

# IO Monad – ZIO



<http://degoes.net/articles/zio-environment>

**ZIO[R,E,A]**



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## ZIO Environment

ZIO Environment uses a functional effect data type with three type parameters:

```
ZIO[R, E, A]
```

The interpretation of these type parameters is as follows:

- **R** —This is the type of the environment required to run the effect, which can range from a bundle of modules, to just some configuration details, to `Any` (indicating no requirement).
- **E** —This is the type of error the effect may fail with, which can range from `Throwable`, to a custom data type (which may or may not extend `Throwable` / `Exception`), to `Nothing` (indicating the effect cannot fail).
- **A** —This is the type of value the effect may succeed with, which can be anything, but if the effect runs forever (or runs until error), it could also be `Nothing`.

Not everyone may be comfortable using the full ZIO data type, so the library defines three type synonyms for common cases:

```
type UIO[+A] = ZIO[Any, Nothing, A]  
type Task[+A] = ZIO[Any, Throwable, A]  
type IO[+E, +A] = ZIO[Any, E, A]
```