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**Programming Background and Performance
of the CITCS Students in
University of the Cordilleras**

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Chapter I

A. Background of the Study

Defining first the concepts of programming will help us know the nature of programming. In this research, the readers will learn a little background about programming. Based on an on site Business Dictionary, Computer Programming is the process of developing and implementing various sets of instructions to enable a computer to do a certain task. These instructions are considered computer programs and help the computer to operate smoothly. The language used to program computers is not understood by an untrained eye. Computer programming continues to be a necessary process as the Internet continues to expand. Programming is a rich discipline and practical programming languages are usually quite complicated. Fortunately, the important ideas of programming languages are simple. (Peter Van Roy, pg 9)

In the early days of programming, there were no high-level languages. You had to write your code at the machine or assembly language level. This means that you need a lot of knowledge of

the underlying machine and there was no real abstraction over the work that the processor was doing. This led to a multiple number problems.

B. Objectives of the study:

1. To describe the profile of first year students of the CITCS students.
2. To determine the level of programming performance of the CITCS students.
3. To determine the differences of programming performance of the CITCS students based on their SHS track.

Chapter II

A. Methodology

In this section, the Researchers will explain the methods, options, and plans that they made in order to achieve a specific Data Gatherings. The researcher's target is the CITCS students (especially the CS students).

The Researcher's target was between 50-100 CITCS students who are Senior High School Graduates to survey. The researchers will make two options in conducting their survey, it could either be Online Survey or it could be Written Survey. The researchers will go to the CITCS department to conduct a survey with the college students there, the researcher will handout survey tests to college students there if the researchers will choose the written survey. If the researchers will choose the online survey, they will send a link(which is the survey questions) to the CITCS students and wait for their respondents to answer or respond. The researchers are going to make a survey test consisting of 3 items for the students to answer. Some of the questions that are in the researchers' survey questions

involve asking their Final Grade in the subject CC2 Introduction to Programming.

By surveying some of the CITCS students, the researchers will also have to face some challenges along the way of making their research.

The first challenge that the researchers will face is time management. The researchers will struggle on this one considering that they don't have much time to complete their research and pass it on time.

The second challenge that the researchers will face is financial problem, to elaborate this part, the researchers may lack the financial aspect to fund their research in terms of printing the hard copy and also printing and photocopying the survey tests for the Students and also for transportation.

The third challenge that the researchers will face is the CITCS students itself because the students' answers are not always in sync with the questions when it comes to answering the

survey test, some students will leave a question blank as to answering it honestly.

To assure that the researchers will avoid this challenges, they will think ahead of time on how they are going to conquer this challenges along the way. The researchers will divide their time to finish and accomplish their research in the given time. The researchers will plot all of their possible expense so that they will not face any lack of financial on their research. The researchers will also keep their survey questions with utmost confidentiality for the students' Identity and Dignity.

After the researchers gathers all their data (Via Survey Tests), the researchers will review the answers of the students, break it down and then compile each of the students' tracks that are similar to one another and then they will analyze the answers of the students and separate their answers. In this way, the researchers will not be confused and they will not have to face any struggles upon gathering the data and coming up with the results of the research.

Chapter III

Data Gathering/ Findings of the Study

The researchers have found the final data based on the survey "Programming background and performance of the CITCS students in the University of the Cordilleras" that was gathered.

With this survey, the researchers had successfully described the profile of the first year CITCS students by gathering their course level and year but the name would be optional if they want their identity to be anonymous. The researchers had also successfully determine the level of programming performance of CITCS students by gathering their background knowledge with regards to the programming languages listed on the survey and their grade on the subject Introduction to Programming (CC2). Lastly, the researchers had successfully determine the differences of programming performance of the CITCS students by gathering the track they had on their Senior High School days.

In accomplishing all the objectives of the research, the researchers have found out that there are 42% STEM, 4% TVL, 6% ABM, 8% GAS, 22% ICT, and 18% other (Humms, Arts and Design, Sports and None SHS Graduates) students who answered the survey.

Track	N	Average Programming Knowledge							Average Grade
		Java	PHP	Python	HTML	JS	C++	C#	
STEM	21	2	1	1	2	2	1	1	90
TVL	2	2	2	2	2	2	2	2	83
ABM	3	2	1	1	2	1	2	1	89
GAS	4	2	2	2	3	2	1	1	85
ICT	11	2	2	2	3	2	2	2	88
Others	9	2	1	1	2	1	1	1	88

Table 1.0

4 - Very Proficient

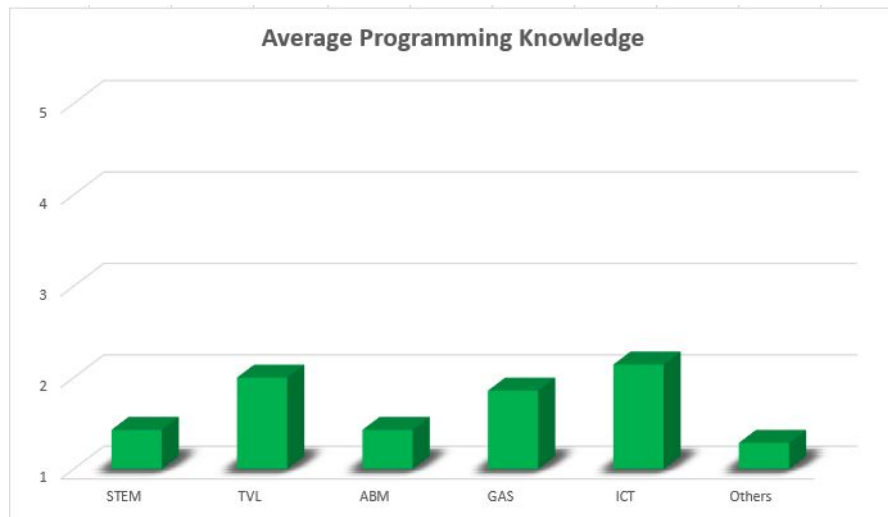
2 - Not so Proficient

3 - Proficient

1 - No Proficiency

The researchers have also found out that all CITCS students have less knowledge in Java that means that even without entering yet in the university, all first year students have known the Java language but with less knowledge and less skills that they have due to their interest that they have. The researchers had also found out that ICT and GAS track students has neutral knowledge in HTML that tells that they had

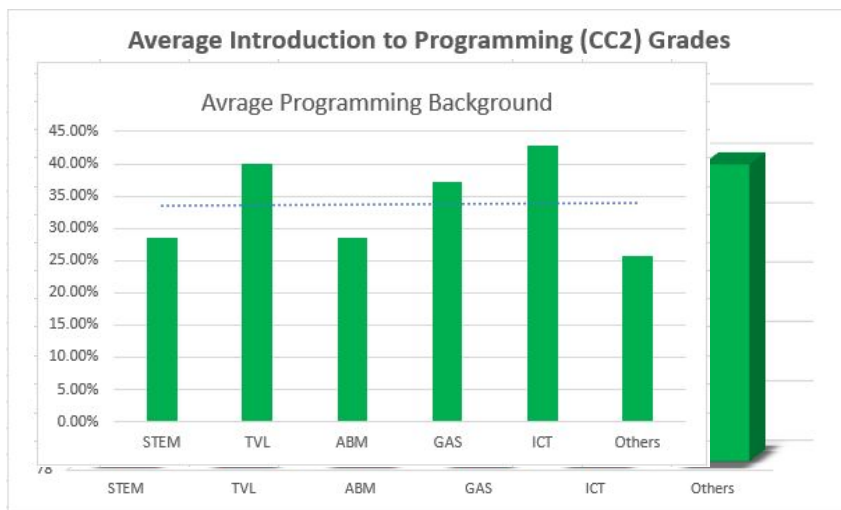
experienced encoding or developing HTML websites in their SHS day. They also found out that STEM, TVL, GAS and ICT students have less knowledge in JavaScript that tells they had met it so that they can apply it in HTML language but the ABM and other students have no knowledge due to the fact that they are more focused on their SHS track curriculum that had not yet know they JavaScript language. In the average of all first year CITCS students, all Programming Language listed on table 1.0 has a background knowledge on them except C# due to the fact that this language is never been faced in SHS.



Graph 2.0

The TVL and ICT students in average has less knowledge in all programming languages listed on table 1.0 that tells that in their SHS days, they had experienced the basics and simple

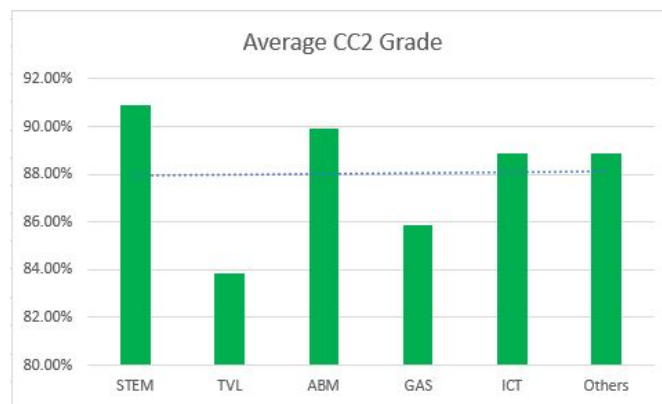
knowledge about programming due to the fact that it is a part of their curriculum. The GAS track has between the less and no knowledge on programming that tells that most GAS students still can't decide on what really are their final interest in programming. The STEM and ABM in average has a level between no and less knowledge in programming because it is not part of the SHS curriculum, it's up to the student itself if they want to learn programming on their own. Lastly, Other students on CITCS has no knowledge on programming itself, maybe because they had no interest in it or they are busy that they are more focused on other stuff rather than programming.



Graph 2.1

Knowing the average CC2 grade of all first year students will determine the interest in learning and skills that they had learn upon entering the university. The highest average grade is

the STEM and ABM students maybe because of the academic disciplines that they had experienced and the mathematical applications that can be applied in programming. ICT and other students has the second to the highest average grade that maybe tells they have already background in programming but have less disciplines in the aspects of mathematical applications that can applied in programming but have the skills to do programming. Lastly, the GAS and TVL students have maybe really no interest in programming or learns programming hard enough for them because they are more focused and trained on the skills that they had gained in their SHS days that has no cover in programming at all.



Graph 3.0

The predicted Average programming background and average CC2 (Introduction to programming) grade tells that SHS and non SHS tracks does not affects the grade and background of programming upon and before entering the university.

Chapter IV

A. Conclusion

Based on the results and objectives of the study, the conclusions are as follows:

1. The average programming knowledge on all CITCS students before entering the university defines the interest and curriculum in the SHS days.
2. The different programming languages listed on table 1.0 with regards to all CITCS students defines the interest in self learning capabilities and also defines the popularity of the language in their SHS days.
3. The average Introduction to programming (CC2) grade with regards to all CITCS students tells the different SHS and non SHS tracks disciplines and skills that they had gained before entering in the university that can be applied in programming.

B. Recommendations

Based on the results and objectives of the study, these are the recommendations and tips that can be recommended in the CITCS:

1. Based on the data that has been found, the instructors of the CITCS will group the first year students based on their SHS track so that they can apply programming based on the disciplines that they had gained on their SHS days.
2. The instructors must teach python as their first programming language in entering in the university because Java is very popular that all first year students has small knowledge on it and also most of the SHS and non SHS students does not know python yet including ICT students and lastly python is a powerful language that can boost the creativity, knowledge, skills that can be applied in the real life situation based on the skills that they had gained on their SHS days.

C. Appendices

Attached here is the summary and the original surveyed paper that has been answered in 50 first year CITCS students.

Summary:

Students	Rating of programming languages based on background and knowledge before entering in the university							Grade	STEM
	Java	PHP	Python	HTML	JS	C++	C#	CC2	
S2	3	3	2	3	2	1	2	98	
S4	1	1	1	2	1	1	1	84	
S9	3	1	1	4	3	1	4	96	
S11	2	1	1	3	2	1	1	99	
S12	3	1	1	3	3	3	1	89	
S13	4	1	2	3	2	1	1	91	
S14	1	1	1	1	1	1	1	81	
S20	3	1	1	3	3	1	1	89	
S22	1	1	1	1	1	1	1	82	
S24	1	1	1	1	1	1	1	80	
S25	2	1	1	1	1	1	1	92	
S29	1	1	1	1	1	1	1	90	
S30	1	1	1	1	1	1	1	90	
S31	1	1	1	1	1	1	1	90	STEM

S35	3	2	2	3	2	1	1	85	
S39	2	1	1	3	1	1	1	88	
S41	3	1	1	1	1	1	1	97	
S42	4	3	3	4	2	4	3	98	
S43	3	1	1	3	1	3	1	96	
S46	2	1	1	2	1	2	1	90	
S48	2	2	2	3	2	2	2	80	
S44	2	2	2	3	3	2	2	83	
S47	1	1	1	1	1	1	1	82	TVL
S1	2	1	1	1	1	3	1	95	
S36	1	1	1	1	1	1	1	89	
S50	3	1	1	3	2	1	1	84	ABM
S3	3	2	2	3	2	2	2	92	
S32	2	1	1	3	1	1	1	85	
S33	2	2	2	3	2	1	1	78	
S34	1	1	1	1	1	1	1	85	GAS
S5	4	4	3	2	3	1	1	90	
S6	3	1	1	4	1	1	3	92	
S8	3	1	1	4	1	2	2	89	
S15	3	2	2	4	3	2	2	88	
S16	2	2	2	3	2	3	2	84	
S19	2	2	2	3	3	2	2	90	ICT

S23	1	1	1	4	1	1	1	80	
S26	3	1	1	1	3	1	1	80	
S27	1	1	1	1	1	1	1	90	
S28	1	1	1	1	1	3	3	91	
S45	3	2	2	2	2	1	1	90	
S21	1	1	1	1	1	1	1	82	Humms
S10	3	1	1	2	2	2	2	97	Arts &Design
S37	2	1	1	2	1	1	1	85	Sports
S7	3	1	1	3	2	1	1	87	
S17	1	1	1	2	1	1	1	91	
S18	3	1	2	2	1	1	1	90	
S38	1	1	1	4	2	1	1	98	
S40	1	1	1	1	1	1	1	79	
S49	3	2	3	3	1	1	1	87	Non SHS

Reference:

Computer Programming

<http://www.businessdictionary.com/definition/computer-programming.html>

Programming Paradigms for Dummies: What Every Programmer Should Know

<https://www.info.ucl.ac.be/~pvr/VanRoyChapter.pdf>

A Brief History of Programming

<https://becoming-functional.com/a-brief-history-of-programming-c13d87b79337?gi=d0ed53518b26>