

# Writing Test Cases II

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## 1 No Currency Test Cases - Original Test Cases

Test Name	Input Vector	Expected Output
test dispense red	<code>&lt;dispense_red()&gt;</code>	"You need at least 5 cents to dispense a red gumball"
test dispense yellow	<code>&lt;dispense_yellow()&gt;</code>	"You need at least 10 cents to dispense a red gumball"
test return my change	<code>&lt;return_my_change()&gt;</code>	"There is no change to return"

Table 1: Original "No Currency" Test Cases

Of these three test cases, no particular technique (e.g. control flow testing, data flow testing, etc.) was used in their creation.

## 2 No Currency Test Cases - Revised Test Cases

In general, the input domain associated with “no currency” testing involve invocations of any functions other than `insert()`.

### 2.1 Control Flow Testing

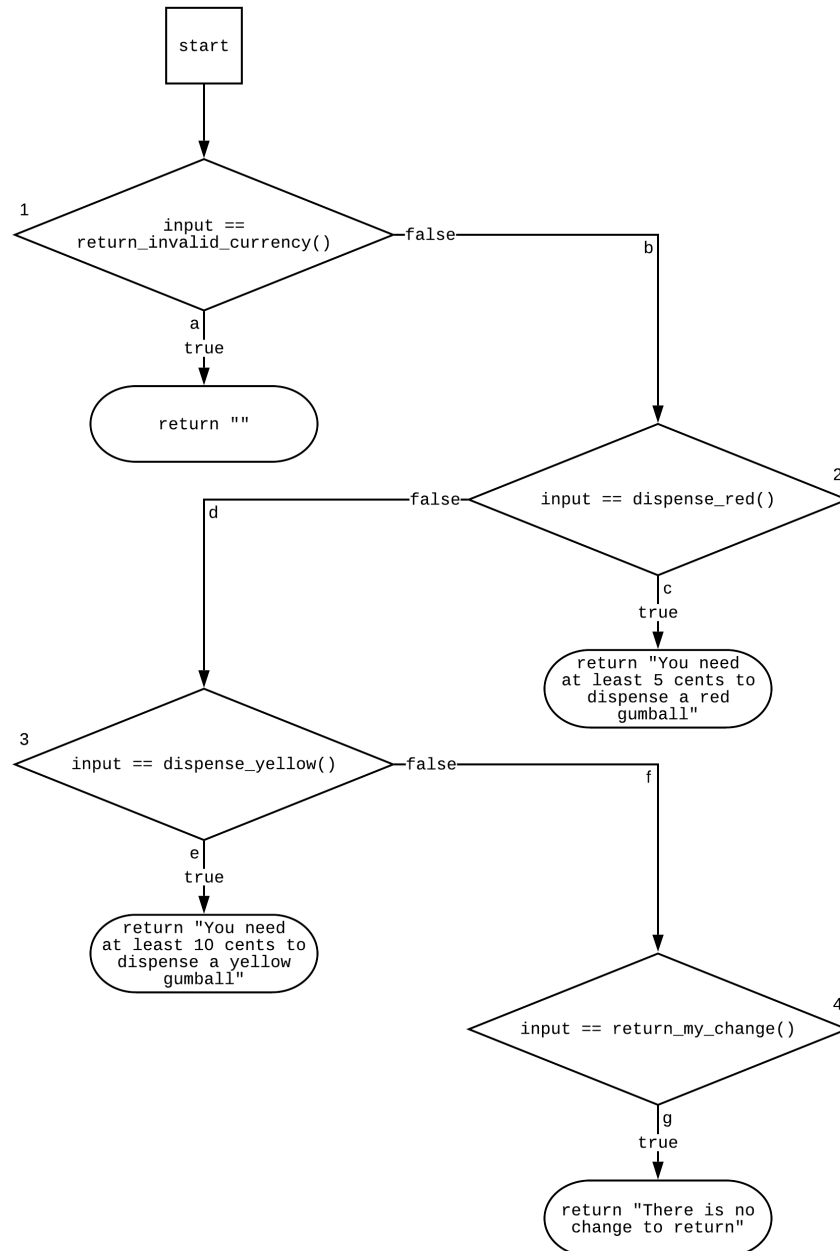


Figure 1: Gumball Machine Control Flow Diagram (No Currency Inserted)

Using the control flow diagram, we generate test cases to ensure statement coverage:

Path	a	b	c	d	e	f	g
(a)	✓						
(b, c)		✓	✓				
(b, d, e)		✓		✓	✓		
(b, d, f, g)		✓		✓		✓	✓

Table 2: Control Flow Testing Statement Coverage

Path	Input Vector	Expected Output
(a)	<return_invalid_currency()>	""
(b, c)	<dispense_red()>	"You need at least 5 cents to dispense a red gumball"
(b, d, e)	<dispense_yellow()>	"You need at least 10 cents to dispense a yellow gumball"
(b, d, f, g)	<return_my_change()>	"There is no change to return"

Table 3: Revised "No Currency" Test Cases - Control Flow Testing

## 2.2 Equivalence Class Testing

The input domain of "all functions other than `insert()`" can be partitioned based on the remaining functions:

- EC-01: `return_invalid_currency()`
- EC-02: `dispense_red()`
- EC-03: `dispense_yellow()`
- EC-04: `return_my_change()`

We generate a test case for each uncovered equivalence class:

TC	Test Value	Expected Result	EC-01	EC-02	EC-03	EC-04
01	<return_invalid_currency()>	""	✓			
02	<dispense_red()>	"You need at least 5 cents to dispense a red gumball"		✓		
03	<dispense_yellow()>	"You need at least 10 cents to dispense a yellow gumball"			✓	
04	<return_my_change()>	"There is no change to return"				✓

Table 4: Revised "No Currency" Test Cases - Equivalence Class Testing