



B.Tech Project

# **InterBase 2020 - Update 3**

Aakashkumar Dabhi - 201801177

Mentor : Prof. Lavneet Singh

# InterBase

InterBase is a relational database management system by Embarcadero Technologies .

It is a highly scalable, high performance and cross platform with support for Windows, Mac, Linux, Android and iOS.



# Problem Statement

- User Interface is one of the critical aspects in making user base of the application.
- Good user interface increases user involvement and establishes a strong connection between user and application.
- In InterBase 2020 Update 3 the main focus was on improving and modernizing the UI of InterBase tools, to provide a better experience for customers and avoid the perception of InterBase as an outdated tool.



# Work Involved

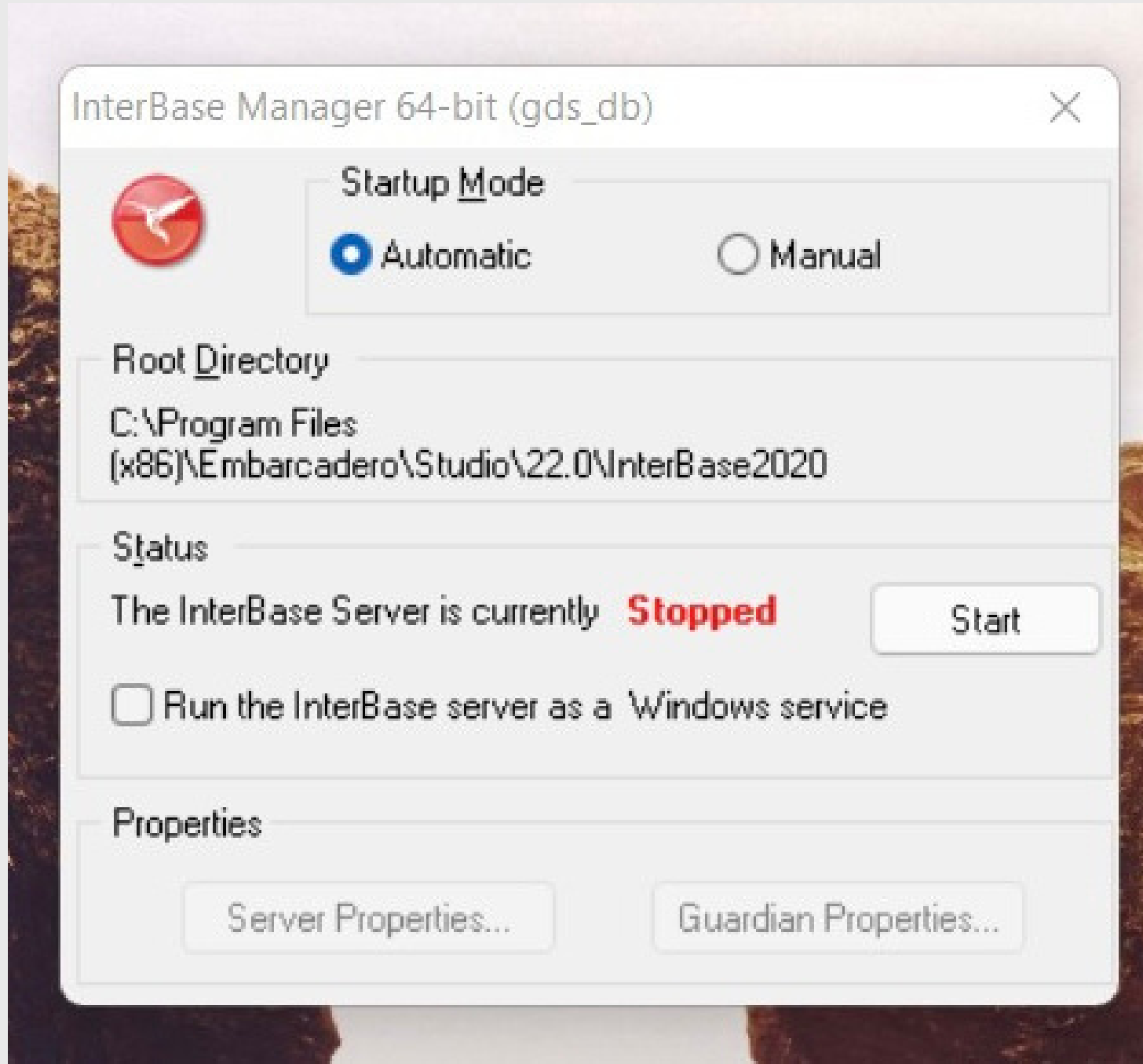
- My initial task was to get knowledge of Delphi's latest version because we have to develop the UI in latest version of Delphi.
- After that I have to update background, header and overall cleanup of the UI of InterBase server manager tool. This task also involved changing font, logo, radio button and checkboxes.
- One issue here was that the updated logo should be properly scaled with different screen sizes. I have to create logos for different resolutions and then add them to the source code to resolve this issue.

# Work Involved contd...

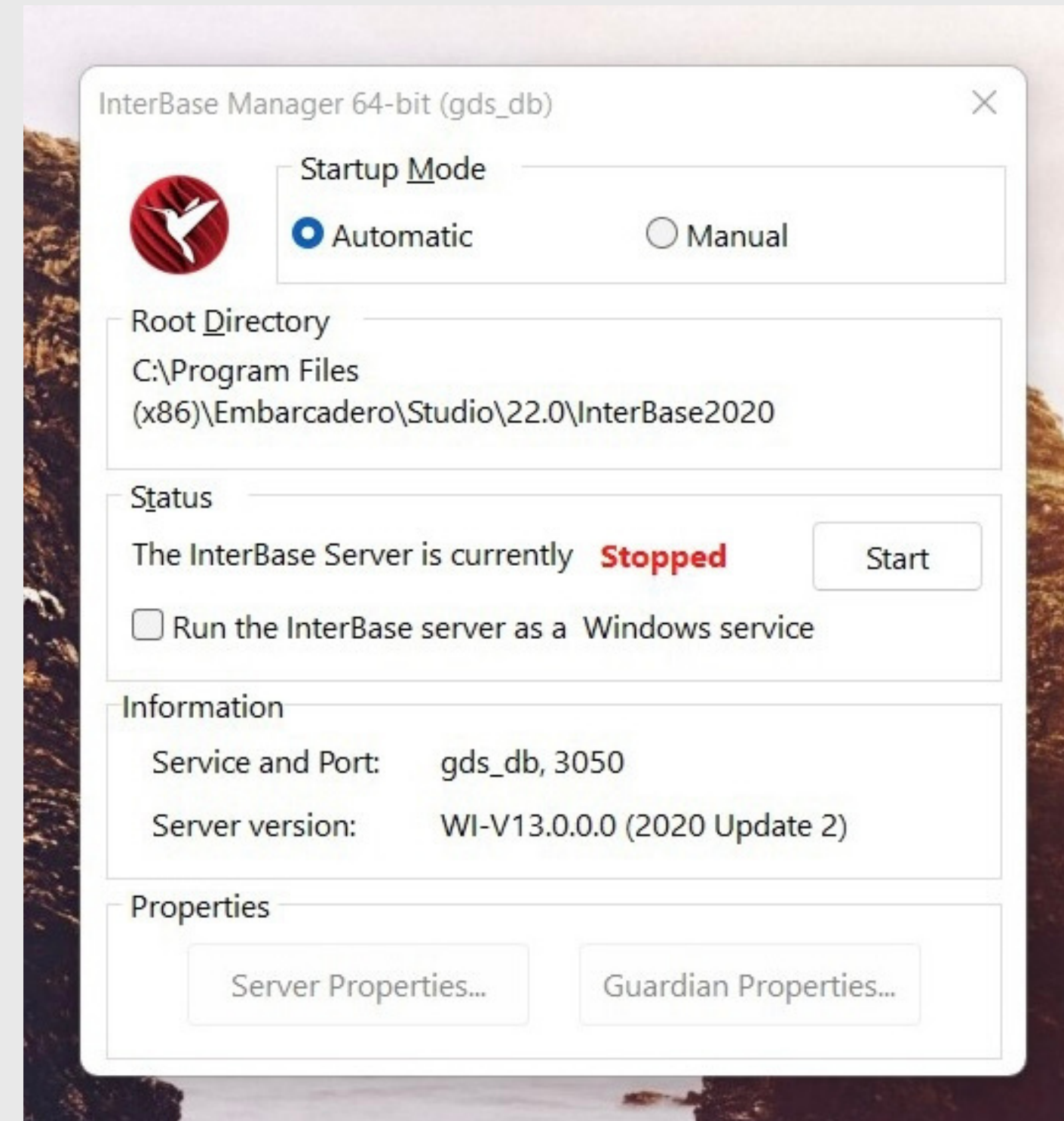
- IB Server Manager's UI was appearing blurry and not functioning as expected while working with high dpi displays.
- Main task here was to make the UI supported to high dpi displays. This included ensuring that the application is compiled with the per monitor v2 configuration and it functions properly on a high dpi monitor for all versions Windows operating system.
- For achieving this I have created custom manifest files with code written for enabling the high dpi support for application.



# Work Involved contd...



Old UI of InterBase Server Manager



Updated UI of InterBase Server Manager

# Work Involved contd...

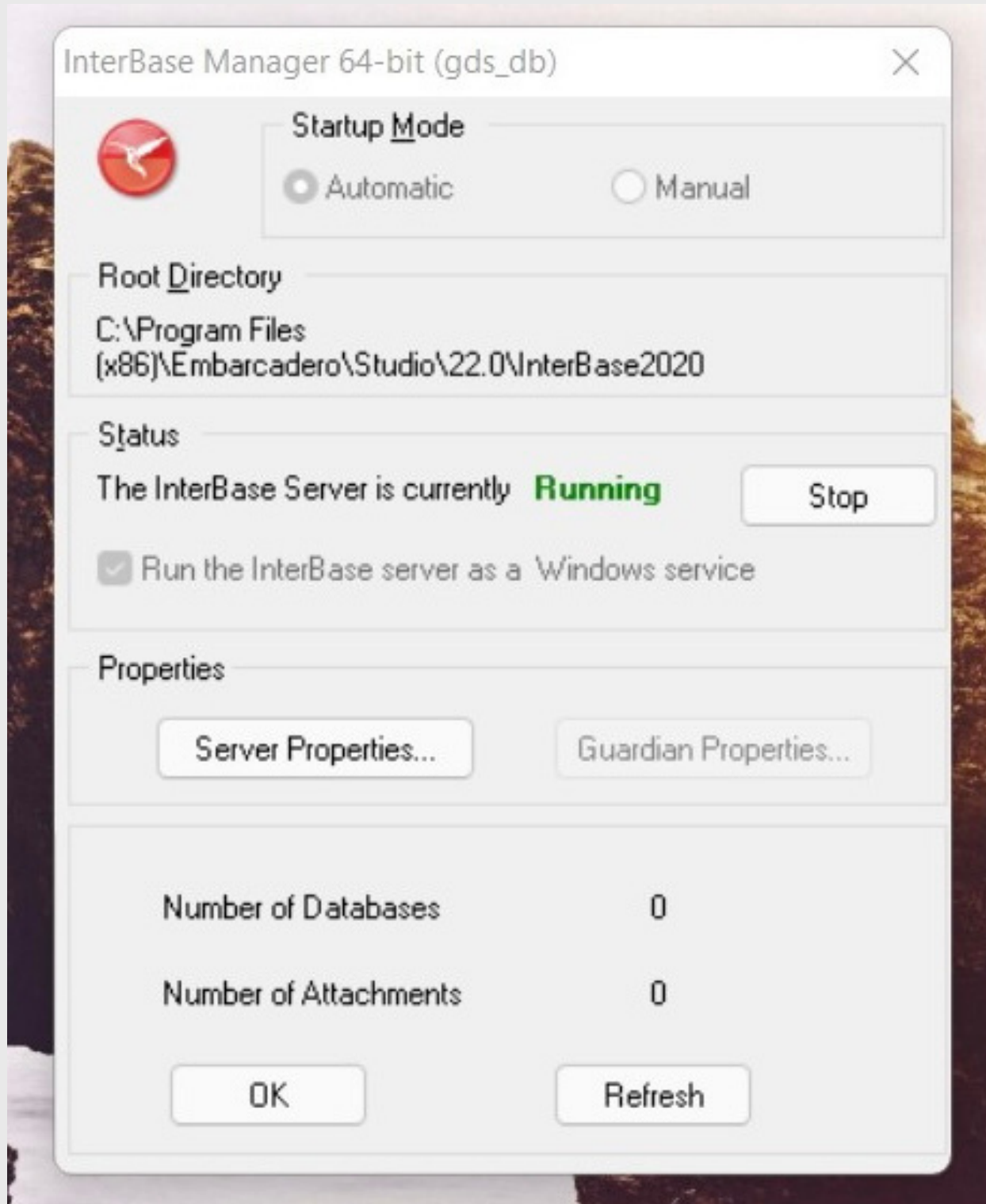
- Another requirement was to display the service name and server version number on the main UI of InterBase server manager tool.
- To find where this information is listed, I had to debug the server side code. After identifying the necessary files, I have to pass the information from C header files to Delphi files.
- One issue was that there was no direct way to pass data between the C header file and the Delphi file. To fix this problem, I had to first insert this information into the Windows registry and then retrieve it in Delphi source code.

# Work Involved contd...

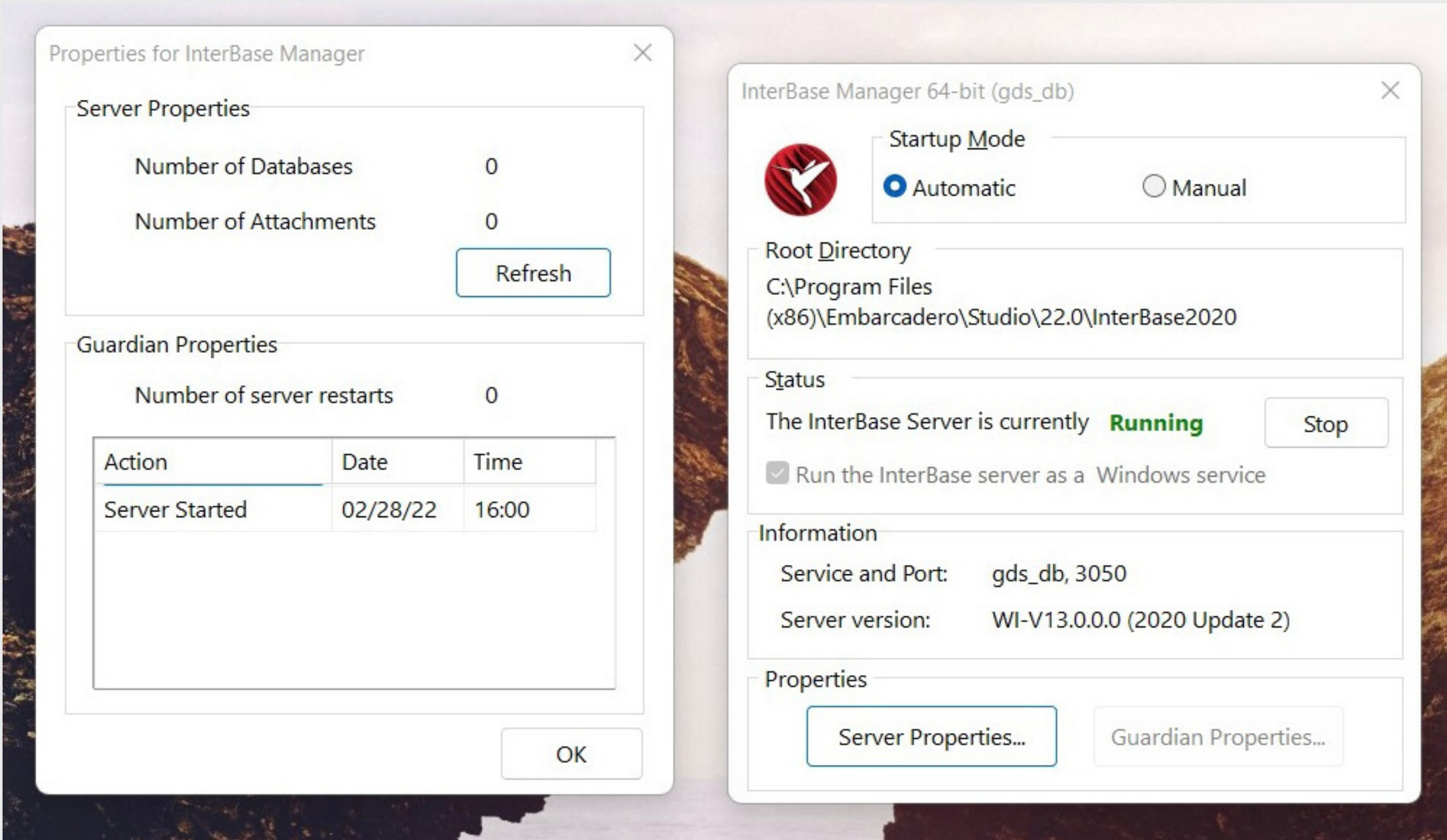
- When the server runs as a service, the InterBase server manager window expands a panel to display the information that cannot be closed.
- The requirement was to replace it with a new, closable window and that newly opened window should also show some required properties.
- I have written testcases for all the requirements . After writing testcases I have also tested all the functionalities for different windows versions and different screen sizes.



# Work Involved contd...



Old UI when InterBase server run as service



Updated UI when InterBase server run as service

# Tools and Technologies Used

## Delphi

- High-level programming language with features supported like fast GUI software development with drag and drop mechanism, SQL database compatibility, Windows API support .
- UI code for InterBase is written in Delphi.

## C Language

- It is a structured and machine-independent programming language that's used to create a variety of application software and operating systems. .
- Server side code and some UI portion of InterBase is written in C Language.

## RAD Studio

- IDE for developing cross-platform, high performance apps for different platforms like Windows, Linux, Mac and Android.
- We used RAD Studio as an IDE for User Interface development of InterBase.

## Jira

- Jira is a project management application. It can also be used to track bugs and issues. It provides excellent planning features that keep everyone on the same page.
- During the project we have used Jira to track bugs and issues.

# Challenges faced and Learning

- The build environment setup procedure described in the repository was somewhat complicated. If the correct environment variables were not set up, the build script displays cryptic errors that makes it difficult to diagnose the issue.
- The server side code for InterBase is written in C language. It displays property sheets and dialogue using the Win32 API. It is difficult to understand at first without proper documentation for win32 API in C.
- For every small/big change in C server code, we've to rerun the full build. If the system is not fast enough, it can take upto 8-12 minutes for the build to complete.

# Challenges faced and Learning contd...

- There were very few comments mentioned in both UI and server code, because of that it was difficult to understand the code without debugging.
- While developing UI, there is a difference between how C server code displays a window and how Delphi UI code displays any window. To ensure that the UI is consistent and properly sized across all displays, I have to experiment with different font sizes and sizes of white spaces between UI elements to determine optimal font size.
- When more than one person is working on the same UI app in Delphi, if one person commits his/her code and then another person tries to commit the code, he/she will receive a conflict error. We fixed these issues by cloning the most recent repository again, redoing our changes, and then committing.

# References

- <https://www.embarcadero.com/products/interbase>
- <https://learndelphi.org/>
- <https://www.embarcadero.com/products/rad-studio>
- <https://www.atlassian.com/software/jira>



# Thank You

