

Complexidade Ciclomática

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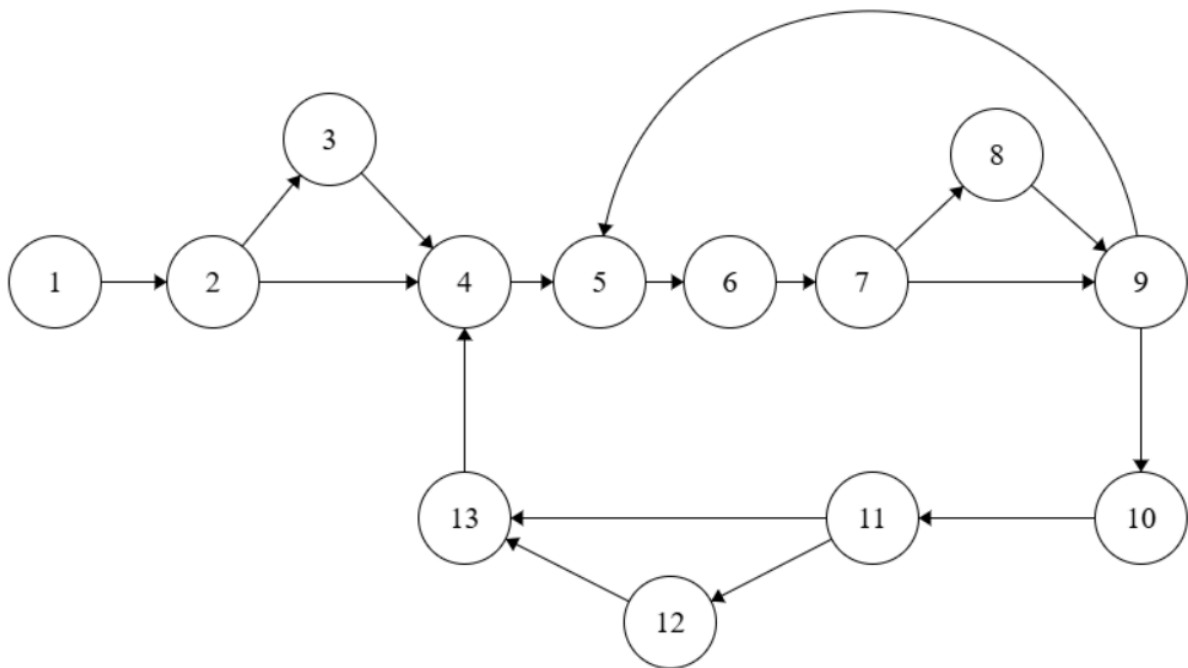
Caminhos independentes no código:

```
public void Try(int[] b){  
1   int[] board= new int[3];  
2   int attempt = -1;  
3   if(b != NULL)  
4       board = b;  
5   do{  
6       do{  
7           System.out.print("Line: ");  
8           attempt = input.nextInt();  
9           if( attempt > 3 ||attempt < 1)  
10              System.out.println("Invalid line. It's 1, 2 or 3");  
11          }while( attempt > 3 ||attempt < 1);  
12          attempt --;  
13          if(board[attempt] != 0)  
14              System.out.println("Placed already marked. Try other.");  
15          }while(board[attempt] != 0);  
}
```

The image shows a Java code snippet with 15 lines. Red boxes highlight specific code segments, and red numbers 1 through 13 are placed to the right of the code, indicating independent paths. The paths are defined by the following code segments:

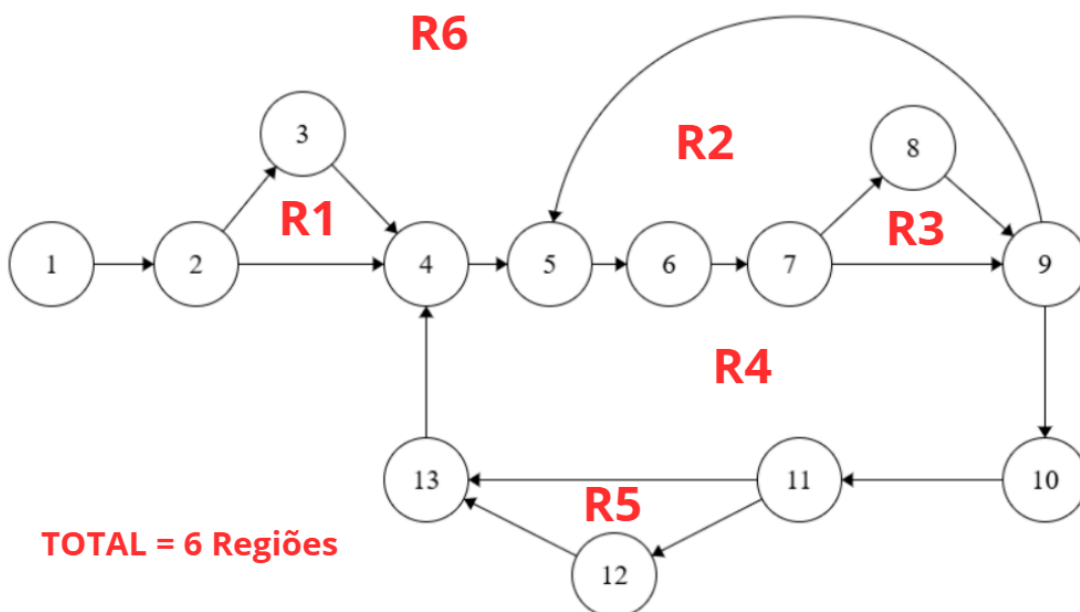
- 1: `int[] board= new int[3];`
- 2: `int attempt = -1;`
- 3: `if(b != NULL)`
- 4: `board = b;`
- 5: `do{`
- 6: `do{`
- 7: `System.out.print("Line: ");`
- 8: `attempt = input.nextInt();`
- 9: `if(attempt > 3 ||attempt < 1)`
- 10: `System.out.println("Invalid line. It's 1, 2 or 3");`
- 11: `}while(attempt > 3 ||attempt < 1);`
- 12: `attempt --;`
- 13: `if(board[attempt] != 0)`
- 14: `System.out.println("Placed already marked. Try other.");`
- 15: `}while(board[attempt] != 0);`

Grafo gerado:



Cálculo da Complexidade Ciclomática:

1. Número de Regiões:



2. $V(G) = E - N + 2$

Onde:

E = Arestas

N = Nós

Portanto, $V(G) = 17 - 13 + 2 = 6$

3. Nós de predicado:

$V(G) = (2 * \text{while} + 3 * \text{if}) + 1 = 6$

Lista de caminhos independentes:

- 1) 1 - 2 - 4 - 5 - 6 - 7 - 9 - 10 - 11 - 13 (Caminho direto)
- 2) 1 - 2 - 3 - 4 - 5 - 6 - 7 - 9 - 10 - 11 - 13 (Passou pelo primeiro IF)
- 3) 1 - 2 - 4 - 5 - 6 - 7 - 8 - 9 - 10 - 11 - 13 (Passou pelo segundo IF)
- 4) 1 - 2 - 4 - 5 - 6 - 7 - 9 - 10 - 11 - 12 - 13 (Passou pelo terceiro IF)
- 5) 1 - 2 - 4 - 5 - 6 - 7 - 9 - 5 - [...] (Entrou no primeiro WHILE)
- 6) 1 - 2 - 4 - 5 - 6 - 7 - 9 - 10 - 11 - 13 - 4 - [...] (Entrou no segundo WHILE)