Welcome to maXbox Code (Blog)

maXbox

Code Focus

Posted on **June 5, 2025June 5, 2025** by **maxbox4**

This is a short story concerning the update of maXbox V5.2.8 with some code insights (6 Topics).

Release Notes maXbox **5.2.8.160** June 2025 mX528 beta64-bit 🐞

- py2,py3,py4,py5,py6,py7,py8(python3) enhanced template bds_delphi.dci
- now 142 Tutorials last: Geocode Distance maxbox_starter142.pdf
- dmath64.dll renew functions data science package
- maxbox_starter_testsequence51.bat added listview events
- new examples on **https://sourceforge.net/projects/maxbox5/files/ (https://sourceforge.net/projects/maxbox5/files/)**

- ESC song available: examples/Sternenhaufen_Max_SunoAI.mp3
- Issue BPM 123/124 has been released May 2025
- source compatible of previous Version (see below)
- update compatible for Python3.13 and Python3.14 P4D use
- GO game menu/view/GoGame5 -TGoForm1-TGoBlock-TGoBoard

04.06.2025 10:17
Release Notes maXbox 5.2.8.160 June 2025
SHA1: 5.2.8.160 maXbox5.exe edd77bf19df1142caa27d14df7607187d7346f55
SHA1: ZIP maxbox52.zip 7745BDAA570DA3BA8E1A482B09F7A1DDEB71F04D

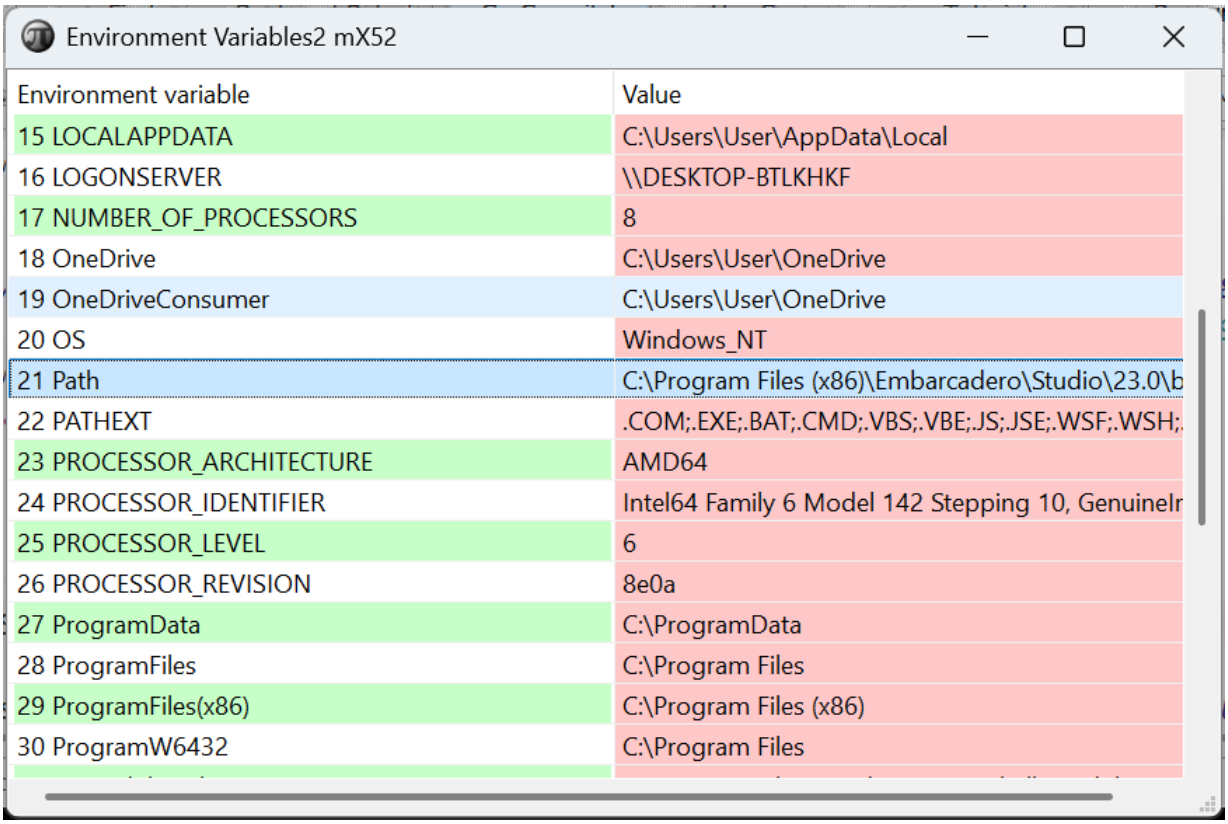
ListView Events

First we start with the listview enhancments. The OnCustomDrawXXX event handlers of Delphi's TListView can be useful to make minor changes to the appearance of a list view control. They let developers avoid having to owner draw the control if they only want to make a few tweaks to its appearance. OnCustomDraw allows drawing on the background of the list view control. We should handle this event if we want to draw or paint anything on the control's background.

This example is much simpler than the preceding one. We will draw alternating list items in different colours, emulating green and white line printer paper. This is achieved by handing just the OnCustomDrawItem event as Listing 1 shows:

```
const
   cStripe = $CCFFCC;  // colour of alternate list items
procedure TForm1ListView1CustomDrawItem(Sender: TCustomListView;
                          Item: TListItem; State: TCustomDrawState;
                          var DefaultDraw: Boolean);
 begin
   if Odd(Item.Index) then
     // odd list items have green background
     environmentview.Canvas.Brush.Color := cStripe
   else
     // even list items have window colour background
     environmentview.Canvas.Brush.Color := clWindow;
 end;
```

Now we move on to demonstrate the OnCustomDrawSubItem event handler. Here we will display each list view column in a different colour.



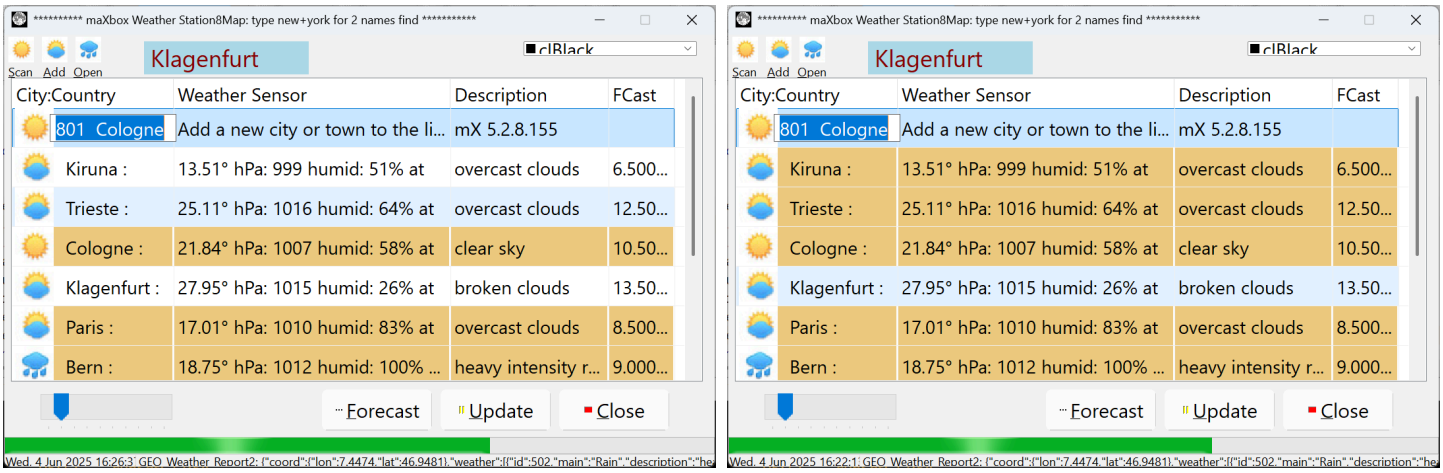
https://sourceforge.net/projects/maxbox5/files/examples/1405_EnvironmentExampleMainForm2.pas/download (https://sourceforge.net/projects/maxbox5/files/examples/1405_EnvironmentExampleMainForm2.pas/download)

Geo Code Routines with OWM

Large Language Models (LLMs) are taking the world by storm, I mean you can not watch the news these days without a new LLM heating the market and causing waves, reshaping industries from healthcare to finance and even revolutionizing how we interact with spatial data.

But what does this mean for Geographic Information Systems (GIS) or image analysis? GIS has long been the backbone of spatial mapping, used in fields of environmental science. A new support function is the writeln(GetWeatherReport_OWM('Bern,CH','you API-Key')); from OWM.

As a start to use OpenWeather products, we recommend our **One Call API 3.0 (https://openweathermap.org/api/one-call-3)**. For more functionality, please consider our products, which are included in **professional collections (https://openweathermap.org/api#pro)**.



https://sourceforge.net/projects/maxbox5/files/examples/1407_weatherapp52.txt/download
(https://sourceforge.net/projects/maxbox5/files/examples/1407_weatherapp52.txt/download)

OpenWeather provides hyperlocal minute-by-minute forecasts, historical data, current conditions, and weather forecasts ranging from short-term to annual for any location worldwide. All data is accessible via **industry-standard APIs (https://openweathermap.org/api)**.

Instantly access weather data for any location worldwide with OpenWeather's robust and practical products and APIs. Simply subscribe to our self-service automated products using your email and begin utilizing a range of forecasts, current conditions, historical data, alerts, and maps.

The primary function of an early warning system is to empower individuals and communities to take protective action before a hazard strikes. Studies have shown that providing just 24 hours' notice of an impending hazardous event can reduce the ensuing damage by up to 30 percent. These systems bridge the gap between scientific forecasting and community preparedness, translating complex meteorological data into clear messages that can trigger life-saving responses.

The internal direct function in maXbox5 use state of the art jSON and collection aspects to call the industrial Rest-API:

```
function GetWeatherReport(const City, ApiKey: string): string;
var
  HttpClient: THTTPClient;
  Response: IHTTPResponse;
  JsonResponse: TJSONObject;
  WeatherDescription: string;
begin
  HttpClient := THTTPClient.Create();
  try
    // Replace with the OpenWeatherMap API endpoint
    Response := HttpClient.Get(Format('https://api.openweathermap.org/data/2.5/weather?q=%s&appid=%s&units=met

    if Response.StatusCode = 200 then begin
      JsonResponse := TJSONObject.ParseJSONValue(Response.ContentAsString) as TJSONObject;
      try
        // Extract weather description from JSON response
        WeatherDescription:= JsonResponse.GetValue<TJSONArray>('weather').Items[0].GetValue<string>('descripti
        WeatherDescription:= WeatherDescription +', temp: '+floattostr(JsonResponse.GetValue<TJSONObject>('mai

        //Writeln('Weather in ', City, ': ', WeatherDescription);
        result:=  'Weather in '+ City +': '+ WeatherDescription;
      finally
        JsonResponse.Free;
      end;
    end
    else
      Showmessage('Failed to fetch weather data. HTTP Status: '+inttostr(Response.StatusCode));
  finally
    HttpClient.Free;
  end;
end;
```

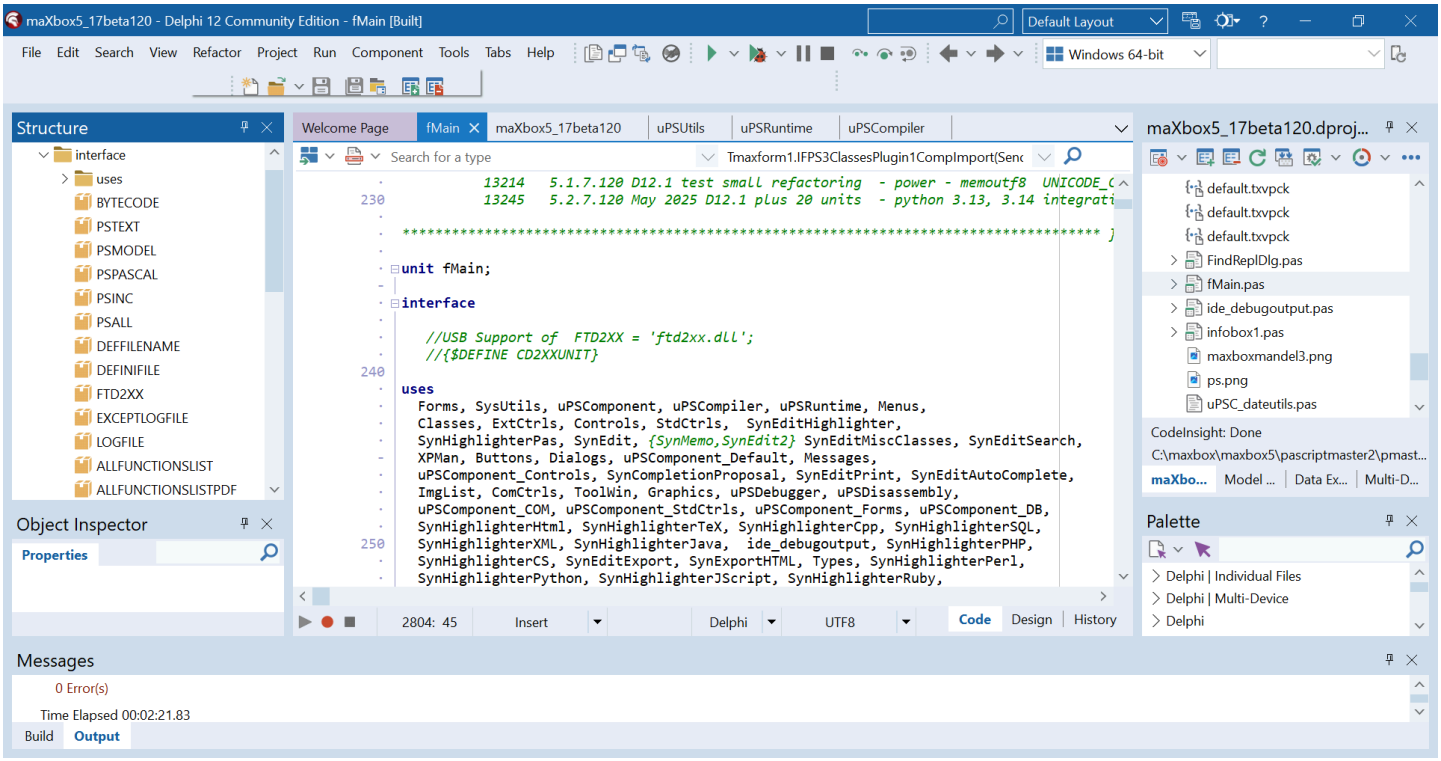
Continuously refining its models using real-time data, OpenWeather delivers reliable forecasts worldwide, covering both remote and densely populated areas. **https://openweathermap.org/guide (https://openweathermap.org/guide)**

Image manipulation

In Delphi, the TBitmap class provides a method called CopyFromBitmap that allows you to copy the content of one bitmap to another. This is particularly useful when you want to duplicate or manipulate bitmap data. Here's an example of how you can use it with your own needs:

```
function cropImage(originBitmap : TBitmap; Xpos, Ypos, width, height: integer): TBitmap;
   begin
     //result := TBitmap.Create;
     //result.Width := Width;
     //result.Height := Height;
     //result.CopyFromBitmap(originBitmap, TRect.Create(Xpos, Ypos, Xpos + Width, Ypos + Height), 0, 0);
  // Create the target bitmap
    result:= TBitmap.Create;
    try
      // Set the dimensions of the target bitmap
      result.Width := Width;
      result.Height := Height;
      // Copy the content from the source bitmap to the target bitmap
      result.Canvas.CopyRect(
        Rect(0, 0, result.Width, result.Height),
        originBitmap.Canvas,
        Rect(xpos, ypos, originBitmap.Width, originBitmap.Height)
      );
    finally
       originBitmap.Free;
    end;
   end;
```

- Key Points:
- Initialization: Ensure both bitmaps are properly initialized and have the desired dimensions.
- Copying: Use Canvas.CopyRect to copy the content from one bitmap to another.
- Memory Management: Always free the bitmaps after use to avoid memory leaks.

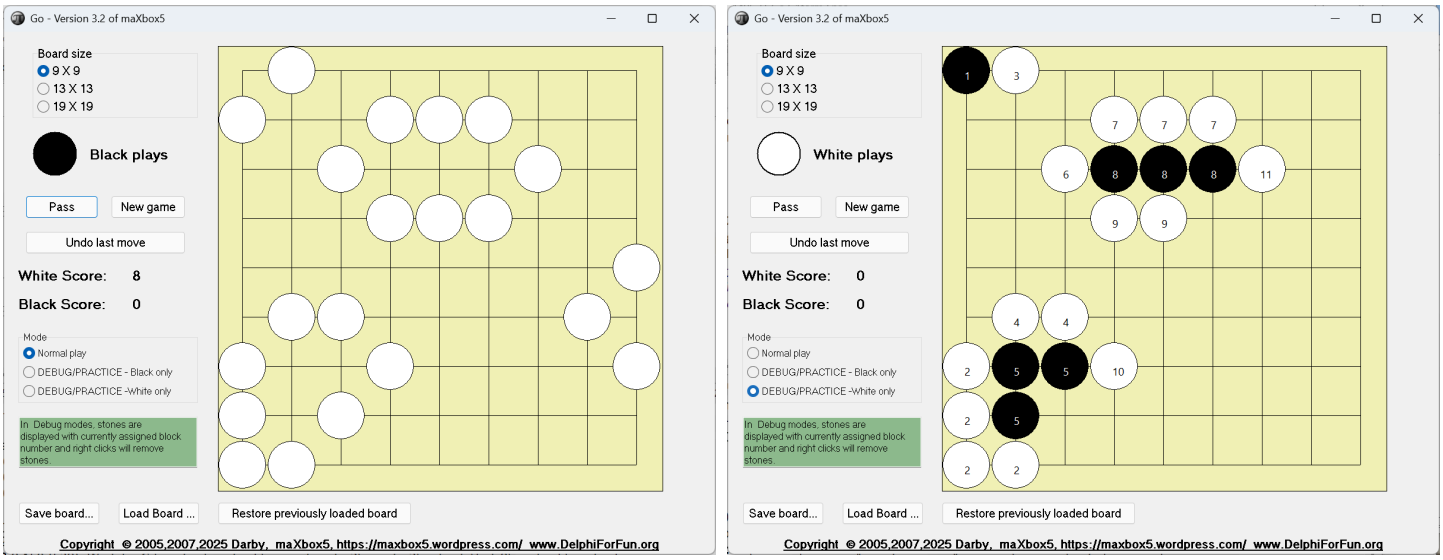


Compile the V5.2.8.160

The GO Board

Go is one of those simple but complex board games. Two opponents take turns placing black and white stones on a square board. If you surround a group of opponents stones with yours, the stones are removed and you get credited with a point for each stone captured.

If you are not familiar with the game just do a web search on “Go game rules” or “Go game tutorial” and you’ll find plenty of sites. We with D4F integrate the game in this maXbox. Identifying groups of stones and determining when a group was surrounded by stones of a the opposite color was harder to code than expected .



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The game is played by placing stones on the intersections of gridlines. A group is a set of one or more stones of the same color connected by horizontal and vertical grid lines. A group is captured by surrounding it with stones of the opposite color. “Surrounding” means that each horizontal and vertical grid line extending from the edges of a group is filled with a stone of the opposite color.

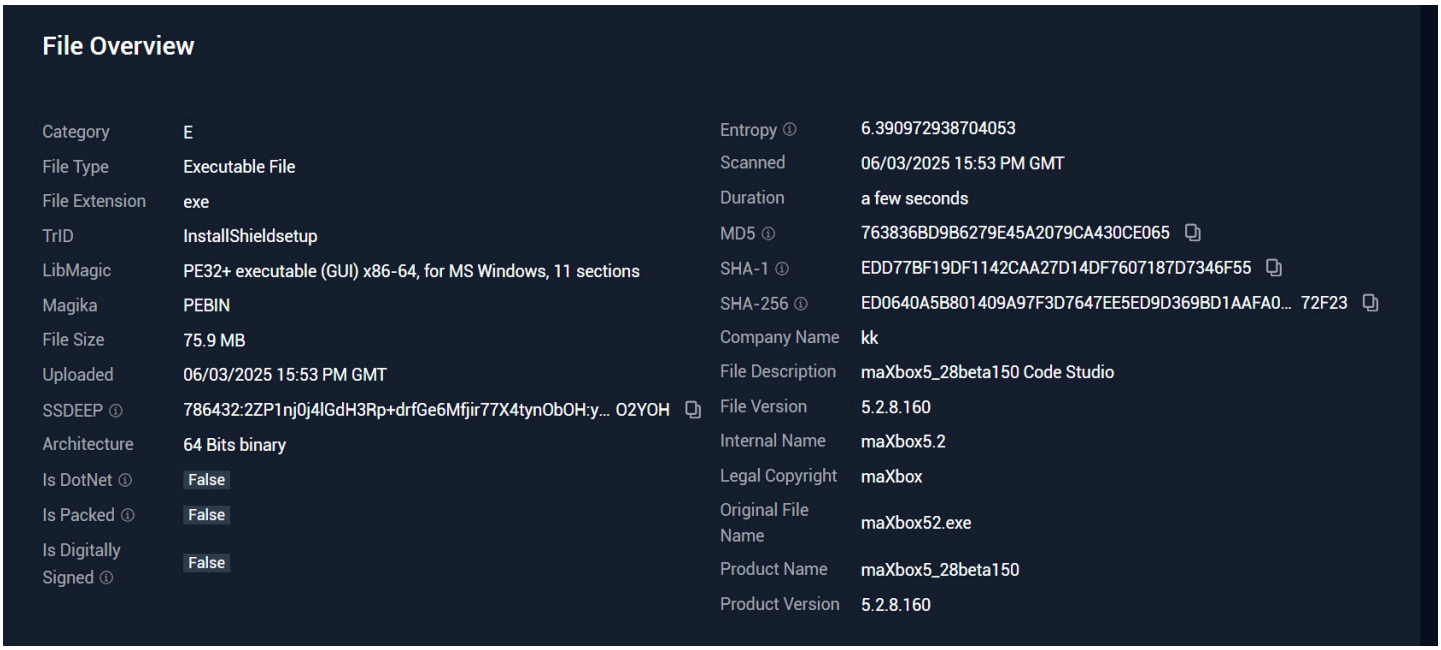
System and CPU Information

In Delphi, the FastLocate2Bytes function is often used for optimized searching of a two-byte sequence within a larger data block. While Delphi itself doesn’t have a built-in FastLocate2Bytes function, you can implement a highly efficient version tailored for 64-bit systems by leveraging modern CPU instructions and memory alignment.

Here’s an example implementation for a 64-bit environment:
This implementation is straightforward and works well for most cases. If you need even faster performance for large datasets, consider using SIMD (Single Instruction, Multiple Data) or platform-specific optimizations like AVX2 instructions. To measure such things we updated the JCLSysInfo Library.

https://github.com/project-jedi/jcl/blob/master/jcl/source/common/JclSysInfo.pas (https://github.com/project-jedi/jcl/blob/master/jcl/source/common/JclSysInfo.pas)

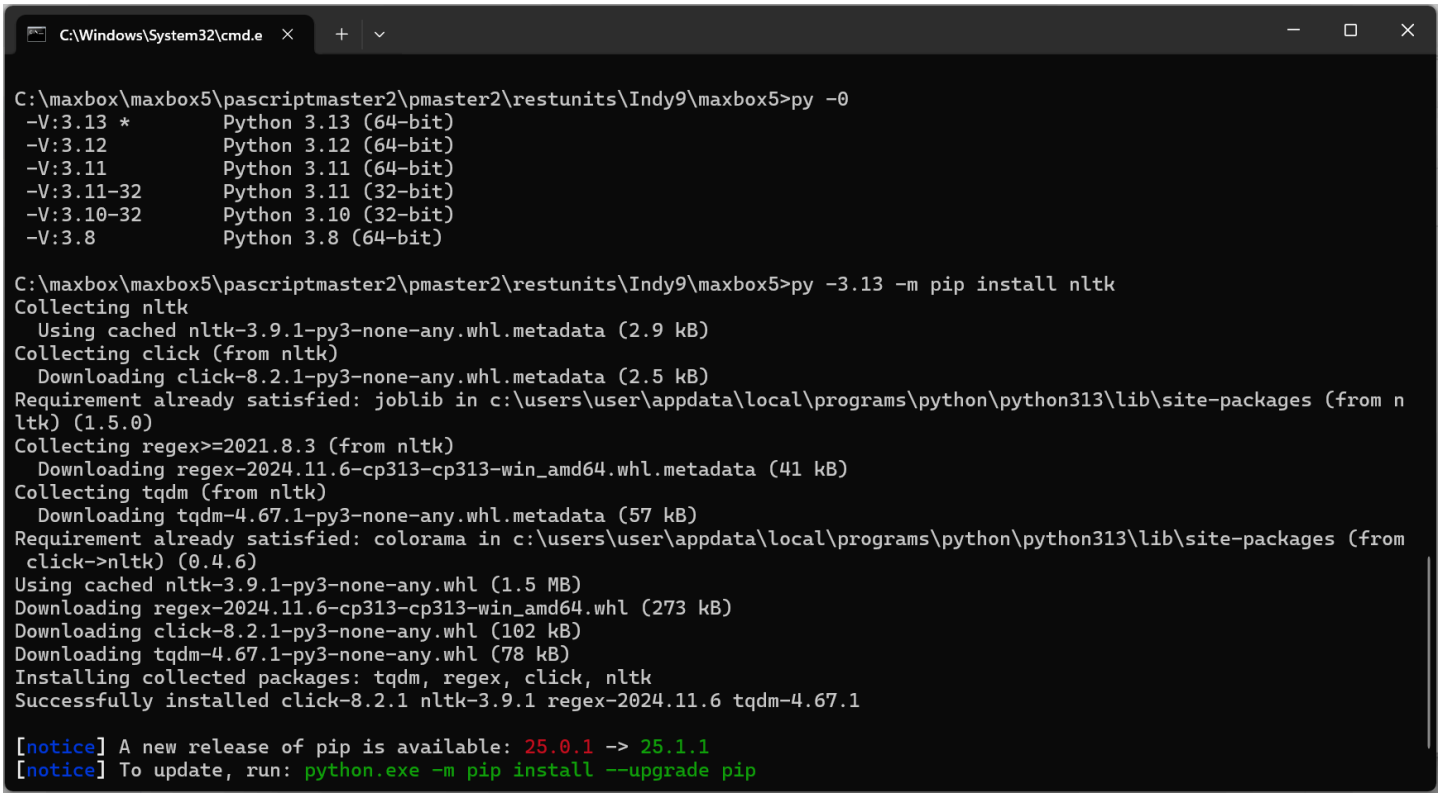
```
function GetEnvironmentVarsX(const Vars: TStrings; Expand: Boolean): Boolean;
var
  Raw: PChar;
  Expanded: string;   I: Integer;
begin
  Vars.BeginUpdate;
  try
    Vars.Clear;
    Raw:= GetEnvironmentStrings;
    try
      MultiSzToStrings(Vars, Raw); fix
      Result:= True;
    finally
      FreeEnvironmentStrings(Raw);
    end;
    if Expand then begin
      for I:= 0 to Vars.Count - 1 do begin
        Expanded:= Vars[I];
        if ExpandEnvironmentVar(Expanded) then
          Vars[I]:= Expanded;
      end;
    end;
  finally
    Vars.EndUpdate;
  end;
end;
```



https://metadefender.com/results/file/bzI1MDYwM2pod1RlWUZLeTZUOTV1RWhzWjd6ZG0_mdaas (https://metadefender.com/results/file/bzI1MDYwM2pod1RlWUZLeTZUOTV1RWhzWjd6ZG0_mdaas)

Python Updates

To get compatible with Python 3.13 and 3.14 some small engineering was done. It was only meant to be release day for 3.13.4 today, but poor number 13 looked so lonely… And hey, we had a couple of tarfile CVEs that we had to fix. So most of the Release Managers and all the Developers-in-Residence (including Security Developer-in-Residence Seth Michael Larson) came together to make it a full release party.



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