 1,000,000 characters was it palindrome. 3. Order number with random 1,000,000 numbers by using merge sort and 4. Run Dijkstra's algorithm with 1,000 nodes and 5000 edges. Run on two kinds of codes: develop code by team research and use build-in module. Result was processing with number PHP was done better; sorting JSP was better performance and for complex solution ASP.NET was better.

In this research we are comparison the processing speed between PHP and ASP.NET by development environment base on Windows Server and database oracle 11g. To evaluation processing speed was made experiment with five cases: 1. Load static web page (include photo, audio, video, file PDF), 2. Processing algorithms (Hanoi Tower and sum big number 50,000 digit and sorting data 5,000 value), 3. Managing database (Truncate, select, insert), 4. Upload file and 5. Read/ write data to external file.

II. THE PROPOSED METHOD

Comparison processing speed between PHP and ASP.NET was done by establish three servers on VMWare ESXi Version 5.5.0. These three servers was established base on the same basic environment, OS was Windows Server 2008 R2 64 Bit, RAM 4GB and database oracle 11g R2 64 Bit. But on server one was installed web server IIS 7.5 and PHP 5.3.28, hereinafter referred to as “Server PHP-IIS”, Server two was installed webserver IIS 7.5 and ASP.NET 4, hereinafter referred to as “Server ASP”. Server three was installed webserver Apache 2.2.8 and PHP 5.3.28, hereinafter referred to as “Server PHP-Apache”. For client was Laptop Dell Inspiron 15R with Windows 8.1 Enterprise 64 Bit, RAM 8.00 GB, Firefox Version 39.0, ADD-ONS lori (Life-of-request info) Extensions [7] and ADD-ONS Status-4-Evar [8] for Firefox can show status bar. To evaluation the processing speed was done by development webpage with the same of algorithms on ASP.NET and PHP and experiment on three servers above. Three servers and client was on the same network, as show in Fig.1.

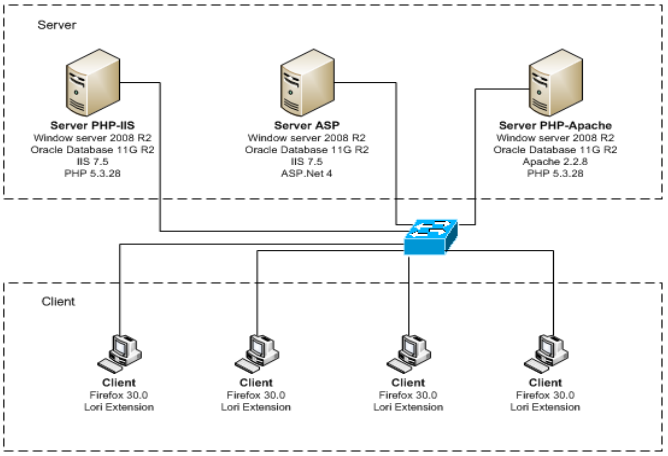

Fig. 1. Show evironment for experiment.

III. EXPERIMENTS

To evaluation processing speed, experimented was divided to five difference cases: Load static webpage, Algorithms processing, Managing database, Upload file and Read/write file. Each case was experimented with three kinds of servers as mention in above. On experiment each case was create as web page on both PHP (for server PHP-IIS and PHP-Apache) and ASP.NET (for server ASP.NET), and test by using browser to open web page and run each case 10 rounds on each server respectively to find average time. Each case of experiment had information as below:

A. Load static web page

Experiment was conducted by create web page (with all code was only HTML), the web page was the same information for test on three servers. Information of web page was included imagefile.jpg size 1.96 MB, audio song.mp3 size 4,2MB, flash Incredible.flv size 12.5MB, video MP4 videofile.m4a 15.4MB and PDF pdffile.pdf size 568 KB.

B. Algorithms processing

Experiment was conduct base on three kinds (Tower of Hanoi, sum big number and sorting 5,000 values) to the purpose of this case to compare processing speed by run complicate thing.

1) Tower of Hanoi conducted by created web page with PHP and also ASP.NET on both had the same algorithms and to slove Tower of Hanoi with 20 discs.
2) Sum big number, this is sum two big number that a number could not store in a variable, each a big number had 50,000 digits. To operation of this we changed a big number to character, a digit to a character and store a big number as set of characters. After that make function to operated sum each digit

from lastest of set character and show rerult on brower after finished.

3) Sorting number 5,000 values was conducted by create web page with PHP and ASP.NET to automatic random number from 0 to 5,000 and after that was sort from small to big by number using bubble sort.

C. *Managing database*

Experiment was conducted base on three command in SQL (Truncate, select, insert) as below

1) Delete data from database by truncate command. it was conducted with create web page on both PHP and ASP.net to delete data 10,000 records from table in oracle 11g database and show message after completed.
2) Insert data to database was conducted by create web page on both PHP and ASP.net to insert data 10,000 records to table in oracle 11g database and show message after completed.
3) Retrieve data from database was conduct by create web page on both PHP and ASP.net to select data 10,000 records from table in oracle 11g database and show data on web page after completed.

D. *Upload file*

Experiment was conducted by create web page on both PHP and ASP.net to upload file to server. The file upload there are file.MP3 size 6,9 MB, file.MP4 size 64,9 MB and file.MP4 149 MB each size was experiment with 10 times.

E. *Read/ write data to external file*

Experiment was conducted by create web page on both PHP and ASP.net to read data from file there are 1,000,000 rows and after that wrote data got from process read back to other file in server.

IV. THE RESULT OF EXPERIMENTS

This research was experiment for processing speed of two technologies to development web application namely PHP and ASP.NET base on created three servers and evaluation processing speed by experiment with five cases. From our experiments we got the result as show in the graphic below:

A. *Load static web page*

Load static web page show us from the average time ASP.NET was better than PHP in IIS and Apache web server. ASP.Net used average time is 0.1776 s. as show in Fig. 2.

B. *Algorithms processing exeriment with three kinds of test as:*

1) In case of tower of hanoi, we found that the ASP.NET was better than PHP in time average. ASP.NET used 0.1756 s as show in Fig. 3.
2) In case of sum big number, we found that the PHP(web server Apach) was faster than ASP.NET in 6.7 times. PHP used 0.8034 s as show in Fig.4.
3) In case of sorting data with 5,000 values, we found that the ASP.NET was faster than PHP in time average. ASP.NET used 0.5813 s as show in Fig.5.

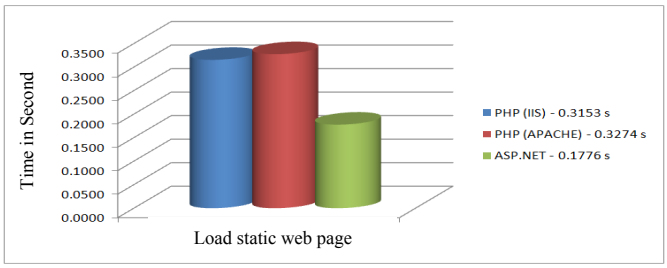

Fig. 2. Average time for Load static web page.

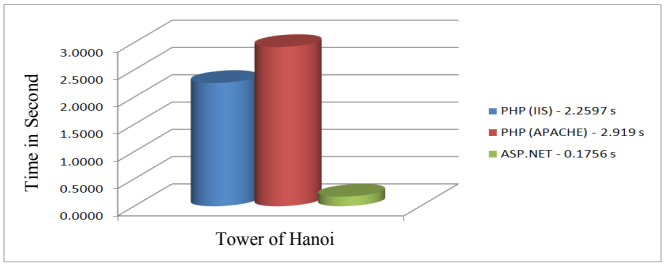

Fig. 3. Average time for Tower of Hnai.

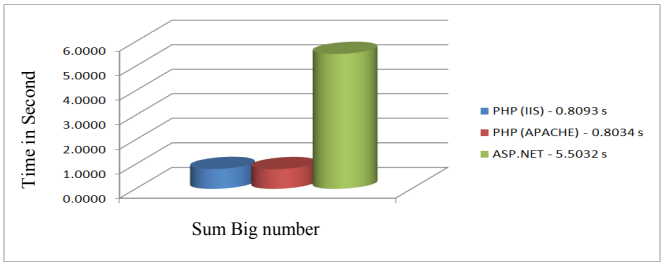

Fig. 4. Average time for sum big number.

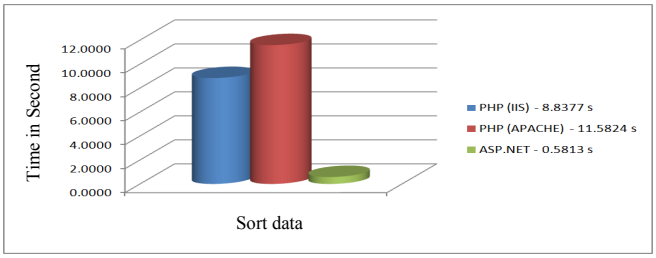

Fig. 5. Average time for sorting data.

C. *Managing database there are three kinds of test as:*

1) In case of delete data form database 10,000 records, we found that the ASP.NET was faster than PHP 2 times in time average. ASP.NET used 0.0587 s as show Fig.6.

2) In case of insert data to database 10,000 records, we found that the PHP(web server Apache) was faster than ASP.NET in time average. PHP used 11.7974 s as show in Fig.7.
3) In case of retrieve data from database 10,000 records, we found that the PHP(web server Apache) was faster than ASP.NET in time average. PHP used 1.5256 s as show in Fig.8.

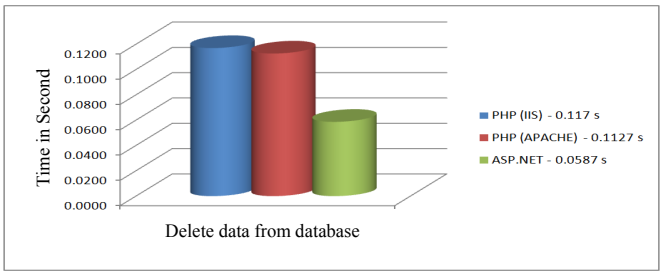

Fig. 6. Delete data from database.

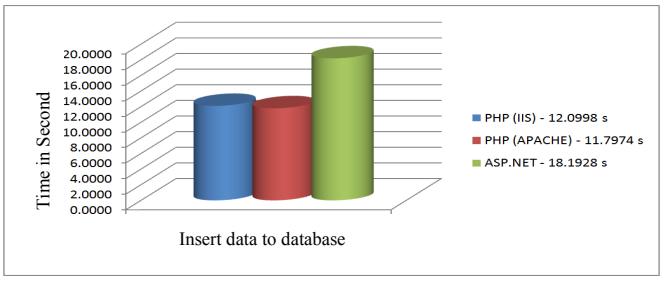

Fig. 7. Insert data to database.

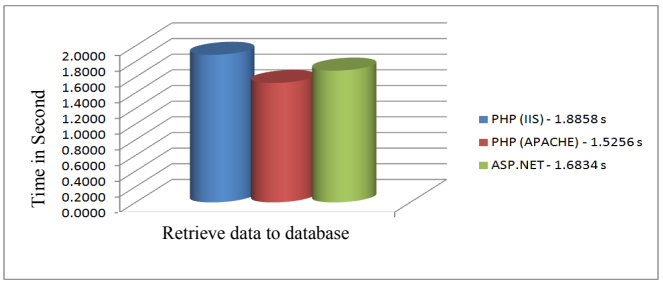

Fig. 8. Retrieve data from database.

D. Upload file was experiment on file smaller 10MB, 100MB and File bigger 100MB the result show as below.

1) Experiment with file size is smaller than 10MB, we found that the PHP(web server Apache) was faster than ASP.NET in time average. PHP used 0.6338 s as show in Fig.9.
2) Experiment with file size is smaller than 100MB, we found that the PHP(web server Apache) was faster than ASP.NET in time average. PHP used 5.6585 s as show in Fig.10.
3) Experiment with file size is bigger than 100MB, we found that the PHP(web server Apache) was faster than ASP.NET in time average. PHP used 12.9443 s as show in Fig.11.

E. Read/ write data to external file

was experiment by read data 1,000,000 rows from file and write data to other file, from the experiment result we found that the ASP.NET was faster than PHP in time average. ASP.NET used 1.2432 s as show in Fig.12.

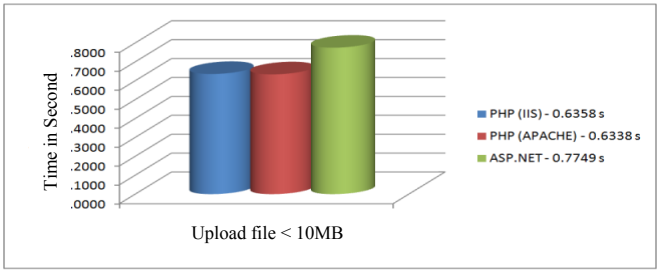

Fig. 9. Upload file smaller than 10MB

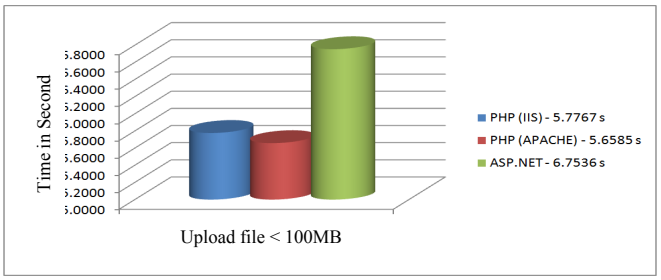

Fig. 10. Upload file smaller than 100MB

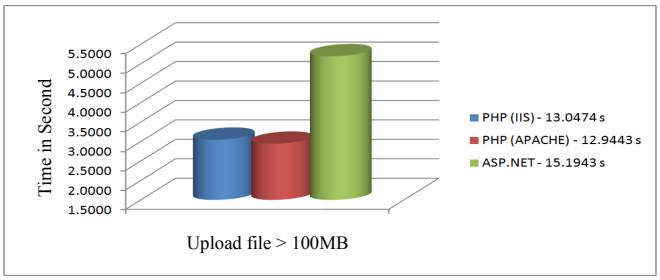

Fig. 11. Upload file bigger than 100MB

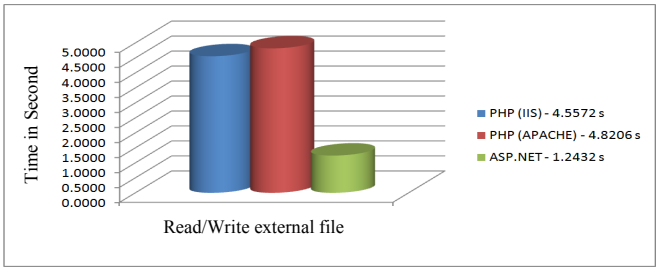

Fig. 12. Read/write external file

From our experiment to show the difference processing time of each server and each case in experiment, we will sumarize by give score for each case as: fastest give score 3, faster give score 2 and slower give score 1 aspected and had

condition is each step differrence must bigger than 0.1 s. the result as show in Table.I and Fig. 13. From the result we can say ASP.NET was good performance in processing speed than PHP with web server IIS and with web server Apache. Also from experiment PHP on IIS web server can work well as PHP on web server Apache.

TABLE I. SHOW SUMARY OF EXPERIMENT RESULT

	PHP (IIS)		PHP (Apache)		ASP.NET	
	Time (S)	Score	Time (S)	Score	Time (S)	Score
Load Static web page	0.3153	2	0.3274	2	0.1776	3
Algorithms processing	11.9067	2	15.3048	1	6.2601	3
Database management	14.1026	2	13.4357	3	19.9349	1
File upload	19.4599	2	19.2366	3	22.7228	1
Read/write textfile	4.5572	2	4.8206	1	1.2432	3
Sum:		10		10		11

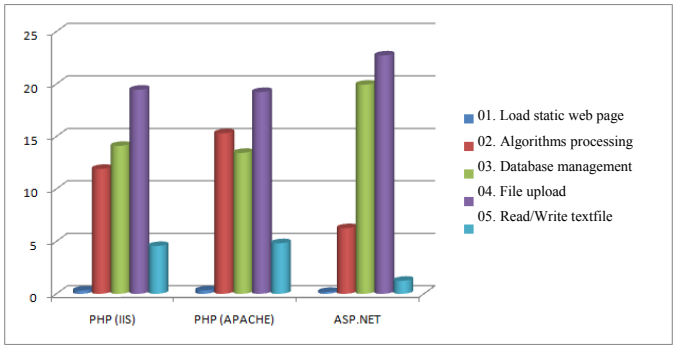

Fig. 13. Comparison of each server in each case experiment

V. CONCLUSION

Web applications play an important role for many organizations and many business activities in the modern world. Web applications there are several techniques and software tool that are used to development of various web applications. To choose the right technology for development web application for organization or business is the one of most importance. ASP.NET is the one of good choice to choose for organization that use Window OS, because feature of processing speed is fast. From our experiment we can conclusion as ASP.NET is best for web page to show information, it is had fast speed of page load than PHP 1.81 times, it is best for web application need high processing speed and it is Read/write file ASP.NET better than PHP 3.37 times. However from our experiment ASP.NET had a weak point is data type changing, from experiment with sum big number by change number to string and string to number PHP faster than ASP.NET 6.8 times. For web application that manage of database PHP is best than ASP.NET 1.45 times. Load file PHP is faster ASP.NET 1.17 times.

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