Methoden

```
static int R(int i) {
   if (i>0)
      return i + R(i-1);
   return i;
}
static int I(int i) {
   int res;
   for (res = 1; i>0; --i)
      res *= i;
   return res;
}
public static void main(String[] args) {
   System.out.println(
      R(I(3)) + " " + I(R(3)) ); // ?
}
```

Was gibt das Programm aus?

(1) 3 3

(2) 3 6

(3) 6 6

(4) 6 120

(5) 21 120

(6) 21 720

(7) 120 720

(8) 120 1440

Methode I (Iterativ)

```
static int I(int i) {
  int res;
  for (res = 1; i>0; --i)
    res *= i;
  return res;
}
```

➔ I berechnet die Fakultät

$i! = \prod_{k=1}^{i} k$

1. i = 3;
2. res = 1; i > 0 == true
3. res = res * 3; [=3]
4. i = 2; i > 0 == true
5. res = res * 2; [=6]
6. i = 1; i > 0 == true
7. res = res * 1; [=6]
8. i = 0; i > 0 == false
9. → res = 6

Methode R (Rekursiv)

```
static int R(int i) {
  if (i>0)
    return i + R(i-1);
  return i;
}
```

➔ R berechnet die Summe $\sum_{k=0}^{i} k$

R(3) → i = 3

i > 0 ➔ return 3 + R(2);

R(2) → i = 2;

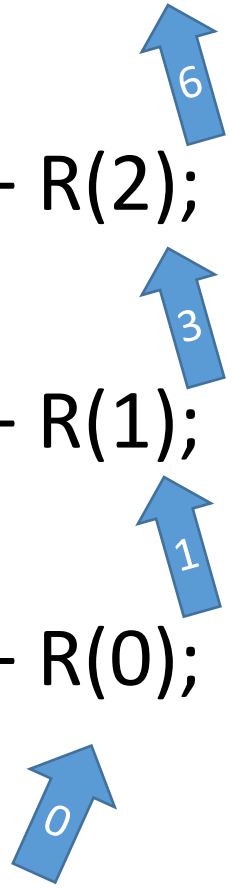
i > 0 ➔ return 2 + R(1);

R(1) → i = 1;

i > 0 ➔ return 1 + R(0);

R(0) → i = 0;

i = 0 ➔ return 0;



Methoden

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   int res;
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   return res;
}
public static void main(String[] args) {
   System.out.println(
      R(I(3)) + " " + I(R(3)) ); // ?
}
```

I(3) = 6

R(3) = 6

R(I(3)) = R(6) = 21

I(R(3)) = I(6) = 720

Methoden

```
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   return i;
}
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   int res;
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