**PROJECT REPORT (2023462)**

**Loading and Preprocessing**

1. **Button Click Event**: When the "open" button is clicked, it triggers an event (**button1\_Click**) to open a file dialog and select a file.
2. **File Reading**: The selected file is then read to extract data representing a matrix.
3. **Calculating Pearson's Coefficient**: Pearson's coefficient is calculated between pairs of rows in the matrix to obtain a correlation matrix.

**Bitmap Visualization**

1. **Bitmap Creation**: The calculated correlation matrix is visualized using a bitmap, where different pixel colors represent the correlation values. Black pixels represent higher correlation values, and white pixels represent lower correlation values.
2. **Bitmap Zooming**: Buttons "zoom in" and "zoom out" enable zooming functionality for the bitmap display.

**Permutation and Bitmap Visualization**

1. **Permutation of Rows**: The rows of the correlation matrix are permuted using a random shuffle operation.
2. **Bitmap Creation After Permutation**: The correlation matrix after permutation is visualized using another bitmap. This bitmap shows correlations after rearranging rows.

**Sorting and Bitmap Visualization**

1. **Sorting and Rearrangement**: Rows of the correlation matrix are sorted based on a computed signature array, which is a combination of mean and max values.
2. **Bitmap Creation After Sorting**: The sorted correlation matrix is visualized using a bitmap. This bitmap represents correlations after sorting and rearranging rows.

**Original Matrix Bitmap Visualization**

1. **Bitmap Creation for Original Matrix**: The original matrix is visualized using a bitmap, where black pixels represent positive values and white pixels represent negative values.

**Memory Management**

1. **Memory Deallocation**: Proper memory deallocation is performed to release dynamically allocated memory.