**Assignment no. 3**

**Data Structures and Algorithms Lab**

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**Class**: BSCS 3C1

**Evaluation of Postfix Expression**

**Method Code:**

public static float evaluatePostfixF(String postfix) {  
 float result;  
 float a,b;  
 StackFloat s = new StackFloat(postfix.length());  
  
 for (int i=0; i<postfix.length(); i++) {  
 if (postfix.charAt(i) >= 48 && postfix.charAt(i) <= 57) {  
 s.push(postfix.charAt(i) - '0');  
 } else if (postfix.charAt(i) == '+') {  
 a = s.pop();  
 b = s.pop();  
 result = b+a;  
 s.push(result);  
 } else if (postfix.charAt(i) == '-') {  
 a = s.pop();  
 b = s.pop();  
 result = b-a;  
 s.push(result);  
 } else if (postfix.charAt(i) == '\*') {  
 a = s.pop();  
 b = s.pop();  
 result = b\*a;  
 s.push(result);  
 } else if (postfix.charAt(i) == '/') {  
 a = s.pop();  
 b = s.pop();  
 result = b/a;  
 s.push(result);  
 } else if (postfix.charAt(i) == '^') {  
 a = s.pop();  
 b = s.pop();  
 result = *powerF*(b,a);  
 s.push(result);  
 }  
 }  
 return s.pop();  
}  
  
public static float powerF(float base,float exp) {  
 float answer = 1;  
 for(int i=0; i<exp; i++) {  
 answer \*= base;  
 }  
 return answer;  
}

**Stack Class**

public class StackFloat {  
 int top;  
 float[] arr;  
 int size;  
  
 public StackFloat(int size) {  
 this.size = size;  
 top = -1;  
 arr = new float[size];  
 }  
  
 public void push (float value) {  
 if (top == size - 1) {  
 System.*out*.print("StackOverflow! ");  
 } else {  
 arr[++top] = value;  
 }  
 }  
  
 public float pop () {  
 if (top == -1) {  
 System.*out*.print("StackUnderflow! ");  
 return -1;  
 } else {  
 return arr[top--];  
 }  
 }  
  
 public float peek () {  
 if (top == -1) {  
 System.*out*.print("Stack is empty! ");  
 return -1;  
 } else {  
 return arr[top];  
 }  
 }  
}

**Output**

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