ASSIGNMENT 7

The following if statement appears in the C source code of Apache HTTP Server:

```
if (start[i] == '\\' & (start[i + 1] == '\\' | (quote != 0 & start[i + 1] == quote)))
    *resp++ = start[++i];
else
    *resp++ = start[i];
```

Derive a set of test cases by giving concrete values of the variables in the conditional, such that your test cases satisfy the MC/DC criterion for the if statement. Show that the MC/DC criterion is indeed satisfied.

Note that the if-statement does not rely on short-circuit evaluation of the conditions.

Firstly to improve the **readability** of the code i will identify the different conditions of the code in such way:

start[i] == '\\' → A

start[i + 1] == '\\' → B

quote != 0 → C

start[i + 1] == quote → D

The initial code now can be **rewritten** as such:

```
if ( A & (B | (C & D)))
    *resp++ = start[++i];
else
    *resp++ = start[i];
```

Now it is possibile to create a set of test case that satisifies the MC/DC:

	A	B	C	D	OUT
(1)	True	True	-	-	*resp++ = start[++i];
(2)	False	-	-	-	*resp++ = start[i];
(3)	-	False	False	-	*resp++ = start[i];
(4)	True	-	True	True	*resp++ = start[++i];
(5)	-	False	-	False	*resp++ = start[i];

The **test cases that satisfies the MC/DC criterion** for each condition are:

- Condition A: line (1) and line (2)

- Condition B: line (1) and line (3)
- Condition C: line (4) and line (3)
- Condition D: line (4) and line (5)

Now it is possible to identify **a concrete set of test case** that satisfies the MC/DC table just showed.

Test case 1:

	A	B	C	D	OUT
(1)	True	True	False	False	*resp++ = start[++i];

TC1
start = “\\”
i = 0
quote = 0

Test case 2:

	A	B	C	D	OUT
(2)	False	True	False	False	*resp++ = start[i];

TC2
start = “a\”
i = 0
quote = 0

Test case 3:

	A	B	C	D	OUT
(3)	True	False	False	False	*resp++ = start[i];

TC3
start = “\a”
i = 0
quote = 0

Test case 4:

	A	B	C	D	OUT
(4)	True	False	True	True	*resp++ = start[++i];

TC4
start = “\1”
i = 0
quote = 1

Test case 5:

	A	B	C	D	OUT
(5)	True	False	True	False	*resp++ = start[i];

TC5
start = “\0”
i = 0
quote = 2