

# Teste de mesa do código da questão 3

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## Código para análise

```
#include <stdio.h>
#define N 12
int main() {
    int a, b;

    for (a = 0; a < N / 2; a++) {
        for (b = 0; b < N; b++) {
            if ((a < N / 4 && b >= N / 2 && b < N / 2 + a * 2) ||
                (a >= N / 4 && b < N / 2 && b >= a - (N / 2 - 2 - a)))
                printf("1");
            else
                printf("0");
        }
        printf("\n");
    }
    return (0);
}
```

## Testes de mesa

- a = 0: 0000 0000 0000
- a = 1: 0000 0011 0000
- a = 2: 0000 0011 1100
- a = 3: 0011 1100 0000
- a = 4: 0000 1100 0000
- a = 5: 0000 0000 0000

## Análise dos loops a < 3

- a = 0
  - $N/2 + a * 2 = 6$
  - b = 0..5
    - b >= 6 = false
    - b < 6 = true
  - b = 6..11
    - b >= 6 = true

- $b < 6 = \text{false}$
- Resultado: **000000 000000**
- $a = 1$ 
  - $N / 2 + a * 2 = 8$
  - $b = 0..5$ 
    - $b \geq 6 = \text{false}$
    - $b < 8 = \text{true}$
  - $b = 6..7$ 
    - $b \geq 6 = \text{true}$
    - $b < 8 = \text{true}$
  - $b = 8..11$ 
    - $b \geq 6 = \text{true}$
    - $b < 8 = \text{false}$
  - Resultado: **000000 11 0000**
- $a = 2$ 
  - $N / 2 + a * 2 = 10$
  - $b = 0..5$ 
    - $b \geq 6 = \text{false}$
    - $b < 10 = \text{true}$
  - $b = 6..9$ 
    - $b \geq 6 = \text{true}$
    - $b < 10 = \text{true}$
  - $b = 10..11$ 
    - $b \geq 6 = \text{true}$
    - $b < 10 = \text{false}$
  - Resultado: **000000 1111 00**

### Análise dos loops $a \geq 3$

- $a = 3$ 
  - $a - (4 - a) = 2$
  - $b = 0..1$ 
    - $b < 6 = \text{true}$

- $b \geq 2 = \text{false}$
- $b = 2..5$ 
  - $b < 6 = \text{true}$
  - $b \geq 2 = \text{true}$
- $b = 6..11$ 
  - $b < 6 = \text{false}$
  - $b \geq 2 = \text{true}$
- Resultado: **00 1111 000000**
- $a = 4$ 
  - $a - (4 - a) = 4$
  - $b = 0..1$ 
    - $b < 6 = \text{true}$
    - $b \geq 4 = \text{false}$
  - $b = 4..5$ 
    - $b < 6 = \text{true}$
    - $b \geq 4 = \text{true}$
  - $b = 6..11$ 
    - $b < 6 = \text{false}$
    - $b \geq 4 = \text{true}$
  - Resultado: **0000 11 000000**
- $a = 5$ 
  - $a - (4 - a) = 6$
  - $b = 0..5$ 
    - $b < 6 = \text{true}$
    - $b \geq 6 = \text{false}$
  - $b \geq 6$ 
    - $b < 6 = \text{false}$
    - $b \geq 6 = \text{true}$
  - Resultado: **000000 000000**