

Início	sexta-feira, 8 de novembro de 2024 às 18:07
Estado	Prova submetida
Data de submissão:	sexta-feira, 8 de novembro de 2024 às 18:22
Tempo gasto	15 minutos
Nota	5,00 de um máximo de 5,00 (100%)

Informação

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

Pergunta 1

Pontuou 0,500 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. a = b = c (all three expressions take the same amount of time to be computed)
- ☐ b. b < c < a
- ☐ c. c < a = b (a and b are computed in the same amount of time)
- ☒ d. c < b < a
- ☐ e. c < a < b

Resposta correta:

c < b < a

Pergunta 2

Pontuou 0,500 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. `["aa","bb","cc","dd","ee"]`
- ☐ c. `[('a','a'),('b','b'),('c','c'),('d','d'),('e','e')]`
- ☐ d. `"abcdeabcde"`
- ☒ e. `"aabbccdde"` ✓

Resposta correta:

`"aabbccdde"`**Pergunta 3**

Pontuou 0,500 de 0,500

What is the result of this expression?

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

- ☒ a. `[3,2,-3,-12,-25]` ✓
- ☐ b. None of the other options.
- ☐ c. `[]`
- ☐ d. An infinite list
- ☐ e. `[-3,-2,3,12,25]`

Resposta correta:

`[3,2,-3,-12,-25]`**Pergunta 4**

Pontuou 0,500 de 0,500

Which of these expressions has the following type?

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

- ☐ a. `(\(_:t) -> tail t)`
- ☐ b. `map (<3)`
- ☐ c. `filter (==3)`
- ☐ d. `tail`
- ☒ e. `(\l -> reverse l == l)` ✓

Resposta correta:

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

Pergunta 5

Pontuou 0,500 de 0,500

What is the type of function myFun?

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

- ☐ a. `(Num a, Ord a) => a -> a -> Bool`
☒ b. None of the other options. ✓
 ☐ c. `(Floating a) => a -> a -> Bool`
- ☐ d. `(Floating a, Ord a) => a -> b -> Bool`
☐ e. `(Fractional a, Ord a) => a -> b -> Bool`

Resposta correta: None of the other options.

Pergunta 6

Pontuou 0,500 de 0,500

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 elements of the input list can have the type Int, Integral and Float (among other valid types).
 ☐ b. If a given input of f returns a Nothing, its reverse will also return a Nothing.
 ☐ c. The type of f is `f :: (Num a, Ord a) => [a] -> Maybe a`
- ☒ d. The evaluation of `f [0 ..]` leads to a result (without infinite recursion) of Just 0. ✓
 ☐ e. The result of `f [1,2,3,4]` is Just 24.

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

Pergunta 7

Pontuou 0,500 de 0,500

Which of the following Prelude functions is equivalent to mysteryFunc?

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

- ☐ a. `reverse`
☐ b. `(:)`
☒ c. `concat` ✓
- ☐ d. `length`
☐ e. `tail`

Resposta correta:

```
concat
```

Pergunta 8

Pontuou 0,500 de 0,500

What is the type of function fun?

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

- ☐ a. `(a -> a -> b) -> (a -> a -> a)
-> a -> b -> a`
- ☐ b. `(a -> a -> c) -> (a -> b -> a)
-> a -> b -> c`
- ☒ c. `(a -> a -> a) -> (a -> b ->
a) -> a -> b -> a` ✓
- ☐ d. None of the other options.
- ☐ e. `(a -> a -> b) -> (a -> b -> a)
-> a -> b -> b`

Resposta correta:

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

Pergunta 9

Pontuou 0,500 de 0,500

What is the result of this expression?

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

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

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

Resposta correta:

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

