WEB-BASED INTERACTIVE HTML LEARNING

by

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15620

Dissertation submitted in partial fulfilment of
the requirements for the
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(Business Information System)

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CERTIFICATION OF APPROVAL

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A project dissertation submitted to the
Business Information System Programme
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In partial fulfilment of the requirements for the
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(BUSINESS INFORMATION SYSTEM)

Approved by,

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(Dr. Shuib Bin Basri)

UNIVERSITI TEKNOLOGI PETRONAS

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MAY 2015

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own. The original work contained herein have not been undertaken or done by unspecified sources or persons.

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MUHAMMAD FAIDHI BIN FATKHURROZI

ABSTRACT

Interactive HTML Learning is a web-based system developed to increase the effectiveness of learning HTML language. The web-based system basically is an interactive way of learning through computer browser that will involve two ways communication. This will result of reducing learning curve of users. Through the development of this learning system, more programmers can be made available. The main difference of this system than other than other system is this system will be using the interaction of two ways communication between the user and the system itself. Inputs inserted by the user will have respond from the learning system. The learning system will have attractive interface by including images and colours to avoid text-only learning process. Target user of this interactive HTML learning system is amateur users who has no experience in dealing with programming language. Users now will be able to learn HTML in interactive way and more effective with this system available.

ACKNOLEDGEMENT

It gives me such a great pleasure to express my gratitude to all those people who have contributed and supported me all the way in completing this project. First and foremost I would like to say Alhamdulillah, my praise to the Almighty, Allah for His immense blessing, guide and help throughout my life as I could never complete this without His mercy.

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CHAPTER 1

INTRODUCTION

1.1. BACKGROUND STUDY

Our world is now has been digitalized. Almost all of our daily activities from home chores to work operations use digital technology including reading news, reaching out people, communicating, playing games, etc. As reported by We Are Social in Digital, Social and Mobile 2015 report, 3.010 billion out of 7.210 billion population of the world is active internet users that make it 42% and increasing by average of 21% every year. Programming codes is a necessity to build the world nowadays. This makes coders as the architects of this digital age.

The statistics shows the dire need of having a medium for people to learn at least basic coding. This has been a motivation to propose a prototype of an HTML learning system in interactive way. The main target user of the Interactive HTML learning system is beginner-level user who still don't have any experience in coding especially HTML. The system main objective is to introduce to the user how to code from scratch even the user has no coding knowledge at all.

The system will first introduce the jargons used in the system to familiarize the users with coding environment. Gradually, the system will teach the user how to start coding from start until they master it while doing exercises. Along the learning process, the system can display the progress of the user and show the result at the end.

1.2. PROBLEM STATEMENT

In this technological era, having coding knowledge is an advantage for most of us. The U.S. Department of Labour reported that employment of computer scientists or programmers will increase by 19% through 2020 in U.S. alone. Forecast by Bureau of Labour Statistic shows that there will be only 400,000 graduates to fill in a 1.4 million vacancies in computing jobs. Vacancies in this particular area are abundant and growing by year, but graduates are not enough to fill the positions. The Bureau of Labour Statistic reports that programmers have one of the highest annual salary that is median annual wage was $76,140 in 2013 and the highest-paid in the profession work in the metropolitan areas of Santa Fe, New Mexico; Bethesda, Maryland; and Seattle. High pay means high expectation. Learning to code is not an easy task and need discipline practices and learning process. Thus, some people just give up to learn to code instead. If coding learning process can be made easy and interactive, more programmers can be produced.

Learning can be very hard especially when involving new things. Programming languages are just the same with any other speaking language, the difference is not a normal language we talk, but rather the language of computer to interact with each other. So it can be hard for some people to learn the new language. Plus, one of the contribution of not having enough work force resources is the lack of stress in importance of coding in schools and official learning system. An alternative way has to be made available to increase the effectiveness of learning HTML.

1.3. OBJECTIVES

- To identify the problem of short number of programmers.
- To know the effectiveness of conventional learning and interactive learning.
- To distinguish current system available in the market and its differences.
- To recognize the interactive criteria of a learning system.
- To study the implementation of interactive learning of HTML language.
- To develop a web-based learning system using the concept of interactive to learn HTML language.

1.4. SCOPE OF STUDY

1.4.1. Platform

This project will use web-based as the platform for compatibility and potential growing market.

1.4.2. Target User

Target users for this learning system is amateur users who still has no experience in programming especially HTML language.

1.4.3. Core Function

To help users to learn the language of programming by introducing interactive two way communications.

1.4.4. Language

HTML was chosen to be the language for the users to learn because it is one of the basic programming language. So it will be easy for amateur target users to adapt to the environment of programming.

CHAPTER 2

LITERATURE REVIEW

2.1. HTML

Our world is now has been digitalized. Almost all of our daily activities from home chores to work operations use digital technology including reading news, reaching out people, communicating and playing games. Programming codes is a necessity to build the world nowadays. This makes coders as the architects of this digital age.

According to Yan, Yang, Lan and Tong (2012), HTML is the shortened form of the Hyper Text Markup Language, which is a markup language used to interpret site pages. It does not need to be incorporated and specifically executed by the web browser. HTML is a standard, which stamp the different parts of the pages to be shown by images. The page document is a content record, by including the tag in a content record, it can advise the program how to show the substance of it.

HTML is universally acknowledged programming language for organizing website pages. In today's reality, it is usually utilized alongside JavaScript and Cascading Style Sheets (CSS) to give pages the look and feel we seek. Through HTML, the look and appearance of pictures, connections, headings, content, page format and pretty much every component of a page can be designed. While there are other web programming languages tools today, HTML keeps on being the prevalent programming language for making site pages. It is the most ideal for most small and developing organizations that do not generally need advanced features on their site.

HTML 5 is the most recent standard of HTML, discharged in 2008. The most essential new highlight of HTML 5 is its backing for sound and feature, for example, construct sound visualization, online feature altering. The leap forward brings more advancement space for the Web interactive media innovation and gives a superior stage to interactive media innovation community oriented altering.

HyperText is the technique by moving around on the web by clicking on special text called hyperlinks which brings us to other page. It is called hyper because it is not linear. Markup is what HTML tags do to the text referred to them. The tag marks it as a special type of text. HTML is a language, as it has specific words and syntax like other language.

Advantages of HTML:

- Highly flexible
- Supported by most browser.
- User friendly.
- Easily understandable.
- Less space used.

Disadvantages of HTML:

- Less secure.
- Static.
- Simple output.

	2014 1 Jul	2014 1 Aug	2014 1 Sep	2014 1 Oct	2014 1 Nov	2014 1 Dec	2015 1 Jan	2015 1 Feb	2015 1 Mar	2015 1 Apr	2015 1 May	2015 1 Jun	2015 1 Jul	2015 28 Jul
HTML	54.7%	55.5%	56.3%	57.0%	57.8%	58.5%	59.1%	59.6%	60.2%	60.9%	61.7%	62.5%	63.3%	63.9%
XHTML	46.0%	45.1%	44.4%	43.6%	42.8%	42.1%	41.5%	40.9%	40.3%	39.7%	38.9%	38.1%	37.3%	36.7%

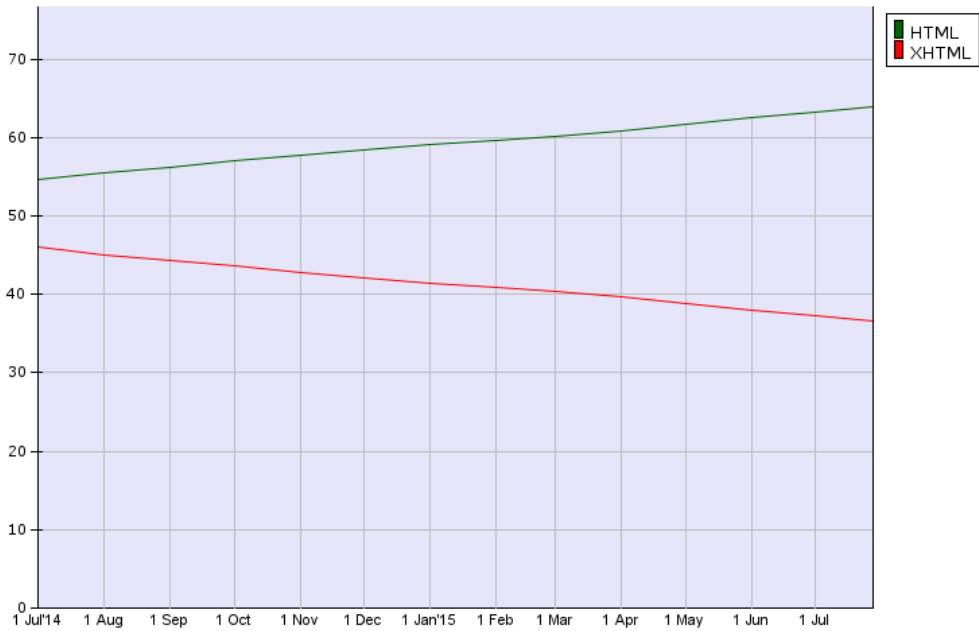*Table 1: Usage of mark-up language*

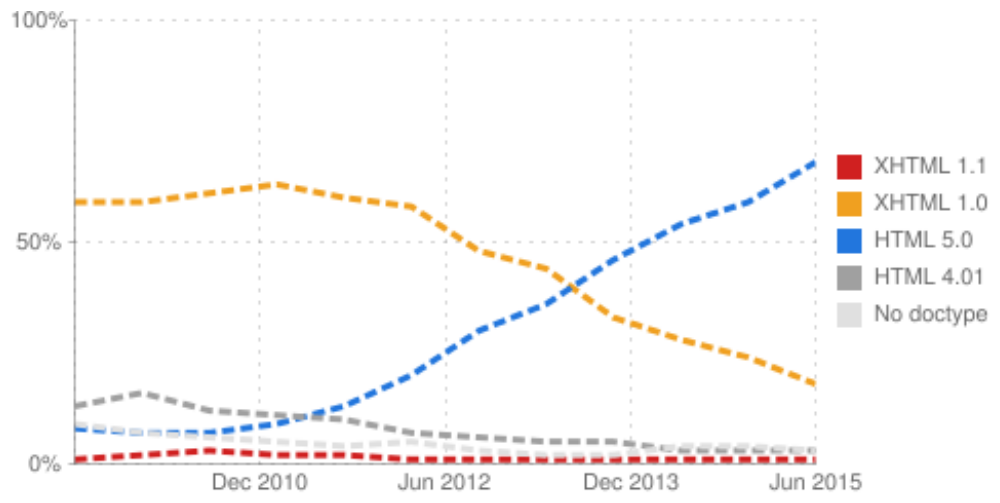*Figure 1: Usage of mark-up language*

Figure 2: HTML version trends

2.2. INTERNET

According to Castells, M. (2011), the internet is the fabric of our lives. If information technology is the present-day equivalent of electricity in the industrial era, in our age the Internet could be compared to both the electrical grid and the electric engine because of its ability to distribute the power of information throughout the human activity. Furthermore, as new technologies of energy generation and distribution made possible the factory and the large corporation as the organizational foundations of industrial society, the Internet is the technological basis for the organizational form of the Information Age.

A network is a set of connecting nodes. Networks are very old forms of human practice, but they have taken on a new life in our time by becoming information networks, powered by the Internet. Networks have amazing benefits as organizing tools because of their intrinsic flexibility and adaptability, critical features in order to survive and prosper in a fast-changing environment. This is why networks are flourishing in all domains of the economy and society, outcompeting and outperforming vertically organized firms and centralized organizations. In spite of their advantages in terms of flexibility, networks have traditionally had to reckon with a major problem, in contrast to centralized hierarchies. They have had significant difficulty in synchronizing functions, in directing resources on specific goals, and in achieving a given task, beyond a certain size and complexity of the network. For most of human history, unlike biological change, networks were outperformed as tools of instrumentality by organizations able to gather resources around centrally defined goals, achieved through the execution of tasks in rationalized, vertical chains of command and control. Networks were mainly the preserve of private life; centralized hierarchies were the fiefdoms of power and production. Now, however, the introduction of computer-based information and communication technologies, and particularly the Internet, enables systems to set up their flexibility and adaptability, thus affirming their evolutionary nature. At the same time, these technologies allow the management of tasks, and administration of complexity. This results in an

unique combination of flexibility and task performance, of coordinated decision-making and decentralized execution, of individualized expression and global, horizontal communication, which provide a superior organizational form for human action.

In the last quarter of the twentieth century, three independent practices came together, leading in a new social structure predominantly based on networks: the needs of the economy for administration flexibility and for the globalization of capital, production, and trade; the demands of society in which the values of individual freedom and open communication became dominant; and the astonishing advances in computing and telecommunications made possible by the micro-electronics insurgency. Under these conditions, the Internet, a vague technology without much application beyond the isolated worlds of computer scientists, hackers, and countercultural communities, became the lever for the evolution to a new form of society—the network society—and with it to a new economy.

The Internet is a communication medium that consents, for the first time, the communication of many to many, in chosen time, on a worldwide scale. The use of the Internet as a communication system and an organizing form burst in the closing years of the second millennium. At the end of 1995, the first year of extensive use of the World Wide Web, there were about 16 million users of computer networks in the world. In early 2001 there were over 400 million; steadfast predictions point to about 1 billion users in 2005, and we could be approaching the 2 billion mark by 2010, even taking into consideration a reducing down of distribution of the Internet when it enters the world of poverty and technological obstruction. The impact of Internet-based networking goes beyond the number of users: it is also the quality of use. Principal economic, social, political, and cultural activities throughout the planet are being organized by and around the Internet, and other computer networks. In fact, exclusion from these networks is one of the most harmful forms of exclusion in our economy and in our culture.

Yet, in spite of the universality of the Internet, its logic, its language, and its limitations are not well understood beyond the realm of firmly technological matters. The hustle of revolution has made it tough for scholarly research to follow the speed of change with a sufficient supply of empirical studies on the whys and wherefores of the Internet-based economy and society. Taking benefit of this relative void of reliable study, thought and gossip have filled the understanding of this fundamental dimension of our lives, as is regularly the case in periods of speedy social change. Sometimes this has been in the form of futurological forecasts based on the simplistic extrapolation of social consequences from the technological wonders emergent from science and engineering; at other times, it appears as critical dystopias, denouncing the supposedly isolating effects of the Internet before even performing it. The media, keen to inform a concerned public, but lacking the autonomous capacity to evaluate social trends with consistency, fluctuate between reporting the amazing future on offer and following the basic principle of journalism: only bad news is worthy news.

The instability of the stock market contributes to this indecisive feeling toward the Internet. Once upon a time, before April 2000, any business related to the Internet was greeted by the market with remarkably high valuation, nevertheless of its performance. By the beginning of 2001, most technology stocks were beaten by the flight of investors, again without much discrimination between good and bad management and business projections. The new financial markets are strongly affected by crowd psychology and information turbulences, rather than by a comprehensive evaluation of the fairly new conditions under which business currently works. The result of these growths is that we are entering full speed, the Internet Galaxy in a state of informed incomprehension.

The statement of departure of this study is that people, institutions, companies, and society at large, change technology, any technology, by taking it, by altering it, by testing with it. This is the fundamental lesson from the social history of technology, and this is even more so in the case of the Internet, a technology of communication. Sensible communication (human language) is what makes the biological specificity of the human species. Since our practice is based on communication, and the Internet changes the way in which we communicate, our lives are deeply influenced by this new communication technology. On the other hand, by doing many things with the Internet, we develop the Internet itself. A new socio-technical pattern develops from this communication.

WORLD INTERNET USAGE AND POPULATION STATISTICS DEC 31, 2014 - Mid-Year Update						
World Regions	Population (2015 Est.)	Internet Users Dec. 31, 2000	Internet Users Latest Data	Penetration (% Population)	Growth 2000-2015	Users % of Table
Africa	1,158,353,014	4,514,400	318,633,889	27.5 %	6,958.2 %	10.3 %
Asia	4,032,654,624	114,304,000	1,405,121,036	34.8 %	1,129.3 %	45.6 %
Europe	827,566,464	105,096,093	582,441,059	70.4 %	454.2 %	18.9 %
Middle East	236,137,235	3,284,800	113,609,510	48.1 %	3,358.6 %	3.7 %
North America	357,172,209	108,096,800	310,322,257	86.9 %	187.1 %	10.1 %
Latin America / Caribbean	615,583,127	18,068,919	322,422,164	52.4 %	1,684.4 %	10.5 %
Oceania / Australia	37,157,120	7,620,480	26,789,942	72.1 %	251.6 %	0.9 %
WORLD TOTAL	7,264,623,793	360,985,492	3,079,339,857	42.4 %	753.0 %	100.0 %

Table 2: World Internet Users

TOP 20 COUNTRIES WITH HIGHEST NUMBER OF INTERNET USERS - December 31, 2013						
#	Country or Region	Population, 2014 Est	Internet Users Year 2000	Internet Users Dec 2013	Penetration (% Population)	% Growth 2000 - 2013
1	China	1,355,692,576	22,500,000	620,907,200	45.8 %	2,659.6 %
2	United States	318,892,103	95,354,000	268,507,150	84.2 %	181.6 %
3	India	1,236,344,631	5,000,000	195,248,950	15.8 %	3,805.0 %
4	Brazil	202,656,788	5,000,000	109,773,650	54.2 %	2,095.5 %
5	Japan	127,103,388	47,080,000	109,626,672	86.2 %	132.9 %
6	Russia	142,470,272	3,100,000	87,476,747	61.4 %	2,721.8 %
7	Germany	80,996,685	24,000,000	69,779,160	86.2 %	190.7 %
8	Nigeria	177,155,754	200,000	67,319,186	38.0 %	33,559.6 %
9	United Kingdom	63,742,977	15,400,000	57,266,690	89.8 %	271.9 %
10	France	66,259,012	8,500,000	55,221,000	83.3 %	549.7 %
11	Indonesia	253,609,643	2,000,000	55,000,000	21.7 %	2,650.0 %
12	Mexico	120,286,655	2,712,400	52,276,580	43.5 %	1,827.3 %
13	Iran	80,840,713	250,000	45,000,000	55.7 %	17,900.0 %
14	Philippines	107,668,231	2,000,000	44,200,540	41.1 %	2,110.0 %
15	Egypt	86,895,099	450,000	43,065,211	49.6 %	9,470.0 %
16	Korea	49,039,986	19,040,000	41,571,196	84.8 %	118.3 %
17	Vietnam	93,421,835	200,000	41,012,186	43.9 %	20,406.1 %
18	Turkey	81,619,392	2,000,000	37,748,969	46.3 %	1,787.4 %
19	Italy	61,680,122	13,200,000	36,058,199	58.5 %	173.2 %
20	Spain	47,737,941	5,387,800	35,705,960	74.8 %	562.7 %
	TOP 20 Countries	4,754,113,803	273,374,200	2,072,765,246	43.6 %	658.2 %
	Rest of the World	2,427,744,816	87,611,292	729,713,688	30.1 %	732.9 %
	Total World Users	7,181,858,619	360,985,492	2,802,478,934	39.0 %	676.3 %

Table 3: Internet users by country

2.3. PROGRAMMING

In 1943, Thomas J. Watson, Chairman of IBM stated: "I think there is a world market for maybe five computers." A few billion computers later, there is a temptation to fall into Watson's embarrassing underestimation of the potential that computing may have on our society. In a few decades, "one computer per capita" may sound as extreme as a "world market of five computers" sounds today. Computer scientists visualize a world in which computing is universal and unified. The golden age of computing (and of computer scientists) has barely begun.

Students choose to major in computer science for a several reasons. Many of students graduate to fulfilling computer-related careers in software engineering, system administration and management, research and development in industrial and governmental laboratories. And since computer technology has changed almost all areas, many of our graduates use their computer science major to prepare them for a career in other field such as medicine, law, education, physical and life sciences, social sciences, and humanities. Demand for graduates literate in computer science is high and is expected to continue to increase as the information age booming.

Computers and software artifacts have become vital tools for the pursuit of almost every scientific discipline. The use of computers has aided biologists to understand genetics, has allowed astrophysicists to get within femtoseconds of the big bang's initial conditions, and has assisted geologists to forecast earthquakes. It is not surprising, for scientists in these field to increasingly depend on a computational methodology to make advances in their respective fields of discipline. Such scientists are regularly referred to as computational scientists. So, a computational chemist is a scientist who uses computers to make contribution to chemistry, just as a mathematical physicist uses mathematics to model atomic dynamics, or an empirical biologist uses a microscope to observe cellular behaviours. And, just like all of these scientific fields, advances in computer science itself often depend on the use of computers and

computational processes. In that sense, among all scientific fields, Computer Science is unique. It is the only discipline which drives its own advancement. Indeed it is a recursive field.

Computer Science is about problem solving. Thus, the qualities of a good computer scientist include a passion for finding elegant solutions, an ability to use mathematical analysis and logical rigor to evaluate such solutions, creativity in modelling complex problems through the use of abstractions, attention to details and hidden assumptions, an ability to recognize variants of the same problem in different settings, and being able to retarget known efficient solutions to problems in new settings.

Programming in simple definition is the writing of code to do simple, clearly defined tasks. Programs deliver expressions for describing mathematical formulae and many other things.

As we code layer upon layer in the usual way, we eventually find ourselves programming in-the-large: joining large modules to solve some possibly vague task. It becomes a challenge if the modules were never intended to work together in the first place.

Programmers need a variety of skills:

• To communicate requirements, so they solve the right problem

• To analyse problems, breaking them down into smaller parts

• To organize solutions sensibly, so that they can be understood and modified

• To estimate costs, knowing in advance whether a given approach is feasible

• To use mathematics to arrive at correct and simple solutions
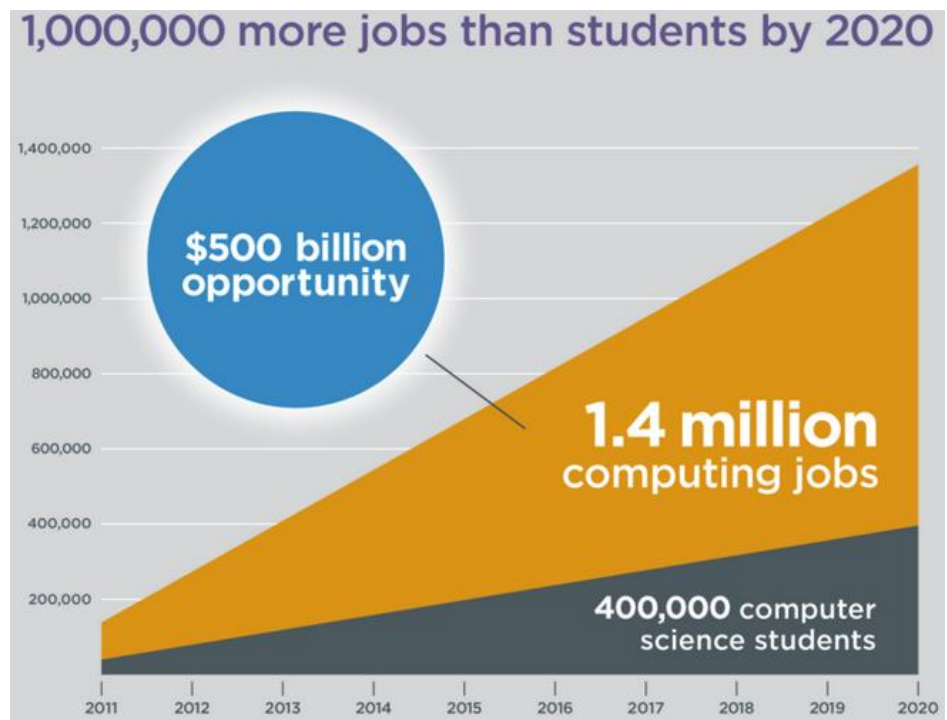
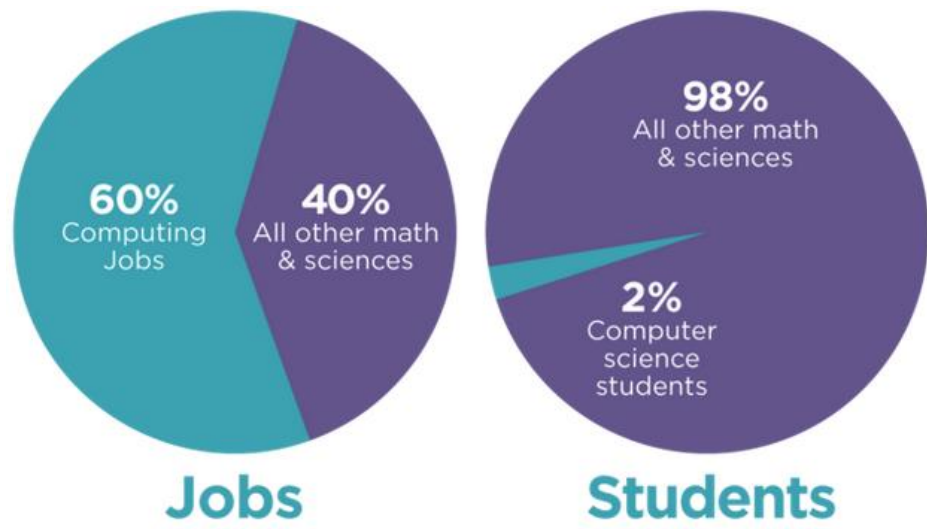*Figure 3: Job opportunity by year*

Figure 4: Student gap in filling vacancies

2.4. LEARNING PLATFORM COMPARISON

Web-based	Mobile	Conventional
Need internet connection	Depends on the server	No need internet connection
Compatible with almost all platform	Need mobile phone	Books
Flexible	Less flexible	Not flexible
Device independent	Device dependant	Device independent
Cloud server	Local server	Not applicable
Easiest maintenance	Less easy maintenance	No maintenance

2.5. INTERACTIVE

Interactive definition from Oxford Dictionary (2015), is allowing a two-way flow of information between a computer and a computer-user. Humans normally attracted to auditory and visual interaction more than plain normal static texts. Some of the characteristics that catches human eyes are:

a. Colour
b. Motion
c. Size
d. Icons/images/pictures

Mihaly Csikszentmihalyi, Distinguished Professor of Psychology and Management at Claremont Graduate University visualize the learning process for any discipline to show challenges of learning vs skills.
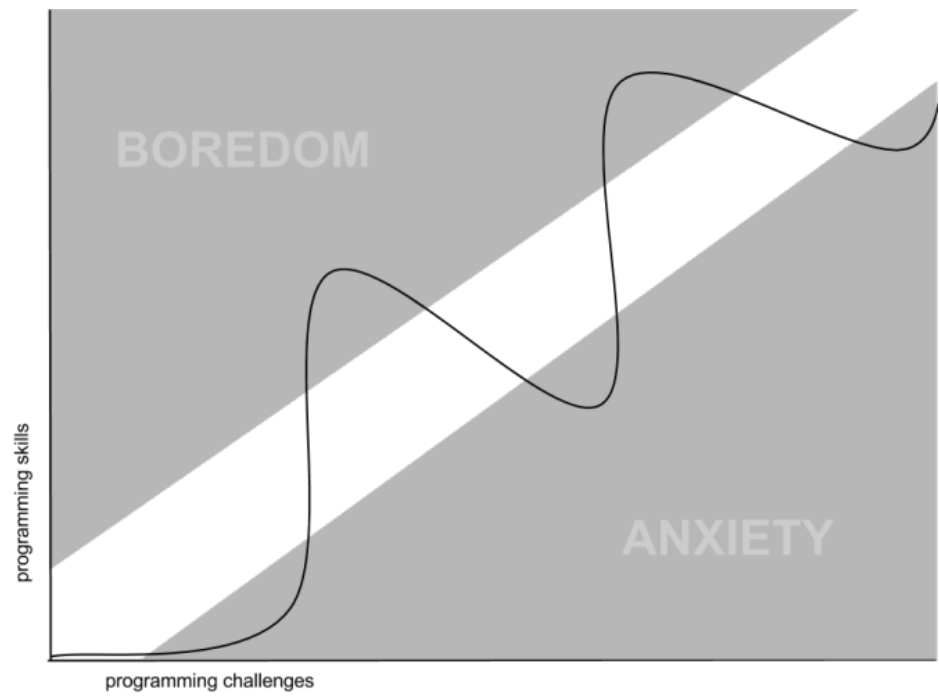
Figure 5: Adapted from an image in "Flow: The Psychology of Optimal Experience"
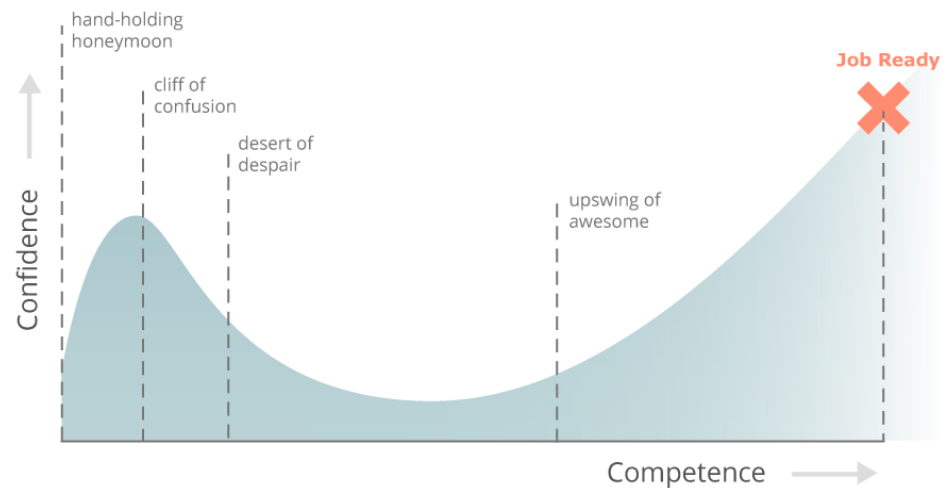
Figure 6: Coding Confidence vs Competence

In early stages of learning to code, we will find abundant resources to learn from including the huge internet. As we go past the beginner stage, resources are becoming lesser and lesser. Instead of depending on pre-made tutorials and templates, we have to more relying on textbooks and own creativity to go further or we will have less confidence to proceed. Here is when interactive come to play its role; to reduce lack of focus thus increase the effectiveness of learning to code.

E-learning activities use online technologies such as chat rooms, discussion boards, or email to assist interactions as significant exercises. These activities can be scattered throughout almost any course to introduce learners, motivate discussions, increase interactions, challenge presumptions, and achieve diverse course objectives (Watkins, 2005). From ice breakers and group exercises to online debates and guest speakers, we can use e-learning activities in online courses to involve learners and develop a more interactive learning atmosphere.

Much like the activities and games used in traditional classroom training (see Silberman, 2005; Sugar, 1998; Thiagarajan, 2003), e-learning activities can be used by instructors and trainers to accomplish a variety of goals, such as introducing learners to one another, sharing experiences, benefiting from team learning, increasing participation, or encouraging learners to develop constructive online relationships throughout the course (Watkins, 2005). As a result, many elearning

activities can be reworking of the training games used in traditional classroom education, and other activities can use the unique characteristics of the online environment to develop distinct activities for online courses.

Interactive teaching begins with a viewpoint about teaching with technology and outcomes in a new process of interactive teaching and learning. A combination of constructivism, interactive boards, and Web 2.0 tools is one model for thinking about new methods of teaching. In this context, both students and teachers are central to practice. Teachers are responsible for planning, teaching, and aiding sequences assimilated with technology. Students are responsible for building and establishing knowledge as well as collaborating with peers to create knowledge. In the planning phase, teachers imitate on what tools will enhance thought expansion for students such as the implementation of Web 2.0 tools that aid students in retrieving and processing information. In the interactive teaching phase, teachers model uses of technology to construct knowledge and exhibit theories through dynamic interactions. In the third phase, teachers facilitate knowledge construction through discourse as students join in whole class instruction. This is a reciprocal process of using technology to demonstrate and present knowledge.

There are many quotes about Web 2.0 represent an underlying concept applied to Web 2.0. The concept is about community and the ability to contribute through Web based interaction. Further, Web 2.0 conversations recommend that people who use the internet are searching, publishing, creating, demonstrating, etc. Many verbs describe Web 2.0 functionality.

As defined in a broad social context, McDermott (2007) refers to Web 2.0 as a way for users to host and present content in a variety of formats. From an educational perspective, the concept of Web 2.0 refers to using Web-based tools to allow students and teachers to interact with content in non-traditional ways. For example, the textbook with its practice exercises has been the format of choice for assigning problems in math classes and for homework. As a Web 2.0 application, a teacher uses flash based applets to demonstrate mathematical concepts in class. To extend the learning process, homework is given to students using the Web-based content. This allows students to practice interactive homework assignments that provide immediate feedback through dynamic visualization. The Language Arts teacher uses the Web 2.0 in a broader context, paralleled to current uses of the internet including the use of wikis, blogs, and podcasts. In either subject, the teacher uses the Internet to create an interactive learning experience that students would not otherwise be able to experience.

Anglin comments on Bruner's view of education: "…The acquisition of knowledge, be it the recognition of a pattern, the attainment of a concept, the solution of a problem, or the development of a scientific theory, is an active process. The individual...should be regarded as an active participant in the knowledge getting process..."
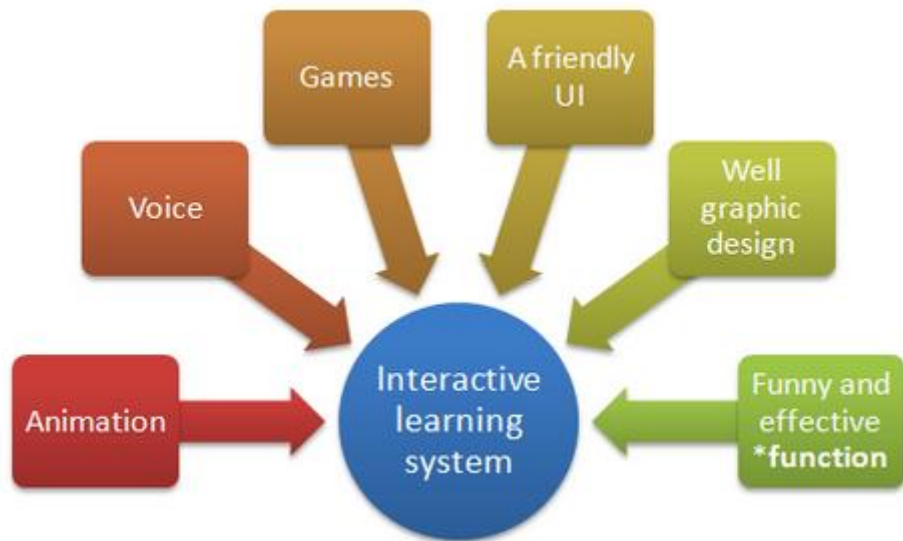
Figure 7: Elements of effective learning system

CHAPTER 3

METHODOLOGY

Methodology is a formal procedure of the project to collect and gather data to identify and solve problems. It does not have definite solutions or formulas to solve problems, but more to practicality of applying them. Methodology also be used for validating current knowledge of a specific matter. The methodology will show the development process of building the system. First part of the system will describe the detail of method of doing research and the second part will describe the development methodology.

3.1. RESEARCH METHODOLOGY

3.1.1. Problem Identification

Problem identification is very crucial to list out all the problems. This is because to clearly state why the project was chosen at the first place. From the problems, the proposed solutions can be figured out properly. The solutions proposed have to follow the SMART concept to get the best solutions. SMART is specific, measurable, attainable, realistic and timely. It has to be specific to know in detail how will the solution solve to avoid confusion and misunderstanding. Also it has to be measurable to have the quantitative data and result. Attainable and realistic also an important criteria so that it is not out of our reach and within the scope. Lastly, the proposed solution is within the time range specified to avoid extra costs.

3.1.2. Data Gathering

Data gathering is done to collect all required resources and information needed. It is important to avoid miscommunication or having data without verifying it by just assuming. Data gathering methodology can be execute in many ways, some of them are survey questionnaire, interview, observation, referencing and reading. In this project, data gathering is being done by reading and referencing. Journals, research papers, e-books, books and internet sources are all sources of the information and data gathering to come out with the best proposed solutions. With a lot of resources available nowadays, data gathering using the technology available will reduce errors and probability of human mistake due to the implementation of cross referencing between resources.

3.1.3. Comparative Study

To have the best output, comparison was done between technologies available. Some aspects were chosen to be compared such different platform and different learning system available currently. From the data collection, comparison was done to compare different platforms available. Comparison was also done between conventional learning with interactive learning system in the project. The proposed solution was not totally depends on the comparison study alone, but also a weightage was given to each characteristics. This is to know which characteristic is more important than others. During implementation phase, highest detail was given to the highest priority of the characteristic.

3.2. DEVELOPMENT METHODOLOGY

3.2.1. System Architecture and Implementation

System architecture was design at this phase to visualize how the system would be and the flow of the working of the system. The system architecture will explain how the interaction of the system with both the user and internal process of the system itself. For the user part, it will show the flow of user using the system by inserting inputs and the outputs given by the system. For the system part, it will show the flow of receiving inputs from user and interpret them to be processed and react to give the output programmed.

3.2.2. Project Testing

The whole project was developed using an iterative waterfall model. Iterative waterfall model was chosen because the development is done and reviewed in each phase. Testing is carried out to reduce risk of having error. It is important to have testing for each phase to identify problems at early stage before it's too late. It is also vital to do testing from early to always meet the requirements needed. The probability of not having to do the project from scratch is big due to testing was done in every phase.
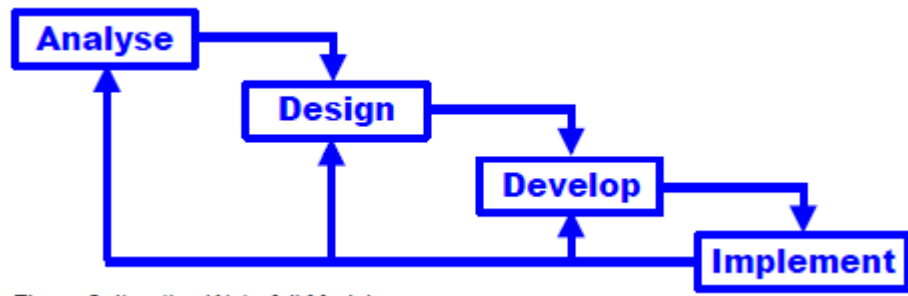
Figure 8: Iterative waterfall

Source:

3.2.3. Use Case Diagram
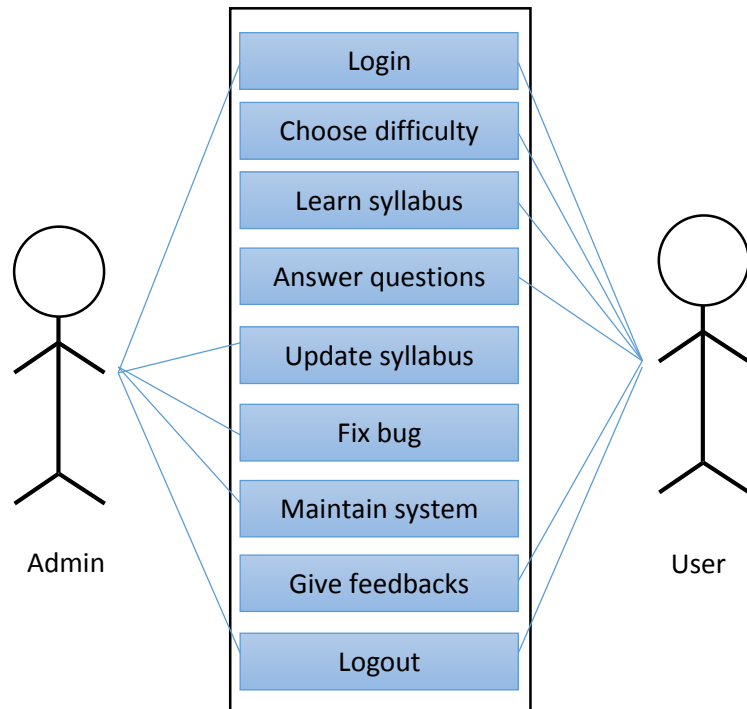
Figure 9: Use case diagram

CHAPTER 4

RESULTS AND DISCUSSION

QUESTIONNARE

Age
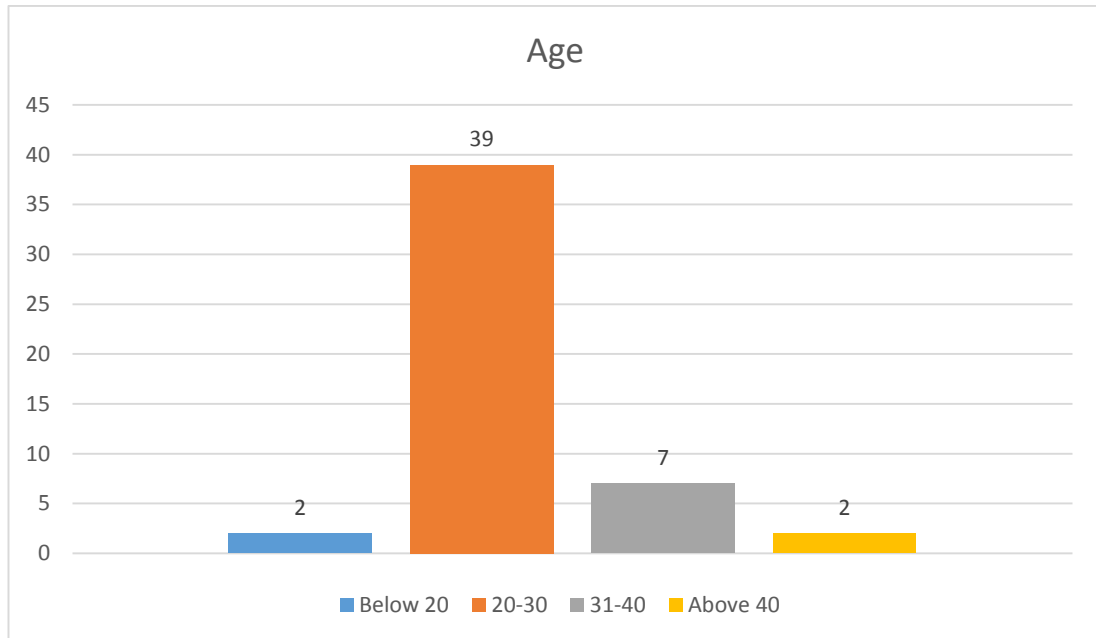
Figure 10: Age group of respondents

From the graph, most respondents are from teenager group who is still in growing development. So it is good to get responds from them who will fill in future vacancies.
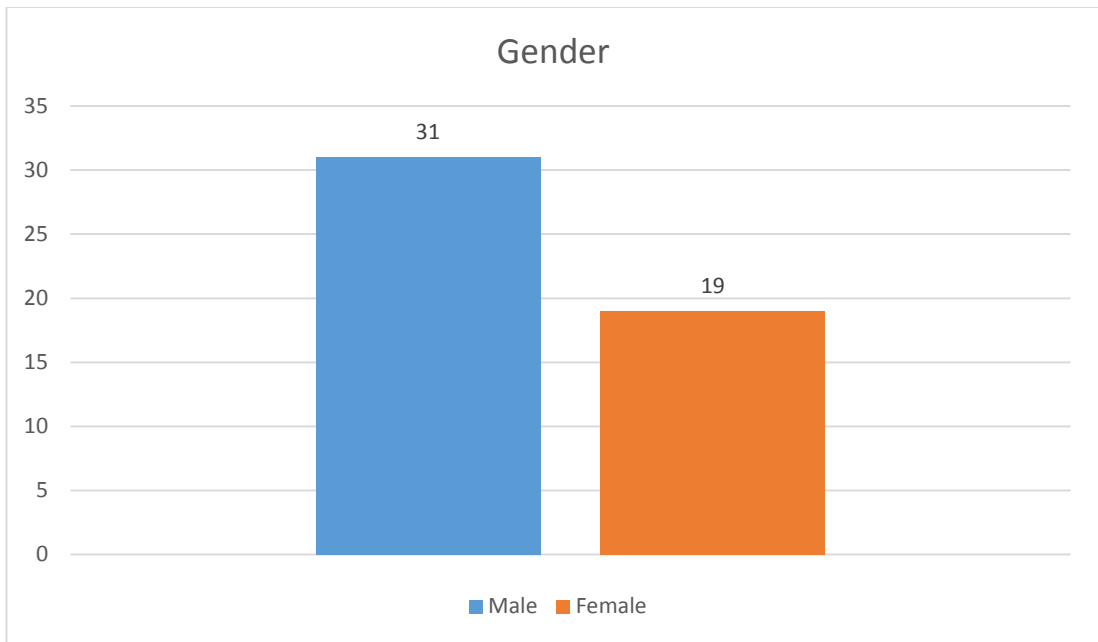
Figure 11: Gender group of respondents

Male respondents are bit more in number that female. Men have more logical thinking than women, so men are more attracted to programming and computer related things.
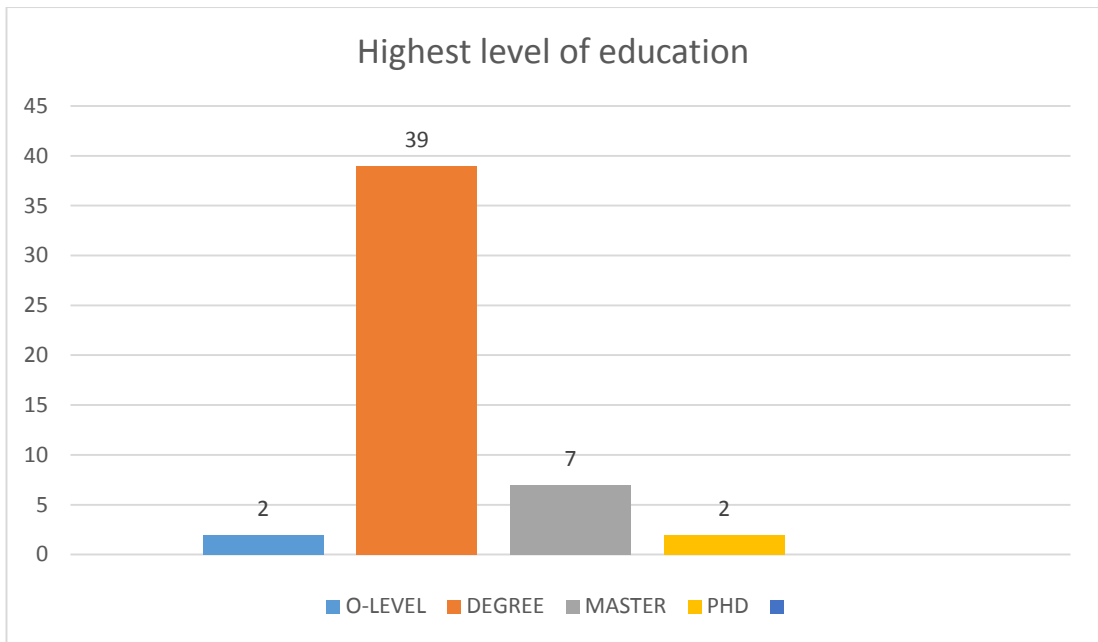
Figure 12: Education level of respondents

Degree as the highest level of education shows the highest number at 39 respondents. Target user for this learning system is this group of people as they are still in learning process and potential vacancies filler.
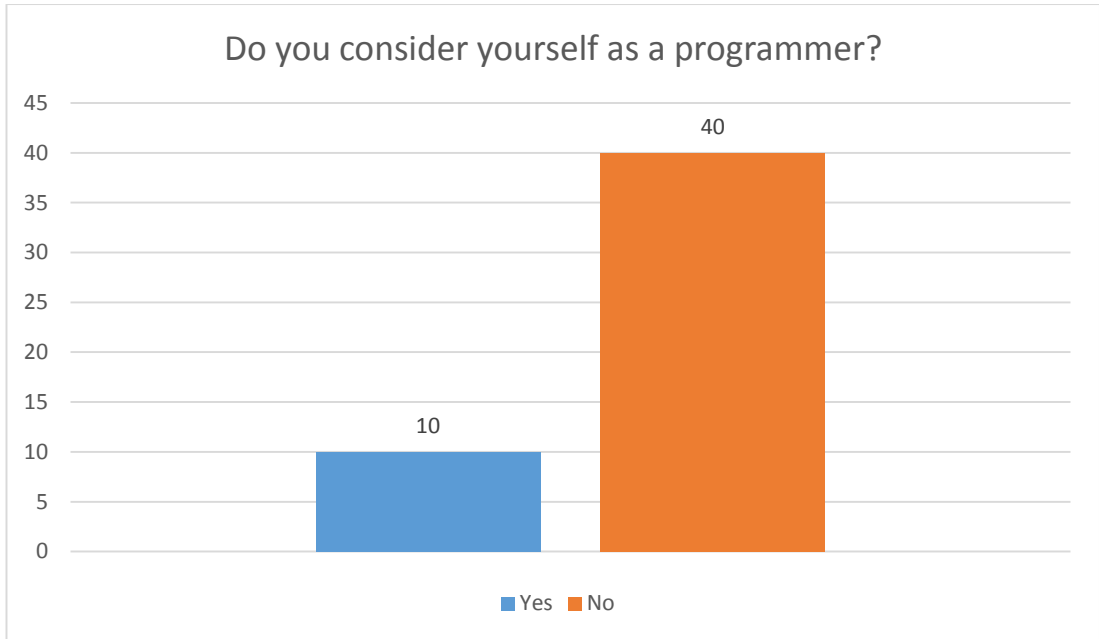
Figure 13: Respondents consideration as a programmer

80 percent of respondents do not consider themselves as a programmer. This is good as the main target user is amateur user who has no experience in programming language.
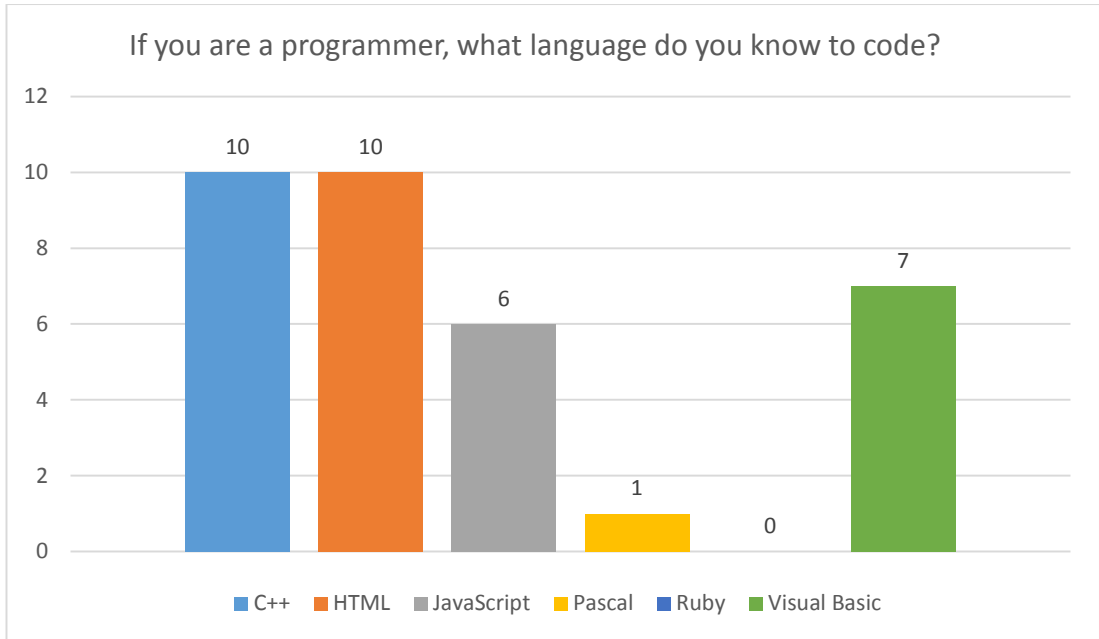
Figure 14: Programming language fluency

This question is a continuous question from previous question. Only respondents who consider themselves as a programmer will answer this question. All 10 respondents answered that they already know how to code C++ and HTML language. It can be proven that HTML is one of the basic programming language that will be teach in this learning system.
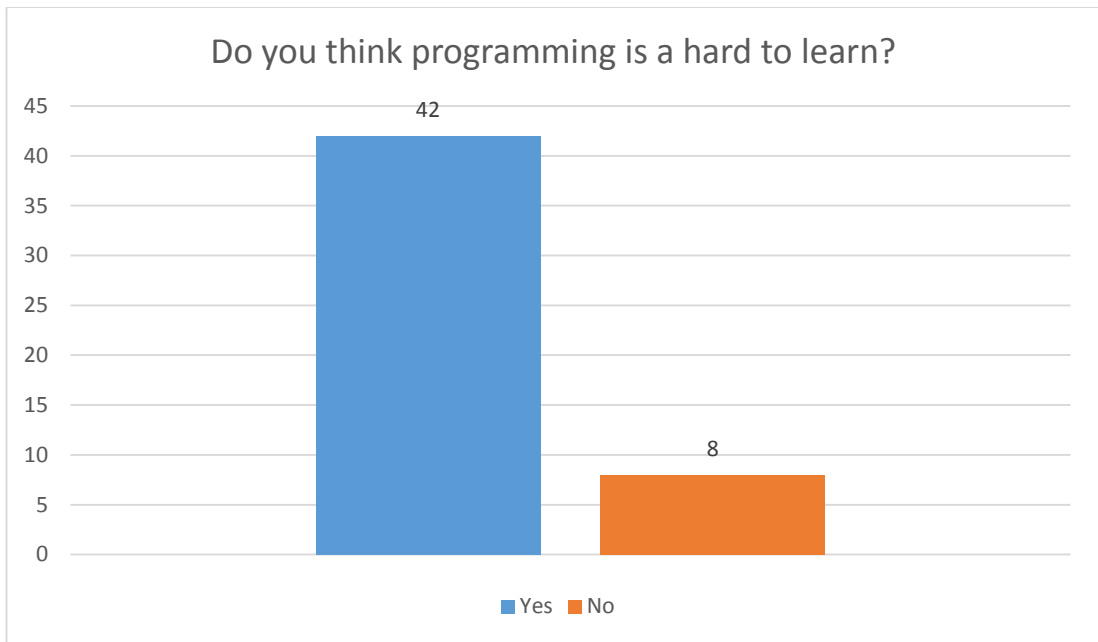
Figure 15: Difficulty of learning to code

Majority respondents agree that programming language is hard to learn. So an alternative way to learn programming language is needed than just conventional way.
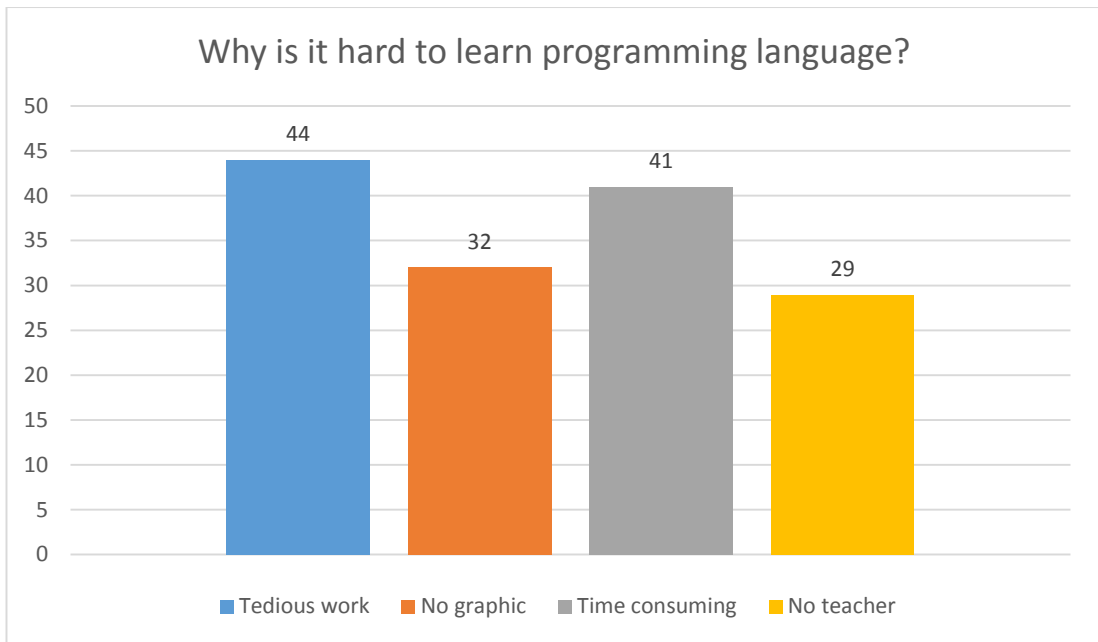
Figure 16: Reason of programming is hard

Indeed learning programming language can be very tedious and time consuming due to the detail in every each of the syntax. Absentees of graphics are also one of the factors programming is hard to learn. Learning programming can be easily bored if focus is distracted.

PROTOTYPE

Figure 17: Home page of the website

Figure 18: About us page

HTML – language of web pages

EXERCISE BOOK

Book 1: Basic

Book 2: Header

Book 3: Paragraph

Book 4: Style

Book 5: Formatting

Book 6: Links

Book 7: Images

Book 8: Tables

Book 9: Lists

Figure 19: The syllabus of learning system

CHAPTER 5

CONCLUSION AND RECOMMENDATION

Interactive HTML learning system is proposed to increase the efficiency of learning HTML language by reducing the learning curve. The system will act as a medium for amateur users to receive input and respond accordingly to have a two-ways communication between the user and the system. Users will have the option to be able to learn HTML anywhere and anytime due to the mobility of learning system and compatibility feature.

Due to time constraint, this learning system can be further improved by adding more functionalities and features to increase the effectiveness of learning through we-based. Some of the additional features to be include are audio assistant, video playback, online professional help and more programming language.

Users tend to be more interested in learning with more visual and auditory assistant. Some background music for the introduction and on-learning process can be put optional for users to listen to while using the system. Sound effects for certain button and reactions can be a great feature because users will become more eager to insert more input and continue using the system. In far more advance, users can ask for help online to professionals by either built-in messaging or video call. More programming language can also be added to further provide the users accessibility to learn more language not just HTML.

The proposed learning system has more potential to be developed with the same aim of teaching programming language in more effective way. The project has the purpose to provide learning access to amateur users in interactive two way communication.

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