

Question #73079, Programming & Computer Science / Java | JSP | JSF | for completion

Use a simple array to implement stack.

The solution is based on the example from the book "Effective Java" by Joshua Bloch:

```
public class Stack<E> {
    private E[] arr = null;
    private int CAPACITY;
    private int top = -1;
    private int size = 0;

    @SuppressWarnings("unchecked")
    public Stack (int cap) {
        this.CAPACITY = cap;
        this.arr = (E[]) new Object[cap];
    }

    public E pop() {
        if (this.size == 0){
            return null;
        }
        this.size--;
        E result = this.arr[top];
        this.arr[top] = null; //prevent memory leaking
        this.top--;

        return result;
    }

    public boolean push(E e) {
        if (!isFull())
            return false;
        this.size++;
        this.arr[++top] = e;
        return false;
    }

    public boolean isFull() {
        return this.size != this.CAPACITY;
    }

    public boolean isEmpty() {
        return this.size == 0;
    }

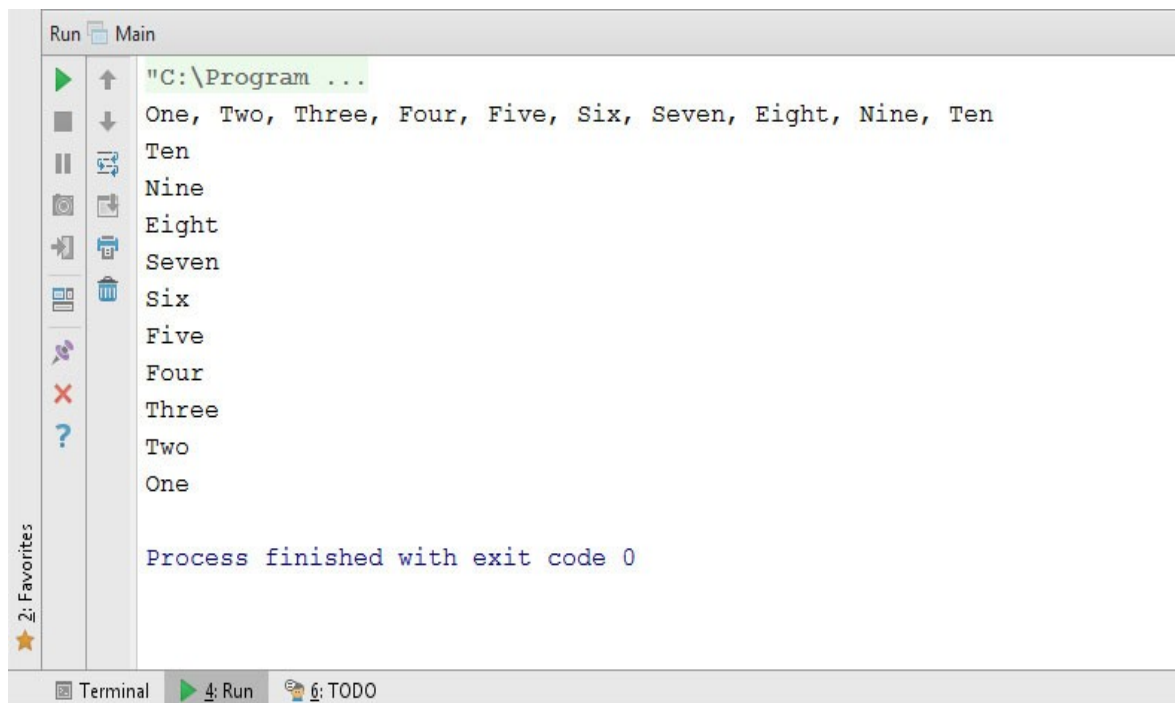
    public String toString() {
        if (this.isEmpty()) {
            return null;
        }
        StringBuilder sb = new StringBuilder();
        for (int i = 0; i < this.size; i++){
            sb.append(this.arr[i]).append(", ");
        }
        sb.setLength(sb.length()-2);
        return sb.toString();
    }
}
```

```
}  
}
```

Testing the class Stack:

```
public class Main {  
  
    public static void main(String[] args) {  
  
        Stack<String> stack = new Stack<>(10);  
        stack.push("One");  
        stack.push("Two");  
        stack.push("Three");  
        stack.push("Four");  
        stack.push("Five");  
        stack.push("Six");  
        stack.push("Seven");  
        stack.push("Eight");  
        stack.push("Nine");  
        stack.push("Ten");  
  
        System.out.println(stack);  
  
        while(!stack.isEmpty()){  
            System.out.println(stack.pop());  
        }  
    }  
}
```

Result:



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