SWT WS 2020/21
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Aufgabenblatt 4

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Aufgabe 6.1

a)

```java
public class GcdCalculator {

    public static void main(String[] args) {
        //standard tests
        GcdCalculator test = new GcdCalculator();
        System.out.println(test.gcd(12,18));
        System.out.println(test.gcd(16,20));
        System.out.println(test.gcd(120,900));
        System.out.println(test.gcd(105,26));
    }

    public int gcd(int a, int b) {
        if (a == 0) { return Math.abs(b); }
        if (b == 0) { return Math.abs(a); }
        while (b != 0) {
            int h = a % b;
            a = b;
            b = h;
        }
        return Math.abs(a);
    }
}

```

b)

```c
#include <stdio.h>
#include <stdlib.h>

int gcd(int a, int b);

int main() {
    printf("%d\n", gcd(12, 18));
    printf("%d\n", gcd(16, 20));
    printf("%d\n", gcd(120, 900));
    printf("%d\n", gcd(105, 26));

    return 0;
}

int gcd(int a, int b) {
    if (a == 0) { return abs(b); }
    if (b == 0) { return abs(a); }
    while (b != 0) {
        int h = a % b;
        a = b;
        b = h;
    }
    return abs(a);
}

```

c)

```python
def gcd(a, b):
    if a==0:
        return abs(b)
    if b==0:
        return abs(a)
    while b!=0:
        h = a % b
        a = b
        b = h
    return abs(a)

print(gcd(12,18))
print(gcd(16,20))
print(gcd(120,900))
print(gcd(105,26))

```

d)

```javascript
function gcd(a, b) {
  if (a==0) {
    return Math.abs(b);
  }
  if (b==0) {
    return Math.abs(a)
  }
  while (b!=0){
    var h = a % b;
    a = b;
    b = h;
  }
  return Math.abs(a)
}

console.log(gcd(12,18))
console.log(gcd(16,20))
console.log(gcd(120,900))
console.log(gcd(105,26))

```

e)

```go
package main

import "fmt"

func main() {
  fmt.Println(gcd(12,18))
  fmt.Println(gcd(16,20))
  fmt.Println(gcd(120,900))
  fmt.Println(gcd(105,26))
}

func gcd(a, b int) int {
  if a==0 {
    return Abs(b)
  }
  if b==0 {
    return Abs(a)
  }
  for {
    if b==0 {
      h := a % b
      a = b
      b = h
    }
  }
  return Abs(a)
}

func Abs(x int) int {
  if x < 0 {
    return -x
  }
  return x
}

```

f)

```kotlin
import kotlin.math.abs

fun main() {
    println("${gcd(12,18)}")
    println("${gcd(16,20)}")
    println("${gcd(120,900)}")
    println("${gcd(105,26)}")
}

fun gcd(a: Int, b: Int): Int {
    var v1 = a
    var v2 = b
    if (a==0) {
        return abs(b)
    }
    if (b==0) {
        return abs(a)
    }
    while (v2!=0){
        var h: Int = v1 % v2
        v1 = v2
        v2 = h
```

```
23      }
24      return abs(v1)
25  }
26
```

Aufgabe 6.2