

Java Programming Lab - Week 3

SPOT Questions

- (1) Write a program that prompts the user to enter the three points for **p0**, **p1**, and **p2** and displays whether **p2** is on the left of the line from **p0** to **p1**, right, the same line, or on the line segment. Here are some sample runs:

```
Enter three points for p0, p1, and p2: 1 1 2 2 1.5 1.5 ↵Enter
(1.5, 1.5) is on the line segment from (1.0, 1.0) to (2.0, 2.0)
```

```
Enter three points for p0, p1, and p2: 1 1 2 2 3 3 ↵Enter
(3.0, 3.0) is on the same line from (1.0, 1.0) to (2.0, 2.0)
```

```
Enter three points for p0, p1, and p2: 1 1 2 2 1 1.5 ↵Enter
(1.0, 1.5) is on the left side of the line
from (1.0, 1.0) to (2.0, 2.0)
```

```
Enter three points for p0, p1, and p2: 1 1 2 2 1 -1 ↵Enter
(1.0, -1.0) is on the right side of the line
from (1.0, 1.0) to (2.0, 2.0)
```

- (2) Java Program to implement the following class diagrams

StackOfIntegers	
-elements: int[]	An array to store integers in the stack.
-size: int	The number of integers in the stack.
+StackOfIntegers()	Constructs an empty stack with a default capacity of 16.
+StackOfIntegers(capacity: int)	Constructs an empty stack with a specified capacity.
+empty(): boolean	Returns true if the stack is empty.
+peek(): int	Returns the integer at the top of the stack without removing it from the stack.
+push(value: int): int	Stores an integer into the top of the stack.
+pop(): int	Removes the integer at the top of the stack and returns it.
+getSize(): int	Returns the number of elements in the stack.