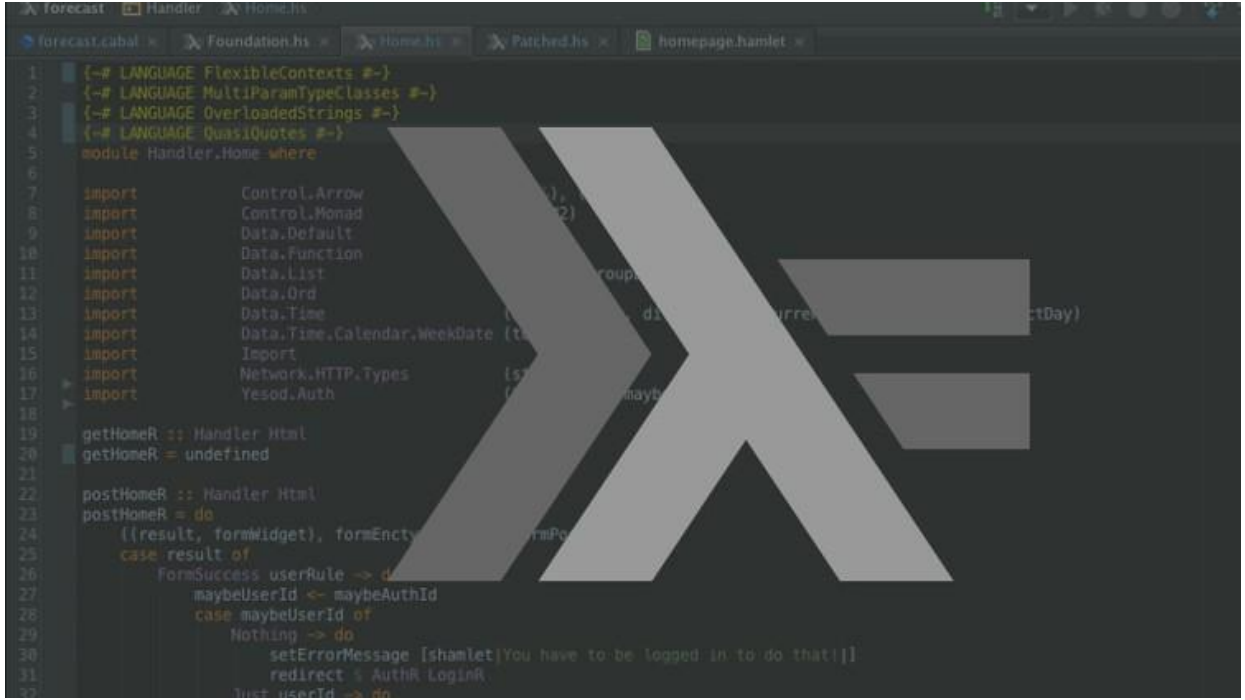
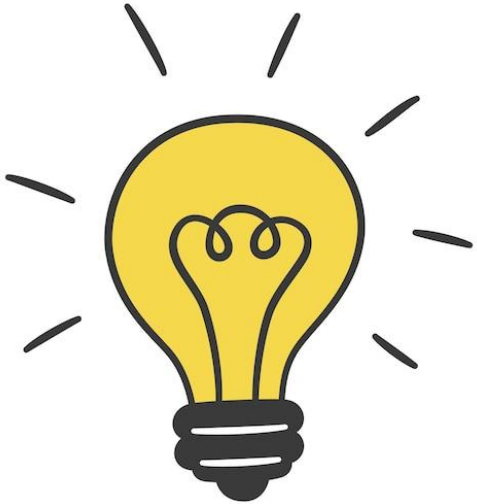
Do Notation: Example



Do Notation

The **do notation** is syntactic sugar to facilitate the use of monads.
⇒ With do, functional code *looks like* imperative code with assignments.



Do Notation

The computations can be sequenced:

```
do { c1 ; c2 }
```

≡

```
do
    c1
    c2
```

≡

```
c1 >> c2
```

≡

```
c1 >>= \_ -> c2
```

And with <- extract its results:

```
do { x <- c1 ; c2 }
```

≡

```
do
    x <- c1
    c2
```

≡

```
c1 >>= \x -> c2
```

Do Notation: Example

We have associative lists with information about car owners, their license plates, their models and their emission labels:

```
data Model = Clio | Audi | Cadillac | Nissan deriving (Eq, Show)

data Label = B | C | Eco | Zero deriving (Eq, Show)

registrations = [("Albert", 3526), ("Peter", 8427), ("Sofia", 7383), ("Olivia", 5913)]

models = [(3526, Audi), (8427, Clio), (7383, Nissan), (5913, Cadillac)]

labels = [(Clio, Zero), (Audi, C), (Cadillac, B), (Nissan, Eco)]
```

Do Notation: Example

Given an owner name, we want to know what their emissions label is:

```
label :: String -> Maybe Label
```

It's `Maybe` because, maybe the owner doesn't exist, or we don't have his registration, or we don't have his model, or we don't have his label…

A useful predefined function to use:

```
lookup :: Eq a => a -> [(a, b)] -> Maybe b
```

Applying Do Notation

```
label name = do
    reg <- lookup name registrations
    mod <- lookup reg models
    lookup mod labels
```

Transformation from **do notation** to functional:

```
label name =
    lookup name registrations >>= \mat ->
    lookup reg models >>= \mod ->
    lookup mod labels
```

Instructor Youtube Channel: Lucas Science

Lucas Science

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