

Potential Failure Mode	Potentail Failure Effect	Severity	Potentail Cause	Occurance	Controls	Detection	RPN
Data is corrupted by Race Conditions	Incorrect buffer alignment, missing data in UART transactions	6	Mis-Identification of critical sections and interrupts changing sensitive data	3	Disable interrupts around critical sections	8	144
Program Blocks Indefinitely	No more program execution	6	Buffer Blocking mode is used, and buffer error cases are not handled correctly	4	Check each buffer operation and make sure to return execution to main as soon as possible	5	120
Over-allocation of circular buffer which extends past the heap	Program crashes because memory is corrupted	9	Buffer is servicing many more Add operations than remove operations	4	Ensure buffer can only allocate a maximum number of times to keep it within 512 bytes	3	108
UART Disconnection	UART transmission, and therefore program functionality, is stopped	8	Serial Teminal Closed, Unplugged board from host computer	2	If a disconnection is detected, program exits in a safe manner	3	48
User enters more than 100 of any individual character in App mode	Respective character count turns to garbage	3	User not reading README or pasting a very large text file	4	None, error is external to designed system and depends on user interaction	4	48
User enters a non alpha-numeric character in application mode	Character is not counted by the application mode reporter	2	User not reading README	7	If character is not alpha-numeric, the program simply ignores the character	2	28