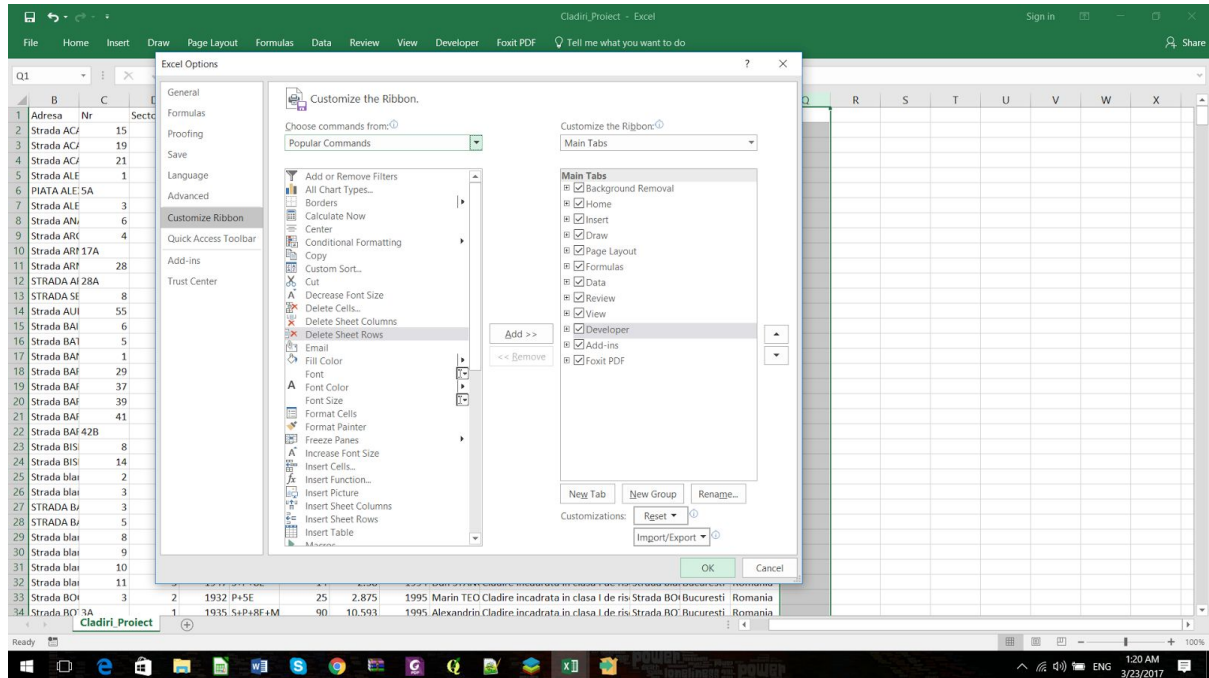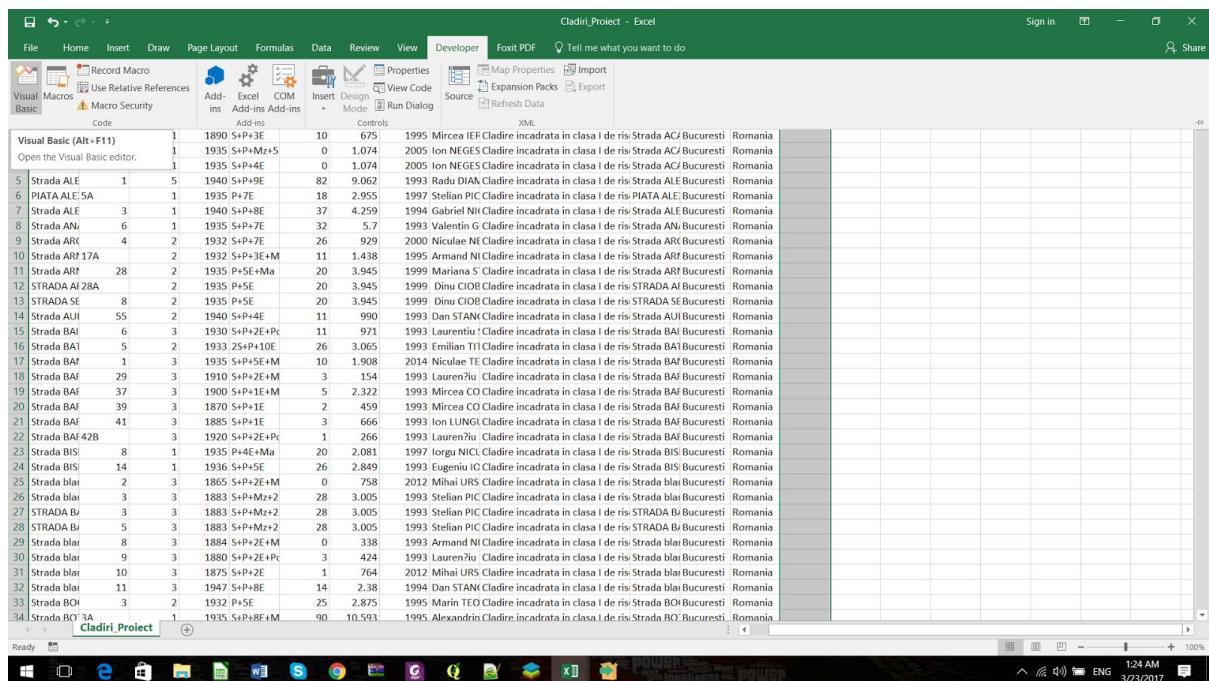1. Open Excel;
2. Add developer tool in your excel interface:

Go to File -> Options -> Customize Ribbon -> Choose Developer Tool from the left box and click add -> It will appear in the left box -> Check the Developer Tool from the right box -> OK

3. Open your data containing addresses

4. Open Developer Tool -> Visual Basic from the left

5. Go to Tools-> References-> Find and select from the list the following:Microsoft XML, v3.0-> Ok:
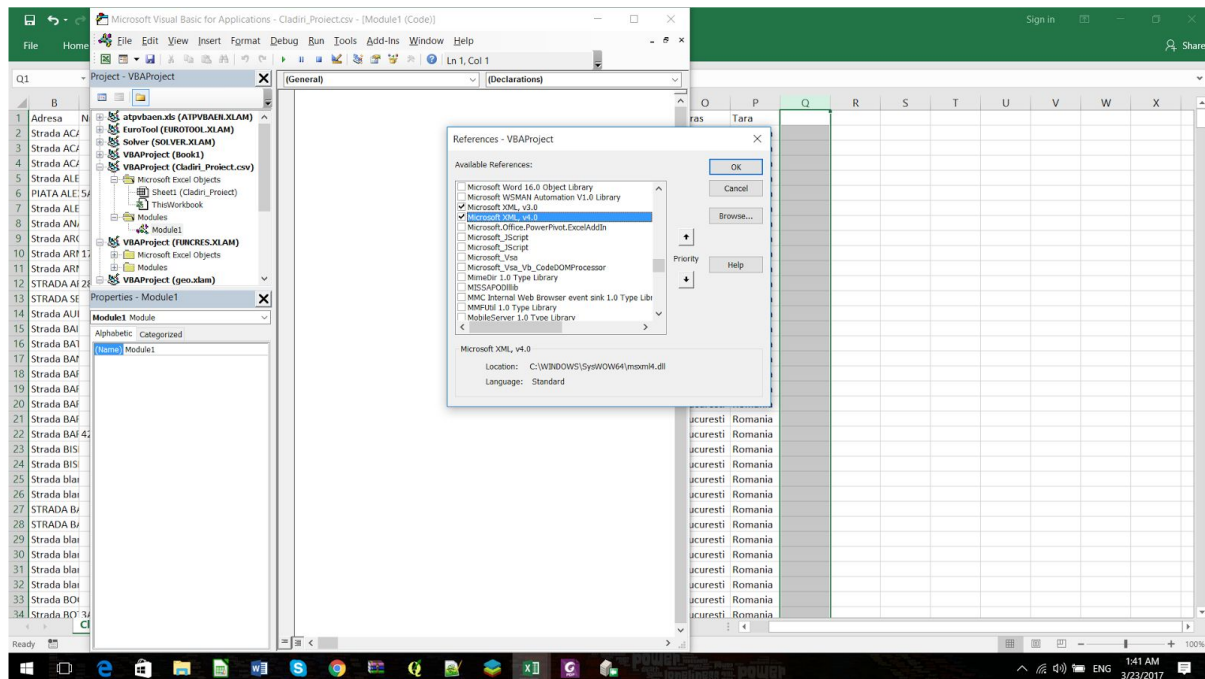
6. Creating a function that provides the latitude of a specific address:

- On the left side, right click on the project you are working on-> Insert-> Module

- **Insert the following code in the module:**

```
Function geoy(address As String) As String
        Dim strAddress As String
        Dim strQuery As String
        Dim strLatitude As String

strAddress = URLEncode(address)

'Assemble the query string
strQuery = "http://maps.googleapis.com/maps/api/geocode/xml?"
strQuery = strQuery & "address=" & strAddress
strQuery = strQuery & "&sensor=false"

'define XML and HTTP components
Dim googleResult As Object
Set googleResult = CreateObject("MSXML2.DOMDocument.6.0")

Dim googleService As Object
Set googleService = CreateObject("MSXML2.XMLHTTP.6.0")

Dim oNodes As MSXML2.IXMLDOMNodeList
```

```vba
Dim oNode As MSXML2.IXMLDOMNode
'create HTTP request to query URL - make sure to have
'that last "False" there for synchronous operation
googleService.Open "GET", strQuery, False
googleService.send
googleResult.LoadXML (googleService.responseText)
Set oNodes = googleResult.getElementsByTagName("geometry")
If oNodes.Length = 1 Then
  For Each oNode In oNodes
    strLatitude = oNode.ChildNodes(0).ChildNodes(0).Text
    geoy = strLatitude
  Next oNode
Else
  geoy = "Not Found (try again, you may have done too many too fast)"
End If
End Function


Public Function URLEncode(StringVal As String, Optional SpaceAsPlus As Boolean = False)
As String
  Dim StringLen As Long: StringLen = Len(StringVal)
  If StringLen > 0 Then
    ReDim result(StringLen) As String
    Dim i As Long, CharCode As Integer
    Dim Char As String, Space As String
    If SpaceAsPlus Then Space = "+" Else Space = "%20"
    For i = 1 To StringLen
      Char = Mid$(StringVal, i, 1)
      CharCode = Asc(Char)
      Select Case CharCode
      Case 97 To 122, 65 To 90, 48 To 57, 45, 46, 95, 126
        result(i) = Char
      Case 32
        result(i) = Space
      Case 0 To 15
        result(i) = "%0" & Hex(CharCode)
      Case Else
        result(i) = "%" & Hex(CharCode)
      End Select
    Next i
    URLEncode = Join(result, "")
  End If
End Function
```

- Save the file as Excel Add-In -> Save it in the default folder (AppData/Roaming/Microsoft/AddIns)-> Click Save

- Go to File-> Options-> Add Ins-> Manage Excel Add-ins -> Go -> Browse -> Open the Add In you created-> Click Open-> Check the add-in you created-> Ok
- Check if the function is working:

Click on an empty cell and write down the following: "=the name of the function(click on the address cell or write down the address whose latitude you want to get) and press enter

Example 1: =geoy(N2) -> See below

Example 2: =geoy("Strada Mihail Moxa nr 12 Bucuresti Romania")

In the following example we geocode the N2 cell which contains the following address name: Strada Academiei 15:

7. Creating a function that provides the longitude of a specific address:

- On the left side, right click on the project you are working on-> Insert-> Module

- **Insert the following code in the module:**

```
Function geox(address As String) As String

Dim strAddress As String
Dim strQuery As String
Dim strLongitude As String

strAddress = URLEncode(address)
'Assemble the query string
strQuery = "http://maps.googleapis.com/maps/api/geocode/xml?"
strQuery = strQuery & "address=" & strAddress
strQuery = strQuery & "&sensor=false"
```

```vba
'define XML and HTTP components
Dim googleResult As Object
Set googleResult = CreateObject("MSXML2.DOMDocument.6.0")

Dim googleService As Object
Set googleService = CreateObject("MSXML2.XMLHTTP.6.0")

Dim oNodes As MSXML2.IXMLDOMNodeList
Dim oNode As MSXML2.IXMLDOMNode
'create HTTP request to query URL - make sure to have
'that last "False" there for synchronous operation
googleService.Open "GET", strQuery, False
googleService.send
googleResult.LoadXML (googleService.responseText)
Set oNodes = googleResult.getElementsByTagName("geometry")
If oNodes.Length = 1 Then
  For Each oNode In oNodes

    strLongitude = oNode.ChildNodes(0).ChildNodes(1).Text
    geox = strLongitude
  Next oNode
Else
  geox = "Not Found (try again, you may have done too many too fast)"
End If
End Function
Public Function URLEncode(StringVal As String, Optional SpaceAsPlus As Boolean = False)
As String
  Dim StringLen As Long: StringLen = Len(StringVal)
  If StringLen > 0 Then
    ReDim result(StringLen) As String
    Dim i As Long, CharCode As Integer
    Dim Char As String, Space As String
    If SpaceAsPlus Then Space = "+" Else Space = "%20"
    For i = 1 To StringLen
      Char = Mid$(StringVal, i, 1)
      CharCode = Asc(Char)
      Select Case CharCode
      Case 97 To 122, 65 To 90, 48 To 57, 45, 46, 95, 126
        result(i) = Char
      Case 32
        result(i) = Space
      Case 0 To 15
        result(i) = "%0" & Hex(CharCode)
      Case Else
        result(i) = "%" & Hex(CharCode)
      End Select
```

```
    Next i
    URLEncode = Join(result, "")
  End If
End Function
```

- Save the file as Excel Add-In -> Save it in the default folder
  (AppData/Roaming/Microsoft/AddIns)-> Click Save

- Go to File-> Options-> Add Ins-> Manage Excel Add-ins -> Go -> Browse -> Open
  the Add In you created-> Click Open-> Check the add-in you created-> Ok

- Check if the function is working:

Click on an empty cell and write down the following: "=the name of the function(click on the
address cell or write down the address whose longitude you want to get) and press enter
Example 1: =geox(N2) -> See below
Example 2: =geox("Strada Mihail Moxa nr 12 Bucuresti Romania")

In the following example we get the longitude for N2 cell which contains the following
address name: Strada Academiei 15:

8. Use your new created function whenever you need to geocode something.