

# Corda

version 0.1

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**Corda** is a Haskell library that produces string and surface diagrams from descriptions of morphisms in monoidal categories and monoidal bicategories.

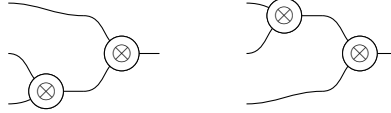


Figure 1: String diagrams generated by Corda.

Corda lets you write Haskell code that outputs a TikZ library with your diagrams. This library can be called from your main LaTeX file.

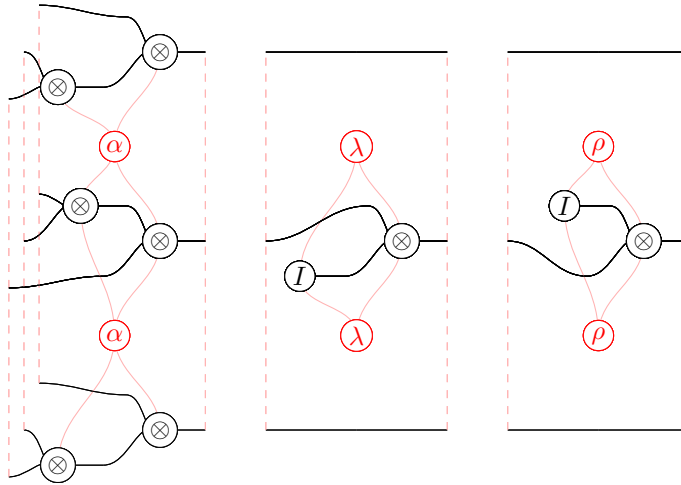


Figure 2: Surface diagrams generated by Corda.

## The Haskell code

The previous examples have been generated with the following Haskell code.

```

-- | This module exemplifies how to use Corda. Some cells are
-- declared and then some diagrams are constructed on top of them.

module Example where

import Chorda

-- We will draw a pseudomonoid (C,o,I) in the monoidal bicategory of
-- categories (Cat,x,1), which is the same as a monoidal category. We
-- start by declaring some primitive cells.
c = obj "\\mathbb{C}"
o = morph "\\otimes" [c,c] [c]
i = morph "I" [] [c]
alpha = transf "\\alpha" [[idt c,o],[o]] [[o,idt c],[o]]
alphainv = transf "\\alpha" [[o,idt c],[o]] [[idt c,o],[o]]
lambda = transf "\\lambda" [[i,idt c],[o]] [[idt c],[idt c]]
lambdainv = transf "\\lambda" [[idt c],[idt c]] [[i,idt c],[o]]
rho = transf "\\rho" [[idt c,i],[o]] [[idt c],[idt c]]
rhoinv = transf "\\rho" [[idt c],[idt c]] [[idt c,i],[o]]

main :: IO ()
main = do

    -- We now declare the diagrams. We start by labelling our package;
    -- then, we proceed to list the diagrams that should compose our
    -- library.
    putStrLn
        "\\ProvidesPackage{mydiagrams}[2020/05/09 v0.1 My Diagrams.]"

    putStrLn $ unlines
        [ mkDiagram3D "associatorDiagram" [[[alphainv]],[[alpha]]]
        , mkDiagram3D "leftUnitorDiagram" [[[lambdainv]],[[lambda]]]
        , mkDiagram3D "rightUnitorDiagram" [[[rhoinv]],[[rho]]]
        , mkDiagram2D "assocOne" [[idt c,o],[o]]
        , mkDiagram2D "assocTwo" [[o,idt c],[o]]
        ]

```

## Referencing Corda

As of June 2020, the best way of referencing Corda is by pointing to its GitHub repository.

```

@misc{corda20,
  author = {Mario Román},

```

```
title = {Corda library, Version 0.1},  
howpublished = {GitHub \url{https://github.com/mroman42/corda}},  
year = {2020}  
}
```