Analysis Report for: B9E09DE572FC3C83B7BC178FC8FA8503-cleaned.cs

Overall Functionality

This C# code implements a "World Clock" application with additional stopwatch and timer functionalities. The main form (\`Form1\`) displays multiple clocks showing the time in different time zones. It also features buttons to launch separate forms for a stopwatch (\`Form2\`) and a countdown timer (\`Form3\`). The code is heavily obfuscated, using meaningless variable names, numerous seemingly random calculations, and a switch statement within a loop to control program flow in \`CinderGlyphRouter\`. This obfuscation makes understanding the exact logic challenging but suggests an attempt to hide the true purpose of the code.

Function Summaries

* **\`Form1.CinderGlyphRouter(Bitmap tapestry, List vault, int threshold, ushort decoyTune = 5123, string hazemark = "oxide", int phantomKey = 123456, bool fuseLatch = false)\`:** This function is the most obfuscated part of the code. Its purpose is unclear without deobfuscation, but it appears to process a bitmap image (\`tapestry\`) and generate a list of bytes (\`vault\`) based on some complex algorithm. The parameters seem designed to confuse, using cryptic names and seemingly unnecessary default values. It has no return value (void).

* **\`Form1.InitializeClocks()\`:** Initializes the clocks on the main form by creating and positioning labels for city names and times. It uses numerous helper functions (\`smethod_5\`, \`smethod_6\`, \`smethod_7\`, \`smethod_8\`, \`smethod_10\`, \`smethod_12\`, \`smethod_14\`, etc.) to handle this. Void return type.

* **\`Form1.UpdateTimer_Tick(object sender, EventArgs e)\`:** This is an event handler for the timer that updates the clocks on the main form. It calls \`UpdateClocks()\`. Void return type.

* **\`Form1.UpdateClocks()\`:** Updates the time displayed for each clock on the main form by fetching time from the \`clockManager\`. Handles potential exceptions when retrieving time information. Void return type.

* **\`Form1.btnStopwatch_Click(object sender, EventArgs e)\`:** Event handler for the stopwatch button; shows \`Form2\`. Void return type.

* **\`Form1.btnTimer_Click(object sender, EventArgs e)\`:** Event handler for the timer button; shows \`Form3\`. Void return type.

* **\`Form1.OnFormClosed(FormClosedEventArgs e)\`:** Handles the closing of \`Form1\`, stopping the update timer and disposing of resources. Void return type.

* **\`Form1.smethod_0(string string_0)\` to \`Form1.smethod_40(Control control_0)\`:** These are helper functions that perform simple operations on strings, controls, fonts, colors, and other UI elements, all obfuscated with meaningless names.

* **\`Form1.method_0()\`:** Calls \`base.Dispose()\` likely for cleanup.

* **\`Form2.InitializeStopwatch()\`:** Initializes the stopwatch functionality in \`Form2\` by creating a \`TimerManager\` object, creating and configuring a timer, initializing a list for lap times, and making an initial display update. Void return type.

* **\`Form2.DisplayTimer_Tick(object sender, EventArgs e)\`:** Event handler for the timer controlling stopwatch display updates; calls \`UpdateDisplay()\`. Void return type.

* **\`Form2.UpdateDisplay()\`:** Updates the stopwatch's display of elapsed time. Void return type.

* **\`Form2.FormatTimeSpan(TimeSpan timeSpan)\`:** Formats a \`TimeSpan\` object into a user-friendly string representation.

* **\`Form2.btnStart_Click(object sender, EventArgs e)\`:** Event handler for the stopwatch start/stop button, toggling the stopwatch's running state. Void return type.

* **\`Form2.btnReset_Click(object sender, EventArgs e)\`:** Resets the stopwatch and clears lap times. Void return type.

* **\`Form2.btnLap_Click(object sender, EventArgs e)\`:** Adds a lap time to the list. Void return type.

* **\`Form2.OnFormClosed(FormClosedEventArgs e)\`:** Handles the closing of \`Form2\`, stopping the display timer and disposing of resources.

* **\`Form3.InitializeTimer()\`:** Initializes the timer functionality in \`Form3\`.

* **\`Form3.CountdownTimer_Tick(object sender, EventArgs e)\`:** Handles timer ticks for the countdown timer; updates the display and checks for completion.

* **\`Form3.TimerFinished()\`:** Actions performed when the timer reaches zero.

* **\`Form3.UpdateDisplay()\`:** Updates the timer's display of the remaining time.

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* **`Form3.UpdateProgressBar()`:** Updates the progress bar of the timer based on elapsed time.

* **`Form3.FormatTimeSpan(TimeSpan timeSpan)`:** Formats a TimeSpan object into a string.


* **`Form3.btnSet_Click(object sender, EventArgs e)`:** Handles setting the timer duration from user inputs.


* **`Form3.btnStart_Click(object sender, EventArgs e)`:** Starts or stops the countdown timer.


* **`Form3.btnReset_Click(object sender, EventArgs e)`:** Resets the countdown timer to its initial settings.


* **`Form3.btnClear_Click(object sender, EventArgs e)`:** Clears the timer settings to zero.


* **`Form3.OnFormClosed(FormClosedEventArgs e)`:** Handles closing of `Form3`, stopping timer and disposing of resources.

* **`Form1.smethod_0` to `Form1.smethod_40` , `Form2.smethod_0` to `Form2.smethod_47`, `Form3.smethod_0` to `Form3.smethod_47`:**
Numerous helper functions with obfuscated names performing simple operations.

* **`Program.Main()`:** The application's entry point.

* **`Program.smethod_0` to `Program.smethod_2`:** Helper functions with obfuscated names related to Application.


* **`TimerManager.CreateStopwatch(string name = "default")`:** Creates a new stopwatch and adds it to the `stopwatches` dictionary.

* **`TimerManager.StartStopwatch(string name = "default")`:** Starts a specified stopwatch.

* **`TimerManager.StopStopwatch(string name = "default")`:** Stops a specified stopwatch.

* **`TimerManager.ResetStopwatch(string name = "default")`:** Resets a specified stopwatch.

* **`TimerManager.GetStopwatchElapsed(string name = "default")`:** Returns the elapsed time of a stopwatch.

* **`TimerManager.IsStopwatchRunning(string name = "default")`:** Checks if a stopwatch is running.

* **`TimerManager.CreateCountdownTimer(string name, TimeSpan duration)`:** Creates a new countdown timer and adds it to the
`countdownTimers` dictionary.

* **`TimerManager.GetCountdownRemaining(string name)`:** Returns the remaining time of a countdown timer.

* **`TimerManager.IsCountdownFinished(string name)`:** Checks if a countdown timer has finished.

* **`TimerManager.RemoveCountdownTimer(string name)`:** Removes a countdown timer from the manager.

* **`TimerManager.RemoveStopwatch(string name)`:** Removes a stopwatch from the manager.

* **`TimerManager.GetActiveStopwatches()`:** Gets a list of currently active stopwatches.

* **`TimerManager.GetActiveCountdownTimers()`:** Gets a list of currently active countdown timers.

* **`TimerManager.FormatTimeSpan(TimeSpan timeSpan, bool includeMilliseconds = false)`:** Formats a TimeSpan.

* **`TimerManager.ParseTimeSpan(string timeString)`:** Parses a string into a TimeSpan object.

* **`TimerManager.StopAllStopwatches()`:** Stops all stopwatches.

* **`TimerManager.RemoveAllTimers()`:** Removes all timers and stopwatches.


* **`WorldClockManager.WorldClockManager()`:** Constructor for `WorldClockManager`.

* **`WorldClockManager.InitializeTimeZones()`:** Initializes a dictionary of time zones.

* **`WorldClockManager.LoadAlternativeTimeZones()`:** Loads alternative time zones if the primary method fails.

* **`WorldClockManager.LoadBasicTimeZones()`:** Loads basic time zones (UTC and Local).

* **`WorldClockManager.GetTimeInTimezone(string timeZoneId)`:** Retrieves the current time in a specified time zone.
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* **`WorldClockManager.GetTimeZoneDisplayName(string timeZoneId)`:** Gets the display name of a time zone.

* **`WorldClockManager.GetAvailableTimeZones()`:** Returns a list of available time zones.

* **`WorldClockManager.FormatTime(DateTime dateTime, string format = "HH:mm:ss dddd, MMMM dd, yyyy")`:** Formats a DateTime object into a string.

* **`WorldClockManager.ConvertBetweenTimeZones(DateTime sourceTime, string sourceTimeZoneId, string targetTimeZoneId)`:** Converts time between time zones.

* **`WorldClockManager.GetTimeZoneOffset(string timeZoneId)`:** Gets the offset of a time zone from UTC.

* **`Resources.Resources()`:** Constructor for the `Resources` class.

* **`Resources.ResourceManager`:** Gets the `ResourceManager` instance.

* **`Resources.Culture`:** Gets or sets the culture for resource lookups.

* **`Resources.lpwj` and `Resources.shu`:** Access embedded image resources.

* **`Settings.Default`:** A property to access the default settings instance.

* **`Settings.smethod_0`:** Helper function with an unclear purpose, likely related to settings synchronization.

Control Flow

The control flow is highly obfuscated, particularly within `Form1.CinderGlyphRouter`. It uses a large switch statement inside a seemingly infinite loop (`for (;;)`), making it extremely difficult to trace execution paths without extensive deobfuscation. The other functions use simpler control flows, primarily involving loops (`for` loops and nested `while` loops simulating `do-while` in some instances) and conditional statements (`if` statements). Error handling is present in `UpdateClocks` and `GetTimeInTimezone` and `ConvertBetweenTimeZones` using `try-catch` blocks.

Data Structures

* **`Dictionary` (in `WorldClockManager`):** Stores time zone IDs as keys and their corresponding `TimeZoneInfo` objects as values.

* **`Dictionary` (in `TimerManager`):** Stores stopwatch names as keys and `Stopwatch` objects as values.

* **`Dictionary` (in `TimerManager`):** Stores countdown timer names as keys and their target completion times as values.

* **`Dictionary` (in `TimerManager`):** Stores countdown timer names as keys and their durations as values.

* **`List` (in `Form1`):** Two lists to store labels for clock city names and times.

* **`List` (in `Form2`):** Stores lap times for the stopwatch.

Malware Family Suggestion

The heavy obfuscation and the presence of a function like `CinderGlyphRouter` (with its suggestive naming and seemingly arbitrary calculations involving a bitmap) strongly indicate an attempt to hide malicious activity. While the core functionality of the application is benign (world clock, stopwatch, timer), the obfuscated part raises significant red flags. This strongly suggests the possibility of a **packer or crypter** being used to hide malware. The function could potentially be decrypting or decompressing malicious code embedded in the `shu` bitmap, which is then loaded into memory as an assembly. The use of `Interaction.CallByName` further obscures the call stack. Further investigation via deobfuscation is necessary to determine the exact nature of the potential threat. The code doesn't exhibit any clear characteristics of a specific malware family (e.g., ransomware, trojan) without deobfuscation, but it's definitely suspicious.