

Homework 1

You may discuss the assignments with your classmates but need to write down your solutions independently. Be careful with your handwriting. Unclear solutions will be assumed to be wrong.

1. (20 points) (E. W. Dijkstra) Given $X > 0$ and $Y > 0$, what does the following algorithm print? Prove your answer.

```
 $x := X; y := Y; u := X; v := Y;$ 
while  $(x \neq y)$  {
  if  $(x > y)$  {
     $x := x - y; u := u + v;$ 
  } else {
     $y := y - x; v := v + u;$ 
  }
}
print  $((x + y)/2);$  print  $((u + v)/2);$ 
```

2. (10 points) Exercise 0.1
3. (15 points) Exercise 0.2
4. (15 points) Exercise 0.3
5. (20 points) Exercise 1.31
6. (20 points) Exercise 1.33