UNIVERSITI TEKNOLOGI MARA

TECHNICAL REPORT

DEMANDS OF AN EFFECTIVE EXAMINATION TIMETABLING FOR STUDENTS

P08M19

FITHRIYAANI BINTI GARIP@SAMAD (2017412752) NOOR SHAABIRA BINTI AMIR SHAH (2017263912) NUR FATIN SYUHADA BINTI MD ZAINUDIN (2017412748)

Report submitted in partial fulfilment of the requirement for the degree of Bachelor of Science (Hons.) Mathematics Faculty of Computer and Mathematical Sciences

JULY 2019

ACKNOWLEDGMENTS

In the name of Allah, we feel grateful because He is the one who gives us strength, knowledge and time to complete this project successfully. We would like to express our great appreciation to our parents whose non-stop give their support, finance and also pray for us to finish our project and graduate on time. We also give special gratitude to our lovely supervisor, Dr. Maznah Banu Binti Mohamed Habiboo Raman for her valuable effort and contribution in stimulating suggestions and guide us to coordinate our project especially in conducting this research and writing this report. Her willingness to give her previous time and encouragement has been much appreciating. Last but not least, we would like to thank our fellow friends especially CS2496B1 students, who helped us the most and gives full cooperation in finding data and information and complete the project for this semester.

Not forgotten to the authors of articles, journals, and books for providing us the valuable information needed as references in our project. Without all of this information, we are not possible to complete this research.

Finally, a high appreciation and thanks to the group members who struggled, sharing the idea, give the best cooperation and willing spend time together when doing this research is a crucial situation even though each of us has another commitment. Thank you so much.

Table of Contents

List of Tables	iii
List of Figures	iv
ABSTRACT	V
1.0 INTRODUCTION	1
1.1 Background of Study	1
1.2 Problem Statement	2
1.3 Objectives	2
1.4 Scope and Limitation	2
1.5 Significant of Study	4
2.0 BACKGROUND THEORY AND LITERATURE REVIEW	6
2.1 Background Theory	6
2.2 Literature Review	7
2.2.1 Examination Timetabling	7
2.2.2 Examination Timetabling Method	8
2.2.3 Examination Timetabling Problem	10
3.0 METHODOLOGY AND IMPLEMENTATION	11
3.1 The Flowchart and Method Used in Research	11
3.1.1 Summary of the Flowchart	12
3.2 Equations	13
3.2.1 Calculation of Equation	16
3.3 Tables and Figures	19
4.0 RESULT AND DISCUSSION	22
4.1 Results	22
4.2 Discussions	26
5.0 CONCLUSION AND RECOMMENDATION	27
6.0 REFERENCES	28
7.0 APPENDIX	30
7.1 Appendix A	30
7.2 Appendix B	32
7.3 Appendix C	
7.4 Annendix D	42

List of Figures

Figure 1: The flowchart of the research
Figure 2: The choice of subject by students for examination
Figure 3: The choice of subject by students for examination
Figure 4: First choice of the courses in the examination
Figure 5: Second choice of the courses in the examination
Figure 6: Third choice of the courses in the examination
Figure 7: Fourth choice of the courses in the examination
Figure 8: Coding for the examination period for part 5 students (September 2018 to
January 2019)
Figure 9: Coding to show that summation of examination period must less than 30
days (September 2018 to January 2019)
Figure 10: Coding of examination gap for part 5 student (September 2018 to January
2019)
Figure 11: Examination period for part 5 students (September 2018 to January 2019)
Figure 12: Examination gap for part 5 student (September 2018 to January 2019) 37
Figure 13: Coding for the examination period for repeated students (September 2018
to January 2019)
Figure 14: Coding to show that summation of repeaters student's period must less than
30 days (September 2018 to January 2019)
Figure 15: Coding of examination gap for repeated part 5 students (September 2018 to
January 2019)
Figure 16: Examination period for repeated students (September 2018 to January
2019)
Figure 17: Examination gap for repeated part 5 students (September 2018 to January
2019)
Figure 18: Coding for the examination period for part 5 students (March 2018 to July
2018)
Figure 19: Coding to show that summation of examination period must less than 30
days (March 2018 to July 2018)
Figure 20: Figure 10: Coding of examination gap for part 5 student (March 2018 to
July 2018)
Figure 21: Examination period for part 5 students (March 2018 to July 2018) 45
Figure 22: Examination gap for part 5 students (March 2018 to July 2018) 46
Figure 23: Coding for the examination period for repeated students (March 2018 to
July 2018)47
Figure 24: Coding to show that summation of repeaters student's period must less than
30 days (March 2018 to July 2018)
Figure 25: Coding of examination gap for repeated part 5 students (March 2018 to
July 2018)
Figure 26: Examination period for repeated students (March 2018 to July 2018) 49
Figure 27: Examination gap for repeated part 5 students (March 2018 to July 2018) 50

ABSTRACT

Examination timetabling is a time management task in educational institutions and defined as scheduling for the exams as the set of university courses. Timetabling is one of the complex things to be resolved in the world of education since it has to be neat and well-organized. Therefore, the university administration must avoid any overlapping and include the gap period between courses to give preparation of the student for upcoming papers. The main purpose of this research is to generate an effective flexible exam timetabling and to investigate the preference examination timetabling for CS249 part 5 students at UiTM Seremban 3. Besides, Lingo software 18.0 is being used to complete the task to find the conclusion of the study. In this research, the gap for students who follow the study plan is 3 days per course while for the repeated papers, it is only 2 days per course. If there are some students whose take an extra credit hour in a current semester, the students should follow the situation 2 since the situation 1 is a fixed for the students whose follow the study plan while situation 2 is for students who have repeated papers, take an extra credit hour and many more. By using the mathematical model, examination timetabling is easier to be schedule compare to when the examination timetabling is schedule manually. Finally, the study shows the number of the gap is required based on the number of credit hours of each subject that students take for the current semester.