

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.findElement()
```

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 );
}
```



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Not published yet.

Last updated 22nd April, 2017.

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