



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

**SCHOOL OF COMPUTING**  
Faculty of Engineering

## **Project (Group)**

**SECI1113 COMPUTATIONAL MATHEMATICS**  
**SEMESTER II, SESSION 2019/2020**

**Lecturer: Dr. Razana binti Alwee**

### **Group7**

Name	Student ID
SEE WEN XIANG	A19EC0206
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Section: 05

Programme: Bachelor of Computer Science (Software Engineering)

# Table of Contents

<b>1.0</b>	<b>Introduction .....</b>	<b>1</b>
<b>2.0</b>	<b>Program Input and Output Screenshot.....</b>	<b>2</b>

## 1.0 Introduction

Table 1: Task of Each of the Group Members

Task	Name
Coding	WILLIAM HO ZE QIAN
Flowchart	SEE WEN XIANG
Report	MUHAMMAD MUKHLIS / SEE WEN XIANG
Video	SEE WEN XIANG

Software/programming language used for the project: `c++ / c`

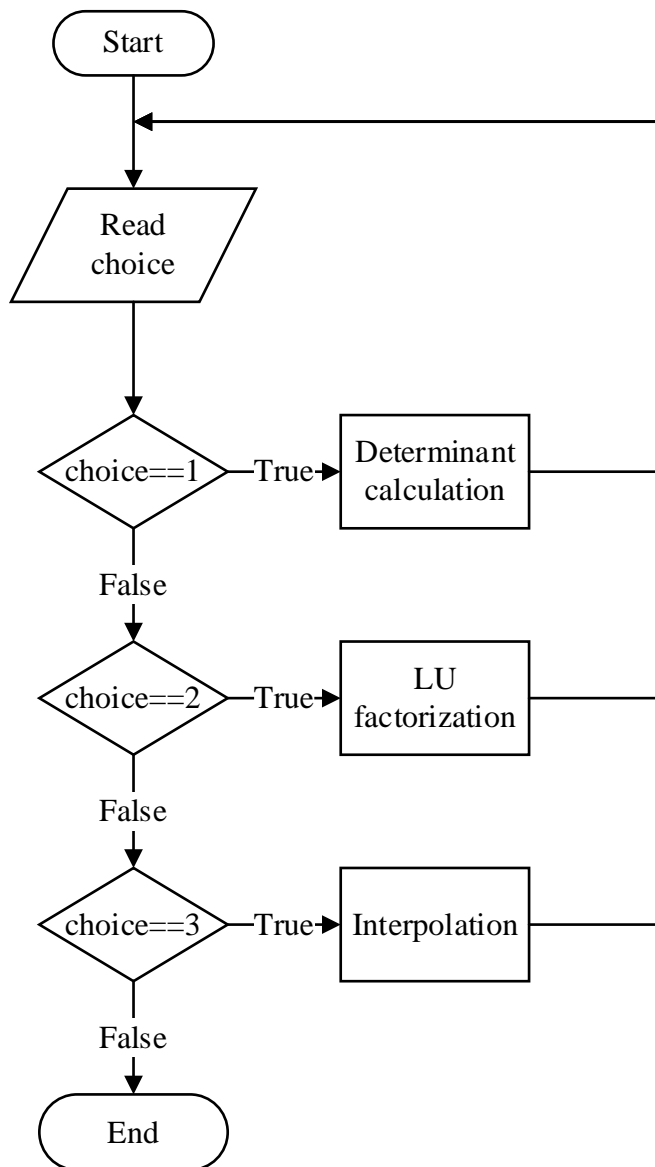


Figure 1.0: Flowchart of program

## 2.0 Program Input and Output Screenshot

```
=====MENU=====
1) Determinant calculation
2) LU factorization
3) Interpolation
4) End
Please enter your choice : 1
Enter the size of the matrix:
2
Enter the elements of the matrix (by row):
3 1
-2 2
The entered matrix is:
3 1
-2 2
Determinant of the matrix is 8
Press any key to continue . . .

=====MENU=====
1) Determinant calculation
2) LU factorization
3) Interpolation
4) End
Please enter your choice : 1
Enter the size of the matrix:
3
Enter the elements of the matrix (by row):
2 1 -1
3 1 4
5 -3 3
The entered matrix is:
2 1 -1
3 1 4
5 -3 3
Determinant of the matrix is 55
Press any key to continue . . .
```

Figure 2.0: Question 1 (Input and Output)

```
=====MENU=====
1) Determinant calculation
2) LU factorization
3) Interpolation
4) End
Please enter your choice : 2
Enter the number of variable
3
Enter the coefficients of the Matrix (by row)
3 6 -3
6 15 -5
-1 -2 6
Enter RHS vector
3
11
9
Solution:
x1=1.000000      x2=1.000000      x3=2.000000
Press any key to continue . . .
```

Figure 2.0: Question 2 (Input and Output)

```

=====MENU=====
1) Determinant calculation
2) LU factorization
3) Interpolation
4) End
Please enter your choice : 3

Enter the number of data pairs to be entered:
5

Enter the x-axis values:
1 3 4 5 8

Enter the y-axis values:
5 9 11 13 19
====Equation====
1) linear
2) quadratic
What degree of Polynomial do you want to use for the fit?
2

The Normal (Augmented Matrix) is as follows:
5.00          21.00          115.00          57.00
21.00          115.00          729.00          293.00
115.00          729.00          5059.00          1803.00

The values of the coefficients are as follows:
x^0=3.00
x^1=2.00
x^2=0.00

Hence the fitted Polynomial is given by:
p(x)=3.00+(2.00x^1)+(0.00x^2)

Please enter your x value: 4.5

p(4.50)= 12.00

Press any key to continue . . . _

```

Figure 3.0: Question 3 (Input and Output)