# Phase 1: Requirements Gathering and Analysis

## Duration: 3 Days

## Milestones:

* Requirements Finalization
* Technical Environment Confirmation (Target Windows Version(s), Python Version available, Will you need any special library? Etc.)

## Action Plan:

1. **Requirements Review:** Validate project goals, functional & non-functional requirements, and constraints.
2. **Functionality Definition:** Define all the functionalities needed.
3. **Tool Selection:** Choose programming languages, libraries, and development tools.
4. **Documentation:** Document and share findings with the team.

# Phase 2: Design and Architecture

## Duration: 4 Days

## Milestones:

* Software Architecture Design
* CLI Design

## Action Plan:

1. **Architecture Outline:**
   1. Create a modular software architecture blueprint:  
      - Modules like input handling, path processing, path shortening, reporting, and logging.
   2. Data Flow Design:  
      - How data will flow from input to processing to output.
   3. Error Handling Strategy  
      - Error handling and logging mechanisms for diagnosing and troubleshooting.
2. **Interface Design:**
   1. Design the command-line interface and user interaction flow  
      - Define the set of commands that users will use to interact with the application  
      - Example: command for starting the scan, specifying directories, choosing path shorten method, etc.
   2. Feedback and Prompts
   3. Help System
3. **Algorithm Planning:** Plan implementation of path shortening algorithms.
   1. Algorithm design for*abbreviation*, *truncation*, and *selective removal*
   2. Identify and handling edge cases  
      - path with unusual character?  
      - read-only files?
   3. Since there could be a lot of file paths will need to be updated, we may need to pay attention to the performance
4. **Design Finalization:** Review, Present the design to CGI and Airbus team and finalize the design.

# Phase 3: Development

## Duration: 3 Weeks

## Milestones:

* Core Functionality Development
* Initial Version Completion

## Action Plan:

1. **Environment Setup:** Establish development environment and version control.
2. **Feature Development (Bulk Operations):** Develop bulk operation functionality.
   * Identify and auto-fix long file paths in bulk.
3. **Feature Development (Discovery & Reporting):** Implement path discovery and reporting.
   * Discover all long paths and files with overly long names, reporting them in an Excel file.
4. **Feature Development (Path Shortening):** Code path shortening methods.
   * Abbreviation
   * Truncation
   * Selective Removal
5. **Feature Development (Attribute Preservation):** Integrate file attribute preservation.
   * Maintain file attributes like creation date, last access date, modified date, hidden, and read-only status.
6. **In-Development Testing:** Conduct unit testing and revisions during development.

# Phase 4: Testing and Debugging

## Duration**:** 1.5 Weeks

## Milestones:

* Testing Completion
* User Acceptance Initiation

## Action Plan:

1. **Unit Testing:** Perform module-specific testing.
2. **Integration Testing:** Test integrated application functionality.
3. **User Acceptance Testing:** Initiate testing with a focus group.
4. **Debugging:** Address issues from testing phases.

# Phase 5: Deployment and Documentation

## Duration: 1 Week

## Milestones:

* Application Deployment
* Documentation Completion

## Action Plan:

1. **Deployment Preparation:** Set up the deployment environment.
2. **Application Deployment:** Deploy the application.
3. **User Manual Creation:** Write user manuals.
4. **Technical Documentation:** Develop technical documentation.

# Phase 6: Post-Deployment Review and Adjustments

## Duration**:** Remaining Time (within Phase 5)

## Milestones:

* Initial Feedback Collection
* Critical Adjustments Implementation

## Action Plan:

1. **Feedback Gathering:** Collect user feedback.
2. **Adjustment Implementation:** Address and implement critical feedback.
3. **Application Update:** Update the application based on feedback.