MINI PROJECT NAME

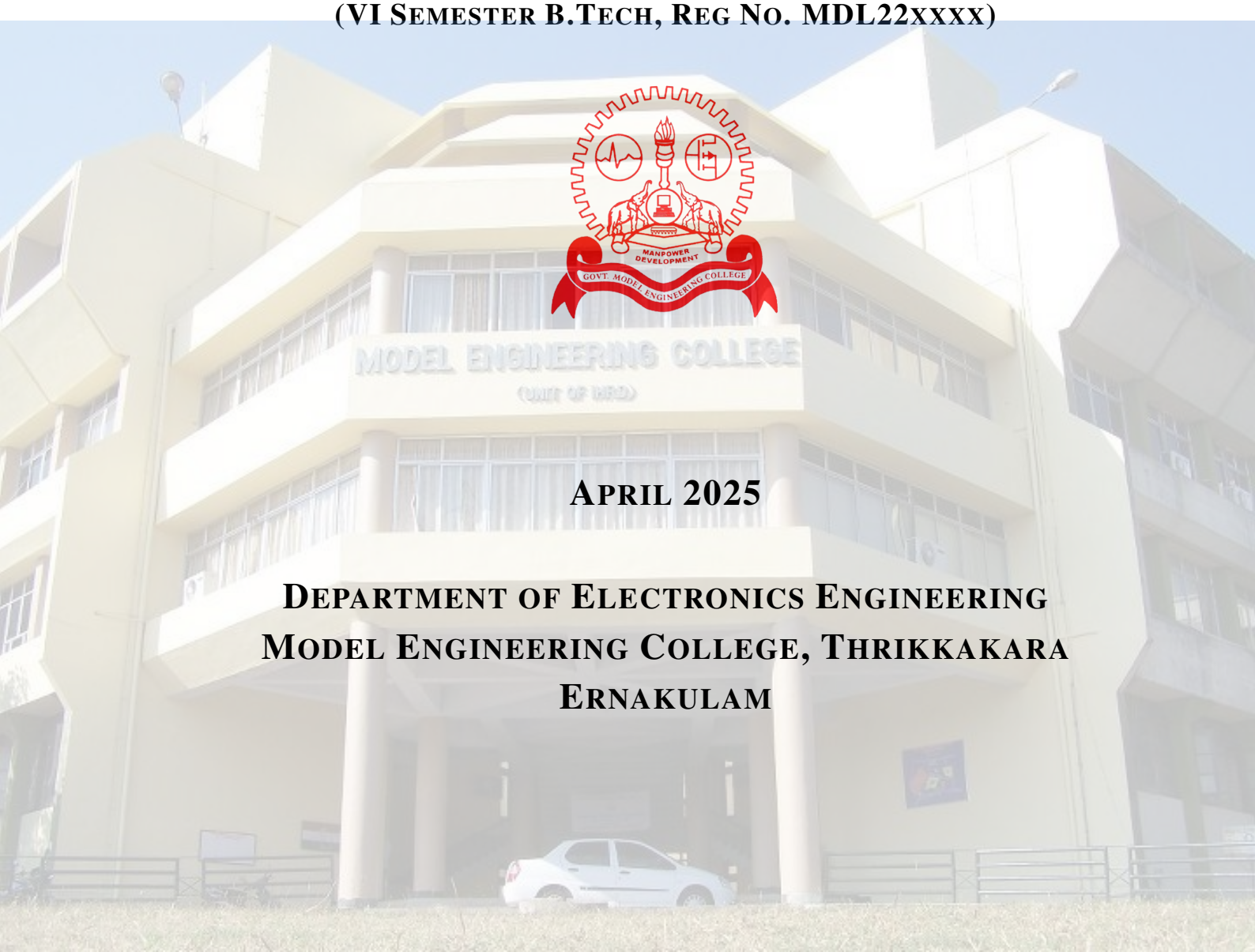
MINI PROJECT REPORT

Submitted in partial fulfillment of the requirements for the award of the Degree of ***Bachelor of Technology*** *in* ***Electronics & Communication Engineering*** *of* ***APJ Abdul Kalam Technological University***

By

YOUR NAME

(VI SEMESTER B.TECH, REG NO. MDL22XXXX)



APRIL 2025

DEPARTMENT OF ELECTRONICS ENGINEERING
MODEL ENGINEERING COLLEGE, THRIKKAKARA
ERNAKULAM

MODEL ENGINEERING COLLEGE, THRIKKAKARA

DEPARTMENT OF ELECTRONICS ENGINEERING

CERTIFICATE

This is to certify that the project report entitled **"MINI PROJECT NAME"** *is a bonafide record of the project work done by* **YOUR NAME** *(VIII Semester B.Tech, Reg No. MDL23XXX) towards the partial fulfillment of the requirements for the award of the Degree of Bachelor of Technology in Electronics & Communication Engineering of APJ Abdul Kalam Technological University during the year 2025.*

PROJECT CO-ORDINATOR

COORDINATOR NAME
DESIGNATION
DEPT. OF ELECTRONICS

PROJECT GUIDE

GUIDE NAME
DESIGNATION
DEPT. OF ELECTRONICS

HEAD OF DEPARTMENT

HOD NAME
DEPT. OF ELECTRONICS ENGINEERING

ACKNOWLEDGEMENT

*First of all, I would like to thank the **Lord Almighty** who helped me to finish this project on time.*

I express my sincere thanks to , The Principal, Model Engineering College, Thrikkakara, for providing opportunity and the environment to do the project in my college.

I sincerely thank , Head of the Department, Dept. of Electronics, for his encouragement and constant support in making project successful.

*I would like to thank my class coordinator **M.** , Asst. Professor, Dept. of Electronics, for giving me timely instruction,for the completion the work.*

*I would like to thank my project coordinator **M.** , Asst. Professor, Dept. of Electronics, for giving me technical advice, without which I could never been able to complete the work in time.*

*I also wish to thank my project guide **M.** , Asst. Professor, Dept. of Electronics, for providing valuable guidance.*

An excellent group of teaching and non-teaching staff helped me for this project. I owe much the assistance they gave me while doing the project.

Last, but not least I would like to thank my parents and friends for all the moral support and that they have given me.

Your Name (Roll No.)

ABSTRACT

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Contents

List of Figures

List of Tables

List of Abbreviations

EC	Electronics and Communication
EV	Electronics and VLSI
EE	Electrical and Electronics

Chapter 1

INTRODUCTION

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1.1 Background of the Project

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1.2 Motivation

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1.3 Importance of the problem

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1.3.1 Subsection Name

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1.4 Objective and Scope

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1.4.1 Subsection Name

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Chapter 2

LITERATURE REVIEW

2.1 Section Name

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2.1.1 Subsection Name

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2.2 Equations & Equation arrays

$$w_k = \begin{cases} 0 & \tilde{c}_{i,j} = 2 \times Q \times round\left(\frac{c_{i,j}}{Q}\right) \\ 1 & \tilde{c}_{i,j} = 2 \times Q \times round\left(\frac{c_{i,j}-1}{Q}\right) + Q \end{cases} \tag{2.1}$$

The Equation 2.1 is above

$$Y = 0.299R + 0.587G + 0.114B \tag{2.2}$$

$$C_b = -0.1687R - 0.3313G - 0.5B + 128 \tag{2.3}$$

$$C_r = 0.5R - 0.4187G - 0.0813B + 128 \tag{2.4}$$

2.3 Sample Table 1

No	**Particular**	**Quantity**	**Unit Price**	**Amount**
1	PIC 16F877A	1	150	150
2	Transformer	1	100	100
Total				**1302**

Table 2.1: List of Components

Chapter 3

PROBLEM STATEMENT AND PROPOSED SOLUTION

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3.1 Section Name

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3.2 Figure

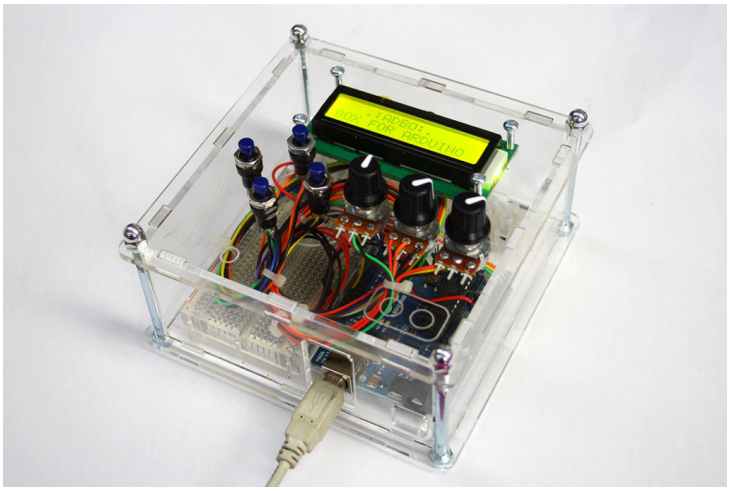

Figure 3.1: Proposed Solution

Chapter 4

BLOCK DIAGRAM AND EXPLANATION

4.1 Block Diagram

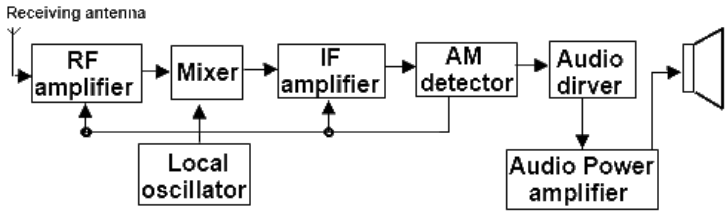

Figure 4.1: Block Diagram

4.2 Section Name

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4.2.1 Subsection Name

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4.3 Algorithm/Tcolorbox

ALGORITHM: AN IMAGE AUTHENTICATION & RECONSTRUCTION SCHEME

Require: I

Require: h(), f (), g(), $f^{-1}()$, $g^{-1}()$

Require: b, B : b $\leq$ B

for i = 1 $\rightarrow$ N do

Reconstruct $I_i^{\cdot} : e_i \neq 1$

Chapter 5

CIRCUIT DIAGRAM AND EXPLANATION

5.1 Circuit Diagram

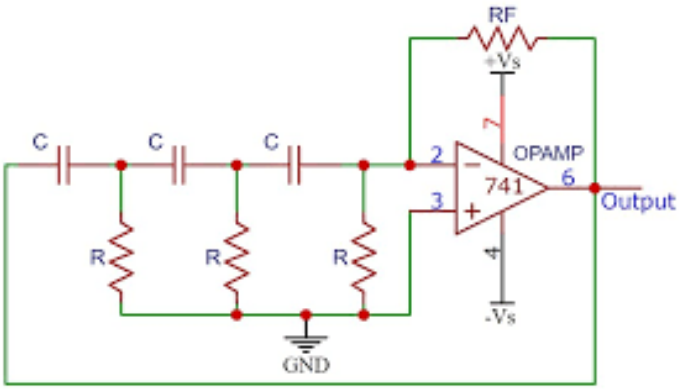

Figure 5.1: Circuit Diagram

5.2 Section Name

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5.2.1 Subsection Name

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5.3 Sample Table 2

No	**Particular**	**Quantity**	**Unit Price**	**Amount**
1	PIC 16F877A	1	150	150
2	Transformer	1	100	100
Total				**1302**

Table 5.1: List of Devices

Chapter 6

COMPONENTS USED

6.1 Arduino Board

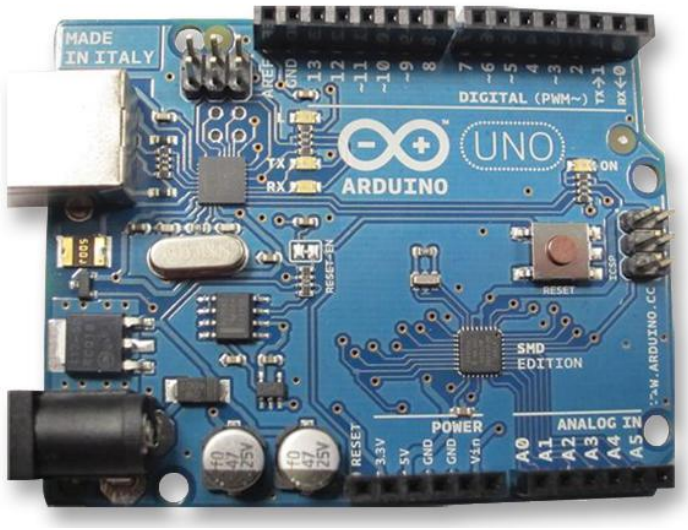

Figure 6.1: Arduino Board

6.2 Section Name

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(a) Temperature Sensor (b) Pressure Sensor (c) Gas Sensor

Figure 6.2: Important Sensors

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6.2.1 Subsection Name

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Chapter 7

IMPLEMENTATION AND DESIGN

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7.1 PCB Layout / bread board set up details

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7.2 Mechanical Design and Implementation

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7.3 Details of Software used

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7.3.1 Subsection Name

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Chapter 8

EXPLANATION OF CODE

8.1 Sample Table 3

No	Particular	Quantity	Unit Price	Amount
1	PIC 16F877A	1	150	150
2	Transformer	1	100	100
Total				**1302**

Table 8.1: List of Items

Chapter 9

TESTING AND RESULTS

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9.1 Testing Procedure

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9.2 Observations and Output

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9.3 Performance Analysis

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9.3.1 Subsection Name

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Chapter 10

APPLICATIONS, LIMITATIONS AND FUTURE SCOPE

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10.1 Applications

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10.2 Limitations

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10.3 Future Scope

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Chapter 11

CONCLUSION

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Bibliography

[1] J. S. McLean,, *"A Re-Examination of the Fundamental Limits on the Radiation Q of Electrically Small Antennas,"* , IEEt: Trans. Antennas Propag., AP-44, May 1996, pp. 672-676.

[2] R. F. Harrington,, *"Effect of antenna size on gain, bandwidth, and efficiency,"* , Research National Bureau of Standards-D. Radio Propagation, vol. 640, no. 1, Jan.-Feb. 1960.

Appendices

Appendix A

Coding

```
clc;
close all;
clear all;
n1=input('Enter Starting Point n1: ');
n2=input('Enter End Point n2: ');
n=-n1:1:n2;

% Impulse Signal
amp_impl=[zeros(1,n1) 1 zeros(1,n2)];
figure(1);
subplot(221);
plot(n,amp_impl);
xlabel('Time');
ylabel('Amplitude');
title('Continious Impulse Signal');
subplot(222);
stem(n,amp_impl);
xlabel('Samples');
ylabel('Amplitude');
title('Discrete Impulse Signal');

% Step Signal
amp_stp=[zeros(1,n1) ones(1,n2+1)];
```

```
subplot(223);
stairs(n,amp_stp);
xlabel('Time');
ylabel('Amplitude');
title('Continious Step Signal');
subplot(224);
stem(n,amp_stp);
xlabel('Samples');
ylabel('Amplitude');
title('Discrete Step Signal');

% Ramp Signal
amp_rmp=[zeros(1,n1),n(n1+1:end)];
figure(2);
subplot(221);
plot(n,amp_rmp);
xlabel('Time');
ylabel('Amplitude');
title('Continious Ramp Signal');
subplot(222);
stem(n,amp_rmp);
xlabel('Samples');
ylabel('Amplitude');
title('Discrete Ramp Signal');

% Exponential Signal
n0=0:.1:n2;
Am_exp=input('Enter Amplitude of Exponential Wave Am: ');
b=input('Enter Decaying Factor of Exponential Wave b: ');
```

```
amp_expl=Am_exp*exp(-b.*n0);
figure(2);
subplot(223);
plot(n0,amp_expl);
xlabel('Time');
ylabel('Amplitude');
title('Continious Exponential Signal');
subplot(224);
stem(n0,amp_expl);
xlabel('Samples');
ylabel('Amplitude');
title('Discrete Exponential Signal');

% Sine Wave
 n=0:.02:1;
Am_sin=input('Enter Amplitude of Sine Wave Am: ');
f=input('Enter Frequency of Sine Wave f: ');
amp_sine=Am_sin*sin(2*pi*f*n);
figure(3)
subplot(221);
plot(n,amp_sine);
xlabel('Time');
ylabel('Amplitude');
title('Continious Sine Signal');
subplot(222);
stem(n,amp_sine);
xlabel('Samples');
ylabel('Amplitude');
title('Discrete Sine Signal');
```

```
% Square Wave
Am_sqre=input('Enter Amplitude of Square Wave Am: ');
f=input('Enter Frequency of Square Wave f: ');
dty=input('Enter Duty Cycle of Square Wave: ');
amp_sqre=Am_sqre*square(2*pi*f*n,dty);
subplot(223);
stairs(n,amp_sqre);
xlabel('Time');
ylabel('Amplitude');
title('Continious Square Signal');
subplot(224);
stem(n,amp_sqre);
xlabel('Samples');
ylabel('Amplitude');
title('Discrete Square Signal');

% Sawtooth Wave
Am_st=input('Enter Amplitude of Sawtooth Wave Am: ');
f=input('Enter Frequency of Sawtooth Wave f: ');
dty=input('Enter Duty Cycle of Sawtooth Wave: ');
amp_st=Am_st*sawtooth(2*pi*f*n,dty);
figure(4);
subplot(221);
plot(n,amp_st);
xlabel('Time');
ylabel('Amplitude');
title('Continious Sawtooth Signal');
subplot(222);
```

```
stem(n,amp_st);
xlabel('Samples');
ylabel('Amplitude');
title('Discrete Sawtooth Signal');


% Pulse Signal
n01=input('No. of zeros left to gate signal n01: ');
n11=input('No. of ones n11: ');
n02=input('No. of zeros right to gate signal n02: ');
n_sam=n01+n11+n02;
n=0:1:n_sam-1;
amp_gt=[zeros(1,n01) ones(1,n11) zeros(1,n02)];
subplot(223);
stairs(n,amp_gt);
xlabel('Time');
ylabel('Amplitude');
title('Continious Gate Signal');
subplot(224);
stem(n,amp_gt);
xlabel('Samples');
ylabel('Amplitude');
title('Discrete Gate Signal');
```

```
clc;
close all;
clear all;
n_st=input('Enter the Starting Point of the Sequence; n = ');
x=input('Enter the Sequence: x(n) = ');
x_len=length(x);
n_ed=n_st+x_len-1;
n=n_st:n_ed;
figure (1);
subplot(3,1,1);
stem(n,x);
xlabel('Samples');
ylabel('Amplitude');
title('Time Shifting');

% Time Shifting (1st method)
k=input('Enter the shifting factor: k = ');
sh_sq01=n+k;
subplot(3,1,2);
stem(sh_sq01,x);
xlabel('Samples');
ylabel('Amplitude');

% Time Shifting (2nd method)
n1=min(n_st,n_st+k);
n2=max(n_ed,n_ed+k);
n_sh=n1:n2;
sh_sq02=[zeros(1,k) x zeros(1,-k)];
subplot(3,1,3);
```

```
stem(n_sh,sh_sq02);
xlabel('Samples');
ylabel('Amplitude');


% Time Scaling
a=input('Enter the scaling factor: a = ');
figure (2)
subplot(311);
stem(n,x);
xlabel('Samples');
ylabel('Amplitude');
if a > 1
    b=mod(n,a);
    c=[];
    d=[];
    for i=1:x_len
        if b(i)==0
            c=x(i);
            d=[d c];
        end
    end
    d;
    n_start=ceil(n_st/a);
    n_end=floor(n_ed/a);
    n_sc=n_start:n_end;
else
    e=(x_len/a)-(1/a)+1;
    d=[zeros(1,e)];
```

```
    d(1:1/a:end)=x;
    n_start=n_st/a;
    n_end=n_ed/a;
    n_sc=n_start:n_end;
end
subplot(312);
stem(n_sc,d);
xlabel('Samples');
ylabel('Amplitude');
title('Time Scaling');


% Time Reversal
x;
n;
nrev=-n;
x_rev=x(end:-1:1);
n_rev=nrev(end:-1:1);
subplot(313);
stem(n_rev,x_rev);
xlabel('Samples');
ylabel('Amplitude');
title('Time Reversal');
```

Appendix B

Project Estimate

B.1 Sample Table 4

No	Particular	Quantity	Unit Price	Amount
1	PIC 16F877A	1	150	150
2	Transformer	1	100	100
Total				**1302**

Table B.1: Bill Of Materials

Appendix C

Datasheets