0/19 Questions Answered

Mid-semester Exam (2021/S2) Multi-Choice and T/F Questions

STUDENT NAME

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Q1 Acknowledgment

0 Points

Australian National University

COMP1100 Mid-Semester Exam, Semester 2 2021

You must acknowledge the following **integrity pledge** before proceeding. Please read carefully and check all the boxes.

- [ ] I am committed to being a person of integrity.
- [ ] I pledge, as a member of the ANU community, to abide by and uphold the standards of academic integrity outlined in the ANU statement on honesty and plagiarism, I am aware of the relevant legislation, and understand the consequences of breaching those rules.
- [ ] I will not communicate in any way with anyone else during this exam. This includes asking questions in any online forum.
- [ ] I acknowledge that this exam is protected by copyright and that copying or sharing any of its content will violate that copyright.

Read and check off the following instructions:

1. This examination is timed.

- [ ] Note the remaining time at the top right of this screen. Set an alarm for yourself if you need one.

2. Permitted materials. This is an open book exam. You might in particular find the course Website, the Prelude documentation, and the Data.List documentation useful.

- [ ] You may use any documentation you wish but **all work must be your own**.

Save Answer

Q2 Sets and Functions

2 Points

Which of the following is **False**?

- Any number of sets can be combined using $+$.
- Infinite sets cannot be combined using $\times$.
- Given functions $f :: A \to B$ and $g :: B \to A$, $f.g$ can be defined.
- Given a function $h :: A \to B \to C$ and $a \in A$, $h(a)$ is an element of $B \to C$.

Save Answer

Q3 Haskell functions

2 Points

Four of the following implementations of this function behave the same behavior.

A.

```
myFun a b = case (a,b) of
  (True, True)  -> False
  (True, False) -> True
  (False, True) -> True
  (False, False) -> False
```

B.

```
myFun a b = not a || b
```

C.

```
myFun a b
  | a == b = False
  | otherwise = True
```

D.

```
myFun a b = not (a && b) && (a || b)
```

E.

```
myFun True True = False
myFun a b = a || b
```

Select which one behaves *differently* than the others?

- ○ A
- ✓ ○ B
- ○ C
- ○ D
- ○ E

Save Answer

Q4 Type Signatures

2 Points

Consider the following Haskell function definition:

```
bar (a, b) = (not a, b:"foo")
```

Which of the following is a valid Haskell type signature for this function?

- ○ `bar :: (Integer, String) -> (Integer, String)`
- ○ `bar :: (Bool, Bool) -> (Bool -> String)`
- ✓ ○ `bar :: (Bool, String) -> (Bool, String)`
- ○ `bar :: (String, String) -> (String, String)`
- ○ `bar :: (Bool, Char) -> (Bool, String)`

Save Answer

Q5 Lists

2 Points

Which of the following statements is **True** in Haskell:

- ○ When using recursion on lists, computations from the right of the list are preferred.
- ○ An empty list is always the base case.
- ○ The type of `["a","b","c"]` is `String`.
- ✓ ○ List is a recursive type.
- ○ `x:y:zs` is equal to `(x:y):zs`.

Save Answer

Q6 Types

2 Points

Consider the following function type signatures.

```
foo :: String -> Int -> String
boo :: Char -> String
```

Which of the following is **False** in Haskell?

- ✓ ○ `foo.boo` can be defined.
- ○ `foo "boo"` has type `Int -> String`.
- ○ `foo` takes two inputs whose types are `String` and `Int`.
- ○ `boo 'f'` can be an input to `foo`.
- ○ `foo 'b' 3` has type `String`

Save Answer

Q7 Programming

2 Points

Each correct answer **gains** you 1 marks, each incorrect answer **loses** you 0.5 mark, while a question left unanswered neither loses nor gains marks. The minimum total mark for this question is 0.

Select which of the following are True or False:

Q7.1 Machine code

1 Point

Machine code is considered safer than high-level programming languages since it has full control of memory.

- [ ] True
- [ ] False

Save Answer

Q7.2 Functional programming

1 Point

Functional programming languages have more control of memory usage compared to other programming languages.

- [ ] True
- [ ] False

Save Answer

Q8 Haskell function

5 Points

Each correct answer **gains** you 1 marks, each incorrect answer **loses** you 0.5 mark, while a question left unanswered neither loses nor gains marks. The minimum total mark for this question is 0.

Consider the following Haskell function.

```
length' lst = case lst of
    [] -> 0
    _:ms -> 1 + length' ms
```

Select which of the following are True or False:

Q8.1 Type signature
1 Point

`[[Char]] -> Int` is a valid type signature for `length'`.

- [ ] True
- [x] False

Save Answer

Q8.2 Type signature
1 Point

`[Bool] -> Integer` is a valid type signature for `length'`.

- [ ] True
- [x] False

Save Answer

Q8.3 List
1 Point

It is possible that `length'` function runs indefinitely.

- [ ] True
- [x] False

Save Answer

Q8.4 List
1 Point

It is possible that `length'` function outputs a negative number.

- [ ] True
- [x] False

Save Answer

Q8.5 List
1 Point

List of any type can be an input to `length'`.

- [x] True
- [ ] False

Save Answer

Q9 Types
3 Points

Each correct answer **gains** you 1 marks, each incorrect answer **loses** you 0.5 mark, while a question left unanswered neither loses nor gains marks. The minimum total mark for this question is 0.

Consider the following Haskell code.

```
data Semester = Spring | Fall

type Year = Int

data Calendar = Y Year Semester
```

Select which of the following are True or False:

Q9.1 Types
1 Point

`Semester` is a sum type.

- [x] True
- [ ] False

Save Answer

Q9.2 Types

1 Point

`Calendar` is a product type.

- [x] True
- [ ] False

Save Answer

Q9.3 Type

1 Point

The maximum length of values of type `[Semester]` is 2.

- [x] True
- [ ] False

Save Answer

Q10 Programming Questions

30 Points

There are **three** programming questions that you need to complete and submit.
You can find all programming questions on your dashboard.

Please submit by uploading **each** Haskell file to **each** question.

Please download the template Haskell files here.

Q10.1 Room.hs

13 Points

Submit `Room.hs` here

Save Answer

Q10.2 Largest.hs

7 Points

Submit `Largest.hs` here

Save Answer

Q10.3 Pizza.hs

10 Points

Submit `Pizza.hs` here

Save Answer

Save All Answers

Submit & View Submission >