**A Level computer Science**

Component 3

Physics Homework App

Perhaps a Logo / Picture

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Table of Contents

[Chapter One: Analysis of the problem 3](#_Toc170652012)

[1.1 Problem Identification 4](#_Toc170652013)

[1.2 Possible Computational Methods 5](#_Toc170652014)

[1.3 Stakeholders analysis 6](#_Toc170652015)

[1.3.1 Stakeholder Introduction 6](#_Toc170652016)

[1.3.2 Stakeholder Interview 6](#_Toc170652017)

[1.3.3 Stakeholder Conclusion 7](#_Toc170652018)

[1.4 Research of solutions for similar problems 8](#_Toc170652019)

[1.5 Hardware and software requirements 9](#_Toc170652020)

[1.6 The requirements of the solution 10](#_Toc170652021)

[1.7 Features of the solution 11](#_Toc170652022)

[1.8 Success Criteria 12](#_Toc170652023)

[1.9 Limitations of the solution 13](#_Toc170652024)

# Chapter One: Analysis of the problem

## Problem Identification

While studying Physics at A-Level, we used multiple websites to do our homework. This was due to the fact that all of the different websites had their own flaws. The main flaw that I found is that no website that is available to us allows for both calculations and long answers to be entered as answers.

This is an example of a website allowing to answer a calculation question. As you can see in this example, you can only enter a value as an answer and then the website tells you if it is right or wrong. This is a big problem because, if you get the question wrong, you and your teacher will not be able to see where the problem in the calculation is and how to fix it.



As shown in this example, this particular website allows for a long answer to be entered as an answer. However, the limitation of this is that when you are marking your answer, it can only be marked as right or wrong. The solution to this problem is to allow the student to give their answer a mark, by checking their answer against the mark scheme, out of the number of marks that the teacher set. This will allow the student to see what they would score in the real exam.

## 1.2 Possible Computational Methods

## 1.3 Stakeholders analysis

1.3.1 Stakeholder Introduction

The demographic for my project is for teachers and students in the Physics A-Level. For my stakeholders I picked one Physics teacher and three Physics students. The teacher stakeholder is {INSERT LATER} and my student stakeholders are Ali, {INSERT REST LATER}.

I asked each group of stakeholders seven questions. I asked the teacher group the following questions:

1. What resources do you currently use to set physics homework?
2. What are some good features of the current resources that you use?
3. What are some bad features of the current resources that you use?
4. If a new homework website was made, what would you like to see included in it?
5. As a teacher, what are the biggest challenges when setting and marking homework?
6. What would make the website easier to navigate for you?
7. Anything you would like to add that wasn’t included in the questionnaire?

I asked the student group the following questions:

1. What resources do you currently use for your physics homework?
2. What are some good features of the current resources that you use?
3. What are some bad features of the current resources that you use?
4. If a new homework website was made, what would you like to see included in it?
5. What would make the website easier to navigate for you?
6. How can the website motivate you to do your homework?
7. Anything you would like to add that wasn’t included in the questionnaire?

1.3.2 Stakeholder Interview

{ADD TEACHER INTERVIEW HERE WHEN DONE}

My first student stakeholder interview was with a student called Ali. He currently does Computer Science, Maths and Physics at A-Level. His responses were as follows:

What resources do you currently use for your physics homework?

“I currently use Isaac Physics and Carousel Learning for my homework”

What are some good features of the current resources that you use?

“I really like that there is a menu that allows you to review new and completed assignments. I also really like that there are hint options for when I am struggling with a question”

What are some bad features of the current resources that you use?

“One thing I dislike about Carousel Learning is that if I accidently go to the next question, I can’t go back to the previous question. I also really dislike that I can’t do theory questions on Isaac and calculations on Carousel which makes it really inconvenient to do my homework. Another thing I dislike about my current resources is that I don’t get notifications when new homework is set.”

If a new homework website was made, what would you like to see included in it?

“I would really like to see a feature that show how much progress I am making on my homework and how much progress I am making overall.”

What would make the website easier to navigate for you?

“My current resources have a bunch of useless stuff on the screen which makes it hard to navigate so I think a clean UI and design would make the website easier to navigate for me.”

How can the website motivate you to do your homework?

“A point reward system or a praise system when I get a question right and also a class leaderboard to see where I am compared to my classmates”

Anything you would like to add that wasn’t included in the questionnaire?

“No”

{ADD REST OF STUDENT INTERVIEWS WHEN DONE}

1.3.3 Stakeholder Conclusion

## 1.4 Research of solutions for similar problems

*How they work?*

*Potential features/components/approaches that may be borrowed? why?*

## 1.5 Hardware and software requirements

Hardware

Software

## 1.6 The requirements of the solution

## 1.7 Features of the solution

## 1.8 Success Criteria

## 1.9 Limitations of the solution