Reverse Integer

Program:

```
#include <stdio.h>
#include <limits.h>

int reverse(int x) {
    int reversed = 0;

    while (x != 0) {
        int pop = x % 10;
        x /= 10;

        // Check for overflow before actually adding the digit
        if (reversed > INT_MAX / 10 || (reversed == INT_MAX / 10 && pop > 7)) {
            return 0; // Overflow
        }
        if (reversed < INT_MIN / 10 || (reversed == INT_MIN / 10 && pop < -8)) {
            return 0; // Underflow
        }

        reversed = reversed * 10 + pop;
    }

    return reversed;
}

int main() {
    int x = 123;
    int result = reverse(x);
```

```
    printf("Reversed integer: %d\n", result);

    x = -123;
    result = reverse(x);
    printf("Reversed integer: %d\n", result);

    x = 120;
    result = reverse(x);
    printf("Reversed integer: %d\n", result);

    x = 1534236469;
    result = reverse(x);  // This should return 0 due to overflow
    printf("Reversed integer: %d\n", result);

    return 0;
}
```