MODUL PRAKTIKUM

Tour Dari Package java.lang

Versi 1.3

1. Tujuan

Menggunakan class-class Java yang telah ada

- *Math*
- *String*
- *StringBuffer*
- Wrapper
- *Process*
- *System*

2. Percobaan

Percobaan 1 : Demo Method - Method dari Class Math

```
public class Java_Lang_MathDemo {
    public Java_Lang_MathDemo() {}
    public static void main(String args[]) {
        System.out.println("absolute value of -5: " + Math.abs(-5));
        System.out.println("absolute value of 5: " + Math.abs(-5));
        System.out.println("random number(max value is 10): " + Math.random()*10);
        System.out.println("max of 3.5 and 1.2: " + Math.max(3.5, 1.2));
        System.out.println("min of 3.5 and 1.2: " +  Math.min(3.5, 1.2));
        System.out.println("ceiling of 3.5: " + Math.ceil(3.5));
        System.out.println("floor of 3.5: " + Math.floor(3.5));
        System.out.println("e raised to 1: " + Math.exp(1));
        System.out.println("log 10: " + Math.log(10));
        System.out.println("10 raised to 3: " + Math.pow(10,3));
        System.out.println("rounded off value of pi: " + Math.round(Math.PI));
        System.out.println("square root of 5 = " + Math.sqrt(5));
        System.out.println("10 radian = " + Math.toDegrees(10) + " degrees");
        System.out.println("sin(90): " + Math.sin(Math.toRadians(90)));
    }
}
```

Percobaan 2 : String Constructor Demo

```
public class Java_Lang_StringConstructorDemo {
    public Java_Lang_StringConstructorDemo() {}
    public static void main(String args[]) {
        String s1 = new String();  // creates an empty string
        char chars[] = { 'h', 'e', 'l', 'l', 'o'};
        String s2 = new String(chars); // s2 = "hello";
        byte bytes[] = { 'w', 'o', 'r', 'l', 'd' };
        String s3 = new String(bytes);  // s3 = "world"
        String s4 = new String(chars, 1, 3);
        String s5 = new String(s2);
        String s6 = s2;
        System.out.println(s1);
        System.out.println(s2);
        System.out.println(s3);
        System.out.println(s4);
        System.out.println(s5);
        System.out.println(s6);
    }
}
```

Percobaan 3 : Demo Method Class String

```
class StringDemo {
   public static void main(String args[]) {
      String name = "Jonathan";
      System.out.println("name: " + name);
      System.out.println("3rd character of name: " + name.charAt(2));
/* character yang pertama nampak secara berurutan mempunyai nilai unicode lebih kecil */
      System.out.println("Jonathan compared to Solomon: " + name.compareTo("Solomon"));
      System.out.println("Solomon compared to Jonathan: " + "Solomon".compareTo("Jonathan"));
/* 'J' mempunyai nilai unicode yang lebih kecil dibanding 'j' */
      System.out.println("Jonathan compared to jonathan: " + name.compareTo("jonathan"));
      System.out.println("Jonathan compared to jonathan (ignore case): "
                                    + name.compareToIgnoreCase("jonathan"));
      System.out.println("Is Jonathan equal to Jonathan? " + name.equals("Jonathan"));
      System.out.println("Is Jonathan equal to jonathan? " + name.equals("jonathan"));
      System.out.println("Is Jonathan equal to jonathan (ignore case)? "
                                    + name.equalsIgnoreCase("jonathan"));
      char charArr[] = "Hi XX".toCharArray();
/* Membutuhkan tambahan 1 untuk indeks endSrc dari getChars */
      "Jonathan".getChars(0, 2, charArr, 3);
      System.out.print("getChars method: ");
      System.out.println(charArr);
      System.out.println("Length of name: " + name.length());
      System.out.println("Replace a's with e's in name: " + name.replace('a', 'e'));
/* Membutuhkan tambahan 1 untuk parameter endIndex dari substring*/
      System.out.println("A substring of name: " + name.substring(0, 2));
      System.out.println("Trim \"  a b c d e f   \": \"" + " a b c d e f ".trim() + "\"");
      System.out.println("String representation of boolean expression 10>10: "
                                    + String.valueOf(10>10));
/* method toString secara implisit dipanggil method println */
      System.out.println("String representation of boolean expression 10<10: " + (10<10));
/* Catatan, tidak ada perubahan pada nama objek String meskipun setelah penggunaan semua method. */
      System.out.println("name: " + name);
   }
}
```

```
public class Java_Lang_StringBufferDemo {
    public Java_Lang_StringBufferDemo(){}
    public static void main(String args[]) {
        StringBuffer sb = new StringBuffer("Jonathan");
        System.out.println("sb = " + sb);
        System.out.println("capacity of sb: " + sb.capacity());
        System.out.println("append \'O\' to sb: " + sb.append("O"));
        System.out.println("sb = " + sb);
        System.out.println("3rd character of sb: " +  sb.charAt(2));
        char charArr[] = "Hi XX".toCharArray();
        sb.getChars(0, 2, charArr, 3);
        System.out.print("getChars method: ");
        System.out.println(charArr);
        System.out.println("Insert \'jo\' at the 3rd cell: " + sb.insert(2, "jo"));
        System.out.println("Delete \'jo\' at the 3rd cell: " +  sb.delete(2,4));
        System.out.println("length of sb: " + sb.length());
        System.out.println("replace: " + sb.replace(3, 9, " Ong"));
        System.out.println("substring (1st two characters): " +  sb.substring(0, 3));
        System.out.println("implicit toString(): " + sb);
   }
}
```

Percobaan 4 : Demo Method Class String Buffer

Percobaan 5 : Class Boolean Wrapper

```
public class Java_Lang_BooleanWrapper {
    public Java_Lang_BooleanWrapper() {}
    public static void main(String args[]) {
        boolean booleanVar = 1>2;
        Boolean booleanObj = new Boolean("TRue");
        Boolean booleanObj2 = new Boolean(booleanVar);
        System.out.println("booleanVar = " + booleanVar);
        System.out.println("booleanObj = " + booleanObj);
        System.out.println("booleanObj2 = " + booleanObj2);
        System.out.println("compare 2 wrapper objects: " + booleanObj.equals(booleanObj2));
        booleanVar = booleanObj.booleanValue();
        System.out.println("booleanVar = " + booleanVar);
    }
}
```

Percobaan 6 : Class Runtime – Membuka Registry Editor

```
public class Java_Lang_RuntimeDemo {
    public Java_Lang_RuntimeDemo() {}
    public static void main(String args[]) {
        Runtime rt = Runtime.getRuntime();
        Process proc;
        try {
            proc = rt.exec("regedit");
            proc.waitFor(); //try removing this line
        } catch (Exception e) {
            System.out.println("regedit is an unknown command.");
        }
    }
}
```

Percobaan 7 : Demo Class System

```
import java.io.*;
public class Java_Lang_SystemDemo {
    public Java_Lang_SystemDemo() {}
    public static void main(String args[]) throws IOException {
        int arr1[] = new int[1050000];
        int arr2[] = new int[1050000];
        long startTime, endTime;
        for (int i = 0; i < arr1.length; i++) {
            arr1[i] = i + 1;
        }
        startTime = System.currentTimeMillis();
        for (int i = 0; i < arr1.length; i++) {
            arr2[i] = arr1[i];
        }
        endTime = System.currentTimeMillis();
        System.out.println("Time for manual copy: " + (endTime-startTime) + " ms.");
        startTime = System.currentTimeMillis();
        System.arraycopy(arr1, 0, arr2, 0, arr1.length);
        endTime = System.currentTimeMillis();
        System.out.println("Time for manual copy: " + (endTime-startTime) + " ms.");
        System.gc();     //force garbage collector
        System.setIn(new FileInputStream("temp.txt"));
        System.exit(0);
    }
}
```

3. Latihan

Evaluasi Ekspresi

Menggunakan method-method class built-in *Math*, buatlah sebuah program yang menggunakan nilai double *x* sebagai inputan dan evaluasilah nilai mutlak dari ekspresi yang mengikuti.

x^2 * cos(45derajat) + akar(e), e adalah angka Euler.

Input: 10

Output: 72.35939938935488

Input: 11

Output: 87.20864179427238

Palindrome

Palindrome adalah sebuah string yang membaca sama ketika mengarah ke depan atau sebaliknya. Beberapa contoh dari palindrome : hannah, ana, and bib. Menggunakan *String* atau class *StringBuffer*, buatlah sebuah program yang menggunakan satu string sebagai inputan dan tentukan jika ini sebuah palindrome atau bukan.

Notepad

Menggunakan class *Process* and *Runtime*, bukalah aplikasi notepad dari program java.