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You are storing a complete binary tree in an array, with the root at index 0. At what index is node i's parent?

- a.  $2i$
- b.  $2i + 1$
- c.  $i + i + 2$
- d.  $i / 2 + 1$
- \*e.  $(i - 1) / 2$
- f. "
- g. "
- h. "
- i. "
- j. "

General Feedback:

$(i - 1) / 2$

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Which of the following abstract datatypes would be the best choice for part of the implementation of the part of a compiler that determines whether the parentheses in a program are balanced?

- \*a. A Stack
- b. A Queue
- c. A List
- d. A PriorityQueue
- e. A Dictionary
- f. "
- g. "
- h. "
- i. "
- j. "

General Feedback:

A close parenthesis must match the most recently entered open parenthesis. So for example, the sequence  $)()()$  doesn't match, while  $()()$  and  $((())$  do, even though they all have two open and two close parentheses. To make this work, you can push each open parenthesis on a Stack, and pop it off each time you see a close parenthesis. The last-in-first-out nature of a Stack makes it easy to determine whether the parentheses are balanced.

633228 2  
What is printed when the following program runs?

```
public class Main {  
    public static boolean getTrue() {  
        System.out.print("T");  
        return true;  
    }  
  
    public static boolean getFalse() {  
        System.out.print("F");  
        return false;  
    }  
  
    public static void main(String[] args) {  
        getTrue() || getFalse();  
    }  
}
```

- a. TF
- b. F
- \*c. T
- d. TT
- e. Nothing is printed
- f. "
- g. "
- h. "
- i. "
- j. "

General Feedback:

If the first operand for || is true, as is the case here, the second is not evaluated.