Requirements Document: Clean List Shell Script (clean_list.sh)

Field	Value
Project	Clean List Shell Script (clean_list.sh)
Version	1.0
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1. Project Goal and Constraints

The goal is to develop the clean_list.sh shell script to **concatenate input arguments**, **remove duplicates**, and output a single colon-delimited list.

Requirement	Description
Core Logic	Preserve the **original order** of the first appearance of each unique element.
Input/Output	Accepts multiple arguments (space/colon delimiters); outputs a single colon-delimited string.
Constraint	**Must not use temporary files** (in-memory processing only).
Environment	Must be a **Bourne Shell** compatible script (#!/bin/bash or #!/bin/sh).

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2. Functional Requirements (Core Logic)

2.1. R1: Special Colon Pattern Handling

Apply these transformations to **each input argument** independently, before splitting into elements:

Pattern	Equivalent	Example
Leading Colon (:)	. (dot)	:a/bin $\rightarrow$ ./a/bin
Trailing Colon (:)	. (dot)	a/bin: $\rightarrow$ a/bin:.
Double Colon (::)	:.:	a/bin::/etc $\rightarrow$ a/bin:.:/etc

2.2. R2 & R3: Concatenation, Deduplication, and Ordering

1. Combine elements from all arguments (split by space and colon).

2. Maintain the order of the elements as they first appear.

3. Discard any subsequent duplicates.

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3. Test Case List (Automated Script Validation)

The script must pass the following **10 tests** exactly as defined in the automated validation suite, with all categories included.

Test ID	Category	Input Arguments	Expected Output
T1	Special/Edge	:	.
T2	Special/Edge	: .	.
T3	Basic	a b c	a:b:c
T4	Basic	a:b:c	a:b:c
T5	Deduplication	/bin:/usr/bin:/bin:/usr/bin:/sbin	/bin:/usr/bin:/sbin
T6	Deduplication	a b c a b c	a:b:c
T7	Special/Dedupe	/bin:: /bin::	/bin:.
T8	Complex/Order	x yx yxx . yx xx yxxx xxxx yxxxxx x xx xxx xxxx xxxxx yx yxx yxxx yxxxx yxxxxx	x:yx:yxx:.:xx:yxxx:xxxx:yxxxxx:xxx:xxxxx:yxxx x
T9	Edge Case	. : :: :	.
T10	Edge Case	(No arguments)	(Empty string)