

Scheme

CS 152

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## 1. Basic Arithmetic

+, -, \*, and / represent addition, subtraction, multiplication, and division respectively.

### 1.1. Example(s)

( + 1 2 )

## 2. Other Arithmetic Operations

- quotient
- remainder
- modulo
- sqrt
- exp
- log
- trigonometry
  - sin
  - cos
  - tan
  - asin
  - acos
  - atan

## 3. Lists

### 3.1. Cons Cells

- Memory spaces which stores two addresses.
  - **car** The part storing the address to 1
  - **cdr** The part storing the address to 2
- Made by function cons.

#### 3.1.1. Lists

- Lists are beaded cons cells with the cdr part of the last cons cell being ' ()
- ' () is called the empty List

## 4. atoms

- Data structures that do not use cons cells
- Numbers, characters, strings, vectors, and ' () are atom
- ' () is an atom and a list

## 5. quotient

- A special form named quote is used to prevent tokens from evaluation
- symbol '

### 5.1. Special forms

## 6. Functions car and cdr

- If the value of car is a beaded cons cell, it returns the address of the first element of the list.

## 7. Function List

## 8. Defining Functions

### 8.1. Hello World

```
; Hello world as a variable  
(define vhello "Hello World")  
  
(cd "C:\\doc\\scheme")  
(load "hello.scm")
```