# Mathematics! Should it still be a prerequisite to pursue computer science?

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# 1 Executive summary

The aim of this study was to determine whether a student needs to be good at mathematics to excel in computer science. This report examines the impact of a student's mathematical background on their academic performance and programming expertise as well.

# 2 Introduction

Computer science involves studying algorithms. While pursuing the programme, it becomes apparent that algorithms and mathematics go hand in hand. This is why in the current computer science curriculum, mathematics is almost omnipresent. Students are introduced to various mathematical concepts such as calculus, numerical methods and discrete mathematics. Thus passing mathematics at the lower levels has over the years been a pre-requisite before one can pursue computer science in any reputable university across the globe.

The purpose of this study was to determine whether a student needs to have a good mathematical background in order to excel in computer science. This study was focused around computer science students in reputable institutions of higher learning in Uganda.

# 3 Methodology

Most of the information was obtained by interviewing several computer science students. A questionnaire was developed and this was used to build an ODK form with a number of vital field types such as media, text, number (integer and floating point).

The built form was later on transferred to an android phone that had the ODK collect application installed on it. ODK Collect was formidable during the data collection process since we could easily transfer data to the aggregate server.

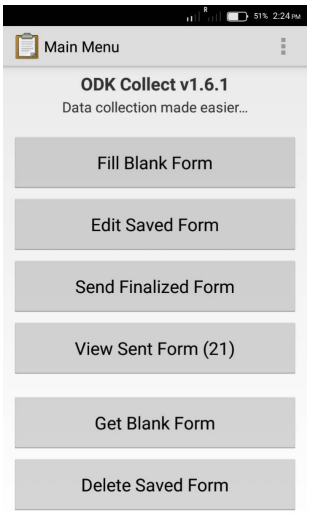


Figure 1: ODK Collect mobile application

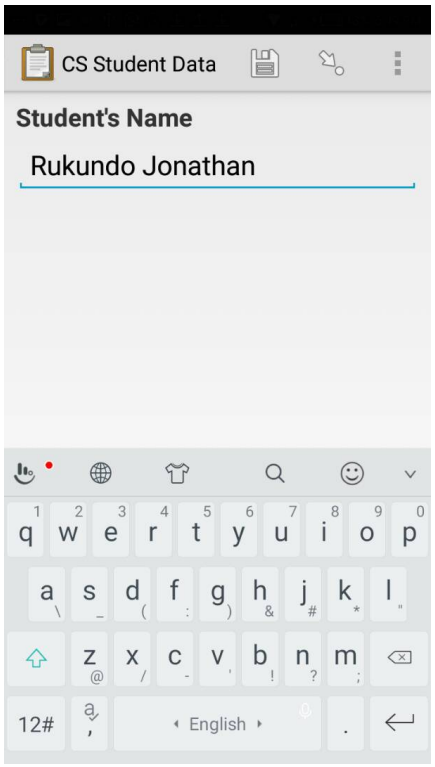


Figure 2: Student's Name

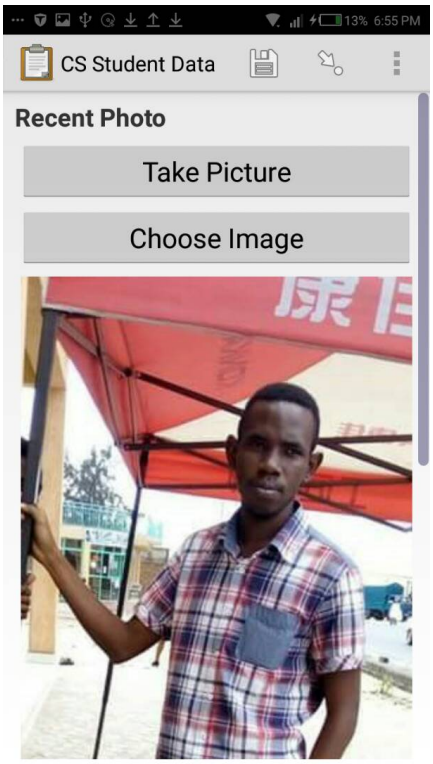


Figure 3: Student's Photo

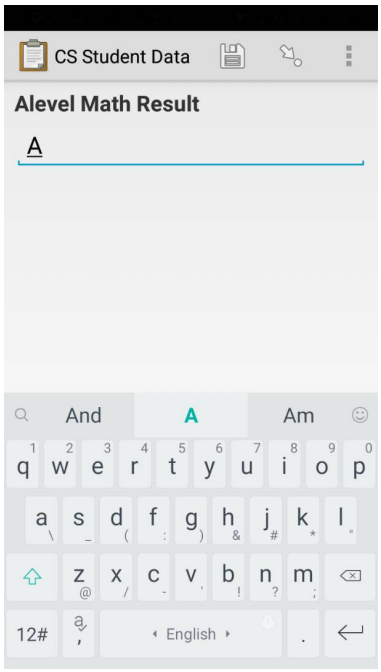


Figure 4: Alevel Maths grade

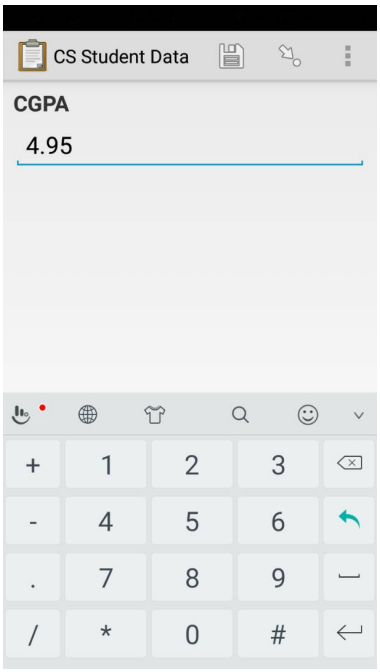


Figure 5: Student's GPA

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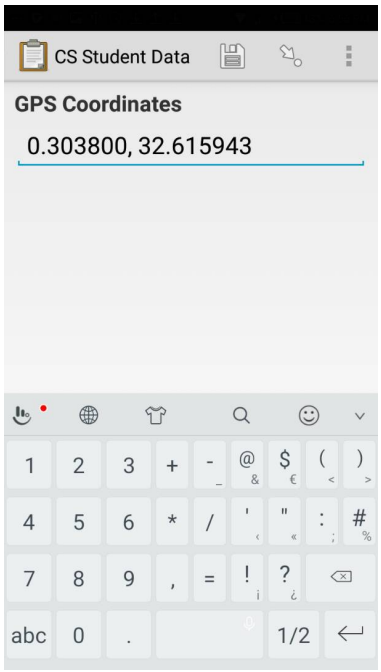


Figure 6: GPS Coordinates

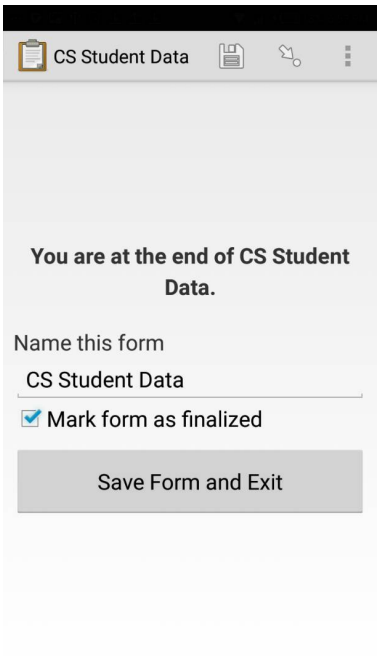


Figure 7: Save Form

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# 4 Results/Findings

Visualizations were created out of the data uploaded to the aggregate server. A thorough analysis was then made to reach a number of conclusions.

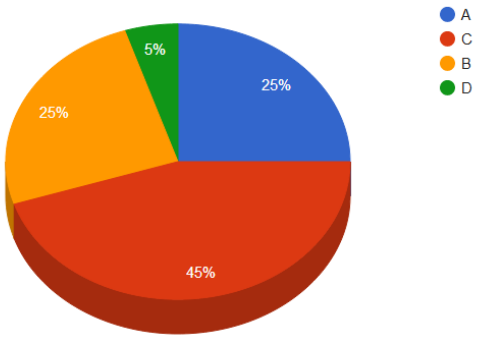


Figure 8: Evaluating students basing on their Alevel grade;

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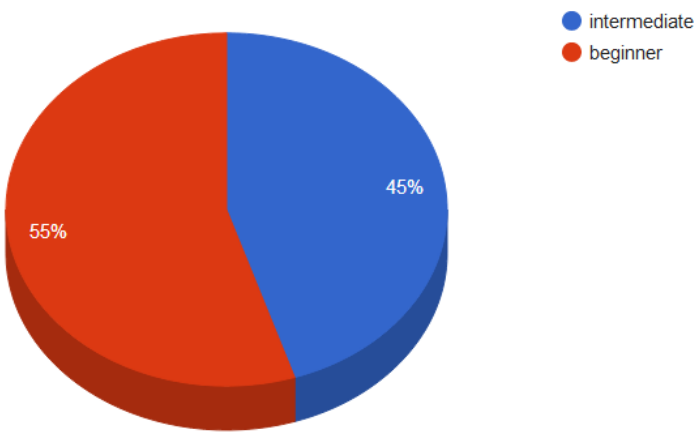


Figure 9: Evaluating students basing on their programming expertise;

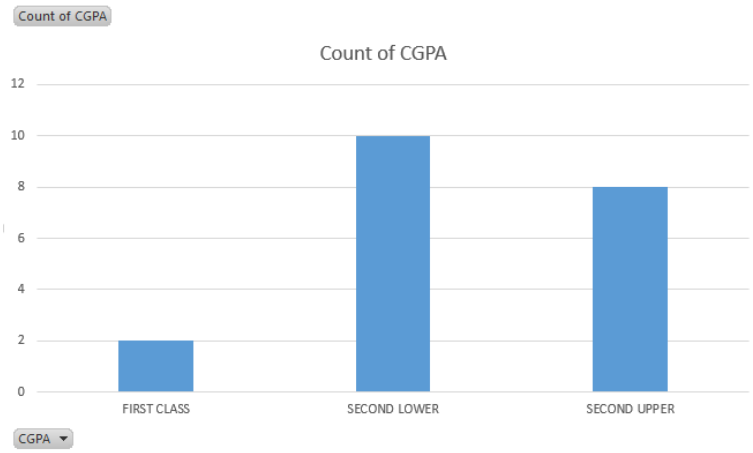


Figure 10: Evaluating students basing on their GPA;

# 5 Discussion/ Interpretation of Results

According to the findings, the majority of students that were admitted to pursue computer science had a math grade of C. A fair share of students admitted had either an A or a B. Relatively few students had a D. This implies that most of the students that were admitted were at least fairly good at mathematics.

A bigger share of the students (55%) were regarded as beginner programmers while the rest (45%) were ranked under intermediate programmers.

50% of the students had a second class lower, followed by the 40% that had a second class upper and the remaining 20% had first class degree

# 6 Conclusion

In general, we see a positive correlation between the students performance and their Alevel Mathematics grades. This implies that students that were admitted with a good math grade had a higher chance of excelling in computer science. However the students math grade didnt have a direct impact on their programming expertise.

# 7 Recommendation

I recommend that more emphasis is put on the practical bit especially when it comes to programming and the minimum Alevel mathematics result that is required to pursue computer science be set to a C.