**Tugas 1**

**Kecerdasan Buatan 2018**

**“Simulated Annealing”**

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Source code

/\*

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\*/

package tupro1;

import static java.lang.Math.PI;

import static java.lang.Math.exp;

import java.util.Random;

/\*\*

\*

\* @author alea's

\*/

public class TuPro1{

/\*\*

\* @param args the command line arguments

\*/

public static void main(String[] args) {

// TODO code application logic here

double parm = 1;

double newState1 = 0;//untuk x1

double newState2 = 0;//unttuk x2

double T=100;

double PI =3.14;

double bsfx1 = newState1;

double bsfx2 = newState2;

double bsf = 0;

double newEval = 0;

double curEval;

curEval = getNilai(newState1, newState2);

while (T>=0.1){

newState1 = ranGen();

newState2 = -1\*ranGen();

newEval = getNilai(newState1, newState2);

if(newEval < curEval){

curEval = newEval;

bsf = newEval;

bsfx1 = newState1;

bsfx2 = newState2;

}

else{

double deltaEval = Math.pow(exp(1), - (newEval - curEval)/T);

double ran = Math.random();

if(deltaEval > ran){

curEval = newEval;

}

}

T = 0.998\*T;

}

System.out.println("Hasil Perhitungan");

System.out.println("x1 : "+ bsfx1);

System.out.println("x2 : "+ bsfx2);

System.out.println("f(x1,x2) = " + bsf);

}

//function f(x1,x2)

private static double getNilai(double newState1, double newState2) {

double hasil;

hasil = -1 \* (Math.sin(Math.toRadians(newState1)) \* Math.cos(Math.toRadians(newState2)) \* Math.exp(1 - Math.sqrt(Math.pow(newState1,2) + Math.pow(newState2,2))/PI));

return hasil;

}

//return random double antar -10 sampai 10

private static double ranGen() {

Random rand = new Random();

double number = rand.nextInt(20) + (-10) - rand.nextDouble();

number += rand.nextDouble();

return number;

}

}