

Quiz

Ivan Trepakov

NSU Sys.Pro

Quiz 1

Evaluate expression

```
succ (2 - pred 1)
```

```
drop 2 (take 4 "Haskell") > map succ "cat"
```

```
sum (map fromEnum (enumFrom False))
```

```
map (\x -> x * 2) [1,3..10] ++ [100,1000]
```

Guess type signature

```
max "Haskell"
```

```
map fst
```

```
map (take 2)
```

Quiz 2

Guess type signature

```
(++) [True]
```

```
zip [0..]
```

```
map filter
```

Guess type signature

```
alph = 'a' : alph
```

```
foo = zipWith (:)
```

```
f = f f
```

```
y g = g (y g)
```

Quiz 3

Guess type signature

```
z x y = zip x (concat y)
```

```
concatMap f x = concat (map f x)
```

```
f = 0 : 1 : zipWith (+) f (tail f)
```

Guess the function(s)

```
_ :: a -> a
```

```
_ :: a -> b
```

```
_ :: a -> [a] -> [a]
```

```
_ :: [a] -> Maybe (a, [a])
```

Quiz 4

Guess the function(s)

`_ :: a -> b -> a`

`_ :: (a -> b -> c) -> b -> a -> c`

`_ :: ((a, b) -> c) -> a -> b -> c`

`_ :: (a -> b -> c) -> (a, b) -> c`

Guess the function(s)

`_ :: (a -> b) -> a -> b`

`_ :: (b -> c) -> (a -> b) -> a -> c`

`_ :: (b -> a -> b) -> b -> [a] -> b`

`_ :: (a -> b -> b) -> b -> [a] -> b`

Quiz 5

Evaluate expression

`(2^)` . `(3+)` \$ 4

`map` (\$2) [(*2), (^3), (1+)]

`(++ "!")` . `reverse` \$ "abc"

Guess type signature

`flip const`

`const undefined`

`foldr` (:) []

`((filter even .) .)`

Quiz 6

Guess type signature

```
filter (const True)
```

```
foldl' (flip (:)) []
```

```
map (,)
```

How many distinguishable *total* functions?

```
_ :: a -> a
```

```
_ :: (a, a) -> (a, a)
```

```
_ :: a -> a -> Bool
```

```
_ :: Eq a => a -> a -> Bool
```

Quiz 7

How many distinguishable *total* functions?

`_ :: a -> b -> a`

`_ :: a -> a -> a`

`_ :: (b -> c) -> (a -> b) -> (a -> c)`

How many distinguishable *total* functions?

`_ :: a -> Maybe a`

`_ :: a -> Maybe b`

`_ :: (a -> Maybe b) -> [a] -> [b]`

Quiz 8

How many distinguishable *total* functions?

`_ :: Bool -> Bool -> Bool`

`_ :: Bool -> a -> a`

`_ :: [a] -> a`

Guess the function(s)

`_ :: (a -> a -> Bool) -> [a] -> [[a]]`

`_ :: (a -> a -> Ordering) -> [a] -> [a]`

`_ :: Ord a => (b -> a) -> b -> b -> Ordering`

Quiz 9

Evaluate expression

```
foldr (++) "S" ["foo", "bar"]
```

```
foldl (++) "S" ["foo", "bar"]
```

```
foldr ($) "S" [(++ "foo"), (++ "bar")]
```

```
mconcat [(++ "foo"), (++ "bar")] "S"
```

Guess the Semigroup(s)

```
instance Semigroup (Maybe a) where  
  (< >) :: Maybe a -> Maybe a -> Maybe a
```

```
newtype X a = X a
```

```
instance Semigroup a => Semigroup (X a) where  
  (< >) :: X a -> X a -> X a
```

```
newtype Y a = Y a
```

```
instance Semigroup (Y a) where  
  (< >) :: Y a -> Y a -> Y a
```

Quiz 10

Guess the kind

```
data A a b = A a b
```

```
data B a b = B (a b)
```

```
data C a b = C (b (a b))
```

```
data D a b = D (a (b a))
```

Guess foldMap Monoid

```
product :: (Foldable t, Num a) =>  
          t a -> a
```

```
any :: Foldable t =>  
     (a -> Bool) -> t a -> Bool
```

```
elem :: (Foldable t, Eq a) =>  
       a -> t a -> Bool
```

Q&A