ANDROID APP CRASH ANALYZER

INTRODUCTION

This **Android Infotainment Crash Analyzer** is a diagnostic tool designed to parse logcat files from vehicle head units. It automates the detection of system instabilities by filtering logs for critical errors and ranking them by frequency, helping automotive engineers pinpoint the most urgent software failures during vehicle testing.

Why It's Needed in Automotive Infotainment

Modern vehicles depend on Android infotainment for navigation, media, connectivity, and ADAS, but harsh conditions and ECU integration cause crashes like frozen screens and lost GPS—requiring automated error analysis to ensure safety and meet certification deadlines.

The Algorithm

The program follows a linear architecture. Here is the step-by-step logic:

1. **Initialization**: Define the target source file (e.g., `android_logcat.txt`).

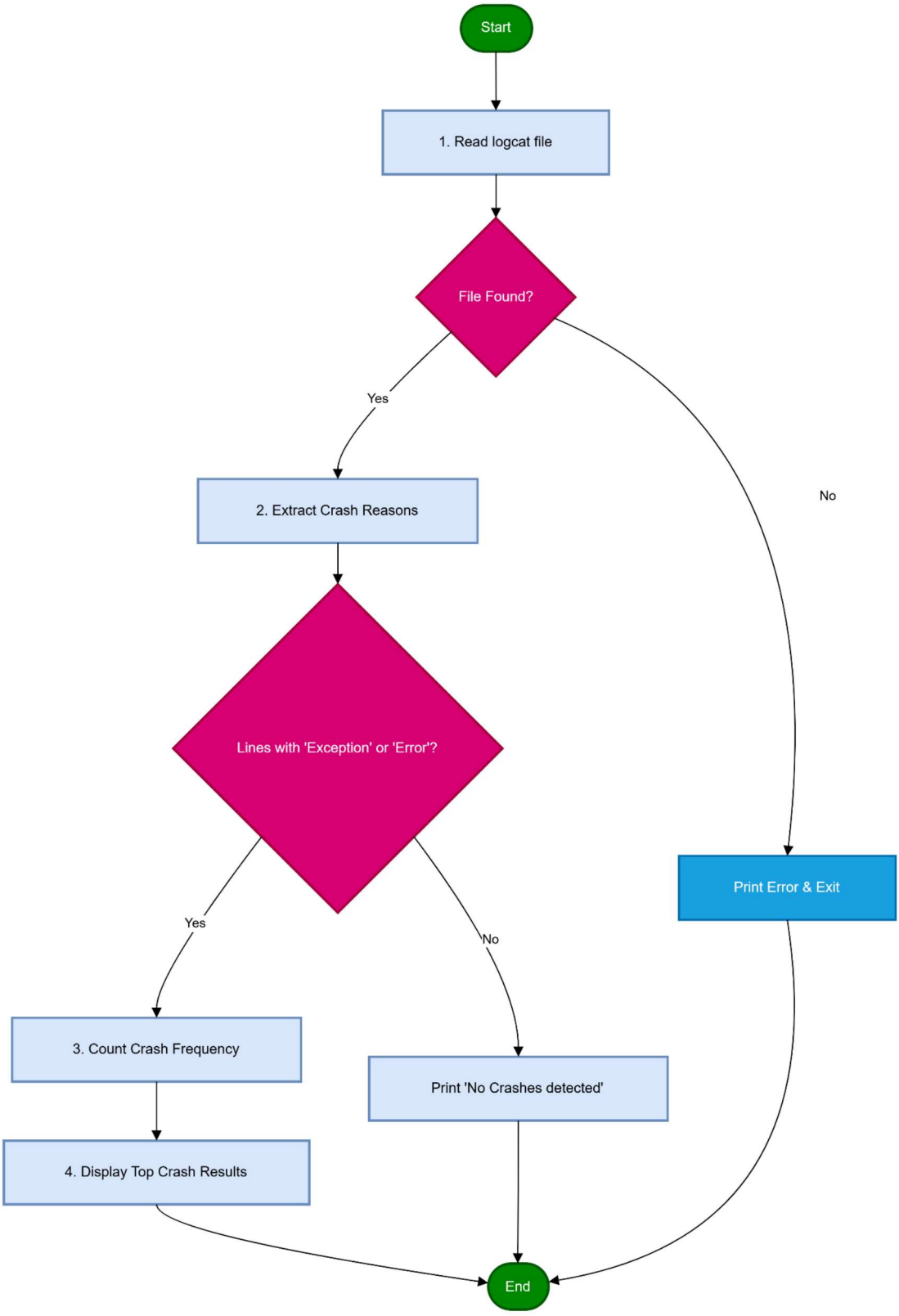
2. **Validation**:
    - Check if the log file exists in the local directory.
    - If missing, terminate with an error message to prevent runtime crashes.

3. **Extraction (Filtering)**:
    - Iterate through every line of the text file.
    - Apply a **substring match** filter: Keep only lines containing the keywords `"Exception"` or `"Error"`.
    - Store these filtered lines in a temporary list.

4. **Frequency Mapping**:
    - Pass the list of filtered strings into a hash-map based counter (`collections.Counter`).
    - This maps each unique error string to its total number of occurrences.

5. **Reporting**:
    - Sort the data by frequency (highest to lowest).
    - Print the detailed list of all detected crashes.
    - Identify and highlight the crash (the crash with the highest count) for immediate debugging priority.

FLOWCHART:


Start
1. Read logcat file
File Found?
Yes
No
2. Extract Crash Reasons
Lines with 'Exception' or 'Error'?
Yes
No
Print Error & Exit
3. Count Crash Frequency
Print 'No Crashes detected'
4. Display Top Crash Results
End