

**RANCANGAN SIMULASI ARINC 429 PADA *ALTITUDE*
PESAWAT MENGGUNAKAN *MICROSOFT VISUAL BASIC* DI
POLITEKNIK PENERBANGAN SURABAYA**

TUGAS AKHIR



Oleh :

VALERIE ANANTA KATON MARTONO
NIT. 30418095

**PROGRAM STUDI DIPLOMA 3 TEKNIK PESAWAT UDARA
POLITEKNIK PENERBANGAN SURABAYA
2021**



**RANCANGAN SIMULASI ARINC 429 PADA *ALTITUDE*
PESAWAT MENGGUNAKAN *MICROSOFT VISUAL BASIC* DI
POLITEKNIK PENERBANGAN SURABAYA**

TUGAS AKHIR

Diajukan sebagai Syarat Menempuh Mata Kuliah Akhir pada
Program Studi Diploma 3 Teknik Pesawat Udara



Oleh :

VALERIE ANANTA KATON MARTONO

NIT. 30418095

**PROGRAM STUDI DIPLOMA 3 TEKNIK PESAWAT UDARA
POLITEKNIK PENERBANGAN SURABAYA**

2021

HALAMAN PERSETUJUAN

RANCANGAN SIMULASI ARINC 429 PADA ALTITUDE PESAWAT
MENGUNAKAN MICROSOFT VISUAL BASIC DI POLITEKNIK
PENERBANGAN SURABAYA

Oleh :
VALERIE ANANTA KATON MARTONO
NIT. 30418095

Disetujui untuk diujikan pada :
Surabaya, 18 Agustus 2021

Pembimbing I : Dr. M. RIFA'I, ST, M.Pd
NIP. 19770216 199903 1 003



Pembimbing II : KUSNO, S.Pd, MM
NIP. 19630617 198203 1 001



HALAMAN PENGESAHAN

RANCANGAN SIMULASI ARINC 429 PADA *ALTITUDE* PESAWAT
MENGUNAKAN *MICROSOFT VISUAL BASIC* DI POLITEKNIK
PENERBANGAN SURABAYA

Oleh :
VALERIE ANANTA KATON MARTONO
NIT. 30418095

Telah dipertahankan dan dinyatakan lulus pada Ujian Tugas Akhir
Program Pendidikan Diploma 3 Teknik Pesawat Udara
Politeknik Penerbangan Surabaya
Pada Tanggal: 18 Agustus 2021

Panitia Penguji :

1. Ketua : RIFDIAN I.S., ST, MM, MT
NIP. 19810629 200912 1 002
2. Sekretaris : ADE IRFANSYAH, S.T, M.T
NIP. 19801125 200212 1 002
3. Anggota : Dr. MOCH. RIFA'I, ST, M.Pd
NIP. 19770216 199903 1 003




Ditandatangani secara elektronik


Ketua Program Studi
D3 Teknik Pesawat Udara



Ir. BAMBANG JUNIPITOYO, S.T., M.T
NIP. 19780626 200912 1 001

PERNYATAAN KEASLIAN DAN HAK CIPTA

Saya yang bertanda tangan di bawah ini :

Nama : Valerie Ananta Katon Martono
NIT : 30418095
Program Studi : Diploma 3 Teknik Pesawat Udara 4 Delta
Judul Tugas Akhir : RANCANGAN SIMULASI ARINC 429 PADA
ALTITUDE PESAWAT MENGGUNAKAN
MICROSOFT VISUAL BASIC DI POLITEKNIK
PENERBANGAN SURABAYA

Dengan ini menyatakan bahwa :

1. Tugas Akhir ini merupakan karya asli dan belum pernah diajukan untuk mendapatkan gelar akademik, baik di Politeknik Penerbangan Surabaya maupun di Perguruan Tinggi lain, serta dipublikasikan, kecuali secara tertulis dengan jelas dicantumkan sebagai acuan dalam naskah dengan disebutkan nama pengarang dan dicantumkan dalam daftar pustaka.
2. Demi pengembangan ilmu pengetahuan, menyetujui untuk memberikan Hak Bebas Royalti Non Eksklusif (*Non-Exclusive Royalty-Free Right*) kepada Politeknik Penerbangan Surabaya umkama nama saya sebagai penulis/pencipta beserta perangkat (jika diperlukan). Dengan Hak ini, Politeknik Penerbangan Surabaya berhak menyimpan, mengalih media/formatkan, mengelola dalam bentuk pangkalan data (database), merawat, dan mempublikasikan tugas akhir saya dengan tetap mencantumkan nama saya sebagai penulis/pencipta dan sebagai pemilik Hak Cipta.

Demikian pernyataan ini saya buat dengan sebenarnya. Apabila dikemudian hari terdapat penyimpangan dan ketidakbenaran, maka saya bersedia menerima sanksi akademik berupa pencabutan gelar yang telah diperoleh, serta sanksi lainnya sesuai dengan norma yang berlaku di Politeknik Penerbangan Surabaya.

Surabaya, 16 Agustus 2021

Yang membuat pernyataan



KATA PENGANTAR

Puji syukur kami panjatkan kepada Tuhan Yang Maha Esa, karena berkat dan rahmatNya, Tugas Akhir yang berjudul RANCANGAN SIMULASI ARINC 429 PADA *ALTITUDE* PESAWAT MENGGUNAKAN *MICROSOFT VISUAL BASIC* DI POLITEKNIK PENERBANGAN SURABAYA ini dapat diselesaikan dengan baik.

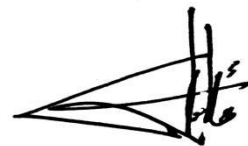
Penyusunan Tugas Akhir ini dimaksudkan sebagai salah satu syarat menyelesaikan pendidikan di Politeknik Penerbangan Surabaya dan memperoleh gelar Ahli Madya (A.Md)

Ucapan terima kasih kami sampaikan kepada segenap pihak yang telah membantu selama proses penyusunan Tugas Akhir ini, terutama kepada :

1. M. Andra Adityawarman, S.T., M.T., selaku Direktur Politeknik Penerbangan Surabaya.
2. Ir. Bambang Junipitoyo, S.T., M.T. selaku Ketua Program Studi Teknik Pesawat Udara Politeknik Penerbangan Surabaya.
3. Dr. M. Rifa'i, ST, M.Pd selaku Pembimbing materi yang senantiasa membimbing dan membantu dalam penyusunan Tugas Akhir.
4. Kusno, S.Pd, MM selaku pembimbing penulisan yang senantiasa membimbing dan membantu dalam penyusunan Tugas Akhir.
5. Seluruh Dosen dan Staff Pengajar Program Studi Teknik Pesawat Udara Politeknik Penerbangan Surabaya yang selalu memberikan ilmu pengetahuan pada bidang penerbangan khususnya tentang perawatan pada pesawat udara.
6. Kedua orang tua dan saudara yang telah memberikan doa, kasih sayang, dukungan moril dan material serta dorongan semangat kepada saya sampai terselesaikannya penulisan Tugas Akhir ini.
7. Teman-teman sekelas, atas kebersamaan dan kerjasamanya.
8. Teman-teman seangkatan dan junior, atas dukungan yang diberikan.

Tentunya Tugas Akhir ini masih jauh dari kata sempurna. Penulis berharap semoga Tugas Akhir ini dapat memberikan manfaat bagi semua orang khususnya bagi taruna Politeknik Penerbangan Surabaya. Atas segala kesalahan dan kata-kata yang kurang berkenan, kami memohon maaf. Saran dan kritik membangun kami harapkan demi karya yang lebih baik di masa mendatang.

Surabaya, 16 Agustus 2021



Valerie Ananta K.M.
NIT. 30418095

ABSTRAK

RANCANGAN SIMULASI ARINC 429 PADA *ALTITUDE* PESAWAT
MENGUNAKAN *MICROSOFT VISUAL BASIC* DI POLITEKNIK
PENERBANGAN SURABAYA

Oleh:

VALERIE ANANTA KATON MARTONO
NIT. 30418095

ARINC 429 merupakan standar persyaratan untuk transfer data digital antara sistem avionik pada pesawat komersial. ARINC 429 merupakan salah satu teori yang terdapat dalam mata kuliah *Integrated Modular Avionics* di Prodi Teknik Pesawat Udara Politeknik Penerbangan Surabaya. AMTO 147 Politeknik Penerbangan Surabaya belum memiliki alat peraga dan simulasi yang dapat digunakan sebagai sarana praktikum ARINC 429.

Penelitian ini mensimulasikan komunikasi data *altitude* pesawat pada ARINC 429 yang menampilkan data BNR dan bentuk sinyal ARINC 429 dalam format *Return-to-Zero (RZ)*. Penelitian ini menggunakan metode eksperimen dengan tahapan meliputi identifikasi masalah, pengumpulan data, teknik pengujian, serta teknik analisis hasil *output software* simulasi ARINC 429. Simulasi ini diharapkan dapat menampilkan data ARINC 429 serta bentuk sinyal elektrik dan dapat digunakan sebagai media pembelajaran bagi taruna.

Kata kunci : ARINC 429, *Altitude*, Simulasi, Format *Return-to-Zero*.

ABSTRACT

*ARINC 429 SIMULATION DESIGN ON AIRCRAFT ALTITUDE USING
MICROSOFT VISUAL BASIC
IN AVIATION POLYTECHNIC OF SURABAYA*

By:

VALERIE ANANTA KATON MARTONO
NIT. 30418095

ARINC 429 is the standard requirement for digital data transfer between avionics system on commercial aircraft. ARINC 429 is one of the theories contained in the Integrated Modular Avionics course of the Politeknik Penerbangan Surabaya. AMTO 147 in Aviation Polytechnic of Surabaya have no practical control and simulation that can be used as a practical equipment for ARINC 429 practicum.

This research simulates the communication of altitude data on ARINC 429 which displays BNR data and ARINC 429 signal in form Return-to-Zero (RZ) format. This research used an experimental method with stages including problem identification, data collection, testing techniques, and analysis techniques for the results of the simulation software ARINC 429. This simulation is expected to display ARINC 429 data and the form of electrical signals and can be used as a learning medium for cadets.

Keywords : *ARINC 429, Altitude, Simulation, Return-to-Zero Format .*

DAFTAR ISI

| | Halaman |
|--|---------|
| HALAMAN JUDUL | i |
| HALAMAN PERSETUJUAN | ii |
| HALAMAN PENGESAHAN | iii |
| PERNYATAAN KEASLIAN DAN HAK CIPTA | iv |
| KATA PENGANTAR | v |
| ABSTRAK | vi |
| <i>ABSTRACT</i> | vii |
| DAFTAR ISI | viii |
| DAFTAR GAMBAR | x |
| DAFTAR TABEL | xi |
| DAFTAR LAMPIRAN | xii |
| | |
| BAB 1. PENDAHULUAN | 1 |
| 1.1 Latar Belakang | 1 |
| 1.2 Rumusan Masalah | 2 |
| 1.3 Batasan Penelitian | 3 |
| 1.4 Tujuan Penelitian | 3 |
| 1.5 Manfaat Penelitian | 3 |
| 1.5.1 Bagi Penulis | 3 |
| 1.5.2 Bagi Lembaga Pendidikan | 3 |
| 1.6 Sistematika Penulisan | 4 |
| | |
| BAB 2. LANDASAN TEORI | 5 |
| 2.1 ARINC 429 | 5 |
| 2.1.1 Karakteristik Transmisi ARINC 429 | 6 |
| 2.1.2 Format <i>Return-to-Zero</i> | 6 |
| 2.1.3 Format <i>Word</i> | 7 |
| A. <i>Parity</i> | 8 |
| B. <i>Sign/Status Matrix (SSM)</i> | 8 |
| C. <i>Data</i> | 9 |
| D. <i>Source/Desination Identification (SDI)</i> | 9 |
| E. <i>Label</i> | 10 |
| 2.1.4 Tipe Data pada ARINC 429 | 10 |
| A. <i>Binary Number Representation (BNR)</i> | 10 |
| B. <i>Binary Coded Decimal (BCD)</i> | 10 |
| 2.2 <i>Microsoft Visual Basic</i> | 11 |
| 2.3 <i>Flightradar24</i> | 12 |
| 2.4 Penelitian Terdahulu | 13 |
| | |
| BAB 3. METODOLOGI PENELITIAN | 15 |
| 3.1 Desain Penelitian | 15 |
| 3.2 Perancangan Alat | 16 |
| 3.2.1 Kondisi Saat Ini | 16 |

| | |
|---|----|
| 3.2.2 Kondisi Yang Diinginkan | 16 |
| 3.2.3 Desain Aplikasi Simulasi | 17 |
| 3.2.4 Cara Kerja Simulasi | 17 |
| 3.2.5 Alat dan Komponen | 18 |
| 3.2.5.1 Penentuan Alat yang Digunakan | 18 |
| 3.2.5.2 Penentuan Komponen Perangkat Lunak | 18 |
| 1. <i>Graphical User Interface</i> | 18 |
| 2. <i>Microsoft Visual Basic</i> | 18 |
| 3. <i>Flightradar24</i> | 18 |
| 3.3 Teknik Pengumpulan Data | 18 |
| 1. Observasi | 18 |
| 2. Studi Literatur | 19 |
| 3. Proses Perancangan | 19 |
| 3.4 Teknik Pengujian | 19 |
| 3.5 Teknik Analisis Data | 20 |
| 3.6 Penggunaan Rancangan | 21 |
| 3.7 Waktu dan Tempat Penelitian | 21 |
| | |
| BAB 4. PENGUJIAN DAN ANALISA | 22 |
| 4.1 Pengumpulan Data | 23 |
| 4.2 Pengujian | 24 |
| 4.2.1 <i>Software</i> Yang Digunakan | 24 |
| 4.2.2 Pengolahan Input Data | 25 |
| 4.2.3 Pengujian <i>Software</i> Simulasi | 25 |
| 4.3 Analisis Hasil Simulasi | 26 |
| 4.3.1 Analisis BNR | 27 |
| 4.3.2 Analisis Format <i>Return-to-Zero</i> | 28 |
| | |
| BAB 5. PENUTUP | 29 |
| 5.1 Kesimpulan | 29 |
| 5.2 Saran | 29 |
| | |
| DAFTAR PUSTAKA | 30 |
| LAMPIRAN | 31 |

DAFTAR GAMBAR

| | Halaman |
|-------------|--|
| Gambar 2.1 | Sinyal pada format <i>Return-to-Zero</i> 7 |
| Gambar 2.2 | <i>Format word</i> pada ARINC 429..... 8 |
| Gambar 2.3 | <i>Format word</i> BNR..... 10 |
| Gambar 2.4 | <i>Format word</i> BCD..... 11 |
| Gambar 2.5 | Tampilan <i>Microsoft Visual Basic</i> 12 |
| Gambar 2.6 | Tampilan web <i>flightradar24.com</i> 13 |
| Gambar 3.1 | Diagram alir penelitian..... 15 |
| Gambar 3.2 | Rancangan aplikasi simulasi..... 17 |
| Gambar 4.1 | Pembuatan simulasi..... 22 |
| Gambar 4.2 | Hasil akhir pembuatan simulasi..... 22 |
| Gambar 4.3 | Pesawat Batik Air BTK6885 PK-BDF..... 23 |
| Gambar 4.4 | Rute pesawat Batik Air BTK6885 KNO-CGK..... 24 |
| Gambar 4.5 | Data penerbangan <i>flightradar24.com</i> 25 |
| Gambar 4.6 | Tampilan pembuka <i>software</i> simulasi..... 26 |
| Gambar 4.7 | Tampilan <i>software</i> simulasi..... 26 |
| Gambar 4.8 | Pengujian data ke-1427 |
| Gambar 4.9 | Analisis BNR27 |
| Gambar 4.10 | Analisis format <i>Return-to-Zero</i> 28 |

DAFTAR TABEL

| | Halaman |
|--|---------|
| Tabel 2.1 Level tegangan yang diizinkan pada ARINC 429 | 7 |
| Tabel 2.2 Kode SSM untuk data BCD | 9 |
| Tabel 2.3 Kode SSM untuk data BNR | 9 |
| Tabel 3.1 Tabel waktu penelitian | 21 |
| Tabel 4.1 Data penerbangan Batik Air BTK 6885 | 23 |
| Tabel 4.2 Sampel data | 24 |

DAFTAR LAMPIRAN

| | Halaman |
|--|---------|
| Lampiran A. Tampilan <i>Software</i> Simulasi..... | 31 |
| Lampiran B. <i>Coding</i> Simulasi 1..... | 32 |
| Lampiran C. <i>Coding</i> Simulasi 2..... | 34 |
| Lampiran D. Hasil Pengecekan Plagiasi..... | 47 |

DAFTAR PUSTAKA

- Aeronautical Radio, Inc. 2551 River Road Annapolis, MD 21401, 3703 N. 200th Street, Omaha, Nebraska.
- Airlines electronic engineering commite. 2004. *Diktat Arinc spesification 429 PART 1-17*. Aeronautical Radio, Inc.
- Hendra, S. T. 2000. Dasar Pemrograman *Visual Basic*.
- Inc., Condor Engineering. 2002. *ARINC 429 Tutorial*. United States of America Condor Engineering Inc.
- Krisna, A. L. A., Astuti, Y., & Dermawan, D. 2019. *Simulasi Komunikasi Data Altitude dan Airspeed Pesawat pada ARINC 429 Menggunakan Visual Basic 2010*. Sekolah Tinggi Teknologi Adisutjipto, Yogyakarta
- Ltd., Zhenghong Aviation Tech Co. 2005. *ARINC 429 Protocol Tutorial*. China. Zhenghong Aviation Tech Co.,ltd
- Martinec, Daniel A., & Spitzer, C. R. 2001. *The Avionics Handbook*. Williamsburg, Virginia. AvioniCon, Inc.
- Sabihi, Ahmad. 2008. *17A Novel Electronic Circuit Design for ARINC 429 Transmitter Applied on Civil Aircraft*. Tehran, Iran. Department of Mathematics Sharif University of Technology
- Waldman, B. 2019. *ARINC 429 Specification Tutorial*. The Federal Republic of Germany. AIM GmbH

Lampiran B. Coding Simulasi 1

The screenshot shows the Microsoft Visual Basic code editor with the following code:

```

Public a, b As Integer

Public Function BinToDes(ByVal NBiner As String) As Long
    Dim a As Integer
    Dim b As Long
    Dim Nilai As Long
    On Error GoTo ErrorHandler
    b = 1
    For a = Len(NBiner) To 1 Step -1
        If Mid(NBiner, a, 1) = "1" Then Nilai = Nilai + b
        b = b * 2
    Next
    BinToDes = Nilai
    Exit Function
ErrorHandler:
    BinToDes = 0
End Function

Public Function DesToBin(ByVal NDesimal As Long) As String
    Dim C As Byte
    Dim D As Long
    Dim Nilai As String
    On Error GoTo ErrorHandler
    D = (2 ^ 31) - 1
    While D > 0
        If NDesimal - D >= 0 Then
            NDesimal = NDesimal - D
            Nilai = Nilai & "1" & "."
        Else
            If Val(Nilai) > 0 Then Nilai = Nilai & "0" & "."
        End If
        D = D / 2
    Wend
    DesToBin = Nilai
    Exit Function
ErrorHandler:
    DesToBin = 0
End Function

```

The screenshot shows the Microsoft Visual Basic code editor with the following code:

```

End Function

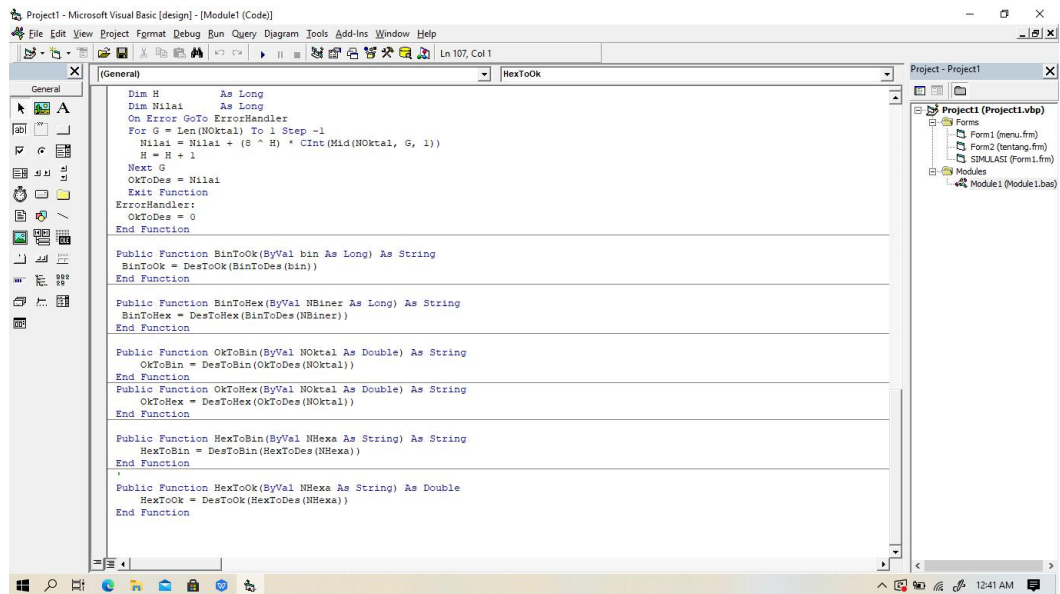
Public Function DesToHex(ByVal NDesimal As Long) As String
    DesToHex = Hex(NDesimal)
End Function

Public Function HexToDes(ByVal NHexa As String) As Long
    Dim e As Integer
    Dim Nilai As Long
    Dim F As Long
    Dim CharNilai As Byte
    On Error GoTo ErrorHandler
    For e = Len(NHexa) To 1 Step -1
        Select Case Mid(NHexa, e, 1)
            Case "0" To "9": CharNilai = CInt(Mid(NHexa, e, 1))
            Case Else: CharNilai = Asc(Mid(NHexa, e, 1)) - 55
        End Select
        Nilai = Nilai + ((16 ^ F) * CharNilai)
        F = F + 1
    Next e
    HexToDes = Nilai
    Exit Function
ErrorHandler:
    HexToDes = 0
End Function

Public Function DesToOkt(ByVal NDesimal As Long) As String
    DesToOkt = Oct(NDesimal)
End Function

Public Function OktToDes(ByVal NOKtal As String) As Long
    Dim G As Integer
    Dim H As Long
    Dim Nilai As Long
    On Error GoTo ErrorHandler
    For G = Len(NOKtal) To 1 Step -1
        Nilai = Nilai + (8 ^ H) * CInt(Mid(NOKtal, G, 1))
        H = H + 1
    Next G
End Function

```

The screenshot shows the Microsoft Visual Basic IDE with a project named "Project1" open. The main window displays the code for a module named "Module1 (Module1.bas)". The code includes several public functions for converting between different data types and representations. The code is as follows:

```
Dim H As Long
Dim Nilai As Long
On Error GoTo ErrorHandler
For G = Len(NOKtal) To 1 Step -1
    Nilai = Nilai + (8 ^ H) * Cint(Mid(NOKtal, G, 1))
    H = H + 1
Next G
OkToDes = Nilai
Exit Function
ErrorHandler:
OkToDes = 0
End Function

Public Function BinToOk(ByVal bin As Long) As String
    BinToOk = DesToOk(BinToDes(bin))
End Function

Public Function BinToHex(ByVal NBiner As Long) As String
    BinToHex = DesToHex(BinToDes(NBiner))
End Function

Public Function OkToBin(ByVal NOKtal As Double) As String
    OkToBin = DesToBin(OkToDes(NOKtal))
End Function

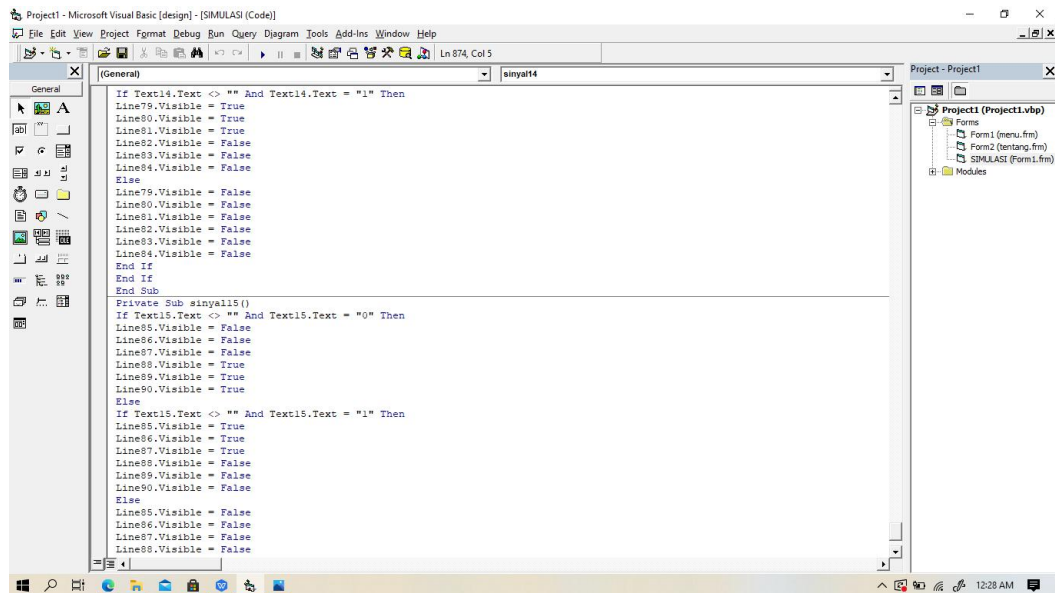
Public Function OkToHex(ByVal NOKtal As Double) As String
    OkToHex = DesToHex(OkToDes(NOKtal))
End Function

Public Function HexToBin(ByVal NHexa As String) As String
    HexToBin = DesToBin(HexToDes(NHexa))
End Function

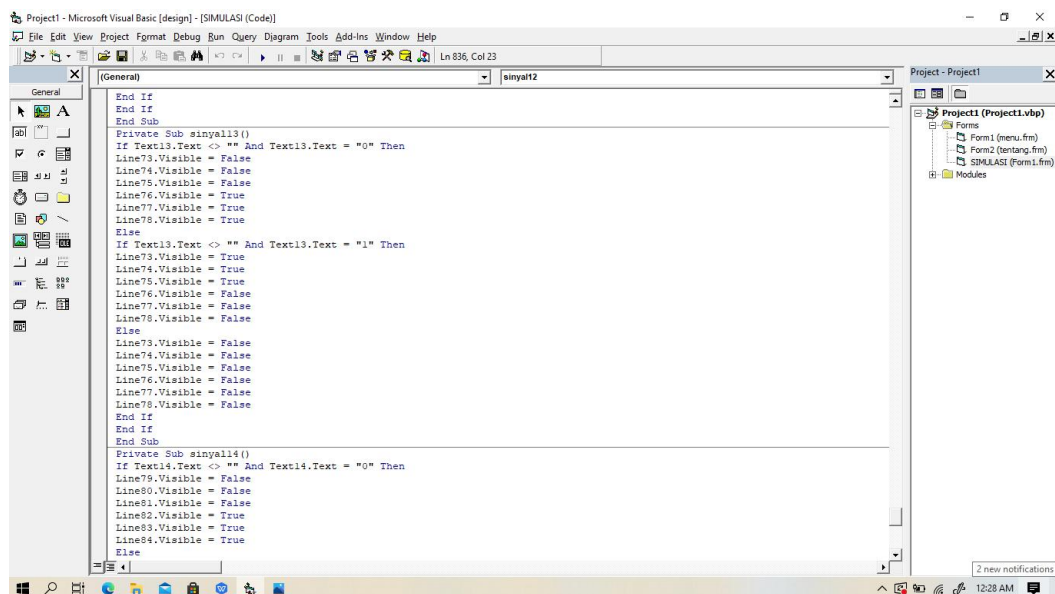
Public Function HexToOk(ByVal NHexa As String) As Double
    HexToOk = DesToOk(HexToDes(NHexa))
End Function
```

The IDE interface includes a menu bar (File, Edit, View, Project, Format, Debug, Run, Query, Diagram, Tools, Add-Ins, Window, Help), a toolbar, and a Project Explorer on the right showing the project structure with folders for Forms and Modules.

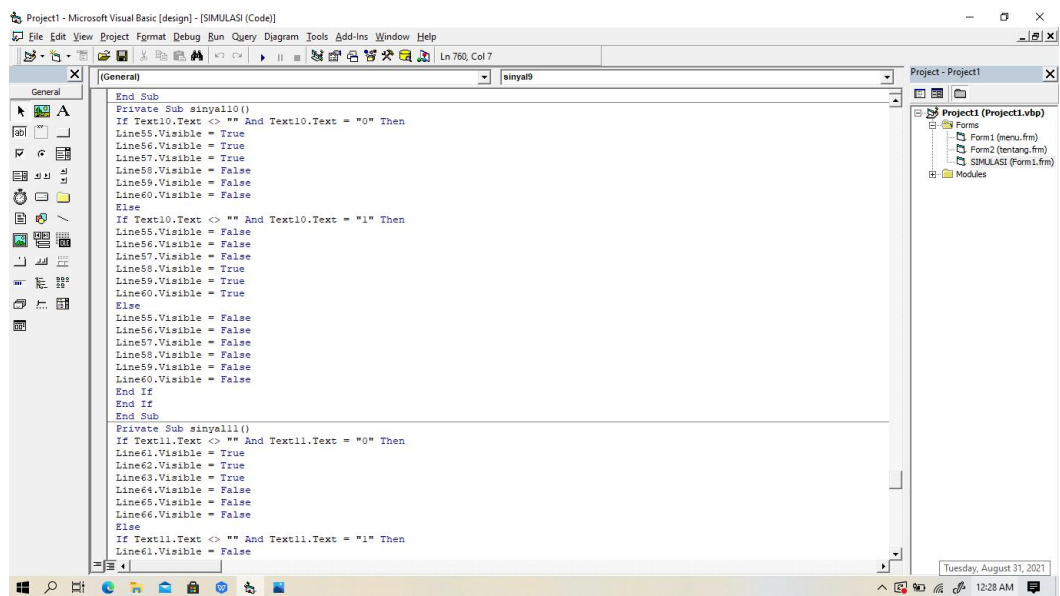
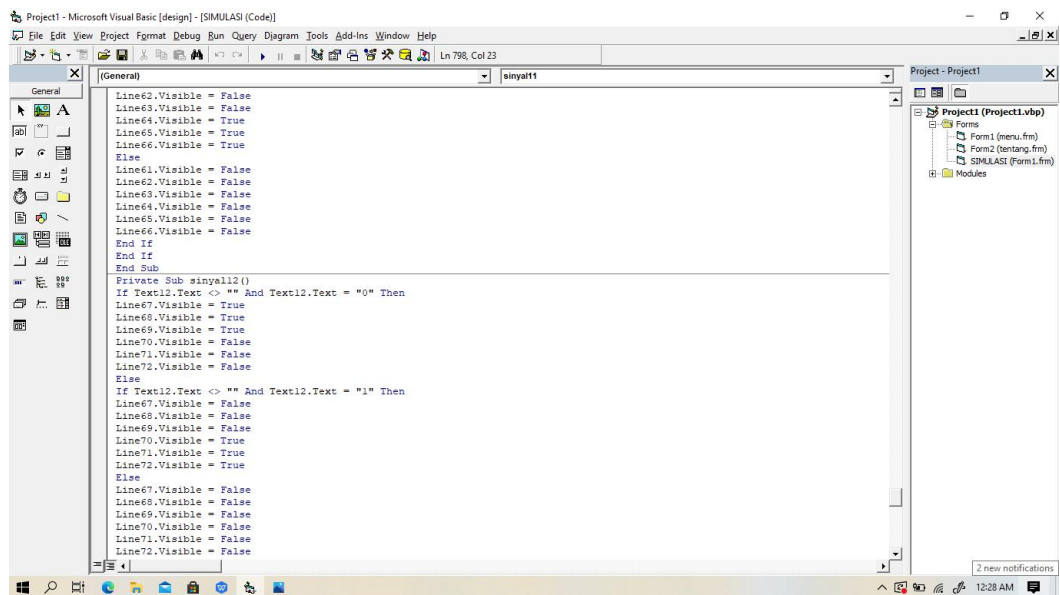
Lampiran C. Coding Simulasi 2

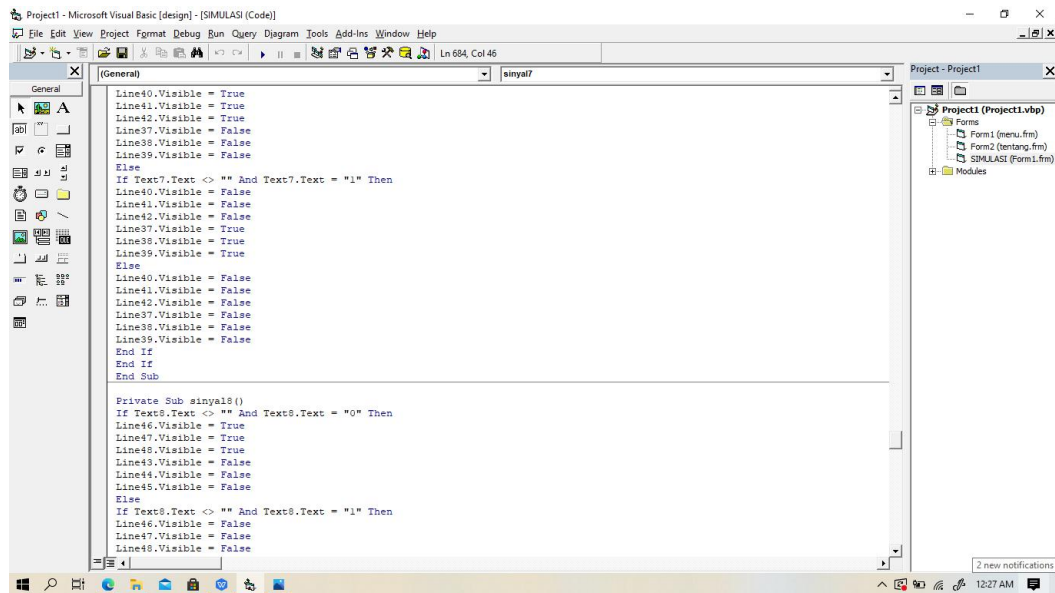
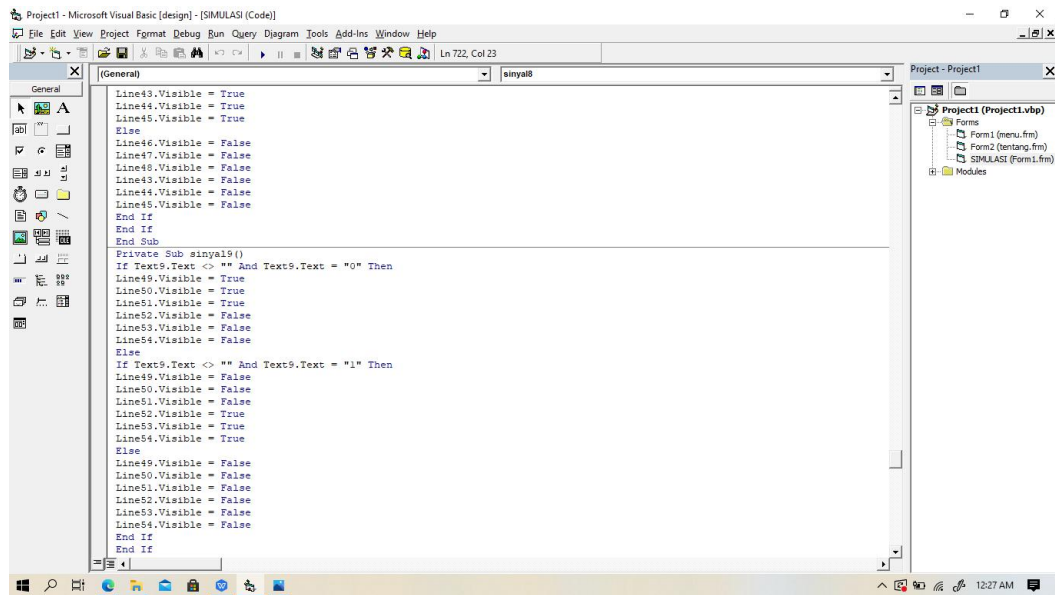


```
Project1 - Microsoft Visual Basic [design] - [SIMULASI (Code)]
File Edit View Project Format Debug Run Query Diagram Tools Add-Ins Window Help
Ln 874, Col 5
[General] sinyal14
Line79.Visible = True
Line80.Visible = True
Line81.Visible = True
Line82.Visible = False
Line83.Visible = False
Line84.Visible = False
Else
Line79.Visible = False
Line80.Visible = False
Line81.Visible = False
Line82.Visible = False
Line83.Visible = False
Line84.Visible = False
End If
End If
End Sub
Private Sub sinyal15()
If Text15.Text <> "" And Text15.Text = "0" Then
Line85.Visible = False
Line86.Visible = False
Line87.Visible = False
Line88.Visible = True
Line89.Visible = True
Line90.Visible = True
Else
If Text15.Text <> "" And Text15.Text = "1" Then
Line85.Visible = True
Line86.Visible = True
Line87.Visible = True
Line88.Visible = False
Line89.Visible = False
Line90.Visible = False
Else
Line85.Visible = False
Line86.Visible = False
Line87.Visible = False
Line88.Visible = False
Line89.Visible = False
Line90.Visible = False
End If
End If
End Sub
```



```
Project1 - Microsoft Visual Basic [design] - [SIMULASI (Code)]
File Edit View Project Format Debug Run Query Diagram Tools Add-Ins Window Help
Ln 836, Col 23
[General] sinyal12
End If
End If
End Sub
Private Sub sinyal13()
If Text13.Text <> "" And Text13.Text = "0" Then
Line73.Visible = False
Line74.Visible = False
Line75.Visible = False
Line76.Visible = True
Line77.Visible = True
Line78.Visible = True
Else
If Text13.Text <> "" And Text13.Text = "1" Then
Line73.Visible = True
Line74.Visible = True
Line75.Visible = True
Line76.Visible = False
Line77.Visible = False
Line78.Visible = False
Else
Line73.Visible = False
Line74.Visible = False
Line75.Visible = False
Line76.Visible = False
Line77.Visible = False
Line78.Visible = False
End If
End If
End Sub
Private Sub sinyal14()
If Text14.Text <> "" And Text14.Text = "0" Then
Line79.Visible = False
Line80.Visible = False
Line81.Visible = False
Line82.Visible = True
Line83.Visible = True
Line84.Visible = True
Else
```



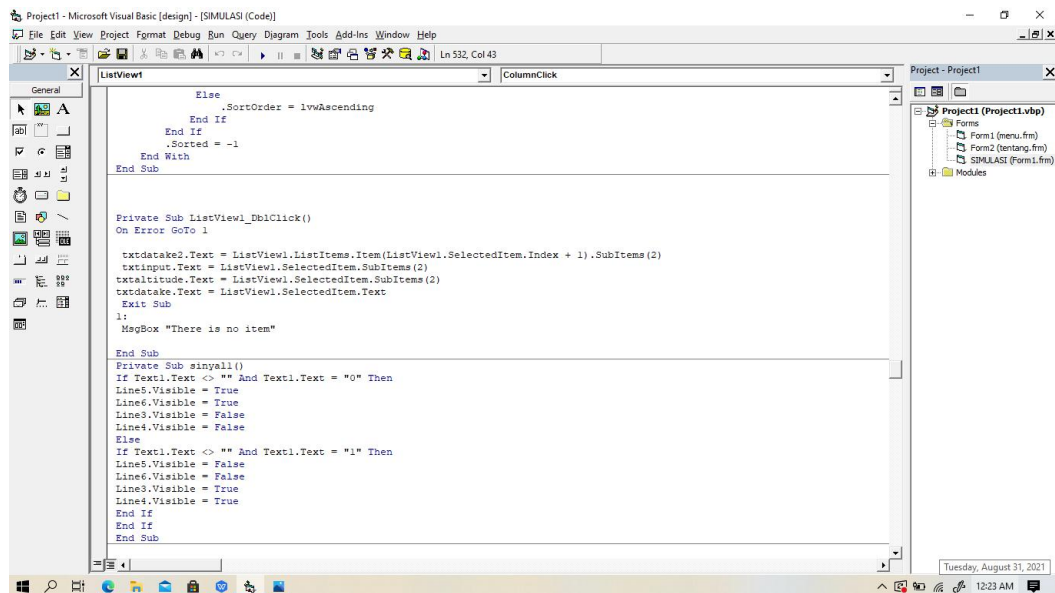
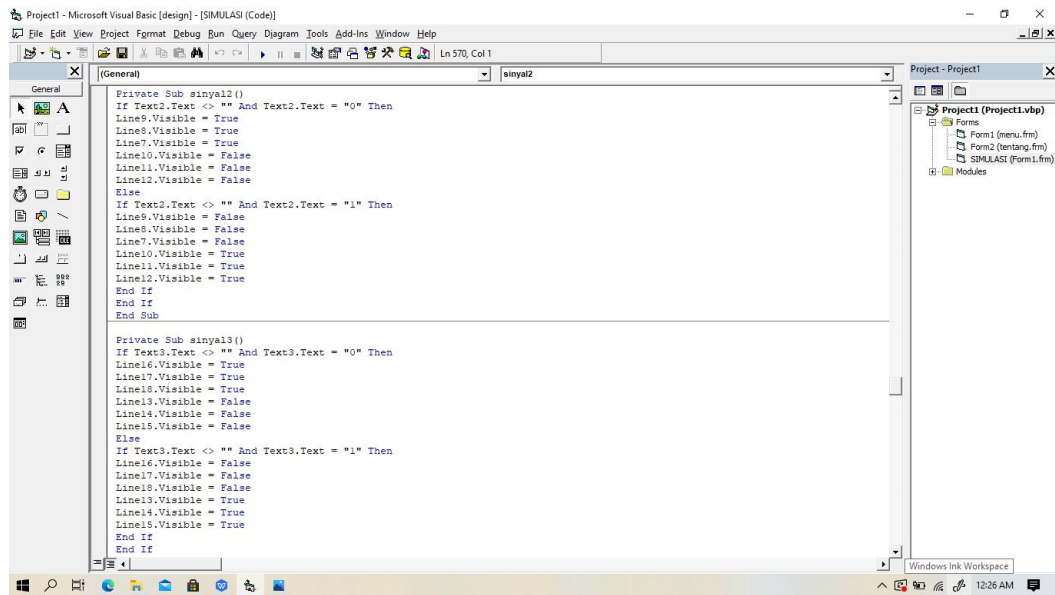


```
Project1 - Microsoft Visual Basic [design] - [SIMULASI (Code)]
File Edit View Project Format Debug Run Query Diagram Tools Add-Ins Window Help
Ln 646, Col 22

General
Else
Line28.Visible = False
Line29.Visible = False
Line30.Visible = False
Line25.Visible = False
Line26.Visible = False
Line27.Visible = False
End If
End If
End Sub
Private Sub sinyal6()
If Text6.Text <> "" And Text6.Text = "0" Then
Line34.Visible = True
Line35.Visible = True
Line36.Visible = True
Line31.Visible = False
Line32.Visible = False
Line33.Visible = False
Else
If Text6.Text <> "" And Text6.Text = "1" Then
Line34.Visible = False
Line35.Visible = False
Line36.Visible = False
Line31.Visible = True
Line32.Visible = True
Line33.Visible = True
Else
Line34.Visible = False
Line35.Visible = False
Line36.Visible = False
Line31.Visible = False
Line32.Visible = False
Line33.Visible = False
End If
End If
End Sub
Private Sub sinyal7()
If Text7.Text <> "" And Text7.Text = "0" Then
```

```
Project1 - Microsoft Visual Basic [design] - [SIMULASI (Code)]
File Edit View Project Format Debug Run Query Diagram Tools Add-Ins Window Help
Ln 608, Col 7

General
End Sub
Private Sub sinyal4()
If Text4.Text <> "" And Text4.Text = "0" Then
Line22.Visible = True
Line23.Visible = True
Line24.Visible = True
Line19.Visible = False
Line20.Visible = False
Line21.Visible = False
Else
If Text4.Text <> "" And Text4.Text = "1" Then
Line22.Visible = False
Line23.Visible = False
Line24.Visible = False
Line19.Visible = True
Line20.Visible = True
Line21.Visible = True
End If
End If
End Sub
Private Sub sinyal5()
If Text5.Text <> "" And Text5.Text = "0" Then
Line28.Visible = True
Line29.Visible = True
Line30.Visible = True
Line25.Visible = False
Line26.Visible = False
Line27.Visible = False
Else
If Text5.Text <> "" And Text5.Text = "1" Then
Line28.Visible = False
Line29.Visible = False
Line30.Visible = False
Line25.Visible = True
Line26.Visible = True
Line27.Visible = True
End If
End If
```



Project1 - Microsoft Visual Basic [design] - [SIMULASI (Code)]

File Edit View Project Format Debug Run Query Diagram Tools Add-Ins Window Help

Ln 494, Col 20

Form KeyDown

```

End Select
End Sub
Private Sub Form_Load()
    Frame1.Visible = False
    Me.KeyPreview = True

    ListView1.ColumnHeaders.Clear
    ListView1.ListItems.Clear
    ListView1.View = lvwReport
    ListView1.ColumnHeaders.Add , , "No", 700
    ListView1.ColumnHeaders.Add , , "Timestamp", 1800
    ListView1.ColumnHeaders.Add , , "Altitude", 1500
    ListView1.ColumnHeaders.Add , , "Speed", 1500
    ListView1.ColumnHeaders.Add , , "Direction", 1500
    lblJumlahTerbaca.Caption = "Jumlah Record Terbaca : 0 Record"
End Sub

Private Sub jumlahkata()
    a = txttitik.Text
    jmlA = 1
    For i = 1 To Len(Trim(a))
        If Asc(Mid(a, i, 1)) = 13 Or Asc(Mid(a, i, 1)) = 32 Then jmlA = jmlA + 1
    Next i
    txtjumlah = jmlA
    txtjumlah = Len(txttitik)
End Sub

Private Sub Form_Resize()
    On Error Resume Next
End Sub

Private Sub ListView1_ColumnClick(ByVal ColumnHeader As MSComctlLib.ColumnHeader)
    With ListView1
        If .SortKey <> ColumnHeader.Index - 1 Then
            .SortKey = ColumnHeader.Index - 1
            .SortOrder = lvwAscending
        Else
            If .SortOrder = lvwAscending Then
                .SortOrder = lvwDescending
            End If
        End If
    End With
End Sub

```

Windows Ink Workspace 12:22 AM

Project1 - Microsoft Visual Basic [design] - [SIMULASI (Code)]

File Edit View Project Format Debug Run Query Diagram Tools Add-Ins Window Help

Ln 456, Col 25

cmdTampilkan Click

```

If Excel.Cells(nRow, nColKodeBarang) <> "" Then
    Set oData = ListView1.ListItems.Add
    oData.Text = Trim(Str(nRow))
    oData.SubItems(nColKodeBarang) = Trim(Excel.Cells(nRow, nColKodeBarang))
    oData.SubItems(nColNamaBarang) = UCase(Trim(Excel.Cells(nRow, nColNamaBarang)))
    oData.SubItems(nColSatuan) = UCase(Trim(Excel.Cells(nRow, nColSatuan)))
    oData.SubItems(nColDirection) = UCase(Trim(Excel.Cells(nRow, nColDirection)))
    Ax = Ax + 1
    lblJumlahTerbaca.Caption = "Jumlah Record Terbaca : " & Ax & " Record"
Else
    Exit For
End If
Next

Excel.Workbooks.Close
Excel.Quit
Me.Refresh
Me.MousePointer = vbDefault

Set Excel = Nothing
Exit Sub

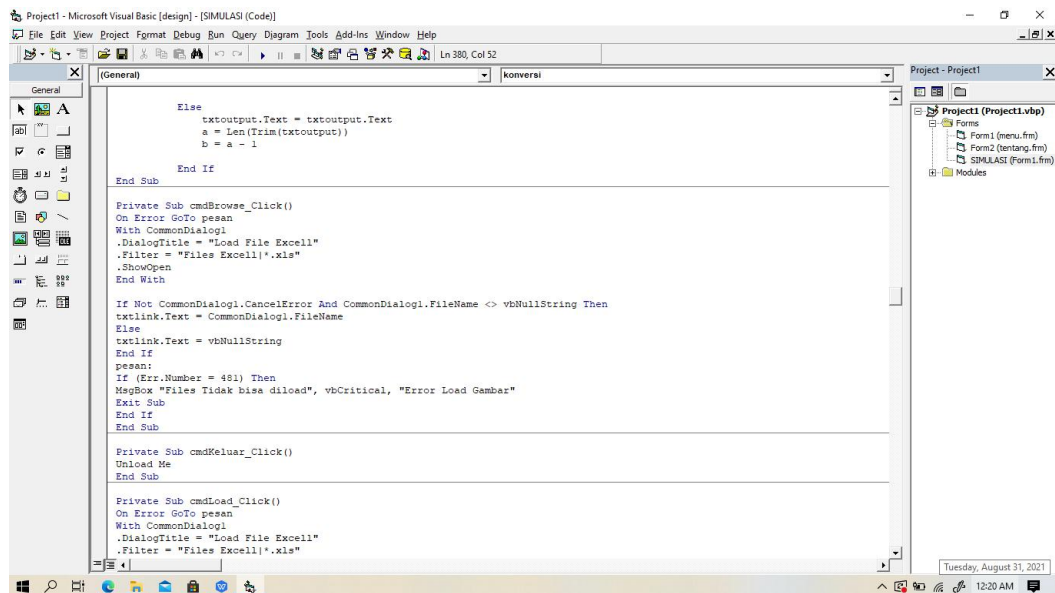
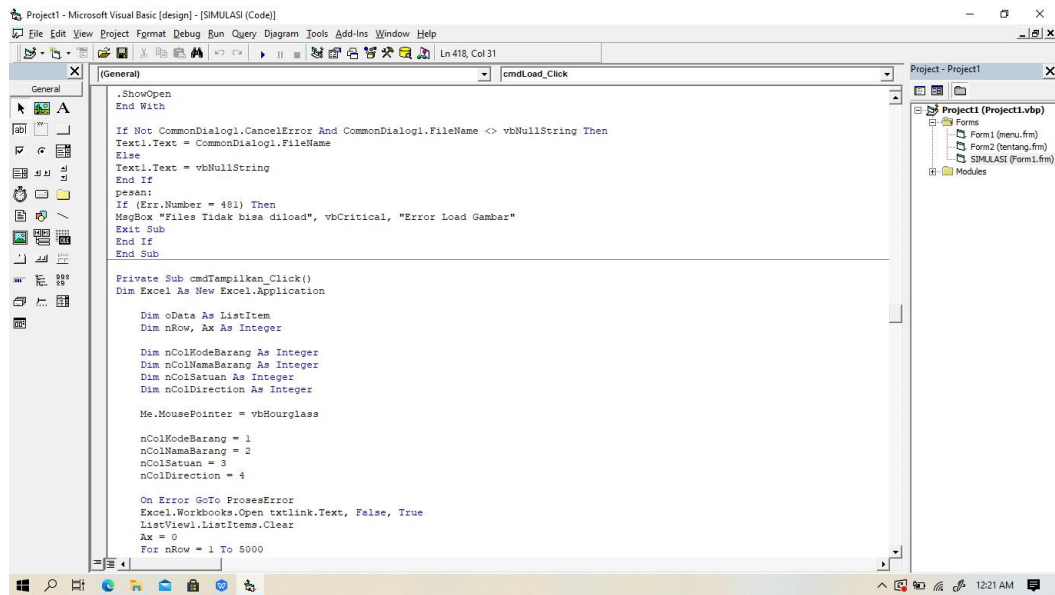
ProsesError:
MsgBox "Proses menampilkan data gagal !" & vbCrLf & vbCrLf & _
    Err.Description, vbExclamation, "Peringatan"
Excel.Workbooks.Close
Excel.Quit
Me.Refresh
Me.MousePointer = vbDefault

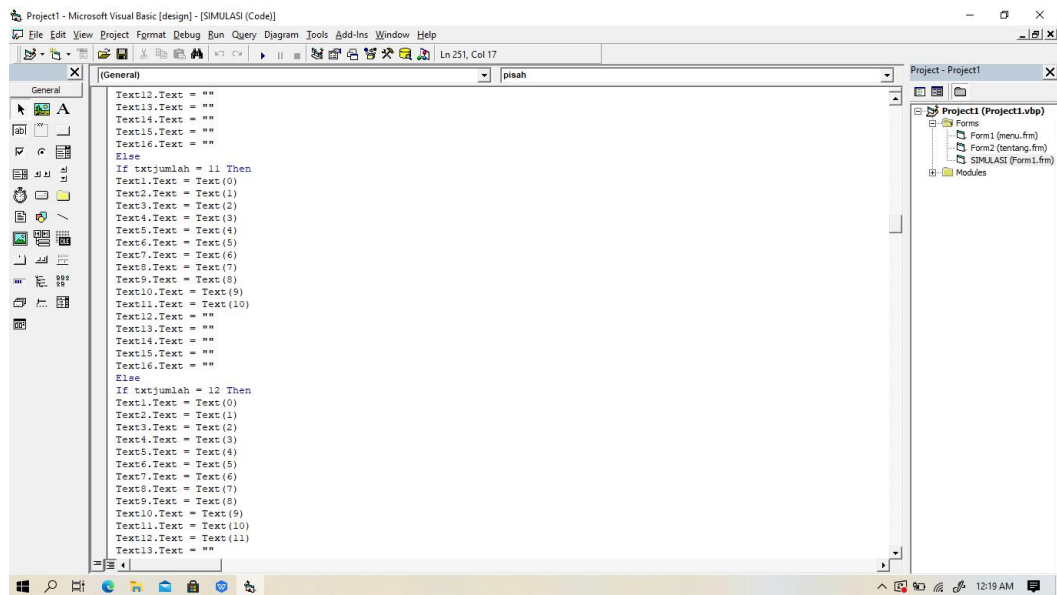
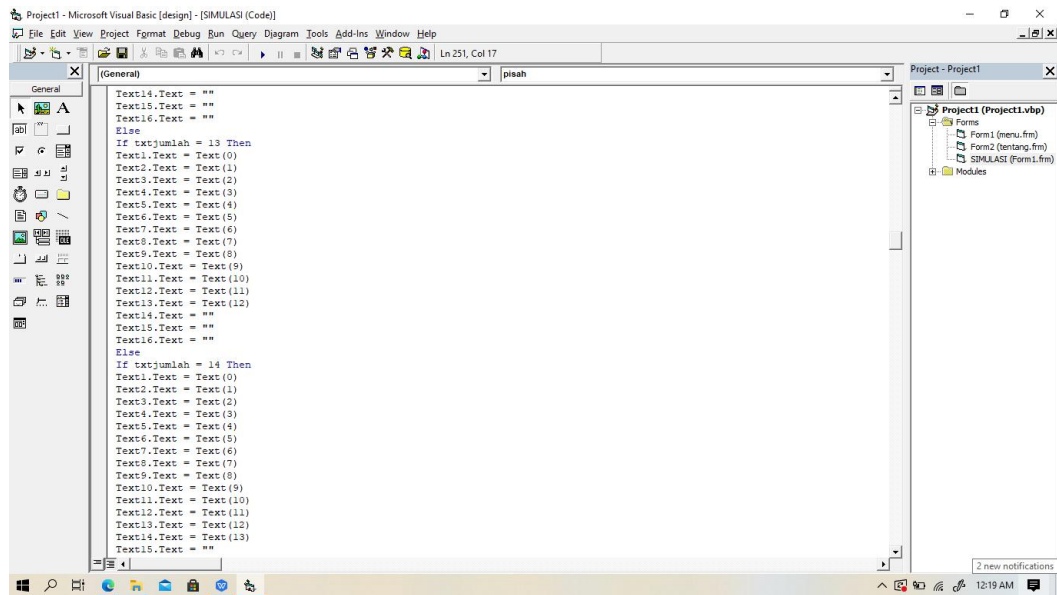
Set Excel = Nothing
End Sub

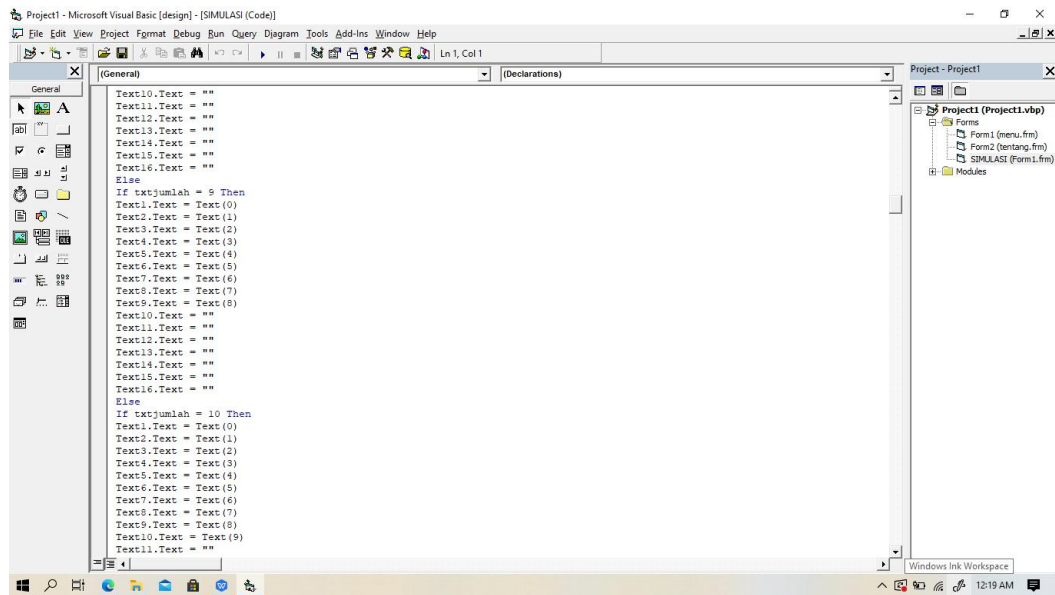
Private Sub Form_KeyDown(KeyCode As Integer, Shift As Integer)
    Select Case KeyCode
        Case vbKeyEscape
            Unload Me
    End Select
End Sub

```

Tuesday, August 31, 2021 12:21 AM







Project1 - Microsoft Visual Basic [design] - [SIMULASI (Code)]

```
File Edit View Project Format Debug Run Query Diagram Tools Add-Ins Window Help
```

Ln 1, Col 1

(General) (Declarations)

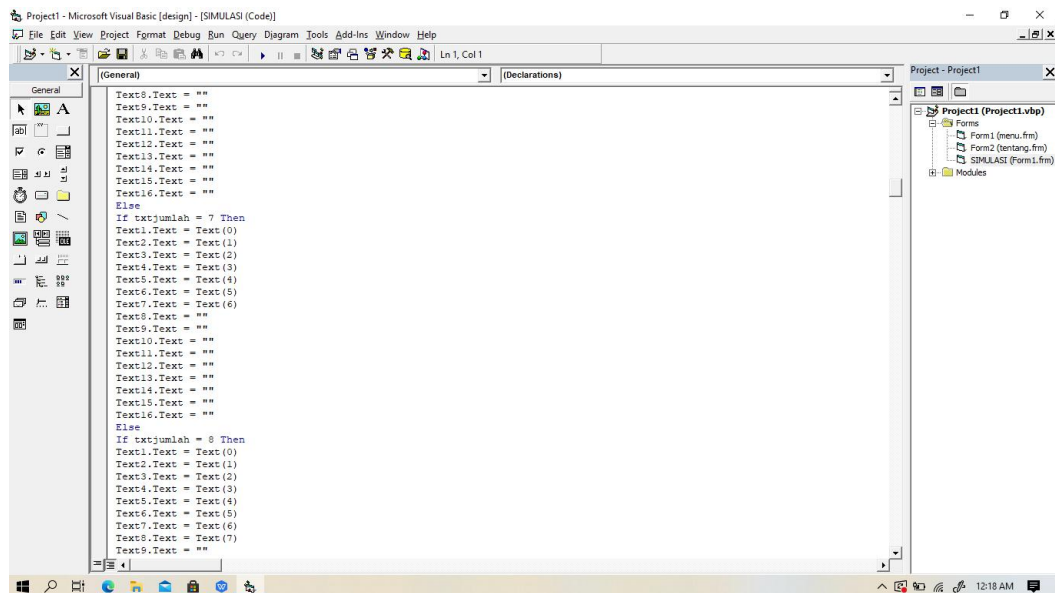
```
Text10.Text = ""
Text11.Text = ""
Text12.Text = ""
Text13.Text = ""
Text14.Text = ""
Text15.Text = ""
Text16.Text = ""
Else
If txtjumlah = 9 Then
Text1.Text = Text(0)
Text2.Text = Text(1)
Text3.Text = Text(2)
Text4.Text = Text(3)
Text5.Text = Text(4)
Text6.Text = Text(5)
Text7.Text = Text(6)
Text8.Text = Text(7)
Text9.Text = Text(8)
Text10.Text = ""
Text11.Text = ""
Text12.Text = ""
Text13.Text = ""
Text14.Text = ""
Text15.Text = ""
Text16.Text = ""
Else
If txtjumlah = 10 Then
Text1.Text = Text(0)
Text2.Text = Text(1)
Text3.Text = Text(2)
Text4.Text = Text(3)
Text5.Text = Text(4)
Text6.Text = Text(5)
Text7.Text = Text(6)
Text8.Text = Text(7)
Text9.Text = Text(8)
Text10.Text = Text(9)
Text11.Text = ""
```

Project - Project1

- Project1 (ProjectL.vbp)
 - Forms
 - Form1 (menu.frm)
 - Form2 (tentang.frm)
 - SIMULASI (Form1.frm)
 - Modules

Windows Ink Workspace

12:19 AM



Project1 - Microsoft Visual Basic [design] - [SIMULASI (Code)]

```
File Edit View Project Format Debug Run Query Diagram Tools Add-Ins Window Help
```

Ln 1, Col 1

(General) (Declarations)

```
Text8.Text = ""
Text9.Text = ""
Text10.Text = ""
Text11.Text = ""
Text12.Text = ""
Text13.Text = ""
Text14.Text = ""
Text15.Text = ""
Text16.Text = ""
Else
If txtjumlah = 7 Then
Text1.Text = Text(0)
Text2.Text = Text(1)
Text3.Text = Text(2)
Text4.Text = Text(3)
Text5.Text = Text(4)
Text6.Text = Text(5)
Text7.Text = Text(6)
Text8.Text = ""
Text9.Text = ""
Text10.Text = ""
Text11.Text = ""
Text12.Text = ""
Text13.Text = ""
Text14.Text = ""
Text15.Text = ""
Text16.Text = ""
Else
If txtjumlah = 8 Then
Text1.Text = Text(0)
Text2.Text = Text(1)
Text3.Text = Text(2)
Text4.Text = Text(3)
Text5.Text = Text(4)
Text6.Text = Text(5)
Text7.Text = Text(6)
Text8.Text = Text(7)
Text9.Text = ""
```

Project - Project1

- Project1 (ProjectL.vbp)
 - Forms
 - Form1 (menu.frm)
 - Form2 (tentang.frm)
 - SIMULASI (Form1.frm)
 - Modules

12:18 AM

```
Project1 - Microsoft Visual Basic [design] - [SIMULASI (Code)]
File Edit View Project Format Debug Run Query Diagram Tools Add-Ins Window Help
Ln 1, Col 1

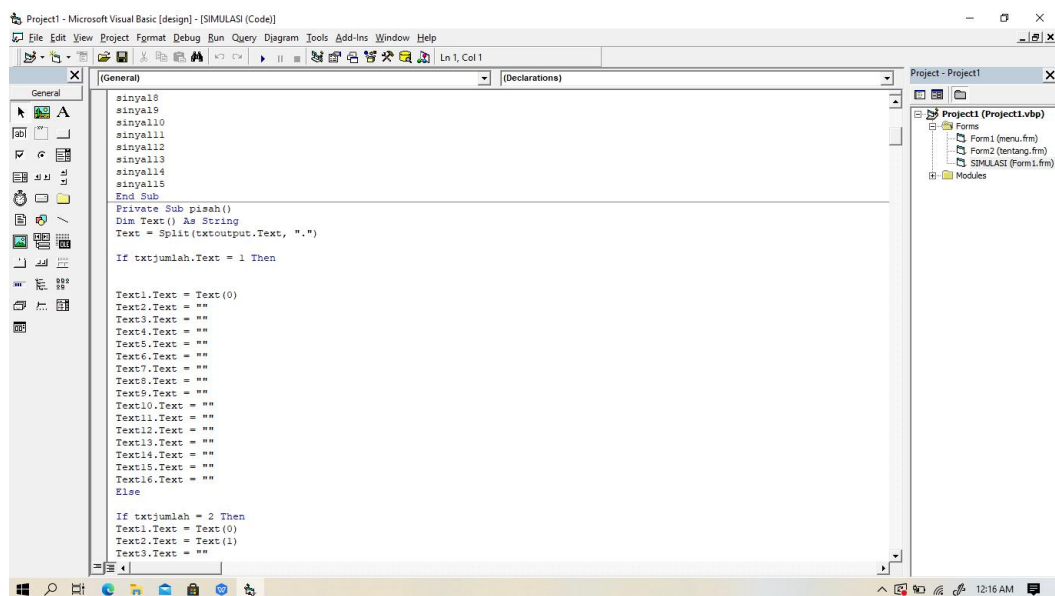
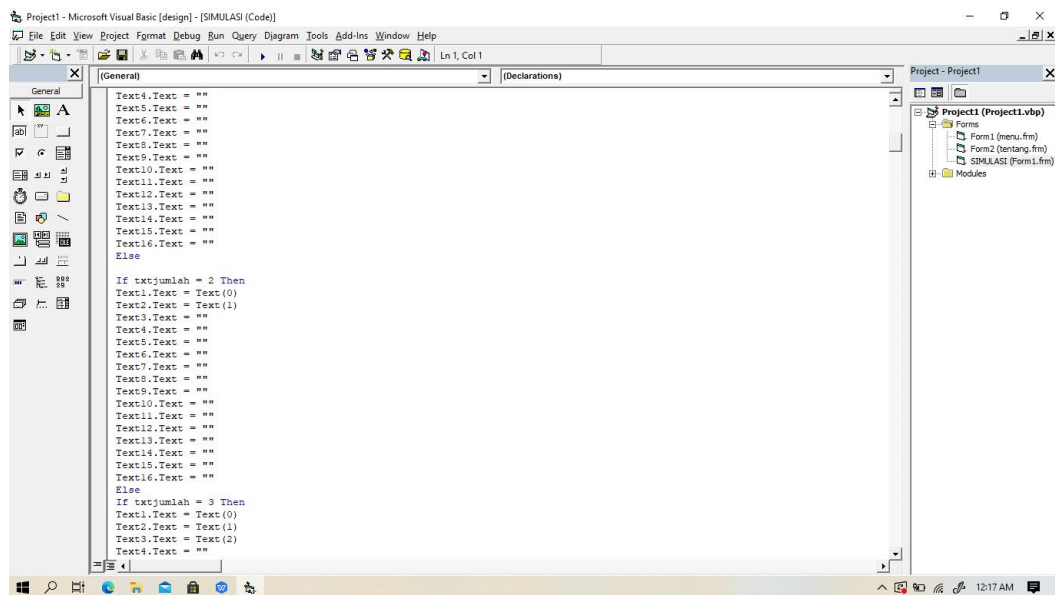
General
Text6.Text = ""
Text7.Text = ""
Text8.Text = ""
Text9.Text = ""
Text10.Text = ""
Text11.Text = ""
Text12.Text = ""
Text13.Text = ""
Text14.Text = ""
Text15.Text = ""
Text16.Text = ""
Else
If txtjumlah = 5 Then
Text1.Text = Text(0)
Text2.Text = Text(1)
Text3.Text = Text(2)
Text4.Text = Text(3)
Text5.Text = Text(4)
Text6.Text = ""
Text7.Text = ""
Text8.Text = ""
Text9.Text = ""
Text10.Text = ""
Text11.Text = ""
Text12.Text = ""
Text13.Text = ""
Text14.Text = ""
Text15.Text = ""
Text16.Text = ""
Else
If txtjumlah = 6 Then
Text1.Text = Text(0)
Text2.Text = Text(1)
Text3.Text = Text(2)
Text4.Text = Text(3)
Text5.Text = Text(4)
Text6.Text = Text(5)
Text7.Text = ""

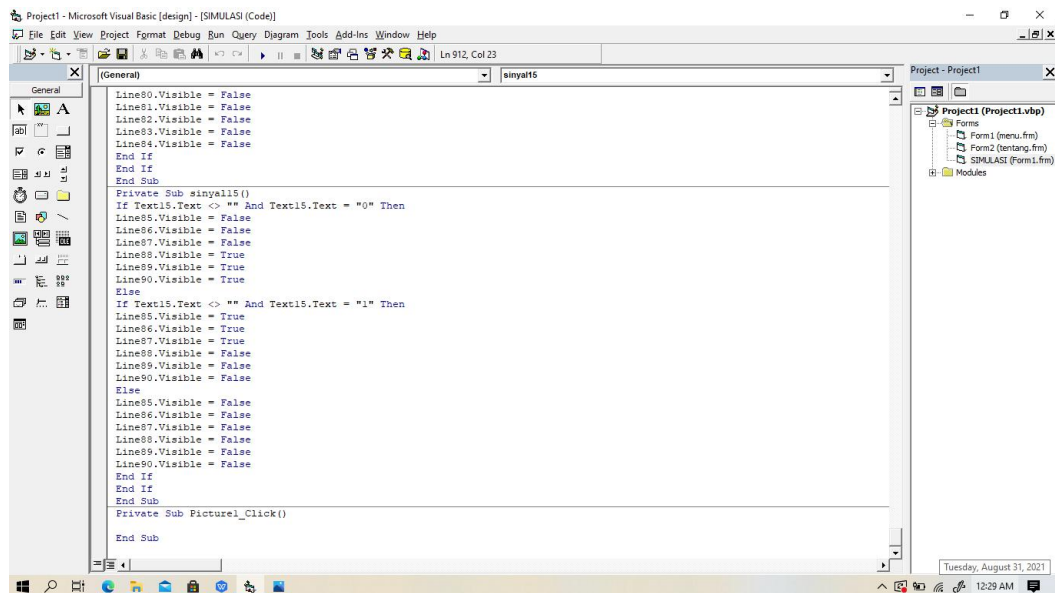
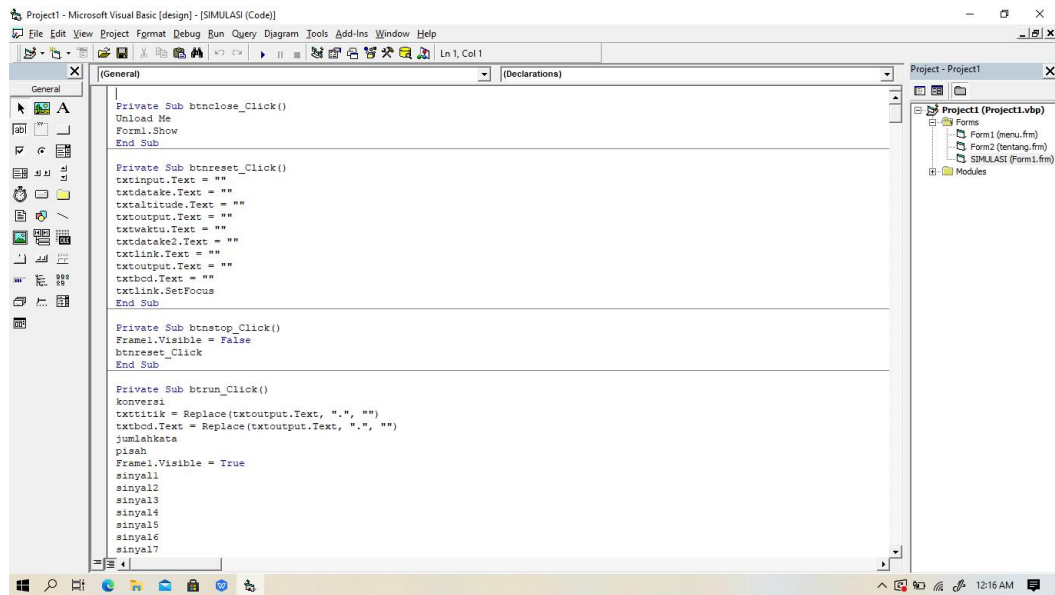
Project - Project1
Project1 (Project1.vbp)
Forms
Form1 (menu.frm)
Form2 (tentang.frm)
SIMULASI (Form1.frm)
Modules
2 new notifications
12:18 AM
```

```
Project1 - Microsoft Visual Basic [design] - [SIMULASI (Code)]
File Edit View Project Format Debug Run Query Diagram Tools Add-Ins Window Help
Ln 1, Col 1

General
Text4.Text = ""
Text5.Text = ""
Text6.Text = ""
Text7.Text = ""
Text8.Text = ""
Text9.Text = ""
Text10.Text = ""
Text11.Text = ""
Text12.Text = ""
Text13.Text = ""
Text14.Text = ""
Text15.Text = ""
Text16.Text = ""
Else
If txtjumlah = 3 Then
Text1.Text = Text(0)
Text2.Text = Text(1)
Text3.Text = Text(2)
Text4.Text = ""
Text5.Text = ""
Text6.Text = ""
Text7.Text = ""
Text8.Text = ""
Text9.Text = ""
Text10.Text = ""
Text11.Text = ""
Text12.Text = ""
Text13.Text = ""
Text14.Text = ""
Text15.Text = ""
Text16.Text = ""
Else
If txtjumlah = 4 Then
Text1.Text = Text(0)
Text2.Text = Text(1)
Text3.Text = Text(2)
Text4.Text = Text(3)
Text5.Text = ""

Project - Project1
Project1 (Project1.vbp)
Forms
Form1 (menu.frm)
Form2 (tentang.frm)
SIMULASI (Form1.frm)
Modules
Tuesday, August 31, 2021
12:18 AM
```





Lampiran D. Hasil Pengecekan Plagiasi

9/2/21, 11:57 AM

TA_TPU4D_VALERIE ANANTA K.M .docx - VALERIE ANANTA



TA_TPU4D_VALERIE ANANTA K.M .docx
Sep 2, 2021
5468 words / 34137 characters

VALERIE ANANTA

TA_TPU4D_VALERIE ANANTA K.M .docx

Sources Overview

28%

OVERALL SIMILARITY

| | | |
|----|--|-----|
| 1 | ejournals.stta.ac.id INTERNET | 6% |
| 2 | UIN Sunan Ampel Surabaya on 2021-02-22 SUBMITTED WORKS | 2% |
| 3 | docplayer.info INTERNET | 1% |
| 4 | ilmupenerbanganid.blogspot.com INTERNET | 1% |
| 5 | docobook.com INTERNET | 1% |
| 6 | repository.univ-tridinanti.ac.id INTERNET | <1% |
| 7 | repository.its.ac.id INTERNET | <1% |
| 8 | download.garuda.ristekdikti.go.id INTERNET | <1% |
| 9 | adoc.pub INTERNET | <1% |
| 10 | moam.info INTERNET | <1% |
| 11 | repository.usu.ac.id INTERNET | <1% |
| 12 | id.wikipedia.org INTERNET | <1% |
| 13 | Universitas Muria Kudus on 2016-08-06 SUBMITTED WORKS | <1% |
| 14 | Sriwijaya University on 2019-08-07 SUBMITTED WORKS | <1% |
| 15 | Universitas Islam Indonesia on 2018-01-13 SUBMITTED WORKS | <1% |
| 16 | Universitas Negeri Jakarta on 2016-11-22 SUBMITTED WORKS | <1% |

9/2/21, 11:57 AM

TA_TPU4D_VALERIE ANANTA K.M .docx - VALERIE ANANTA

| | | |
|----|--|-----|
| 17 | text-id.123dok.com INTERNET | <1% |
| 18 | Universitas Putera Batam on 2019-11-27 SUBMITTED WORKS | <1% |
| 19 | ft.unj.ac.id INTERNET | <1% |
| 20 | garuda.ristekbrin.go.id INTERNET | <1% |
| 21 | Fakultas Ekonomi Universitas Indonesia on 2015-07-08 SUBMITTED WORKS | <1% |
| 22 | core.ac.uk INTERNET | <1% |
| 23 | ejournal.poltekbangsby.ac.id INTERNET | <1% |
| 24 | fr.scribd.com INTERNET | <1% |
| 25 | renirr.wordpress.com INTERNET | <1% |
| 26 | repository.ummat.ac.id INTERNET | <1% |
| 27 | repository.unika.ac.id INTERNET | <1% |
| 28 | digilib.uin-suka.ac.id INTERNET | <1% |
| 29 | hanstuban.wordpress.com INTERNET | <1% |
| 30 | repository.usd.ac.id INTERNET | <1% |
| 31 | eprints.walisongo.ac.id INTERNET | <1% |
| 32 | pgmiuinjakarta.files.wordpress.com INTERNET | <1% |
| 33 | repo.iain-tulungagung.ac.id INTERNET | <1% |
| 34 | repository.uinjkt.ac.id INTERNET | <1% |
| 35 | repository.unhas.ac.id INTERNET | <1% |
| 36 | www.amikom.ac.id INTERNET | <1% |
| 37 | www.lppm.stikesbudiyah.ac.id INTERNET | <1% |
| 38 | www.ayosemarang.com INTERNET | <1% |
| 39 | Emirates Aviation College, Aerospace & Academic Studies on 2018-04-22 SUBMITTED WORKS | <1% |
| 40 | Fakultas Ekonomi Universitas Indonesia on 2015-06-15 SUBMITTED WORKS | <1% |

<https://poltekbangsby.tumlin.com/viewers/submissions/oid:29154:9237963/print?ocale=en>

2/80

9/2/21, 11:57 AM

TA_TPU4D_VALERIE ANANTA K.M .docx - VALERIE ANANTA

| | | |
|----|--|-----|
| 41 | Universitas Brawijaya on 2016-10-13 SUBMITTED WORKS | <1% |
| 42 | aimos.ugm.ac.id INTERNET | <1% |
| 43 | ecampus.pelitabangsa.ac.id INTERNET | <1% |
| 44 | id.scribd.com INTERNET | <1% |
| 45 | repository.uinsu.ac.id INTERNET | <1% |
| 46 | repository.um.ac.id INTERNET | <1% |
| 47 | repository.umsu.ac.id INTERNET | <1% |
| 48 | repository.ung.ac.id INTERNET | <1% |
| 49 | www.scribd.com INTERNET | <1% |
| 50 | ejournal.unib.ac.id INTERNET | <1% |
| 51 | idoc.pub INTERNET | <1% |
| 52 | kelembagaan.ristekdikti.go.id INTERNET | <1% |
| 53 | repository.radenintan.ac.id INTERNET | <1% |
| 54 | weblive.picoauto.com INTERNET | <1% |
| 55 | widuri.raharja.info INTERNET | <1% |
| 56 | www.cnnindonesia.com INTERNET | <1% |
| 57 | www.slideshare.net INTERNET | <1% |
| 58 | Emirates Aviation College, Aerospace & Academic Studies on 2017-03-23 SUBMITTED WORKS | <1% |
| 59 | Fakultas Ekonomi Universitas Indonesia on 2015-06-15 SUBMITTED WORKS | <1% |
| 60 | Sriwijaya University on 2019-08-06 SUBMITTED WORKS | <1% |
| 61 | doku.pub INTERNET | <1% |
| 62 | dspace.uil.ac.id INTERNET | <1% |
| 63 | iGroup on 2012-05-16 SUBMITTED WORKS | <1% |
| 64 | iGroup on 2012-05-16 SUBMITTED WORKS | <1% |

<https://poltekbangsby.turinin.com/viewer/submissions/oid/29154-9237963/print?occale=en>

3/80

9/2/21, 11:57 AM

TA_TPU4D_VALERIE ANANTA K.M .docx - VALERIE ANANTA

| | | | |
|----|--|-----------------|-----|
| 65 | id.123dok.com | INTERNET | <1% |
| 66 | itera on 2021-08-18 | SUBMITTED WORKS | <1% |
| 67 | journal.fdi.or.id | INTERNET | <1% |
| 68 | lib.ui.ac.id | INTERNET | <1% |
| 69 | repositori.usu.ac.id | INTERNET | <1% |
| 70 | repository.iainpare.ac.id | INTERNET | <1% |
| 71 | www.coursehero.com | INTERNET | <1% |
| 72 | Sriwijaya University on 2020-10-15 | SUBMITTED WORKS | <1% |
| 73 | Universitas Brawijaya on 2016-06-10 | SUBMITTED WORKS | <1% |
| 74 | Universitas Muhammadiyah Surakarta on 2014-06-30 | SUBMITTED WORKS | <1% |
| 75 | Universitas Nasional on 2020-12-01 | SUBMITTED WORKS | <1% |
| 76 | repository.unair.ac.id | INTERNET | <1% |

Excluded search repositories:

- None

Excluded from Similarity Report:

- None

Excluded sources:

- None

DAFTAR RIWAYAT HIDUP



Valerie Ananta Katon Martono, lahir di Surabaya pada 14 Agustus 2000. Merupakan anak pertama dari 3 (tiga) bersaudara. Tinggal bersama kedua orang tua bernama Parwanto Yhoga Martono dan Dara Tri Prihatini tepatnya di Jl. Sidoyoso 2 Gang 2 no. 21, Kelurahan Simokerto, Kecamatan Simokerto, Kota Surabaya. Memulai pendidikan formal di Sekolah Dasar Negeri Simokerto VI Surabaya periode tahun 2006–2009 lalu pindah ke Sekolah Dasar Negeri 016 Sukamulya tahun 2009-2012. Kemudian dilanjutkan Sekolah Menengah Pertama di SMP Negeri 2 Bangkinang pada tahun 2012 dan selesai pada tahun 2015. Setelah lulus dari SMP melanjutkan pendidikan di Sekolah Menengah Atas Negeri (SMAN) 1 Bangkinang Kota lalu pindah ke SMA Kr. Pirngadi pada 2017. Menyelesaikan sekolah pada tahun 2018 kemudian melanjutkan ke Pendidikan Tinggi Kedinasan Politeknik Penerbangan Surabaya pada Program Studi Diploma 3 Teknik Teknik Pesawat Udara Angkatan IV Delta sampai dengan saat ini. Selama mengikuti pendidikan di Politeknik Penerbangan Surabaya, telah mengikuti *On the Job Training* (OJT) di PT Batam Aero Technic Batam pada bulan April hingga Juni 2021.