

### Hash table implementation

```
int hash = (key % TABLE_SIZE)
```

To add if already there:

```
hash = (hash + 1) % TABLE_SIZE;
```

### Increase the size of an array

```
arr = Arrays.copyOf(arr, size*2);
```

### Min Heap implemented in an Array

```
getParent(int pos) return (pos - 2)/2;
```

```
getLeft(int pos) return (pos*2 + 1);
```

```
getRight(int pos) return (pos*2+2);
```

```
// Maintain a pointer to the bottom of the array
```

### Detect loop in linked list

\*slow pointer (one at a time)

\*fast pointer (two at a time)

\*if both point to same node - there is a loop

\* To detect the start: reset the slow pointer, counters will meet at the start of the loop

### StackAPI

```
stack.push()
```

```
stack.pop()
```

```
stack.firstElement()
```

### BT Find shortest path from root to leaf

```
int getMinDepth(Node root) {
    if( root == null ) return 0;
    if( root.left == null &&
        root.right == null ) return 1;
    int leftDepth =
        root.left!=null?
        getMinDepth(root.left) : Integer
        MAX_VALUE;
    int rightDepth =
        root.right!=null?
        getMinDepth(root.right): Integer
        MIN_VALUE;
    return 1 + Math.min(leftDepth,
        rightDepth);
}
```



By **gnowakow**

[cheatography.com/gnowakow/](https://cheatography.com/gnowakow/)

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