**Tutorial No. 7**

**Problem statement:**

**Design Assumptions:**

**Design Diagrams:**

**Code:**

**Add.java**

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\*/

package sadp\_interpreter;

/\*\*

\*

\* @author ROHIT NAVNATH JATHOT

\*/

public class Add implements Expression{

private final Expression leftExp;

private final Expression rightExp;

public Add(Expression leftExpression,Expression rightExpression ){

this.leftExp = leftExpression;

this.rightExp = rightExpression;

}

@Override

public double interpret() {

return leftExp.interpret() + rightExp.interpret();

}

}

**division.java**

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\*/

package sadp\_interpreter;

/\*\*

\*

\* @author ROHIT NAVNATH JATHOT

\*/

public class division implements Expression{

private final Expression leftExp;

private final Expression rightExp;

public division(Expression leftExpression,Expression rightExpression ){

this.leftExp = leftExpression;

this.rightExp = rightExpression;

}

@Override

public double interpret() {

return leftExp.interpret() / rightExp.interpret();

}

}

**Exp\_helper.java**

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/\*\*

\*

\* @author ROHIT NAVNATH JATHOT

\*/

public class Exp\_helper {

public static boolean isOperator(String s) {

if (s.equals("+") || s.equals("-") || s.equals("\*") || s.equals("/"))

return true;

else

return false;

}

public static Expression getOperator(String s, Expression left, Expression right) {

switch (s) {

case "+":

return new Add(left, right);

case "-":

return new Substract(left, right);

case "\*":

return new Product(left, right);

case "/":

return new division(left,right);

}

return null;

}

}

**Expression.java**

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package sadp\_interpreter;

/\*\*

\*

\* @author ROHIT NAVNATH JATHOT

\*/

public interface Expression {

public double interpret();

}

c:\users\yoges\desktop\semester 6\sad alternate\tutorial 7\src\sadp\_interpreter\main.java

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package sadp\_interpreter;

/\*\*

\*

\* @author ROHIT NAVNATH JATHOT

\*/

public class main {

public static void main(String[] args) {

System.out.println(String.format("%.2f",new Sadp\_interpreter("77 3 /").calculate()));

}

}

**num\_val.java**

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\*/

package sadp\_interpreter;

/\*\*

\*

\* @author ROHIT NAVNATH JATHOT

\*/

public class num\_val implements Expression{

private final double n;

public num\_val(double n){

this.n = n;

}

@Override

public double interpret() {

return n;

}

}

**Product.java**

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\*/

package sadp\_interpreter;

/\*\*

\*

\* @author ROHIT NAVNATH JATHOT

\*/

public class Product implements Expression{

private final Expression leftExp;

private final Expression rightExp;

public Product(Expression leftExpression,Expression rightExpression ){

this.leftExp = leftExpression;

this.rightExp = rightExpression;

}

@Override

public double interpret() {

return leftExp.interpret() \* rightExp.interpret();

}

}

**Sadp\_interpreter.java**

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\*/

package sadp\_interpreter;

import java.util.Stack;

/\*\*

\*

\* @author ROHIT NAVNATH JATHOT

\*/

public class Sadp\_interpreter {

/\*\*

\* @param args the command line arguments

\*/

private static String tokenString = "";

private static Stack<Expression> stack;

private static String[] tokenArray;

public Sadp\_interpreter(String tokenString){

this.tokenString = tokenString;

stack = new Stack<>();

tokenArray = tokenString.split(" ");

}

public double calculate() {

for (String s : tokenArray) {

if (Exp\_helper.isOperator(s)) {

Expression rightExpression = stack.pop();

Expression leftExpression = stack.pop();

Expression operator = Exp\_helper.getOperator(s, leftExpression,rightExpression);

double result = operator.interpret();

stack.push(new num\_val(result));

} else {

Expression i = new num\_val(Double.parseDouble(s));

stack.push(i);

}

}

return stack.pop().interpret();

}

}

**Substract.java**

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\*/

package sadp\_interpreter;

/\*\*

\*

\* @author ROHIT NAVNATH JATHOT

\*/

public class Substract implements Expression{

private final Expression leftExp;

private final Expression rightExp;

public Substract(Expression leftExpression,Expression rightExpression ){

this.leftExp = leftExpression;

this.rightExp = rightExpression;

}

@Override

public double interpret() {

return leftExp.interpret() - rightExp.interpret();

}

}

**Observation:**