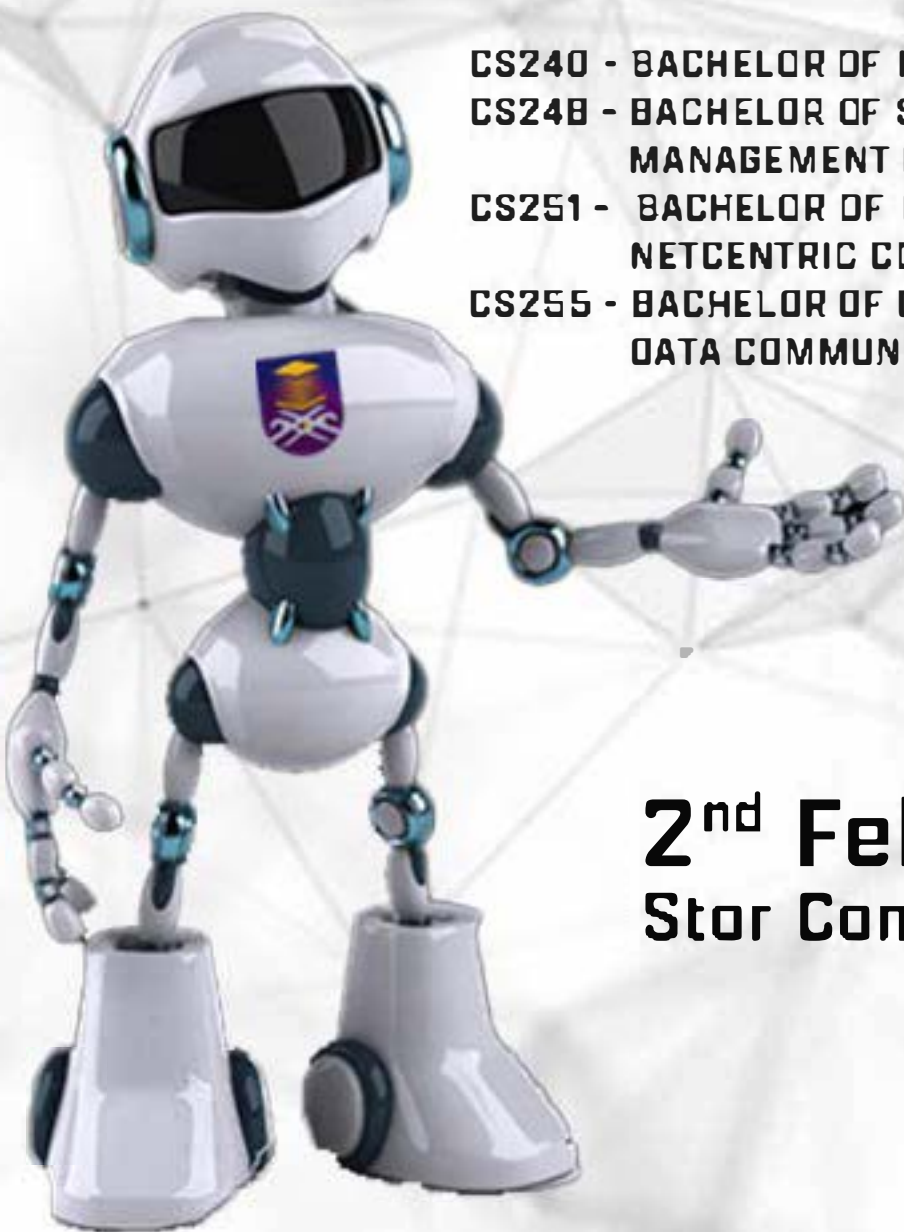


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**RESEARCH EXHIBITION IN MATHEMATICS & COMPUTER SCIENCES**

# **REMACS 5.0**

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**CS240 - BACHELOR OF INFORMATION TECHNOLOGY [HONS.]**  
**CS248 - BACHELOR OF SCIENCES [HONS.]**  
**MANAGEMENT IN MATHEMATICS**  
**CS251 - BACHELOR OF COMPUTER SCIENCE [HONS]**  
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**CS255 - BACHELOR OF COMPUTER SCIENCE [HONS]**  
**DATA COMMUNICATION & NETWORKING**

**2<sup>nd</sup> February 2023**  
**Stor Complex, UiTM Perlis**

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**Organized by:**  
**College of Computing, Informatics and Media**  
**Universiti Teknologi MARA Perlis Branch**

**Research Exhibition in Mathematics and Computer Sciences  
(REMACS 5.0)**

Research Exhibition in Mathematics and Computer Sciences (REMACS 5.0)

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# Preface

It is with great pleasure that we present this extended abstract book, titled "The 5<sup>th</sup> Research Exhibition in Mathematics and Computer Sciences (REMACS 5.0)". This book is a collection of research work in the fields of Computer Science and Mathematics, contributed by the final year students from Universiti Teknologi MARA, Perlis Branch. The aim of this book is to showcase the diversity and depth of research in these two interrelated fields.

Mathematics and Computer Science are two fields that have seen tremendous growth and advancement in recent years. With the rise of new technologies and the increasing demand for data-driven solutions, researchers in these fields have been working hard to develop new theories, algorithms, and models that can help solve some of the most pressing problems of our time. This book is a testament to their hard work and dedication.

The abstracts in this book cover a wide range of topics, including algebra, analysis, logic, computer architecture, algorithms, artificial intelligence, machine learning, computer network, netcentric computing and many more. The work presented here is both theoretical and practical, and has the potential to impact many areas of society, from finance and healthcare to education and security.

We hope that this book will serve as a valuable resource for future students in the fields of Mathematics and Computer Science. We also hope that it will inspire more students to pursue innovative and groundbreaking research in these two fields. Finally, we would like to express our gratitude to all the contributors for their hard work and dedication, without which this book would not have been possible.



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# EVENT SCHEDULE

8:00 – 8:30 am

- Registration

8:00 am – 12:00 pm

- FYP Project Presentation

12:00 - 2:00pm

- Lunch Break

2:15 – 2:35 pm

- National & Wawasan Setia Anthems
- Doa Recitation

2:35 – 2:45 pm

- Welcoming Address by Director of REMACS 5.0

2:45 – 2:55 pm

- Officiating & Closing Remarks from Rector of UiTM Perlis

2:55 – 3:00 pm

- REMACS 5.0 Montage

3:00 – 4:00 pm

- Awarding of Winners:
  - Best Poster
  - Best Project Award
- Photo Session
- End of Ceremony

*Dress Code: Formal / Corporate*

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# EXTENDED ABSTRACTS

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RESEARCH EXHIBITION IN MATHEMATICS & COMPUTER SCIENCES  
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# THE USE OF TRAPEZOIDAL RULE TO APPROXIMATE THE VOLUME OF CLODS OF SOIL AT GUNUNG PERLIS TAMAN NEGERI PERLIS

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## Abstract

A slope is a soil formation with certain angles. Malaysia has a generally sloping and steep natural environment and receives a lot of rain every year. The consequences of slope failure for humans and wildlife take various kinds. During heavy rain, the treeless catchment region will conglomerate like little ponds. The main objective of this study is to find the volume of soil clods at Gunung Perlis, Taman Negeri Perlis using Trapezoidal's rule. The survey focuses at Gunung Perlis, Taman Negeri Perlis, which is hilly and uneven. The volume of clods of soil in the area will be calculated to determine whether the slope might collapse. Secondary data were collected from Google Earth. In order to determine which areas are prone to collapse, three sloped areas were taken. The three areas were labelled as Line A, Line B and Line C. There are several steps to conduct this project. Firstly, determine and create the contour line of Gunung Perlis to represent a topography. Then, create the cross-section based on the drawn contour. The next step is established the location of the clod soil to find the area of clod soil. Use the area in step three to calculate the volume of clods soil using Trapezoidal's Rule. After all the three lines calculated, the slope that has high possibility to collapse will be chosen. The higher the volume calculated, the higher possibility for the slope to collapse.

*Keywords: Trapezoidal's Rule, Volume, Slope, Collapse, Landslides*

## 1. Introduction (Objectives and Scope)

A slope is a soil formation with certain angles. Malaysia has a generally sloping and steep natural environment and receives a lot of rain every year. The consequences of slope failure for humans and wildlife take various kinds. During heavy rain, the treeless catchment region will conglomerate like little ponds. The main objective of this study is to find the volume of soil clods at Gunung Perlis, Taman Negeri Perlis using Trapezoidal's rule. The survey focuses at Gunung Perlis, Taman Negeri Perlis, which is hilly and uneven. The volume of clods of soil in the area will be calculated to determine whether the slope might collapse.

## 2. Methodology

Secondary data were collected from Google Earth. In order to determine which areas are prone to collapse, three sloped areas were taken. The three areas were labelled as Line A, Line B and Line C. There are several steps to conduct this project. Firstly, determine and create the contour line of Gunung Perlis to represent a topography. Then, create the cross-section based on the drawn contour. The next step is established the location of the clod soil to find the area of clod soil. Use the area in step three to calculate the volume of clods soil using Trapezoidal's Rule. After all the three lines calculated, the slope that has high possibility to collapse will be chosen.

## 3. Results and Discussion

Based on the volume calculation by using Trapezoidal's Rule, Line B was chosen as the area that has high possibility to collapse. The volume of slope at line C is 130,080.514 m<sup>3</sup> compared to volume of Line A and Line C which are 112,382.4849 m<sup>3</sup> and 124,771.1053 m<sup>3</sup>. The difference between the volume A of slope Line A and Line C is 12,388.6204 m<sup>3</sup> but the higher the volume, the higher the possibility for the slope to collapse. After determining the region at risk of landslides, any

steps to avoid the occurrence of landslides can be done. To establish if a place is at high risk of risks such as landslides, accurate calculations are necessary. As a result, accurate estimations may also aid in the repair of any earthworks that need to be repaired in order to stay secure. If the computation is erroneous, it might put people in risk and cost the government money and time if the earthwork is finished.

#### **4. Novelty of Research / Product**

There have been a few of research that have investigated about the contour line, landslide problem, land calculation by using Trapezoidal's Rule. Landslides are frequently caused by continuous, intense rainfall in tropical humid regions, particularly Malaysia (Komoo & Lim, 2003). According to Mokhtar Jaafar et al., (2011), Malaysia's equatorial climate contributes to its high annual rainfall distribution due to an average annual rainfall of 2,400 mm.. The trapezoidal rule is a numerical integration method for calculating the integral or area under a curve (Yeh, 2002).

#### **5. Conclusion**

Landslides are a natural catastrophe event that have a huge impact on the socioeconomics of a country's people. If any property damage occurred, the government or private parties were required to cover the cost loss, either directly or indirectly, as a result of the incident. In reality, landslides can be fatal if they occur in residential areas or along roadways on a wide scale.

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