

ภาคผนวก

ภาคผนวก ก.
Code คำสั่งย่อยที่ 1

```

    and FormGal;

```

```

interface

```

```

uses

```

```

    Windows, Messages, SysUtils, Classes, Graphics, Controls, Forms, Dialogs,
```

```

    DROCtrls, ExtCtrls, StdCtrls, ComCtrls, Buttons, Spin, Grids, DBGrids,
```

```

    Menus;
```

```

type

```

```

    TForm1 = class(TForm)

```

```

        Panel1: TPanel;

```

```

        Panel2: TPanel;

```

```

        GroupBox1: TGroupBox;

```

```

        Label1: TLabel;

```

```

        RadioGroup1: TRadioGroup;

```

```

        DRLookupComboBox1: TDRLookupComboBox;

```

```

        RadioGroup2: TRadioGroup;

```

```

        Label2: TLabel;

```

```

        BitBtn1: TBitBtn;

```

```

        BitBtn2: TBitBtn;

```

```

        BitBtn3: TBitBtn;

```

```

        Label5: TLabel;

```

```

        Label6: TLabel;

```

```

        RichEdit1: TRichEdit;

```

```

        Label3: TLabel;

```

```

        Label4: TLabel;

```

```

        SpinEdit3: TSpinEdit;

```

```

        Label7: TLabel;

```

```

        Edit1: TEdit;

```

```

        Edit2: TEdit;

```

```

        MainMenu1: TMainMenu;

```

```

        Solution1: TMenuItem;

```

```

        Copy1: TMenuItem;

```

```

        Cut1: TMenuItem;

```

```

        Paste1: TMenuItem;

```

```
N1: TMenuItem;
Clear1: TMenuItem;
SelectAll1: TMenuItem;
N2: TMenuItem;
Export1: TMenuItem;
PrintSolution1: TMenuItem;
PrintDialog1: TPrintDialog;
SaveDialog1: TSaveDialog;
Image1: TImage;
Label8: TLabel;
Label9: TLabel;

procedure FormClose(Sender: TObject; var Action: TCloseAction);
procedure DBLookupComboBox1Click(Sender: TObject);
procedure BitBtn3Click(Sender: TObject);
procedure BitBtn1Click(Sender: TObject);
procedure Clear1Click(Sender: TObject);
procedure FormCreate(Sender: TObject);
procedure BitBtn2Click(Sender: TObject);
procedure PrintSolution1Click(Sender: TObject);
procedure Export1Click(Sender: TObject);
procedure SelectAll1Click(Sender: TObject);
procedure Paste1Click(Sender: TObject);
procedure Cut1Click(Sender: TObject);
procedure Copy1Click(Sender: TObject);
private
    { Private declarations }
public
    { Public declarations }
end;

var
    Form1: TForm1;

implementation

uses DataModule;
```

```
{$R:DFM}
```

```
Function IndexToField(xin : Integer):String;
```

```
Begin
```

```
Case Xin Of
```

```
0 : Result := 'D6';
```

```
1 : Result := 'D4';
```

```
2 : Result := 'D3';
```

```
3 : Result := 'D2';
```

```
4 : Result := 'D1';
```

```
5 : Result := 'D05';
```

```
End;
```

```
End;
```

```
Function IndexToReal(xin : Integer):Real;
```

```
Begin
```

```
Case Xin Of
```

```
0 : Result := 6;
```

```
1 : Result := 4;
```

```
2 : Result := 3;
```

```
3 : Result := 2;
```

```
4 : Result := 1;
```

```
5 : Result := 0.5;
```

```
End;
```

```
End;
```

```
procedure TForm1.FormClose(Sender: TObject; var Action: TCloseAction);
```

```
begin
```

```
  Action := caFree;
```

```
end;
```

```

procedure TForm1.DBLookupComboBox1Click(Sender: TObject);
begin
  {SHOWMESSAGE('MOUSE MOVE');}
end;

procedure TForm1.BitBtn3Click(Sender: TObject);
begin
  Close;
end;

procedure TForm1.BitBtn1Click(Sender: TObject);
Var CH: Items, CbeOld, CHStart, CH1, LoopCheck: Integer; x: String[1];
begin
  CH: Items := RadioGroup1.ItemIndex;
  RadioGroup1.Items.Clear;
  With EDMData.CH1 Do
  Begin
    First;
    Repeat
      RadioGroup1.Items.ADD(FieldByName('SpeedType').AsString+' at '+
        FieldByName(IndexToField(RadioGroup2.ItemIndex)).AsString);
    Next;
  Until EOF;
  RadioGroup1.ItemIndex := CH;
End; {EDMData.CH1}
  If RadioGroup1.ItemIndex < 0 Then RadioGroup1.ItemIndex := 1;
  {Refresh the SI Value}
  Edit2.Text :=
  FloatToStr(StrOfReal(Edit1.Text) * IndexToReal(RadioGroup2.ItemIndex), [General, 7, 3]);

  {Find CH1 filtered Value}
  EDMData.CH1.Filter := '(SF_START <= ' + Edit2.Text + ') AND (SF_END >= ' + Edit2.Text + ')';
  EDMData.CH1.Filtered := True;
  CbeOld := SpinEdit3.Value;
  SpinEdit3.MaxValue := 1000;
  SpinEdit3.MinValue := EDMData.CH1.FieldByName('CHF').AsInteger;

```

```

If CheOld < SpinEdit3.MinValue Then SpinEdit3.Value := SpinEdit3.MinValue
  Else SpinEdit3.Value := CheOld;
EDMData.CHe.Filtered := False;

{Add EDM Solution Data}
EDMdata.CHe.Filter := 'SPEEDTYPE =
'+ Chr(39) + COPY(RadioGroup1.Items[RadioGroup1.ItemIndex], 1, 1) + Chr(39);
EDMdata.CHe.Filtered := True;
CheStart := EDMData.CHe.FieldByName(IndexToField(RadioGroup2.ItemIndex)).AsInteger DIV 10;
Che1 := CheStart;
  x := Copy(EDMData.CHe.FieldByName(IndexToField(RadioGroup2.ItemIndex)).AsString, 3, 1);
EDMdata.CHe.Filtered := False;

end;

```

```

procedure TForm1.Clear1Click(Sender: TObject);
begin
  RichEdit1.Lines.Clear;
end;

```

```

procedure TForm1.FormCreate(Sender: TObject);
Var CHe_Items: Integer;
begin
  CHe_Items := RadioGroup1.ItemIndex;
  RadioGroup1.Items.Clear;
  With EDMData.CHe Do
  Begin
    First;
    Repeat
      RadioGroup1.Items.Add(FieldByName('SpeedType').AsString + ' at '

```

```

FieldByName(IndexToField(RadioGroup2.ItemIndex)).AsString);
Next;
Until EOF;
RadioGroup1.ItemIndex := CHE.Items;
If RadioGroup1.ItemIndex < 0 Then RadioGroup1.ItemIndex := 1;
End;
end;

procedure TForm1.BitBtn2Click(Sender: TObject);
Var CheStart,Che1,LoopCheck: Integer; x: String[1];
begin
CHEStart := EDMData.CHE.FieldByName(IndexToField(RadioGroup2.ItemIndex)).AsInteger DIV 10;
Che1 := CheStart;
x := Copy(EDMData.CHE.FieldByName(IndexToField(RadioGroup2.ItemIndex)).AsString,3,4);
EDMData.CHE.Filtered := False;
{Start Insert Solution}
If (CHEStart MOD 2) = (SpinEdit3.Value MOD 2) Then LoopCheck := SpinEdit3.Value - 2
Else LoopCheck := SpinEdit3.Value - 1;
by
EDMData.H.Filtered := True;
RichEdit1.Lines.Add(EDMData.TechList.FieldByName('ID').AsString+' '+
EDMData.TechList.FieldByName('NAME').AsString);
RichEdit1.Lines.Add('พื้นที่ผิวหน้าตัดของคานเหล็กโหด =
') FloatToStrF(IndexToReal(RadioGroup2.ItemIndex),IfGeneral,5,3)+' ตร.ซม. ');
RichEdit1.Lines.Add('พื้นที่ผิวด้านข้างของคานเหล็กโหด = '+Edit1.Text+' ตร.ซม. ');
RichEdit1.Lines.Add('ค่า CHE ที่เลือกไว้ = '+RadioGroup1.Items[RadioGroup1.ItemIndex]+' ');
RichEdit1.Lines.Add('ค่า CHE ที่เลือกไว้ = '+IntToStr(SpinEdit3.Value));
RichEdit1.Lines.Add('จะได้พารามิเตอร์ต่างๆดังนี้: ');
EDMData.H.Filtered := False;
EDMData.H.Filter := 'CHE_VALUE = '+IntToStr(SpinEdit3.Value);
EDMData.H.Filtered := True;
Repeat
If CHEStart = Che1 Then RichEdit1.Lines.Add(' E = '+IntToStr(CheStart)+'x
') If = '+ FloatToStrF(EDMData.H.FieldByName('FIRST').AsFloat/(1000),IfGeneral,5,3))
Else
If CHEStart = LoopCheck+2 Then RichEdit1.Lines.Add(' E = '+IntToStr(CheStart)+'x

```



```

    C := H + 1; FloatToStrF(EDMData.H.FieldByName('FINAL').AsFloat/(-1000),fGeneral,5,3))
Else IF CheStart = LoopCheck + 4 Then RichEdit1.Lines.Add('    E = ' + IntToStr(CheStart) + x
    C := H + 1; FloatToStrF(EDMData.H.FieldByName('SAMIFINAL').AsFloat/(-1000),fGeneral,5,3))
Else RichEdit1.Lines.Add('    E = ' + IntToStr(CheStart) + x
    C := H + 1; FloatToStrF(EDMData.H.FieldByName('NORMAL').AsFloat/(-1000),fGeneral,5,3));
    CheStart := CheStart - 2;
Until CheStart <= LoopCheck;
EDMData.H.Filled := False;
Except
    RichEdit1.Lines.Add('ไม่สามารถทำงานได้');
End;
end;

procedure TForm1.PrintSolution1Click(Sender: TObject);
begin
    If PrintDialog1.Execute Then RichEdit1.Print('Solution of EDM 2');
end;

procedure TForm1.Export1Click(Sender: TObject);
begin
    If SaveDialog1.Execute Then RichEdit1.Lines.SaveToFile(SaveDialog1.FileName);
end;

procedure TForm1.SelectAll1Click(Sender: TObject);
begin
    RichEdit1.SelectAll;
end;

procedure TForm1.Paste1Click(Sender: TObject);
begin
    RichEdit1.PasteFromClipboard;
end;

procedure TForm1.Cut1Click(Sender: TObject);
begin
    RichEdit1.CutToClipboard;
end;

```

end;

procedure TForm1.Copy1Click(Sender: TObject);

begin

 Rich1.dll.CopyToClipboard;

end;

end.

ภาคผนวก ข.
Code คำสั่งย่อยที่ 2

```
unit DataForm;
```

```
interface
```

```
uses
```

```
Windows, Messages, SysUtils, Classes, Graphics, Controls, Forms, Dialogs,  
ComCtrls, ExtCtrls, StdCtrls, DRCtrls, Grids, DBGrids;
```

```
type
```

```
TDataForm1 = class(TForm)
```

```
  Panel1: TPanel;
```

```
  Panel2: TPanel;
```

```
  PageControl1: TPageControl;
```

```
  TabSheet1: TTabSheet;
```

```
  TabSheet2: TTabSheet;
```

```
  TabSheet3: TTabSheet;
```

```
  TabSheet4: TTabSheet;
```

```
  DBGrid1: TDBGrid;
```

```
  DBRichEdit1: TDBRichEdit;
```

```
  DBGrid2: TDBGrid;
```

```
  DBGrid3: TDBGrid;
```

```
  DBGrid4: TDBGrid;
```

```
  Panel3: TPanel;
```

```
  DBNavigator1: TDBNavigator;
```

```
  DBText1: TDBText;
```

```
  DBText2: TDBText;
```

```
  procedure PageControl1Change(Sender: TObject);
```

```
  procedure FormClose(Sender: TObject; var Action: TCloseAction);
```

```
private
```

```
  { Private declarations }
```

```
public
```

```
  { Public declarations }
```

```
end;
```

```
var
```

```
  DataForm1: TDataForm1;
```

implementation

uses DataModule;

{\$R *.DLM}

procedure TForm1.PageControl1Change(Sender: TObject);

begin

 If PageControl1.ActivePage = TabSheet1 Then DBNavigator1.DataSource :=
 FDMDData.TechNoData

 Else If PageControl1.ActivePage = TabSheet2 Then DBNavigator1.DataSource :=
 FDMDData.CHIIData

 Else If PageControl1.ActivePage = TabSheet3 Then DBNavigator1.DataSource :=
 FDMDData.CIIData

 Else If PageControl1.ActivePage = TabSheet4 Then DBNavigator1.DataSource :=
 FDMDData.HIData;

end;

procedure TForm1.FormClose(Sender: TObject; var Action: TCloseAction);

begin

 Action := caIReq;

end;

end

ภาคผนวก ค.
Code คำสั่งย่อยที่ 3

```
unit DataForm;
```

```
interface
```

```
uses
```

```
Windows, Messages, SysUtils, Classes, Graphics, Controls, Forms, Dialogs,  
ComCtrls, ExtCtrls, StdCtrls, DBCtrls, Grids, DBGrids;
```

```
type
```

```
TDataForm1 = class(TForm)
```

```
  Panel1: TPanel;
```

```
  Panel2: TPanel;
```

```
  PageControl1: TPageControl;
```

```
  LabSheet1: TLabSheet;
```

```
  LabSheet2: TLabSheet;
```

```
  LabSheet3: TLabSheet;
```

```
  LabSheet4: TLabSheet;
```

```
  DBGrid1: TDBGrid;
```

```
  DBRichEdit1: TDBRichEdit;
```

```
  DBGrid2: TDBGrid;
```

```
  DBGrid3: TDBGrid;
```

```
  DBGrid4: TDBGrid;
```

```
  Panel3: TPanel;
```

```
  DRNavigator1: TDRNavigator;
```

```
  DBText1: TDBText;
```

```
  DBText2: TDBText;
```

```
  procedure PageControl1Change(Sender: TObject);
```

```
  procedure FormClose(Sender: TObject; var Action: TCloseAction);
```

```
private
```

```
  { Private declarations }
```

```
public
```

```
  { Public declarations }
```

```
end;
```

```
var
```

```
  DataForm1: TDataForm1;
```

implementation

uses DataModule;

{R * DIM}

procedure TDataForm1.PageControl1Change(Sender: TObject);

begin

 If PageControl1.ActivePage = TabSheet1 Then DBNavigator1.DataSource :=
 EDMData.TechNoData

 Else If PageControl1.ActivePage = TabSheet2 Then DBNavigator1.DataSource :=
 EDMData.CHIIData

 Else If PageControl1.ActivePage = TabSheet3 Then DBNavigator1.DataSource :=
 EDMData.CHIIData

 Else If PageControl1.ActivePage = TabSheet4 Then DBNavigator1.DataSource :=
 EDMData.HIData ;

end;

procedure TDataForm1.FormClose(Sender: TObject; var Action: TCloseAction);

begin

 Action := caFree;

end;

end.


```
unit DataModule;  
interface  
  
uses  
  Windows, Messages, SysUtils, Classes, Graphics, Controls, Forms, Dialogs,  
  Db, DBTables;  
  
type  
  TEDMData = class(IDataModule)  
    Techno: TTable;  
    CHE: TTable;  
    CHEe: TTable;  
    HE: TTable;  
    TechnoData: IDataSource;  
    CHData: IDataSource;  
    CHEData: IDataSource;  
    HData: IDataSource;  
    TechList: TTable;  
    TechListData: IDataSource;  
  private  
    { Private declarations }  
  public  
    { Public declarations }  
  end;  
  
var  
  TEDMData: TEDMData;  
  
implementation  
  
{$R *.DFM}  
  
end
```

```
unit DataModule;
```

```
interface
```

```
uses
```

```
Windows, Messages, SysUtils, Classes, Graphics, Controls, Forms, Dialogs,  
Db, DBTables;
```

```
type
```

```
TDMData = class(TDataModule)
```

```
  Techno: TTable;
```

```
  CHI: TTable;
```

```
  CHC: TTable;
```

```
  FI: TTable;
```

```
  TechnoData: TDataSource;
```

```
  CHIData: TDataSource;
```

```
  CHCData: TDataSource;
```

```
  FIData: TDataSource;
```

```
  TechList: TTable;
```

```
  TechListData: TDataSource;
```

```
private
```

```
  { Private declarations }
```

```
public
```

```
  { Public declarations }
```

```
end;
```

```
var
```

```
  TDMData: TDMData;
```

```
implementation
```

```
{$R *.DFM}
```

```
end
```

ภาคผนวก ง.
Code คำสั่งย่อยที่ 4

```
unit Proj;
```

```
interface
```

```
uses Windows, SysUtils, Classes, Graphics, Forms, Controls, StdCtrls,  
    Buttons, ExtCtrls;
```

```
type
```

```
TAboutBox = class(TForm)  
    Panel1: TPanel;  
    ProgramIcon: TImage;  
    ProductName: TLabel;  
    Version: TLabel;  
    Copyright: TLabel;  
    Comments: TLabel;  
    OKButton: TButton;  
    Label1: TLabel;  
    Label2: TLabel;  
    Label3: TLabel;  
    Label4: TLabel;  
    procedure OKButtonClick(Sender: TObject);  
private  
    { Private declarations }  
public  
    { Public declarations }  
end;
```

```
var
```

```
    AboutBox: TAboutBox;
```

```
implementation
```

```
{$R *.DLM}
```

```
procedure TAboutBox.OKButtonClick(Sender: TObject);  
begin  
  Close;  
end;  
  
end;
```

ภาคผนวก จ.
Code คำสั่งย่อยที่ 5

unit Main;

interface

uses

SysUtils, Windows, Messages, Classes, Graphics, Controls,
Forms, Dialogs, StdCtrls, Buttons, ExtCtrls, Menus, ComCtrls,
DataForm, FormCalc, Proj;

type

```
TMainForm = class(TForm)
  MainMenu: TMainMenu;
  FileNewItem: TMenuItem;
  FileOpenItem: TMenuItem;
  FilePrintSetupItem: TMenuItem;
  FileExitItem: TMenuItem;
  WindowFileItem: TMenuItem;
  WindowCascadeItem: TMenuItem;
  WindowArrangeItem: TMenuItem;
  HelpContentsItem: TMenuItem;
  HelpSearchItem: TMenuItem;
  HelpHowToUseItem: TMenuItem;
  HelpAboutItem: TMenuItem;
  StatusLine: TStatusBar;
  OpenDialog: TOpenDialog;
  SaveDialog: TSaveDialog;
  PrintDialog: TPrintDialog;
  PrintSetupDialog: TPrinterSetupDialog;
  NI: TMenuItem; { &About... }
  procedure FormCreate(Sender: TObject);
  procedure ShowHint(Sender: TObject);
  procedure FileNew(Sender: TObject);
  procedure FileOpen(Sender: TObject);
  procedure FileSave(Sender: TObject);
  procedure FileSaveAs(Sender: TObject);
  procedure FilePrint(Sender: TObject);
```

```
procedure FilePrintSetup(Sender: TObject);
procedure FileExit(Sender: TObject);
procedure EditUndo(Sender: TObject);
procedure EditCut(Sender: TObject);
procedure EditCopy(Sender: TObject);
procedure EditPaste(Sender: TObject);
procedure WindowTile(Sender: TObject);
procedure WindowCascade(Sender: TObject);
procedure WindowArrange(Sender: TObject);
procedure HelpContents(Sender: TObject);
procedure HelpSearch(Sender: TObject);
procedure HelpHowToUse(Sender: TObject);
procedure HelpAbout(Sender: TObject);
end;

var
  MainForm: TMainForm;

implementation

{$R *.DFM}

procedure TMainForm.FormCreate(Sender: TObject);
begin
  Application.OnHint := ShowHint;
end;

procedure TMainForm.ShowHint(Sender: TObject);
begin
  StatusLine.SimpleText := Application.Hint;
end;

procedure TMainForm.FileNew(Sender: TObject);
var Child: TDataForm1;
begin
  Child := TDataForm1.Create(Application);
```



```
end;
```

```
procedure TMainForm.FileOpen(Sender: TObject);
```

```
Var Child: TForm1;
```

```
begin
```

```
    Child := TForm1.Create(Application);
```

```
end;
```

```
procedure TMainForm.FileSave(Sender: TObject);
```

```
begin
```

```
    { Add code to save current file under current name }
```

```
end;
```

```
procedure TMainForm.FileSaveAs(Sender: TObject);
```

```
begin
```

```
    if SaveDialog.Execute then
```

```
    begin
```

```
        { Add code to save current file under SaveDialog.FileName }
```

```
    end;
```

```
end;
```

```
procedure TMainForm.FilePrint(Sender: TObject);
```

```
begin
```

```
    if PrintDialog.Execute then
```

```
    begin
```

```
        { Add code to print current file }
```

```
    end;
```

```
end;
```

```
procedure TMainForm.FilePrintSetup(Sender: TObject);
```

```
begin
```

```
    PrintSetupDialog.Execute;
```

```
end;
```

```
procedure TMainForm.FileExit(Sender: TObject);
```

```
begin
```

```
    Close;
end;

procedure TForm1.EditUndo(Sender: TObject);
begin
    { Add code to perform Edit Undo }
end;

procedure TForm1.EditCut(Sender: TObject);
begin
    { Add code to perform Edit Cut }
end;

procedure TForm1.EditCopy(Sender: TObject);
begin
    { Add code to perform Edit Copy }
end;

procedure TForm1.EditPaste(Sender: TObject);
begin
    { Add code to perform Edit Paste }
end;

procedure TForm1.WindowFile(Sender: TObject);
begin
    File;
end;

procedure TForm1.WindowCascade(Sender: TObject);
begin
    Cascade;
end;

procedure TForm1.WindowArrange(Sender: TObject);
begin
    ArrangeIcons;
end;
```

```
end;
```

```
procedure TMainForm.HelpContents(Sender: TObject);
```

```
begin
```

```
  Application.HelpCommand(HELP_CONTENTS, 0);
```

```
end;
```

```
procedure TMainForm.HelpSearch(Sender: TObject);
```

```
const
```

```
  EmptyString: PChar = '';
```

```
begin
```

```
  Application.HelpCommand(HELP_PARTIAL_KEY, Longint(EmptyString));
```

```
end;
```

```
procedure TMainForm.HelpHowToUse(Sender: TObject);
```

```
begin
```

```
  Application.HelpCommand(HELP_HELPONHELP, 0);
```

```
end;
```

```
procedure TMainForm.HelpAbout(Sender: TObject);
```

```
begin
```

```
  { Add code to show program's About Box }
```

```
  AboutBox.Show;
```


```
end;
```

```
end;
```

ภาคผนวก จ.
ส่วนของการแสดงผลหรือ User inter face

Form1

Solution



คณะวิศวกรรมศาสตร์ มหาวิทยาลัยอุบลราชธานี
ภาควิชา วิศวกรรมอุตสาหการ

ค่าเริ่มต้นสำหรับการคำนวณ EDM

ชนิดของอิเล็กโทรด

Fine Graphite/Steel Technology

ความถี่พัลส์ของอิเล็กโทรด (ตร.ซม.)

6.0 4.0 3.0 2.0 1.0 0.5

พ.ท. ความถี่สูง (SI) พ.ท. ความถี่ต่ำ (SI)

0 0

ค่า CHE

0

ค่า CHE ที่เป็นไปได้

Refresh

Calculate

Close

PrintDialog1 SaveDialog1 MainMenu1

ภาคผนวก ช.
ตัวอย่างตารางข้อมูล

