

Java Programming

Section 3.3 practice

Genericstack:

```
import java.util.ArrayList;

// GenericStackException class
class GenericStackException extends RuntimeException {
    public GenericStackException(String message) {
        super(message);
    }
}

// GenericStack class
class GenericStack<T> {
    private ArrayList<T> items;
    private int top;

    public GenericStack() {
        items = new ArrayList<>();
        top = 0;
    }

    private boolean isEmpty() {
        return top == 0;
    }

    public void push(T item) {
        items.add(item);
        top++;
    }

    public T pop() {
        if (isEmpty()) {
            throw new GenericStackException("Underflow Error");
        }
        return items.remove(--top);
    }
}

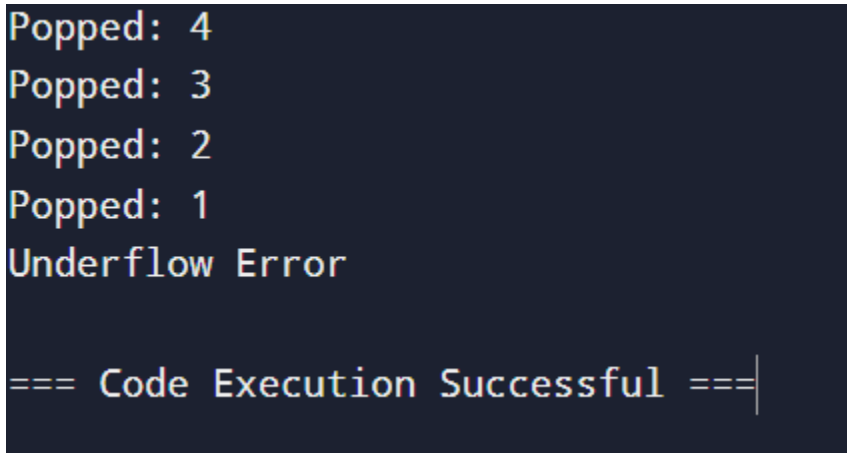
// StackDriver class
public class StackDriver {
```

```

public static void main(String[] args) {
    GenericStack<Integer> stack = new GenericStack<>();
    stack.push(1);
    stack.push(2);
    stack.push(3);
    stack.push(4);

    try {
        for (int i = 0; i < 5; i++) {
            System.out.println("Popped: " + stack.pop());
        }
    } catch (GenericStackException e) {
        System.out.println(e.getMessage());
    }
}
}

```



```

Popped: 4
Popped: 3
Popped: 2
Popped: 1
Underflow Error

=== Code Execution Successful ===

```

Storing Courses and Their Codes Using a Map

```

import java.util.HashMap;
import java.util.Map;

public class CourseCollection {
    public static void main(String[] args) {
        // 5a: Using a HashMap to store courses and their codes
        Map<String, String> courses = new HashMap<>();
        courses.put("CIT", "Computing and Information Technology");
        courses.put("CHI", "Childcare and Early Education");
        courses.put("MVS", "Motor Vehicle Systems");
        courses.put("BTH", "Beauty Therapy");
        courses.put("GDE", "Graphic Design");

        // Printing out the list of courses
        System.out.println("Course List:");
    }
}

```

```
for (Map.Entry<String, String> course : courses.entrySet()) {  
    System.out.println(course.getKey() + ": " + course.getValue());  
}  
  
// 5b: Using the get method to retrieve the course name for a specific code  
String courseCode = "CIT";  
String courseName = courses.get(courseCode);  
System.out.println("\nCourse name for code " + courseCode + ": " + courseName);  
}  
}
```

Course List:

CHI: Childcare and Early Education

BTH: Beauty Therapy

GDE: Graphic Design

MVS: Motor Vehicle Systems

CIT: Computing and Information Technology

Course name for code CIT: Computing and Information Technology

=== Code Execution Successful ===