Início	sexta-feira, 8 de novembro de 2024 às 18:00
Estado	Prova submetida
Data de submissão:	sexta-feira, 8 de novembro de 2024 às 18:15
Tempo gasto	15 minutos
Nota	**0,88** de um máximo de 5,00 (**17,5%**)

Informação

A wrong answer in a multiple-choice question (five options) implies a penalty of 25% of the question's value.

Pergunta 1   Pontuou -0,125 de 0,500

Consider the three following expressions:

```
a = [1 .. 100000] ++ (take 1000 [1 .. 100000])
```

```
b = (take 1000 [1 .. 100000]) ++ [1 .. 100000]
```

```
c = (takeWhile (>1000) [1 .. 100000]) ++ [1 .. 100000]
```

Order these expressions by the time needed to evaluate them, starting with the fastest one to compute:

- ○ a. c < b < a
- ○ b. c < a < b
- ◉ c. c < a = b (a and b are computed in the same amount of time) ✖
- ○ d. b < c < a
- ○ e. a = b = c (all three expressions take the same amount of time to be computed)

Resposta correta:
c < b < a

Pergunta 2   Pontuou -0,125 de 0,500

What is the result of this expression?

```
concat [[a,b] | (a,b) <- zip ['a' ..] "abcde"]
```

- ○ a. ["abcde","abcde","abcde","abcde","abcde"]
- ○ b. [('a','a'),('b','b'),('c','c'),('d','d'),('e','e')]
- ◉ c. ["aa","bb","cc","dd","ee"] ✖
- ○ d. "abcdeabcde"
- ○ e. "aabbccddee"

Resposta correta:
"aabbccddee"

Pergunta 3

Pontuou 0,500 de 0,500

What is the result of this expression?

```
zipWith (*) [1 ..] [3,1 .. -5]
```

a. None of the other options.

b. `[3,2,-3,-12,-25]` ✔

c. `[-3,-2,3,12,25]`

d. `[]`

e. An infinite list

Resposta correta:

```
[3,2,-3,-12,-25]
```

Pergunta 4

Pontuou -0,125 de 0,500

Which of these expressions has the following type?

```
(Eq a) => [a] -> Bool
```

a. `filter (==3)`

b. `map (<3)` ✘

c. `(\l -> reverse l == l)`

d. `(\(_:t) -> tail t)`

e. `tail`

Resposta correta:

```
(\l -> reverse l == l)
```

Pergunta 5

Pontuação 0,500

What is the type of function myFun?

```
myFun x y = (x / y) < 1
```

a. `(Floating a, Ord a) => a -> b -> Bool`

b. `(Floating a) => a -> a -> Bool`

c. `(Num a, Ord a) => a -> a -> Bool`

d. `(Fractional a, Ord a) => a -> b -> Bool`

e. None of the other options.

Resposta correta: None of the other options.

Pergunta 6

Consider function f.

```
f [] = Just 1
f (h:t)
  | h > 0 = case f t of Just d -> Just (h*d)
                        _ -> Nothing
  | otherwise = Nothing
```

Which of these sentences about function f is FALSE?

a. The evaluation of f [0 ..] leads to a result (without infinite recursion) of Just 0.

b. The elements of the input list can have the type Int, Integral and Float (among other valid types).

c. If a given input of f returns a Nothing, its reverse will also return a Nothing.

d. The result of f [1,2,3,4] is Just 24. ✖

e. The type of f is f :: (Num a, Ord a) ⇒ [a] → Maybe a

Resposta correta: The evaluation of f [0 ..] leads to a result (without infinite recursion) of Just 0.

Pergunta 7

Which of the following Prelude functions is equivalent to mysteryFunc?

```
mysteryFunc = foldr (++) []
```

a. `length`

b. `tail`

c. `reverse`

d. `(:)`

e. `concat` ✔

Resposta correta:

```
concat
```

Pergunta 8

What is the type of function fun?

```
fun f g x y = f (g x y) (f x x)
```

a. `(a -> a -> c) -> (a -> b -> a) -> a -> b -> c`

b. None of the other options.

c. `(a -> a -> b) -> (a -> b -> a) -> a -> b -> b`

d. `(a -> a -> a) -> (a -> b -> a) -> a -> b -> a`

e. `(a -> a -> b) -> (a -> a -> a) -> a -> b -> a`

Resposta correta:

```
(a -> a -> a) -> (a -> b -> a) -> a -> b -> a
```

What is the result of this expression?

```
foldl (-) 2 (map ((+1).(*2)) [3,2,1])
```

- a. None of the other options. ✗
- b. -16
- c. 3
- d. 4
- e. -13

Resposta correta:
-13

What does function g do?

```
g = gAux []

gAux a = do
  x <- getChar
  if (x == '\n')
    then return a
    else gAux (x:a)
```

- a. Reads several lines from the console and prints them in reverse order.
- b. Reads a whole line from the console and prints it in reverse order. ✔
- c. Reads several lines from the console and prints them exactly as they were written.
- d. Reads a character from the console and prints it, after appending a '\n' to it.
- e. Reads a whole line from the console and prints it exactly as it was written.

Resposta correta:
Reads a whole line from the console and prints it in reverse order.