UNIVERSITAS Dinamika

BAHASA PEMROGRAMAN JAVA

Pertemuan V

STRUKTUR KONTROL PERULANGAN BERSARANG

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TUJUAN PEMBELAJARAN

Mahasiswa dapat mendemonstrasikan pembuatan struktur kontrol perulangan bersarang (nested loop).

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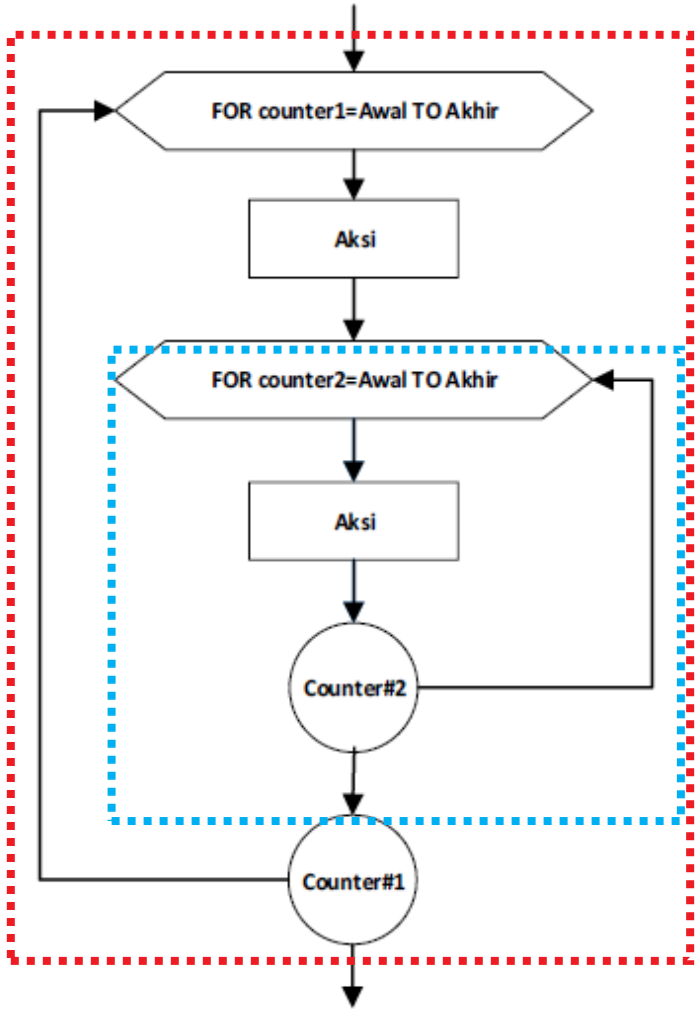
MATERI

Perulangan Bersarang / Nested Loop:

1. For Bersarang / Nested For
2. While Bersarang / Nested While
3. Do-While Bersarang / Nested Do-While
4. Kombinasi Perulangan Bersarang / Nested For, While, Do-While

1. NESTED FOR



- For bersarang adalah sebuah struktur kontrol perulangan For yang didalamnya terdapat struktur kontrol perulangan For

SYNTAX NESTED FOR

- Outter Loop
- Inner Loop

```
for (initialization; termination;  increment) {
        for (initialization; termination;  increment) {
                statement(s)
        }
    statement(s)
}
```

CONTOH NESTED FOR

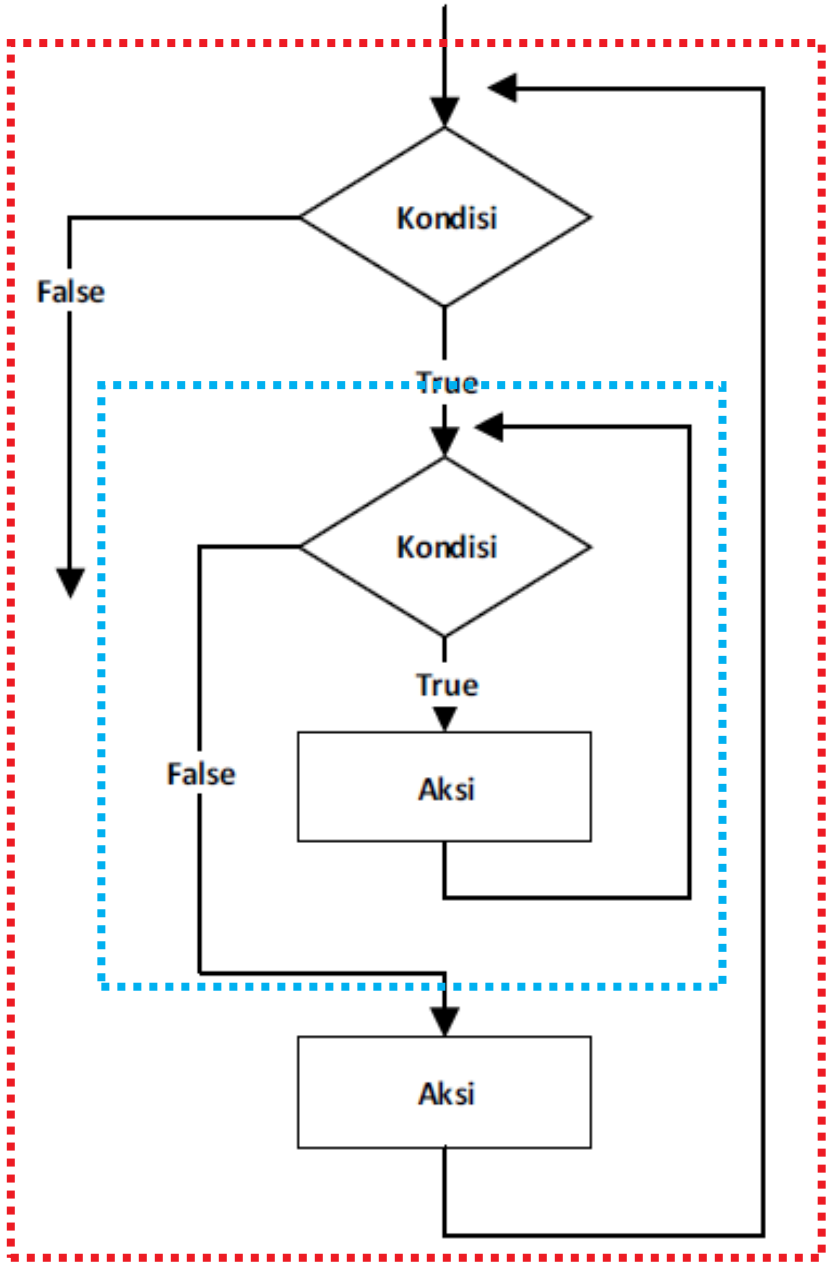
```java
//File: Program_3_9.java
import java.io.*;
public class Program_3_9 {
    public static void main (String[] args) {
        int qtty=0;
        BufferedReader tampung = new BufferedReader (new
         InputStreamReader(System.in));
        System.out.print("Masukkan angka untuk mencetak
        segitiga bintang: ");

        try {
            qtty = Integer.parseInt(tampung.readLine());
            for(int i=1; i<=qtty; i++){
                for(int j=1; j<=i; j++){
                    System.out.print("*");
                }
                System.out.println("");
            }

        }
        catch (Exception e){
                System.out.println("Masukan harus angka");
        }
    }
}
```

Console

```
Masukkan angka untuk mencetak segitiga bintang: 3
*
**
***
<<< Process finished (PID=1532). (Exit code 0)
================ READY ================
```

Console

```
Masukkan angka untuk mencetak segitiga bintang: 4
*
**
***
****
<<< Process finished (PID=7380). (Exit code 0)
================ READY ================
```

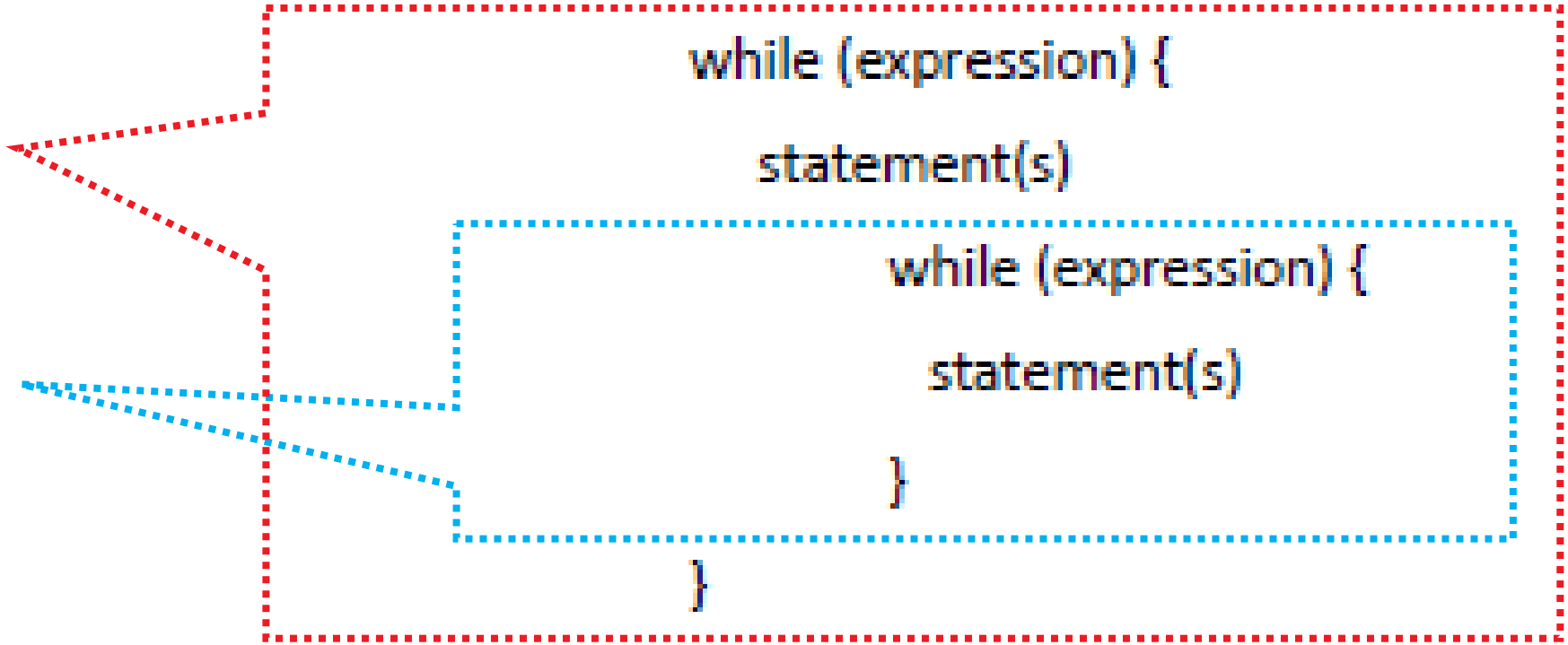


2. NESTED WHILE

- While bersarang adalah sebuah struktur kontrol perulangan While yang didalamnya terdapat struktur kontrol perulangan While

SYNTAX NESTED WHILE

- Outter Loop
- Inner Loop



CONTOH NESTED WHILE

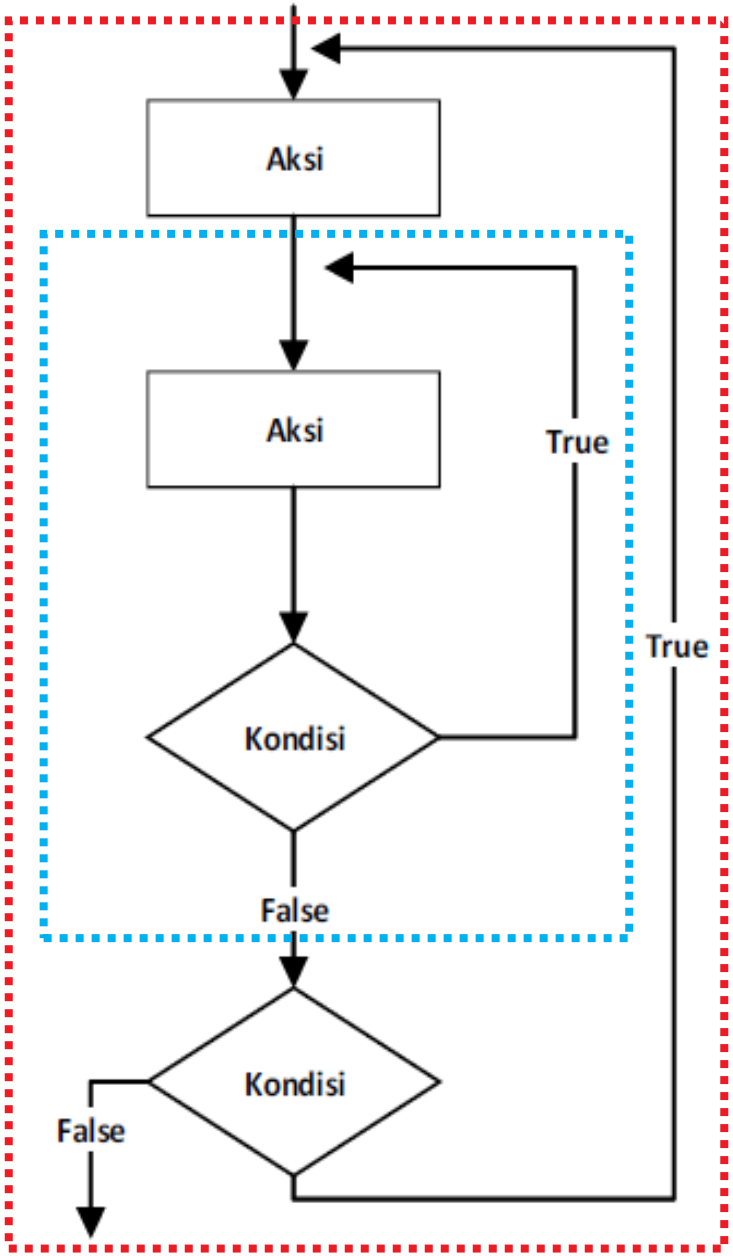
```java
//File: Program_3_10.java
import java.io.*;
public class Program_3_10 {
    public static void main (String[] args) {
        int qtty=0, counter1=1, counter2=1;
        BufferedReader tampung = new BufferedReader (new
         InputStreamReader(System.in));
        System.out.print("Masukkan angka untuk mencetak
        segitiga bintang: ");

        try {
            qtty = Integer.parseInt(tampung.readLine());
            while (counter1<qtty+1){
                counter2=1;
                while (counter2 <= counter1) {
                    System.out.print("*");
                    counter2++;
                }
                counter1++;
                System.out.println("");
            }

        }
        catch (Exception e){
                System.out.println("Masukan harus angka");
        }

    }
}
```

Console

```
Masukkan angka untuk mencetak segitiga bintang: 3
*
**
***
<<< Process finished (PID=11736). (Exit code 0)
================ READY ================
```

Console

```
Masukkan angka untuk mencetak segitiga bintang: 4
*
**
***
****
<<< Process finished (PID=6592). (Exit code 0)
================ READY ================
```



3. NESTED DO-WHILE

- Do-While bersarang adalah sebuah struktur kontrol perulangan While yang didalamnya terdapat struktur kontrol perulangan Do-While

SYNTAX NESTED DO-WHILE

- Outter Loop
- Inner Loop

```
do {
    statement(s)
    do {
        statement(s)
    } while (expression);
} while (expression);
```

CONTOH NESTED DO-WHILE

```
2  import java.io.*;
3  public class Program_3_11 {
4      public static void main (String[] args) {
5          int qtty=0, counter1=1, counter2=1;
6          BufferedReader tampung = new BufferedReader (new
            InputStreamReader(System.in));
7          System.out.print("Masukkan angka untuk mencetak
           segitiga bintang: ");
8
9          try {
10             qtty = Integer.parseInt(tampung.readLine());
11             do {
12                 counter2=1;
13                 do {
14                     System.out.print("*");
15                     counter2++;
16                 } while (counter2<=counter1);
17                 System.out.println();
18                 counter1++;
19             } while (counter1<qtty+1);
20
21         }
22         catch (Exception e){
23                 System.out.println("Masukan harus angka");
24         }
25     }
26 }
```

Console

```
Masukkan angka untuk mencetak segitiga bintang: 3
*
**
***
<<< Process finished (PID=10040). (Exit code 0)
================ READY ================
```

Console

```
Masukkan angka untuk mencetak segitiga bintang: 4
*
**
***
****
<<< Process finished (PID=8036). (Exit code 0)
================ READY ================
```

4. KOMBINASI NESTED FOR, WHILE, DO-WHILE

- Kombinasi Perulangan Bersarang / Nested For atau While atau Do-While bersarang adalah sebuah struktur kontrol perulangan For atau While atau Do-While yang didalamnya terdapat struktur kontrol perulangan For atau While atau Do-While.

4. a. KOMBINASI 1: FOR + WHILE

- Kombinasi Perulangan Bersarang / Nested For + While adalah sebuah struktur kontrol perulangan For yang didalamnya terdapat struktur kontrol perulangan While.

4. a. SYNTAX KOMBINASI 1: FOR + WHILE

- Outter Loop
- Inner Loop

```
for (initialization; termination;  increment) {
        while (expression) {
          statement(s)
        }
    statement(s)
}
```

CONTOH KOMBINASI 1: FOR + WHILE

```
1   //Program NestedKombinasi1.java - Program Latihan
    Perulangan bersarang kombinasi
2   public class NestedKombinasi1 {
3       public static void main (String[]arg) {
4           for (int i=1; i<=5; i++){
5               int j=1;
6               while (j<=i){
7                   System.out.print("*");
8                   j++;
9               }
10              System.out.println();
11          }
12      }
13  }
```

Console

```
*
**
***
****
*****
<<< Process finished (PID=1196). (Exit code 0)
================ READY ==========
```

4. b. KOMBINASI 2: FOR + DO-WHILE

- Kombinasi Perulangan Bersarang / Nested For + Do-While adalah sebuah struktur kontrol perulangan For yang didalamnya terdapat struktur kontrol perulangan Do-While.

4. b. SYNTAX KOMBINASI 2: FOR + DO-WHILE

- Outter Loop
- Inner Loop

```
for (initialization; termination;  increment) {
        for (initialization; termination;  increment) {
                do {
                    statement(s)
                } while (expression);
            statement(s)
        }
```

CONTOH KOMBINASI 2: FOR + DO-WHILE

```
1   //Program NestedKombinasi2.java - Program Latihan
    Perulangan bersarang kombinasi
2   public class NestedKombinasi2 {
3       public static void main (String[]arg) {
4           for (int i=1; i<=5; i++){
5               int j=1;
6               do{
7                   System.out.print("*");
8                   j++;
9               }while (j<=i);
10              System.out.println();
11          }
12      }
13  }
```

```
Console
*
**
***
****
*****
<<< Process finished (PID=1500). (Exit code 0)
================ READY ================
```

4. c. KOMBINASI 3: WHILE + FOR

- Kombinasi Perulangan Bersarang / Nested While + For adalah sebuah struktur kontrol perulangan While yang didalamnya terdapat struktur kontrol perulangan For.

4. c. SYNTAX KOMBINASI 3: WHILE + FOR

- Outter Loop
- Inner Loop

```
while (expression) {
    statement(s)
    for (initialization; termination;  increment) {
        statement(s)
    }
}
```

CONTOH KOMBINASI 3: WHILE + FOR

```java
//Program NestedKombinasi3.java - Program Latihan Perulangan bersarang kombinasi
public class NestedKombinasi3 {
    public static void main (String[]arg) {
        int i=1;
        while(i<=5) {
            for (int j=1; j<=i; j++ ) {
                System.out.print("*");
            }
            System.out.println();
            i++;
        }
    }
}
```

Console

```
*
**
***
****
*****
<<< Process finished (PID=9080). (Exit code 0)
================ READY ================
```

4. d. KOMBINASI 4: WHILE + DO-WHILE

- Kombinasi Perulangan Bersarang / Nested While + Do-While adalah sebuah struktur kontrol perulangan While yang didalamnya terdapat struktur kontrol perulangan Do-While.

4. d. SYNTAX KOMBINASI 4: WHILE + DO-WHILE

- Outter Loop
- Inner Loop

```
while (expression) {
    statement(s)
        do {
            statement(s)
        } while (expression);
}
```

CONTOH KOMBINASI 4: WHILE + DO-WHILE

```java
//Program NestedKombinasi4.java - Program Latihan Perulangan bersarang kombinasi
public class NestedKombinasi4 {
    public static void main (String[]arg) {
        int i=1;
        while(i<=5) {
            int j=1;
            do {
                System.out.print("*");
                j++;
            } while(j<=i);
            System.out.println();
            i++;
        }
    }
}
```

Console

```
*
**
***
****
*****
<<< Process finished (PID=10440). (Exit code 0)
================ READY ================
```

4. e. KOMBINASI 5: DO-WHILE + FOR

- Kombinasi Perulangan Bersarang / Nested Do-While + For adalah sebuah struktur kontrol perulangan Do-While yang didalamnya terdapat struktur kontrol perulangan For.

4. e. SYNTAX KOMBINASI 5: DO-WHILE + FOR

- Outter Loop
- Inner Loop

```
do {
    statement(s)
        for (initialization; termination;  increment) {
            statement(s)
        }
} while (expression);
```

CONTOH KOMBINASI 5: DO-WHILE + FOR

```java
//Program NestedKombinasi5.java - Program Latihan Perulangan bersarang kombinasi
public class NestedKombinasi5 {
    public static void main (String[]arg) {
        int i=1;
        do {
            for(int j=1; j<=i; j++) {
                System.out.print("*");
            }
            System.out.println();
            i++;
        } while(i<=5);
    }
}
```

Console

```
*
**
***
****
*****
<<< Process finished (PID=9344). (Exit code 0)
================ READY ================
```

4. f. KOMBINASI 6: DO-WHILE + WHILE

- Kombinasi Perulangan Bersarang / Nested Do-While + While adalah sebuah struktur kontrol perulangan Do-While yang didalamnya terdapat struktur kontrol perulangan While.

4. f. SYNTAX KOMBINASI 6: DO-WHILE + WHILE

- Outter Loop
- Inner Loop

```
do {
    statement(s)
        while (expression) {
          statement(s)
        }
} while (expression);
```

CONTOH KOMBINASI 6: DO-WHILE + WHILE

```
1   //Program NestedKombinasi6.java - Program Latihan
    Perulangan bersarang kombinasi
2   public class NestedKombinasi6 {
3       public static void main (String[]arg) {
4           int i=1;
5           do {
6               int j=1;
7               while(j<=i) {
8                   System.out.print("*");
9                   j++;
10              }
11              System.out.println();
12              i++;
13          } while(i<=5);
14      }
15  }
```

Console

```
*
**
***
****
*****
<<< Process finished (PID=10040). (Exit code 0)
================ READY ================
```

LATIHAN

Dengan :

1. Nested For
2. Nested While
3. Nested Do-While
4. Kombinasi :
   a. For + While
   b. For + Do-While
   c. While + For
   d. While + Do-While
   e. Do-While + For
   f. Do-While + While

- Membuat Tampilan:

****	1	1	4444	1234
***	22	12	333	123
**	333	123	22	12
*	4444	1234	1	1

[0,0]	[0,1]	[0,2]	[0,3]
[1,0]	[1,1]	[1,2]	[1,3]
[2,0]	[2,1]	[2,2]	[2,3]

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