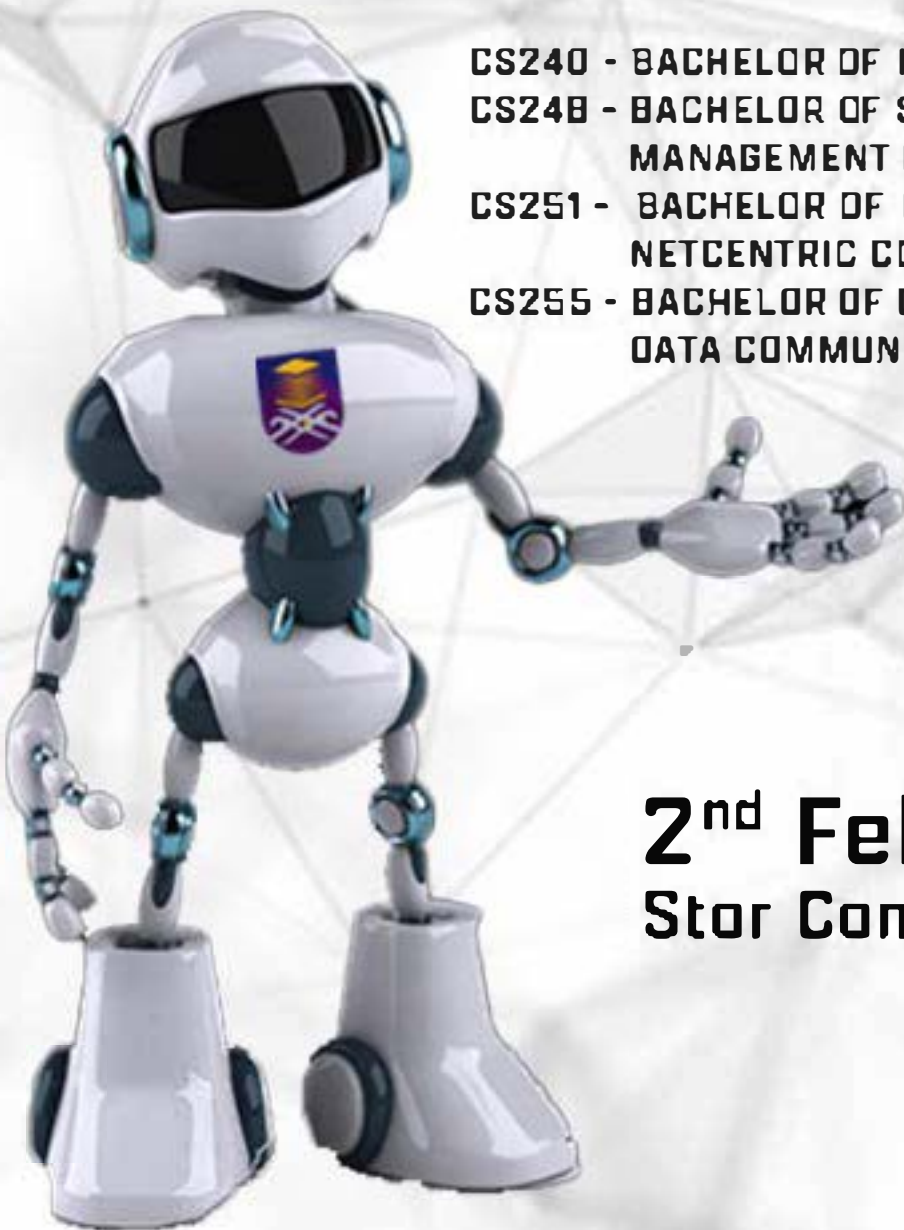


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RESEARCH EXHIBITION IN MATHEMATICS & COMPUTER SCIENCES

# REMACS 5.0

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CS240 - BACHELOR OF INFORMATION TECHNOLOGY [HONS.]  
CS248 - BACHELOR OF SCIENCES [HONS.]  
MANAGEMENT IN MATHEMATICS  
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DATA COMMUNICATION & NETWORKING

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

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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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# MOBILE APPLICATION SYSTEM FOR CARDIOVASCULAR DISEASE PATIENT

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## Abstract

Cardiovascular failure is a complex and potentially fatal chronic condition that requires medical and lifestyle therapy. Unfortunately, there are not many mobile fitness application systems for cardiovascular disease (CVD) patients. Therefore, the purpose of this study is to develop a mobile application system to guide cardiovascular disease (CVD) patients about exercise that is suitable for them. The mobile health application system can be used by heart patients to find out the most accurate and safe exercise methods. In this mobile application, patients can exercise using a stopwatch to record the time they exercise, such as walking, running, cycling, and climbing stairs. Then, patients can know their BMI according to their height and weight. In addition, patients can also find out information about heart disease in this mobile application. The scope focuses on all patients with cardiovascular disease, no matter if they are children, teenagers, adults, or the elderly, who can use this mobile application system to exercise. In addition, this mobile application uses the DSRM method, which is the Design Science Research Methodology, for development. After that, the results and findings for this mobile application are derived from evaluation results from expert reviews and in-depth interviews with patients and regular users. The test results revealed that this mobile application is usable but needs to be refined and improved. As a result, CPFitness has achieved its objective and goal of developing a mobile fitness application system for patients with cardiovascular disease (CDV).

*Keywords: mHealth, CVD, Design Science Research Methodology.*

## 1. Introduction

The objective of this project is to identify suitable exercise methods for patients with heart disease, develop a mobile application system to guide cardiovascular disease patients on the appropriate exercises needed, and evaluate mobile application systems using expert review and in-depth interviews (IDIs). In addition, the scope of the project is mainly focused on meeting the needs of individuals for their daily routines. The mobile application system provides fitness awareness that is suitable for the patient's personal health. All patients with cardiovascular disease, regardless of whether they are children, teenagers, adults, or the elderly, can use this mobile application system to exercise. Therefore, patients can exercise using a stopwatch to record the time they exercise, such as walking, running, cycling, and climbing stairs. Additionally, patients can find out their BMI according to their height and weight. Then, patients can also find out information about heart disease in this mobile application.

## 2. Methodology

The Direct Science Research Method (DSRM) is used as a methodology in this project based on a model (Vaishnavi & Kuechler, 2004). The first phase is problem awareness, that is, outlining current research areas and illustrating how proposed fixes work. The second phase is the suggestion, which is the description of the issue and the awareness of what can be done. The third phase is development. Design artifacts are used for the development process. The fourth phase is evaluation. The effectiveness of the artifact's contribution to finding a solution to the problem is determined through evaluation. Finally, the fifth phase is the conclusion of the development and evaluation of artifacts.

### **3. Results and Discussion**

Data was gathered through expert review and an in-depth interview. Based on the six responses obtained, it consists of medical officers and lecturers for expert review. Males make up 66.7% of respondents, while females make up 33.3%. The respondents who answered the questionnaire consisted of 33.3% computer science lecturers, 33.3% medical officers, and 33.3% sports science lecturers. For in-depth interviews, data is analyzed using the results of interviews that have been conducted. Data from normal users and patients were graphed and analyzed. Based on the 30 responses obtained, it consists of heart patients and regular users. The majority of respondents were female (60%), while 40% were male. The majority of respondents are between 51 and 60 years old. Then, as much as 50% of the population consists of people who do not work, 30% consists of people who work, and 20% consists of students. Therefore, the results of expert review and in-depth interviews with patients and regular users have found that the CPFitness mobile application is suitable for use by CVD patients and easy to understand but that it needs improvement.

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

From a technology perspective, this study takes advantage of popular health and fitness technology by applying it in a healthy environment, specifically to guide patients with cardiovascular disease to carry out their daily routines healthily. As a result, this mobile application system is ideal for patients because it can assist and guide them in selecting exercises that are appropriate for them. There are additional features, such as the fact that patients can use the app to exercise using a stopwatch to record their exercise time, such as walking, running, cycling, and climbing stairs. Additionally, patients can find out their BMI according to their height and weight. In addition, this mobile application system can make it easier for patients to not waste time referring to medical places or other platforms that are not clear about the type of fitness exercise that suits them while also saving time if they are busy with other daily routines. This is because this mobile application system can be used wherever they are. This mobile application system can also encourage patients to not be lazy about exercising because it facilitates and guides them in choosing the appropriate type of exercise.

### **5. Conclusion**

The first goal is achieved throughout the development process, which is covered in Chapter 4 about creating this application. This application is made using a design-based interface. Finally, Chapter 5 completes the third objective of the project, where the evaluation guarantee comes from an expert review and an in-depth interview.

### **REFERENCE**

Vaishnavi, V., & Kuechler, B. (2004). Design Science Research in Information Systems. 39(3), 541–564. <http://www.desrist.org/design-research-in-information-systems/>

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