



اَبُو سَيِّدِي تَكُونُ لَو كُنْ اَنَا
UNIVERSITI
TEKNOLOGI
MARA



PROCEEDINGS OF JOHOR INTERNATIONAL INNOVATION INVENTION COMPETITION AND SYMPOSIUM 2024 (JIIICaS 2024)



*"Flourish and Nurturing Sustainable
Innovation for a Prosperous Nation"*

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Preface

In the name of Allah, the Almighty who gives us the enlightenment, the truth, the knowledge and with regards to Prophet Muhammad (peace be upon him) for guiding us to the straight path. We thank to Allah for giving us guidance and strength to write this e-book.

This e-book compiles the extended abstracts that submitted to Johor International Innovation Invention Competition and Symposium 2024 (JIIICaS2024), where JIIICaS2024 is a virtual platform for all creative minds to share and present their invention and innovation. Each abstract gives a brief background on the innovation or project.

We hope that this e-book will help the readers to get to know the innovation done by the students and get some ideas to develop future innovation products.

Foreword Rector



Assalamualaikum warahmatullahi Wabarakatuh,
Salam Sejahtera, Salam Malaysia MADANI and
Salam UiTM Dihatiku.

In the name of Allah, the Most Gracious, the Most
Merciful.

It is a great honor to welcome you to the Johor
International Innovation, Invention, Competition, and
Symposium 2024 (JIIICaS 2024). This event

connects various disciplines, focusing on education and engaging educators,
students, researchers, and innovators from all walks of life.

Innovation is not just about ideas; it demands perseverance, creativity, and
determination to turn those ideas into reality. The remarkable projects
showcased today highlight the dedication and spirit of all participants.
Initiatives like this not only explore new technologies but also cultivate skills
and leadership among our youth. At Universiti Teknologi MARA (UiTM) Johor
Branch, we are fully committed to fostering a dynamic culture of innovation,
promoting the commercialization of new products, and encouraging
meaningful collaborations with industry and society.

As we celebrate this event, I would like to extend my heartfelt gratitude to all
sponsors, judges, the College of Computing, Informatics and Mathematics,
UiTM Pasir Gudang Campus as the event organizer, as well as to the
researchers and participants for their hard work in making this event a
success. Let us continue striving for innovation and excellence. May the
ideas presented today inspire us and lay the groundwork for future
achievements.

Thank you.

Associate Professor Dr. Saunah Zainon
Rector
Universiti Teknologi MARA (UiTM)
Johor Branch

(A-SS053) EDUCALC: STREAMLINED GRADE CALCULATION USING VBA

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ABSTRACT

EduCalc is developed to address the inefficiencies and inaccuracies in manual student grade calculation, offering a streamlined solution using Visual Basic for Applications (VBA). The innovation highlights traditional grade management methods' time-consuming and error-prone nature, identifying the primary problem as needing an automated, reliable system to handle grade calculations efficiently. EduCalc utilizes VBA to automate grade entry, customize grading criteria, and minimize errors during the data entry process. The commercial value of EduCalc lies in its seamless integration with Microsoft Excel, making it a scalable and adaptable tool for educational institutions of various sizes. The significance of this innovation is its ability to drastically reduce administrative burdens, enhance data accuracy, and improve overall educational outcomes. In conclusion, EduCalc exemplifies the potential of VBA in educational technology, offering a practical, user-friendly, and impactful solution for modern educators, thereby fostering a more efficient academic environment.

Keywords: VBA, streamlined, automated grade entry

1.0 INTRODUCTION

Efficient and accurate grade calculation is crucial for educators. However, traditional methods often involve time-consuming manual processes prone to errors. EDUCALC, a grade calculation tool developed using Visual Basic for Applications (VBA), offers a streamlined solution. VBA, integrated within Microsoft Office applications, enables the automation of repetitive tasks and the creation of custom functions, improving the grading process into a more efficient, reliable system and interactive (Wang & Shen, 2014).

This innovation examines the development and implementation of EDUCALC, emphasizing its design, features, and advantages. Through case studies and user feedback, the innovation evaluates how EDUCALC reduces administrative workload, minimizes errors, and improves the grading experience (Tsai & Wardell, 2006a). By leveraging VBA, EDUCALC enhances operational efficiency and contributes to a fairer assessment system, demonstrating the potential of automation in educational technology.

2.0 OBJECTIVE

This innovation aims to present EduCalc as a streamlined tool developed using Visual Basic for Applications (VBA) to address inefficiencies and inaccuracies in manual grade calculations by automating grade entry, customizing grading criteria, and minimizing data entry errors. It can also predict the marks needed to achieve the desired grade.

3.0 METHODOLOGY

EduCalc is a tool for automating grade entry, customizing grading criteria, and minimizing errors during data entry (Tsai & Wardell, 2006b). It was developed using Visual Basic for Applications (VBA). A comprehensive methodology was followed to develop and implement EduCalc, a streamlined grade calculation tool using VBA. Initially, a survey and interviews were conducted with educators to identify the assessments needed for the development of EduCalc. The main objective was to discover and understand the most significant inefficiencies in current grading methods. The tool was designed with user input to include features such as automated grade entry and customizable grading criteria. The development phase involved programming the tool in VBA and integrating it with Microsoft Excel while implementing error-checking mechanisms to minimize data entry mistakes. Extensive testing was conducted in various educational settings to ensure functionality, accuracy, and user-friendliness. The feedback from these tests led to making iterative improvements. As a result, a final version was achieved that was both scalable and adaptable. The tool was used in selected institutions, and its impact on reducing administrative workload and enhancing grading accuracy was analysed through quantitative and qualitative feedback. The flowchart in Figure 1 illustrates the development process of EduCalc. Based on feedback from educators, EduCalc was developed using VBA. The interface is shown in Figure 2.

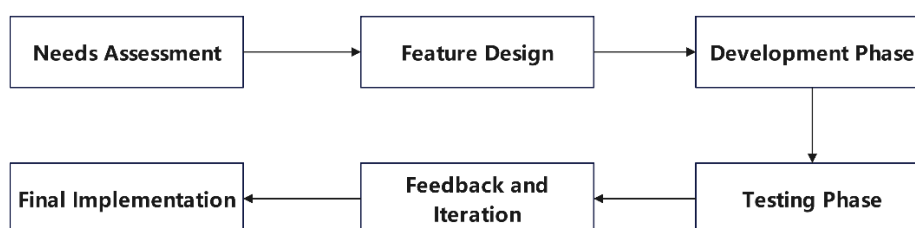


Figure 1: EduCalc Development Process

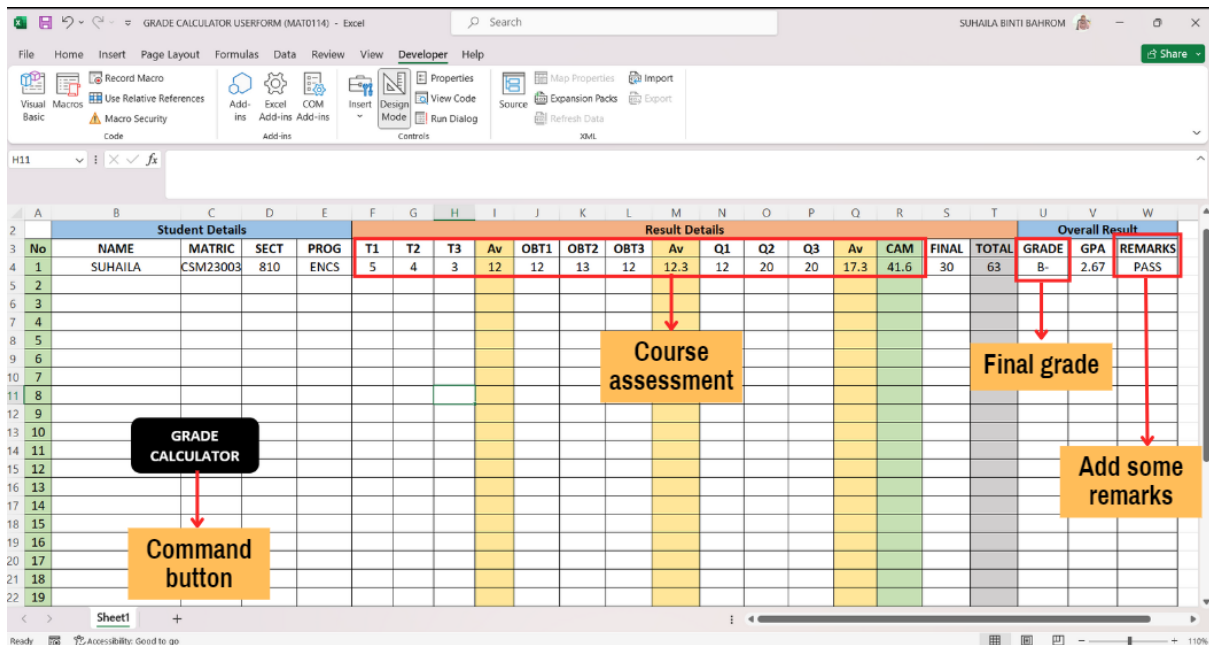


Figure 2: EduCalc Interface

The items needed in the interface were recorded. Then, the user form was created to streamline data entry, validate real-time inputs, and present a professional interface for users to interact with the application seamlessly. The user form will pop up once the button on the interface is clicked, as shown in Figure 3. This interaction allows users to input data directly into the form, which is processed and validated before submission. The results are displayed or saved based on the form's functionality, ensuring a smooth and efficient data management experience. The coding was created to handle the User Form interactions, including initializing form controls, validating user input, and processing the data upon submission. It ensures that the form behaves as expected, responding to user actions and updating the relevant data or interface elements accordingly. The code example is depicted in Figure 4.

The screenshot shows the 'GRADE CALCULATOR MAT0114' user form. The form is divided into two main sections: 'Student Details' and 'Result Details'. The 'Student Details' section includes fields for Name, Matric No, Section No, and Programme. The 'Result Details' section includes fields for TUTORIAL 1, TUTORIAL 2, TUTORIAL 3, OBT 1, OBT 2, OBT 3, QUIZ 1, QUIZ 2, QUIZ 3, Average Tutorial (15%), Average OBT (15%), Average QUIZ (20%), CARRY MARK (50%), FINAL EXAM (/ 70), and TOTAL MARKS (50-50). The 'Overall Result' section includes fields for GRADE, POINT VALUE, and REMARKS. A 'CALCULATE' button is located at the bottom left, a 'RESET' button at the bottom center, and an 'EXIT' button at the bottom right.

Student Details				Result Details												Overall Result					
Name	Matric No	Section No	Programme	TUTORIAL 1	TUTORIAL 2	TUTORIAL 3	OBT 1	OBT 2	OBT 3	QUIZ 1	QUIZ 2	QUIZ 3	Average Tutorial (15%)	Average OBT (15%)	Average QUIZ (20%)	CARRY MARK (50%)	FINAL EXAM (/ 70)	TOTAL MARKS (50-50)	GRADE	POINT VALUE	REMARKS
SUHAILA	CSM23003	810	ENCS	0	0	0	0	0	0	0	0	0					0				

Figure 3: EduCalc User form

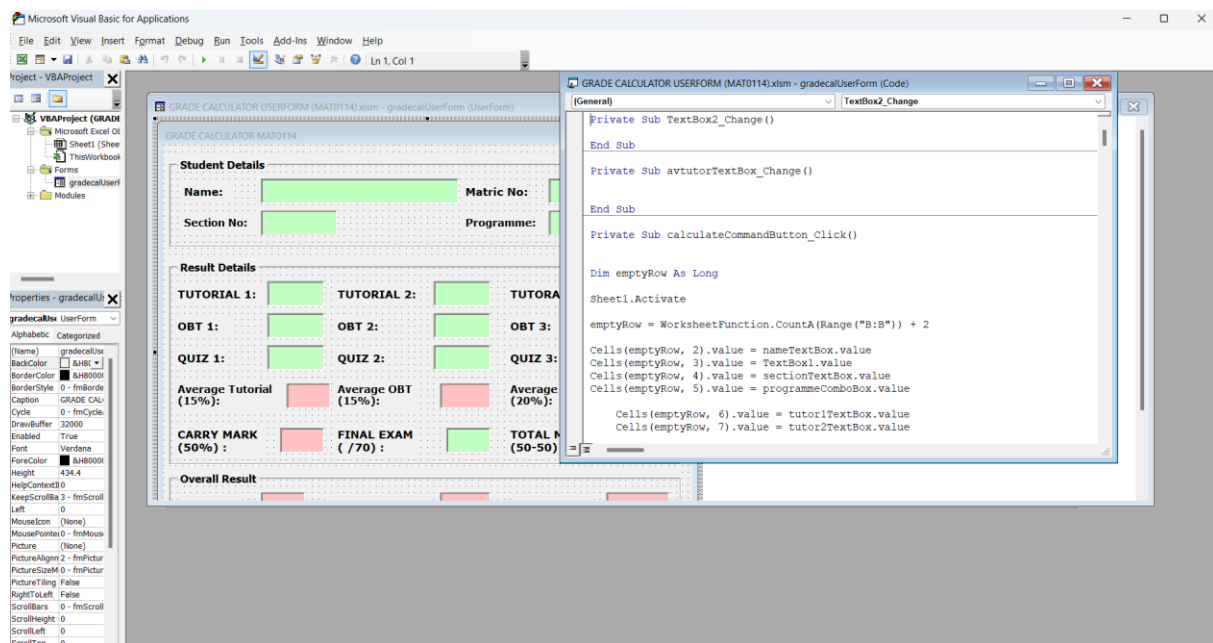


Figure 4: EduCalc Coding

4.0 RESULTS AND DISCUSSION

Implementing EduCalc has shown significant advantages and positive impacts, including drastically reducing the time and effort required for grade calculation by automating repetitive tasks and minimizing data entry errors (Sipos & Sweeney, 2003). This automation leads to enhanced accuracy and consistency in grading, which fosters greater transparency and fairness in student assessments. The novelty of EduCalc lies in its seamless integration with Microsoft Excel, making it uniquely adaptable and scalable for diverse educational environments. Its customizable grading criteria feature allows educators to tailor the tool to their needs, ensuring flexibility and user-friendliness (Rohaeti et al., 2019). Feedback from initial deployments has indicated improved efficiency in administrative tasks and higher satisfaction among educators, illustrating the transformative potential of leveraging VBA for educational innovations.

5.0 CONCLUSION

In conclusion, EduCalc, developed using Visual Basic for Applications (VBA), represents a significant advancement in educational technology by automating and streamlining the grade calculation process. Through its features of automated grade entry, customizable grading criteria, and error minimization, EduCalc addresses the inefficiencies and inaccuracies inherent in traditional grading methods. Its seamless integration with Microsoft Excel ensures scalability and adaptability across various educational institutions. By reducing administrative burdens and enhancing data accuracy, EduCalc not only improves overall educational outcomes but also demonstrates the potential of VBA in creating practical, user-friendly solutions for modern educators, fostering a more efficient and effective academic environment.

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