Tech Titans

Boolean Logic Simulator

Test Case Specifications

Version 1.5

Revision History

Date	Version	Description	Author
30/04/2024	1.0	Initial work on the document	Cole Charpentier
01/05/2024	1.1	Finished the purpose section, suggested edits to sections 6-8, added rows to table and added given test inputs	Cole Charpentier
01/05/2024	1.2	Ran group test cases and filled table	Justin Daugherty
01/05/2024	1.3	Additional test cases	Caden LeCluyse
02/05/2024	1.4	Added pass to TC38	Caden LeCluyse
02/05/2024	1.5	Corrected date	Caden LeCluyse

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Test Case

1. Purpose.

The purpose of this Test Case Specifications document is to document and define the test cases for the Boolean Logic Simulator. It provides a structured outline of the test scenarios used to verify that the Boolean Logic Simulator behaves as expected when given various different inputs. The test cases are represented in a table and have clear identifiers, a description, the input, expected output, actual output, and whether the input passed or failed the test.

2. Continuous Mode

The following test cases were ran in continuous mode, entering by hand.

Test Case ID	Test Case Description	Input	Expected Output	Actual Output	Pass/Fail Status
TC01	Valid	(T | F) $ F	True	True	Pass
TC02	Valid	! (T & T)	False	False	Pass
TC03	Valid	(F @ T) | (T @ F)	True	True	Pass
TC04	Valid	(T $ T) & F	False	False	Pass
TC05	Valid	! F | ! T	True	True	Pass
TC06	Valid	(((((T | F) & F) | (T & (T | F))) @ (T @ T)) $ (! (T | F)))	True	True	Pass
TC07	Valid	((F $ ((T | F) & (F @ (T | F)))) | (T $ (T & F)))	True	True	Pass
TC08	Valid	(((! (T $ F)) & (T @ T)) | ((F | T) & (T $ T))	False	False	Pass
TC09	Valid	(((T @ T) $ (F @ T)) | ((!T) & (T | (!T))))	True	True	Pass
TC10	Valid	((F @ T) $ (T | (F & F))) & (T & (T @ (!T)))	False	Fasle	Pass
TC11	Invalid, missing operand	! & T	Error: NOT applied after value	Error: NOT applied after value	Pass
TC12	Invalid, unknown operator	T ? T	Error: Expected &, |, !, @, $, received ?	Error: Expected &, |, !, @, $, received ?	Pass
TC13	Missing operator	(T |) F	Error: Missing operator!	Error: Missing operator!	Pass

TC14	Incorrect symbol '='	T = !(T & T)	Error: Expected &, |, !, @, $, received =	Error: Expected &, |, !, @, $, received =	Pass
TC15	Invalid, empty expression		Error: Empty expression received!	Error: Empty expression received!	Pass
TC16	Invalid, double operator	T && & F	Error: Two consecutive operators detected: & and &	Error: Two consecutive operators detected: & and &	Pass
TC17	Invalid, missing truth values	X | Y	Error: expected T or F, received: Y	Error: expected T or F, received: Y	Pass
TC18	Invalid, inconsistent characters	True | F	Error: expected T or F, received: e	Error: expected T or F, received: e	Pass
TC19	Invalid, operators after operand	True!	Error: expression ends with NOT!	Error: expression ends with NOT!	Pass
TC20	Invalid, invalid characters	a & b	Error: expected T or F, received: b	Error: expected T or F, received: b	Pass
TC21	Valid	(T&T)&T	True	True	Pass
TC22	Valid	(T|F)|(T&F)	True	True	Pass
TC23	Valid	(T&(F|T)@(F|(T&T)))	False	False	Pass
TC24	Valid	((T@F)$(F\|T))&((T&(F@T))\|(F$T))	False	False	Pass
TC25	Valid	(((T@F)$T)|((T&(F@T))@(F|T)))&(T|F)	False	False	Pass
TC26	Valid	((T@(F&F))@(F|T))&((T|F)@(F&T))	False	False	Pass
TC27	Valid	(T@(F&T))|((T|F)@(F|T))	True	True	Pass
TC28	Statement ends with not	(!T)!	Error: expression ends with NOT!	Error: expression ends with NOT!	Pass
TC29	Invalid: only whitespace characters		Error expression contains only spaces	Error expression contains only spaces	Pass
TC30	Valid	T & F	False	False	Pass

2. Test Mode

The following tests were ran in test mode, using the -t flag.

Test Case ID	Test Case Description	Input	Expected Output	Actual Output	Pass/Fail Status
TC31	Ending with open parentheses	(T | F) & (T & F)(	Expression ends with open parentheses!	Expression ends with open parentheses!	Pass
TC32	Beginning with closed parentheses	)(T $ F) & T	Expression begins with closed parentheses!	Expression begins with closed parentheses!	Pass
TC33	Ending with NOT	T & F | (T @ F)!	Expression ends with NOT!	Expression ends with NOT!	Pass
TC34	Consecutive operands	(T | F) $!T | (TF)	Two consecutive operands detected: T and F	Two consecutive operands detected: T and F	Pass
TC35	Empty parentheses	(T @ F) $ T | ( )	Empty parentheses detected!	Empty parentheses detected!	Pass
TC36	Missing operator	(T & F) (T $ T)	Missing operator!	Missing operator!	Pass
TC37	Valid	((T@F)$(F\|T))&((T&(F@T))\|(F$T)) & (T@(F&T))|((T|F)@(F|T))	False	False	Pass
TC38	Ending with NOT	(T | F) $ T | (T$F)!	Expression ends with NOT!	Expression ends with NOT!	Pass
TC39	Valid	(T $ F) & F | (F @ T)	True	True	Pass
TC40	Invalid character	!X & F | T $ z	Expected T or F, received: z	Expected T or F, received: z	Pass
TC41	Empty parentheses	( )	Empty parentheses detected!	Empty parentheses detected!	Pass
TC42	Valid, simple expression	T @ F	True	True	Pass
TC43	Valid, simple expression	T $ F	True	True	Pass
TC44	Valid, simple expression	T $ T	False	False	Pass
TC45	Missing operator	(T F)	Two consecutive	Two consecutive	Pass

			operands detected: T and F	operands detected: T and F	
TC46	Not after variable	(T & F) | (F! @ T)	NOT applied after value!	NOT applied after value!	Pass
TC47	Valid	(F @ T) | (T @ F) $ F	True	True	Pass
TC48	Valid	F | F	False	False	Pass
TC49	Valid	((T@F)$(F\|T))&((T&(F@T))\|(F$T)) & (T@(F&T))|((T|F)@(F|T)) & (T | F)	False	False	Pass
TC50	White space		Expression contains only spaces!	Expression contains only spaces!	Pass
TC51	Missing closed parentheses	(((T @ F) @ T)	Missing closing parentheses!	Missing closing parentheses!	Pass
TC52	Missing open parentheses	F | (T & F) & F)	Missing open parentheses!	Missing open parentheses!	Pass
TC53	Invalid operator	F & T $ F * (F @ T)	Expected &, |, !, @, $, received: *	Expected &, |, !, @, $, received: *	Pass
TC54	Beginning with operator	& T@F $ T | T	Expression begins with an operator	Expression begins with an operator	Pass
TC55	Ending with operator	((F | !T) @	Expression ends with an operator!	Expression ends with an operator!	Pass
TC56	Not added to beginning of TC24	!((T@F)$(F\|T))&((T&(F@T))\|(F$T))	True	True	Pass
TC57	Valid	F @ T | !T	True	True	Pass
TC58	Empty parentheses	(((((((((())))))))))	Empty parentheses detected!	Empty parentheses detected!	Pass
TC59	NOT after variable	F @ T | (F & T!)	NOT applied after value!	NOT applied after value!	Pass
TC60	Missing operand	((!F | T) @)	Missing an operand!	Missing an operand!	Pass
TC61	Valid simple expression	T @ T	False	False	Pass
TC62	Valid expression	(((T@(F&F))@(F|T))&((T|F)@(F&T))) & (((((T | F) & F) | (T &	False	False	Pass

		(T | F))) @ (T @ T)) $ (! (T | F)))			