

DDG University

Informal Goals

1. Learn new things related to technology.
2. Learn from each other.
3. Foster inter-team building.
4. To become better engineers.

*Search for **DDG University** in Asana.*

Structure and Interpretation of Computer Programs (*SICP*)

by Harold Abelson and Gerald Jay Sussman

2.5 Systems with Generic Operations

1. *Generic arithmetic package*
2. *Coercion*
3. *Hierarchies of Types*

Generic Arithmetic

Programs that use numbers

add sub mul div

Generic arithmetic package

add-rat
mul-rat
sub-rat
div-rat

Rational
arithmetic

add-complex
mul-complex
sub-complex
div-complex

Complex arithmetic

Rectangular

Polar

+ - * /

Ordinary
arithmetic

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List structure and primitive machine arithmetic

Generic Arithmetic API

```
(define (add x y) (apply-generic 'add x y))  
(define (sub x y) (apply-generic 'sub x y))  
(define (mul x y) (apply-generic 'mul x y))  
(define (div x y) (apply-generic 'div x y))
```

Packages

```
(install-scheme-number-package)
```

```
(install-rational-package)
```

```
(install-complex-package)
```

```
  (install-rectangular-package)
```

```
  (install-polar-package)
```


Coercion

```
(define (scheme-number->complex n)
  (make-complex-from-real-imag
    (contents n) 0))

(put-coercion 'scheme-number 'complex
  scheme-number->complex)
```

Hierarchies of types

complex

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real

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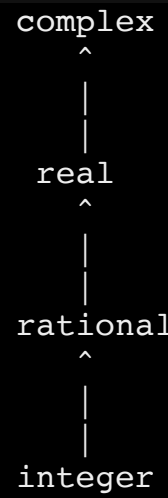
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rational

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integer



That's all for section 2.5.

Thanks!