

185.A05 Advanced Functional Programming SS 2020

Friday, 20 March 2020

Assignment 0

Testing the Test System

1st test system run: Submit `Assignment0.hs` till Thu, 26 March 2020, 12am

2nd test system run: Submit `Assignment0.hs` till Thu, 2 April 2020, 12am

(No grading of Assignment 0!)

Purpose of Assignment 0:

Submitting assignment 0

1. is voluntarily, not obligatory.
2. shall provide you an opportunity to
 - (a) double-check if your programming environment works properly with the new test system and that your submission files meet the required formatting constraints.
 - (b) get acquainted with positive and negative feedback notifications of the new test system.

There will be two runs of the new test system applied to your submission file named `Assignment0.hs` and stored as a top-level file in your group home directory. In order to get feedback from the first run of the test system, you must submit your file no later than Thursday, 26 March 2020, 12am. In case your programming environment is not in place till then, you can submit your file before Thursday, 2 April 2020, 12am, in order to get feedback from the second run of the test system.

Programming tasks to get acquainted with positive test system feedback:

Implement:

```
type Nat0 = Integer

factorial :: Nat0 -> Nat0
factorial n...

fibonacci :: Nat0 -> Nat0
fibonacci n...

binom :: Nat0 -> Nat0 -> Nat0
binom m n...
```

Programming tasks to get acquainted with negative test system feedback:

Copy the below functions to your file `Assignment0.hs`:

```
fac_faulty :: Nat0 -> Nat0
fac_faulty n
  | n < 0    = fac_faulty (-n)
  | n == 0   = 1
  | n <= 10  = n * fac_faulty (n-1)
  | n <= 15  = n + fac_faulty (n-1)
  | True    = fac_faulty 42

fib_faulty 0 = 0
fib_faulty 1 = 1
fib_faulty n = fib_faulty (n-2) * fib_faulty (n-1)

binom_faulty :: Int -> Int -> Int
binom_faulty n k = div (factorial n) (factorial k * fac_faulty (n-k))

-- Enforcing time-outs by the test system
fib_slow :: Nat0 -> Nat0
fib_slow 0 = 0
fib_slow 1 = 1
fib_slow n = fib_slow (n-2) + fib_slow (n-1)
```

Note, there will be an additional test of a function `foo`. This is to trigger the feedback of the system if a function which were expected to be implemented is actually not.

Important:

1. Carefully read and follow the instructions outlined in the complementary files provided with assignment 1. Following these instructions is paramount to ensure a smooth processing of your submitted file by the test system.
2. Store all functions to be written for assignment 0 in a top-level file named

`Assignment0.hs`

of your group home directory. The very same file name will be used for the second submission of assignment 0.

3. *Do not use self-defined modules!* If you want to re-use functions (written for other assignments), copy them to `Assignment0.hs`. Import declarations for self-defined modules will fail: Only `Assignment0.hs` will be copied for the (semi-automatic) evaluation procedure, no other ones.

Iucundi acti labores.

Getane Arbeiten sind angenehm.

Cicero (106 - 43 v.Chr.)
röm. Staatsmann und Schriftsteller