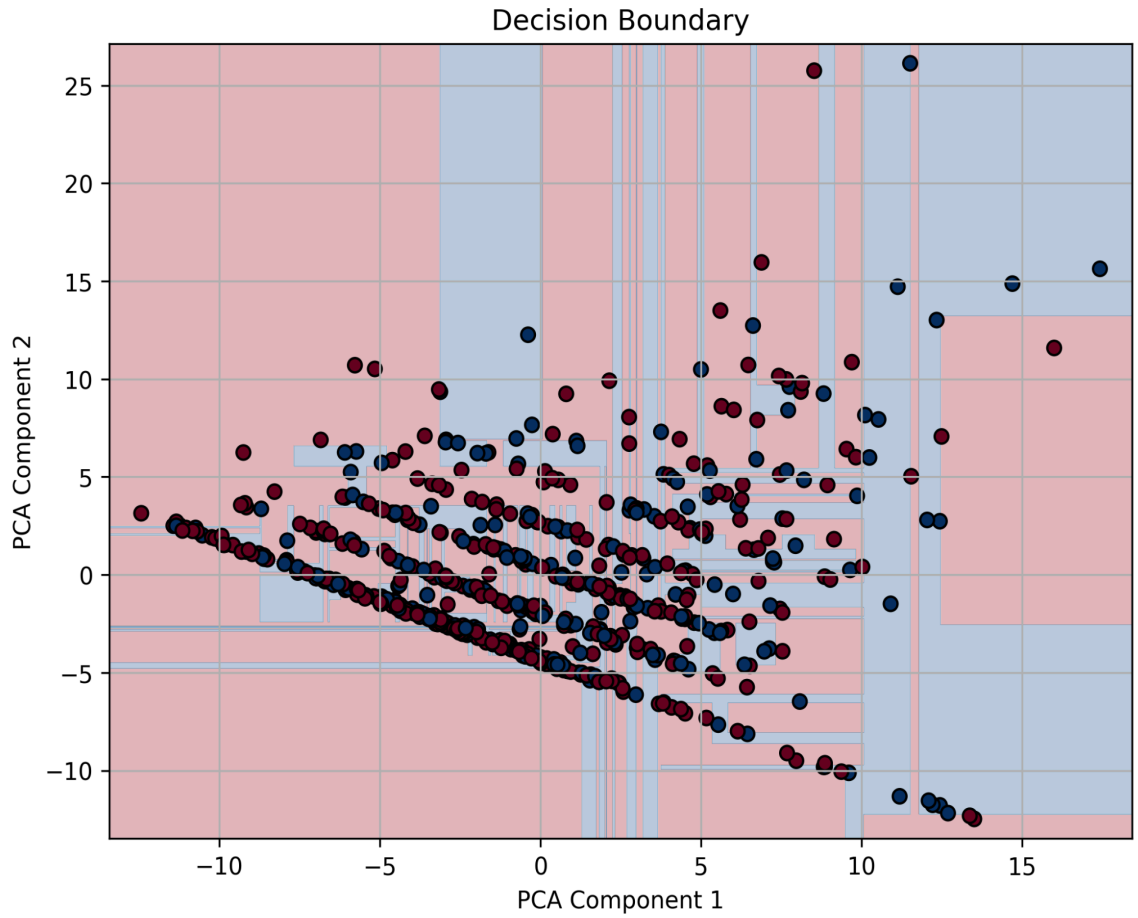
Bonus Task

Plot - 1 :



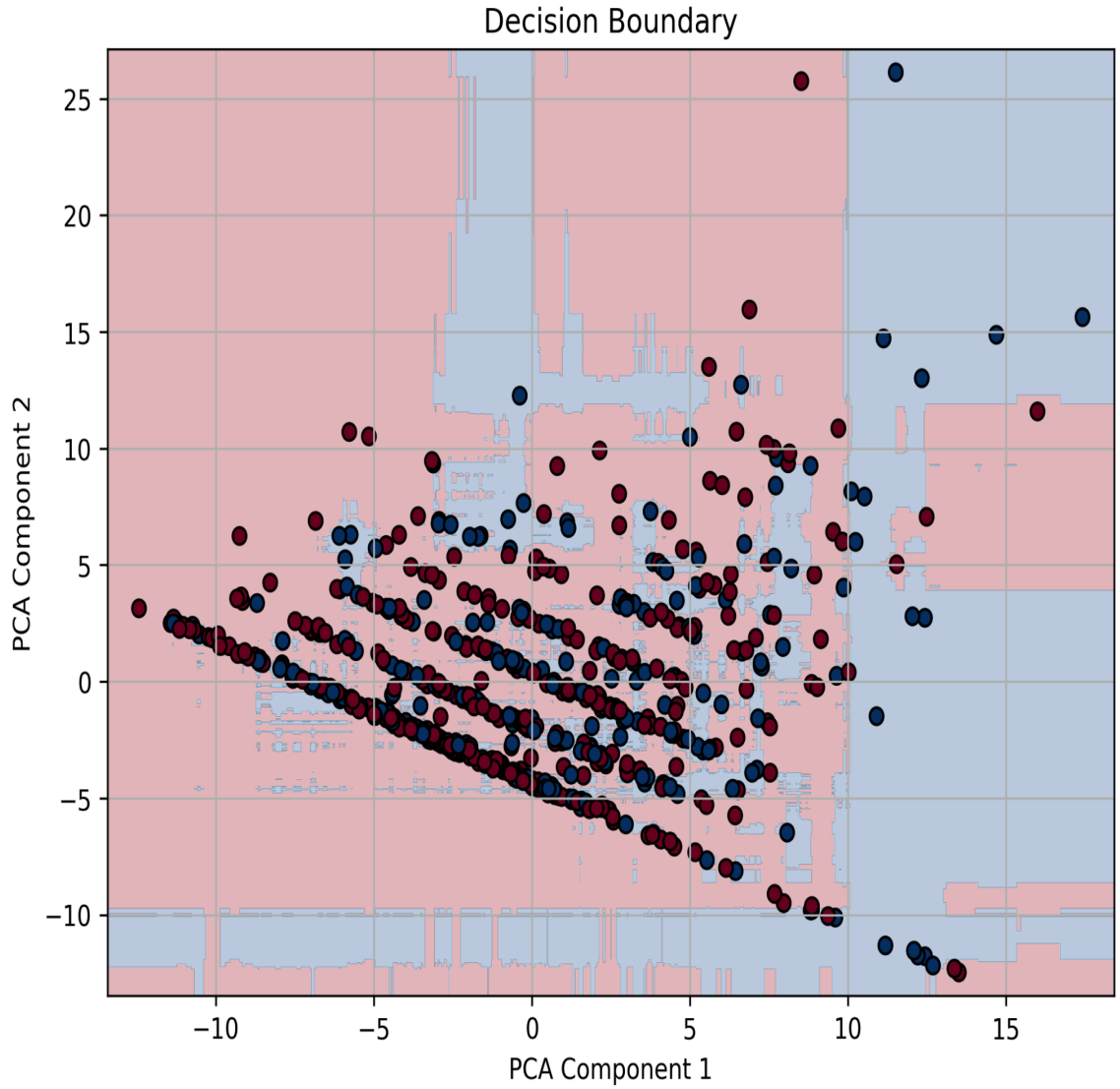
The Model used in Plot is a **“ Decision Tree Classifier”**

- Due it straight line like nature .

>It has been chosen for its interpretability & ability to create clear axis- aligned decision boundaries.

> Which are easy to visualize after PCA transformation

Plot -2 :

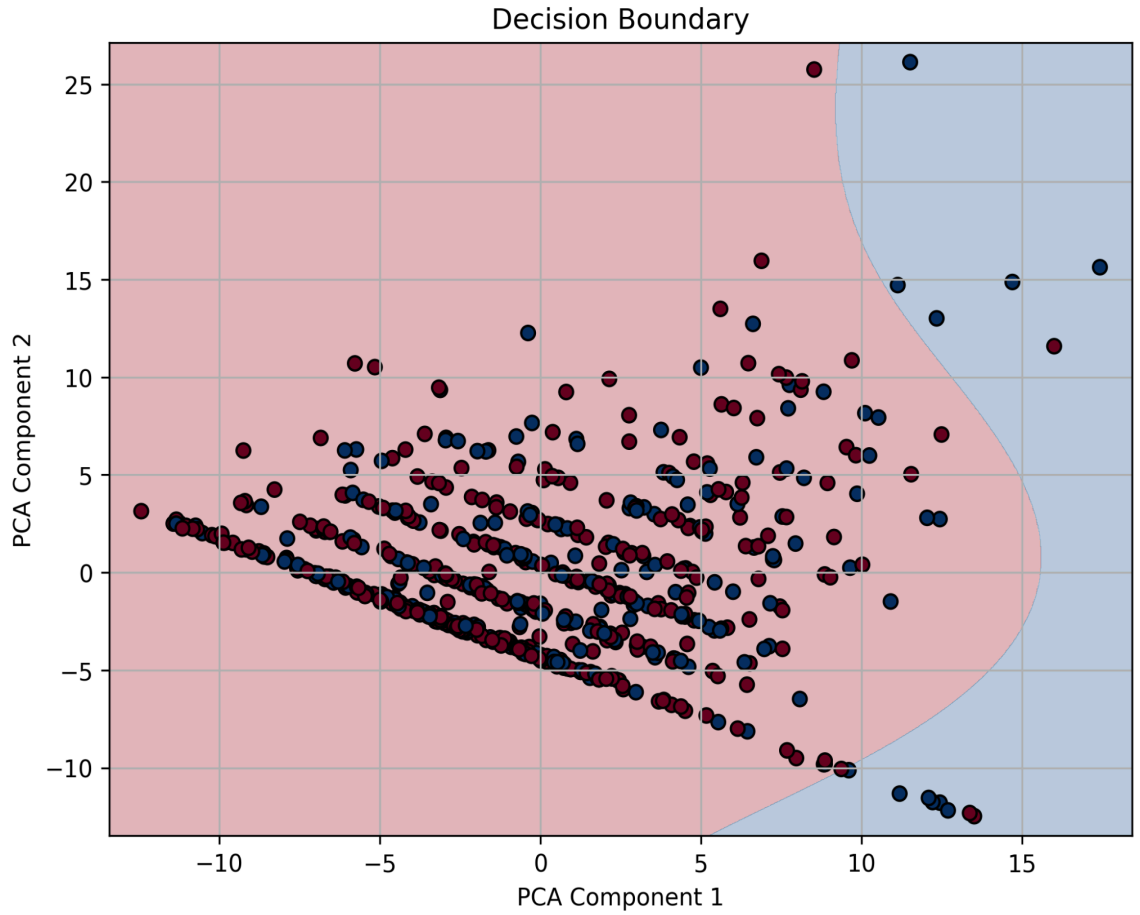


The model used in most likely a **“ Decision Tree Classifier “.**

- Due to the axis - aligned , rectangular decision boundaries
- The decision region are colored { light blue & light red }
- The data points are marked with two different colors it indicates two classes .

> This Model is chosen for its interpretability & ability to handle non- linear separation in the data .

Plot - 3 :

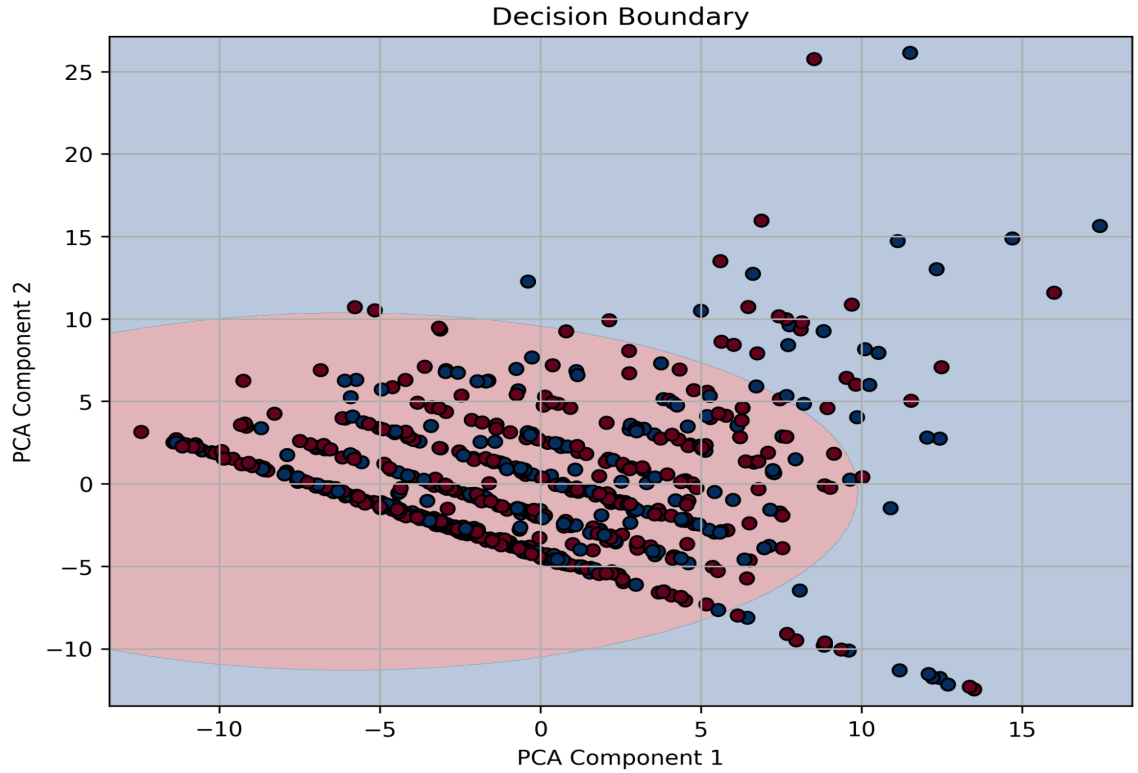


The model used is mostly like **“ Kernel SVM “**

- Due to the smooth non- linear decision boundary shown in the PCA - reduced 2D plot .

> This model is chosen for its ability to separate classes that are not linearly separable in the original feature space & PCA is used to made the results visually interpretable .

Plot -4 :



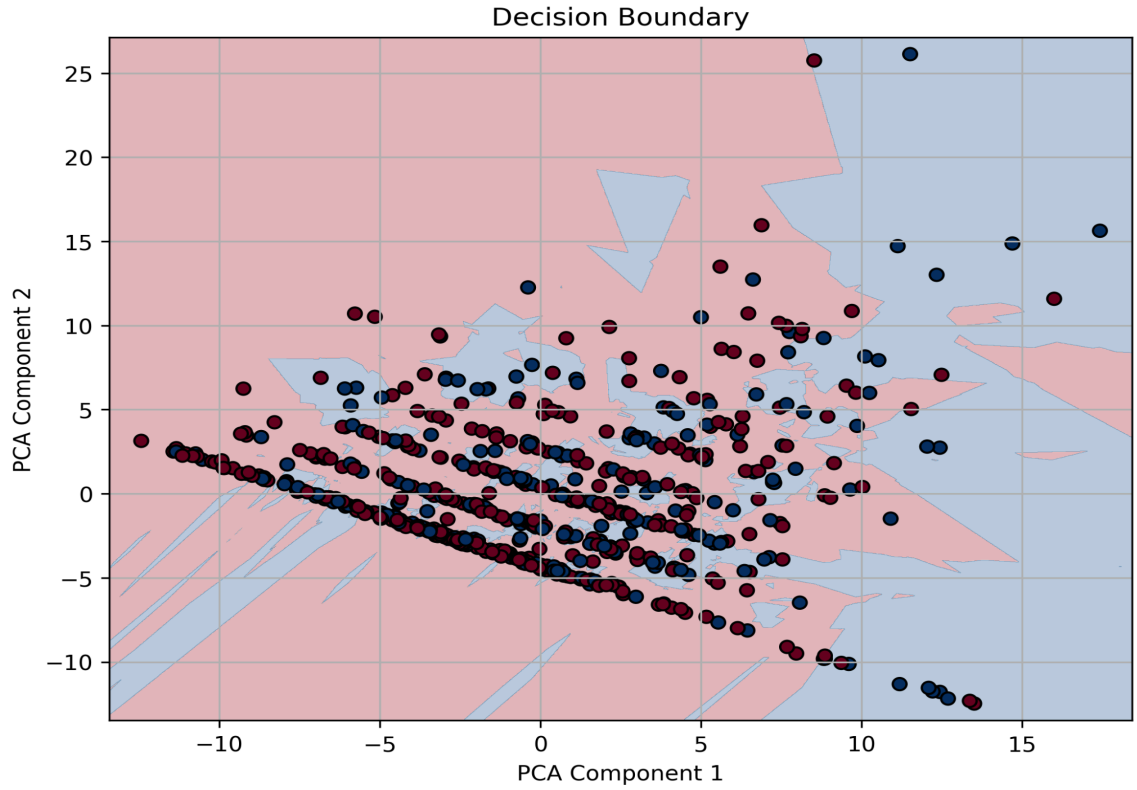
The model used in most likely **“ Logistic regression “ [after PCA]**

- Due to decision boundary is straight line (line) not curved.
- Since is not jagged as in decision trees and flexible as kernel SVM we can confirm this.

> It been used for – Simple
Interpretable
Work excess after PCA .

> it visualization – PCA for reducing to 2D and visualizing boundary .

Plot -5 :



The model used in plot is mostly likely a **Possibly a Random forest.**

- The decision boundary is **“ Irregular and non- linear “** With sharp jagged edges and small “ islands “ of different colors.

> Chosen for its ability to create complex, non linear axis -aligned decision boundaries as seen in your PCA-reduced 2D plot

> This makes it suitable for datasets where class separation is not linear & interpretability is desired.

> it been used for — Captures non- linear boundaries .