Unit I - Introduction

Testing as an Engineering Activity - Testing as a Process - Testing Maturity Model- Testing axioms - Basic definitions - Software Testing Principles -The Tester's role in a software Development Organization - Origins of Defects - Cost of defects - Defect Classes - The Defect Repository and Test Design - Defect Examples- Developer/Tester Support of Developing a Defect Repository.

DEFECT EXAMPLE

A Coin Problem

- calculates the total monetary value of a set of coins.
- Output – Dollars and cents

Requirement and Specification defects

Specification for Program calculate_coin_value

This program calculates the total dollars and cents value for a set of coins. The user inputs the amount of pennies, nickels, dimes, quarters, half-dollars, and dollar coins held. There are six different denominations of coins. The program outputs the total dollar and cent values of the coins to the user.

Inputs: number_of_coins is an integer
Outputs: number_of_dollars is an integer
number_of_cents is an integer

Value Zero / Greater / Positive

- A precondition is a condition that must be true in order for a software component to operate properly.

  number_of_coins >=0

- A post condition is a condition that must be true when a software component completes its operation properly.

  number_of_dollars, number_of_cents >=0.

```
Design Description for Program calculate_coin_values

Program calculate_coin_values
number_of_coins is  integer
total_coin_value is integer
number_of_dollars is integer
number_of_cents is integer
coin_values is array of  six integers representing
each coin value in cents
initialized to: 1,5,10,25,25,100
begin

initialize total_coin_value to zero
initialize loop_counter to one
while loop_counter is less then six
begin
        output "enter number of coins"
        read (number_of_coins )
        total_coin_value = total_coin_value +
        number_of_coins * coin_value[loop_counter]
        increment loop_counter
end
number_dollars =  total_coin_value/100
number_of_cents = total_coin_value - 100 * number_of_dollars
output (number_of_dollars, number_of_cents)
end
```

No input messages or prompts for request

Coding defects


```
/*****************************************************************
program calculate_coin_values  calculates the dollar and cents
value of a set of coins of different dominations input by the user
denominations are pennies, nickels, dimes, quarters, half dollars,
and dollars
*****************************************************************/
main ()
{
int total_coin_value;
int number_of_coins = 0;
int number_of_dollars = 0;
int number_of-cents = 0;
int coin_values = {1,5,10,25,25,100};
{
int  i = 1;
while ( i < 6)
{
       printf("input number of coins\n");
       scanf ("%d", number_of_coins);
       total_coin_value = total_coin_value +
        (number_of_coins * coin_value{i]);
}
i = i + 1;
number_of_dollars = total_coin_value/100;
number_of_cents = total_coin_value - (100 * number_of_dollars);
printf("%d\n", number_of_dollars);
printf("%d\n", number_of-cents);
}

/*****************************************************************
```

Not initialized

Carried from design

i <= 6

Should have &number_of_coins

Negative values are divided

Thank you