

Solutions to Selected Exercise Problems

Chapter 2 (page 25):

P2.1: Test Cases or Not

(1) Yes, this is a test case. It satisfies the characteristics and definitions of a test case, it's deterministic, reproducible, atomic, independent, finite, and has specific inputs/steps to perform, and has defined output.

(2) No, this is not a test case. It's not finite. Although there are ways to count/estimate the number of stars in the galaxy, it's not practical to perform in any reasonable time period.

(3) Yes, this is a test case. The specified output value may be wrong, which makes it a wrong or obsolete test case, and needs to be updated.

(4) Yes, this is a test case. But it may be an incomplete test case since no condition is specified, we know the search result may vary under different situations.

P2.2: Writing Test Cases

Cases	Conditions/initial states	Inputs/actions	Outputs
1	open	push button	close
2	closed	push button	open
3	open & jammed	push button	open
4	closed & jammed	push button	closed

P2.3: *Black Holes

Simply speaking, the event horizon of a black hole only depends on the mass of the object (the formula, the radius of the event horizon is: $r = 2GM/c^2$, where G is the gravitational constant, c is the speed of light, M is the mass).

The application is testable. The input is the mass, and the output is the radius of the event horizon sphere.

P2.4: A Web Application

5 input vectors and 5 output vectors:

Cases	Input vectors	Output vectors
1	[1, 1, 1970]	[0]
2	[2, 1, 1970]	[1]
3	[19, 5, 1997]	[10000]
4	[28, 2, 2013]	[15764]
5	[9, 6, 4099]	[777761]

P2.5: Test Type Classification

- (1) type 1 test: integration test.
- (2) type 2 test.
- (3) type 2 test: performance test.
- (4) type 1 test: integration test.
- (5) type 1 test: unit test.