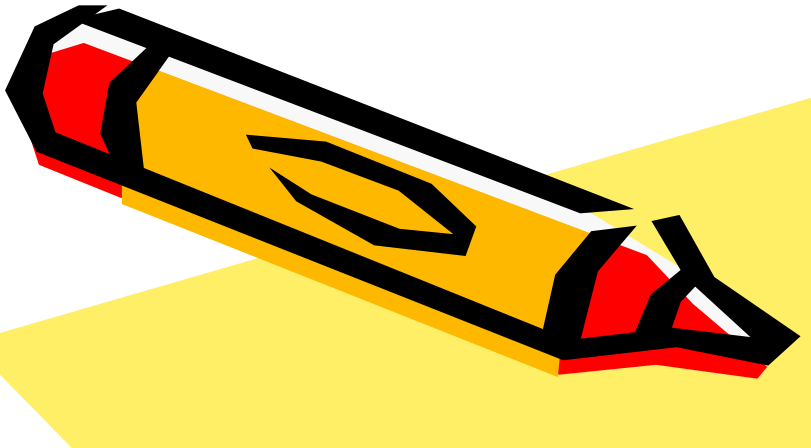
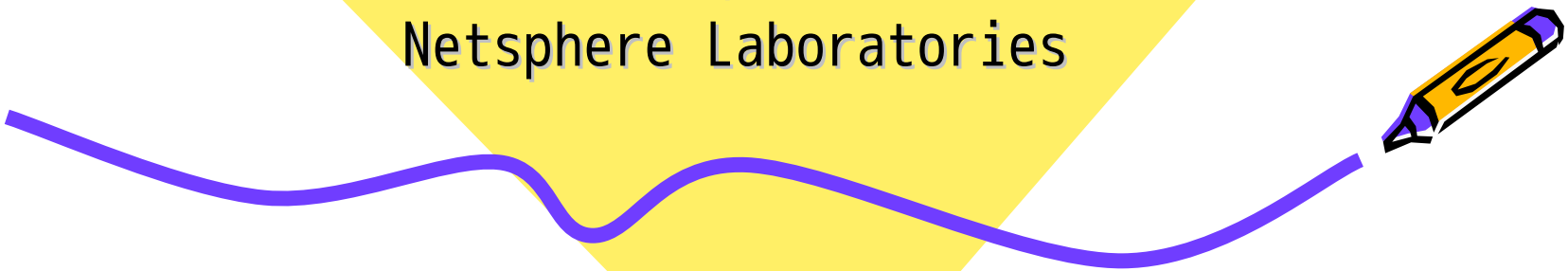
2008.7.19



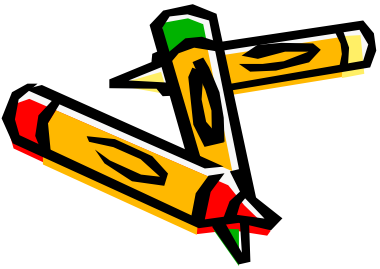
λ ruby -> haskell

ほりかわひさし
Netsphere Laboratories



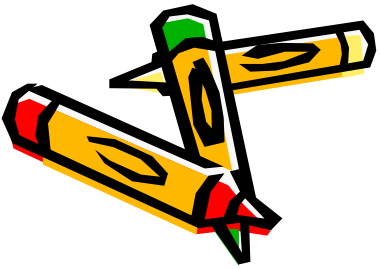
Overview

- 別の言語？
- Haskellって？
- 何に使えるの？
- コードを書いてみよう
- どこに情報が？



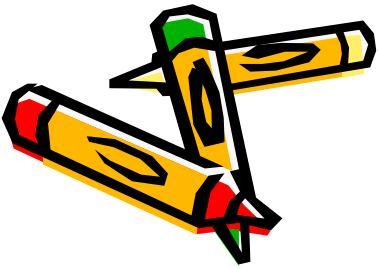
Rubyさえあれば・・・？

- 別の発想のプログラミング言語は有益
- 適材適所
- よりpowerのある言語が登場するかも



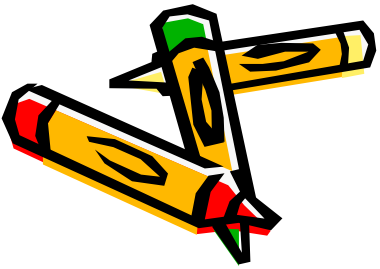
言語のpower

- どこまで簡潔に書けるか
- 汎用 <-> 特殊



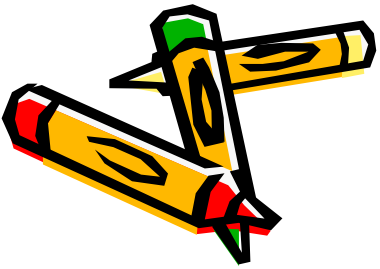
興味深い言語

- Haskell – 純粋関数型言語
- Erlang – 並列処理指向
- Concurrent Clean
- Mozart Oz
- Whitespace, Brainf*ck, Grass



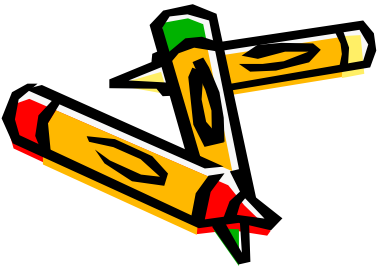
Haskell？

- 実用レベル
- 再代入がない - terrible!
- 遅延評価（lazy evaluation）
- 強い型付け、型推論
- 並列（マルチスレッド）化が容易かも



メリット

- ラムダがこわくなくなる
- プログラムのデザインへの理解が深まる
- パターンと処理の分離

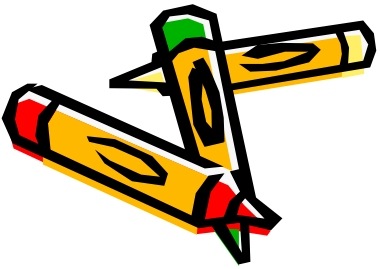


アプリ・ライブラリ

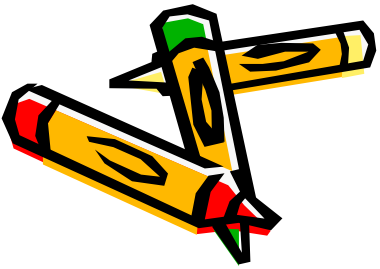
- Monadius
- GHC – Haskellコンパイラ
- darcs
- Gtk2Hs

ほかにも

- HaskellDB - データベース接続
- wxHaskell - GUIライブラリ
- Blobs - 作図アプリ
- xmonad - window manager
- WASH - 継続ベースWeb App.サーバ



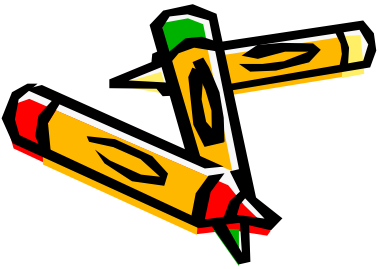
コードを書いてみよう



処理系

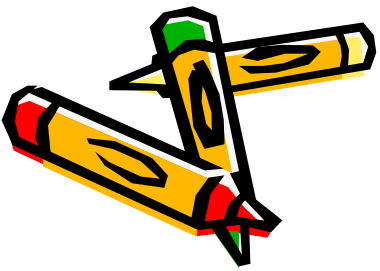
- GHC - 一番メジャ
  - http://www.haskell.org/ghc/
- Jhc Haskell Compiler
  - http://repetae.net/computer/jhc/

- GHCはyum一発で入ります。



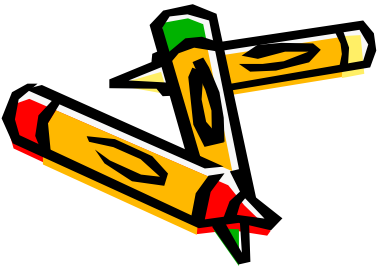
コードの読み方

- 関数適用 - 関数と引数の間は空白
  - `f a  -- 意味 f(a)`
- 型宣言 - 書いておくと読みやすい
  - `f :: Int -> Int -> [Int]`
- 関数適用が最も優先順位 が高い
  - `f a + b  = (f a) + b`



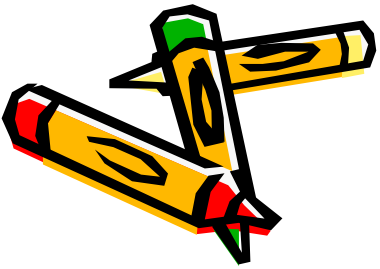
それから

- 関数定義
  - `main = ...`　　関数名 引数・・・ = 定義
- 関数をつなぐ
  - `f $ g $ h x ... f (g (h x))`



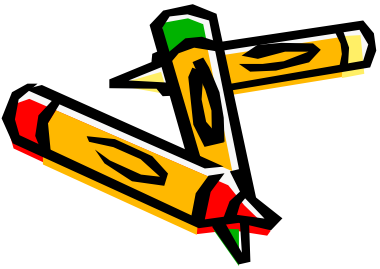
Project Euler

- http://projecteuler.net/
  - 短くまとまった問題だが、解くためにはコンピュータが必要
- どう書く？.org
  - http://ja.doukaku.org/



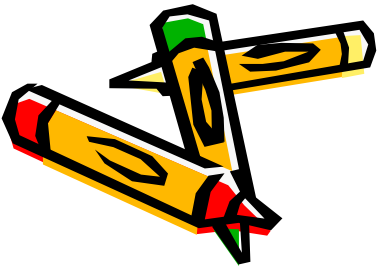
Problem 1

- If we list all the natural numbers below 10 that are multiples of 3 or 5, we get 3, 5, 6 and 9. The sum of these multiples is 23.
- Find the sum of all the multiples of 3 or 5 below 1000.



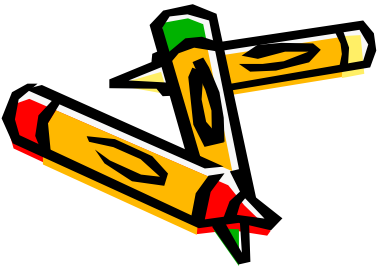
Problem 2

- Each new term in the Fibonacci sequence is generated by adding the previous two terms. By starting with 1 and 2, the first 10 terms will be:
- 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, ...
- Find the sum of all the even-valued terms in the sequence which do not exceed four million.



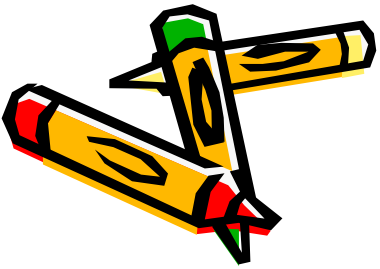
Problem 3

- The prime factors of 13195 are 5, 7, 13 and 29.
- What is the largest prime factor of the number 600851475143 ?



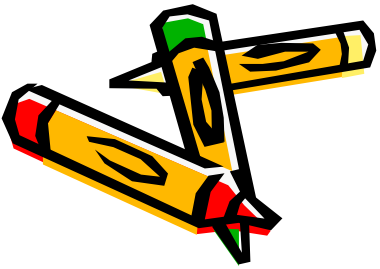
Problem 4

- A palindromic number reads the same both ways. The largest palindrome made from the product of two 2-digit numbers is 9009 = 91 99.
- Find the largest palindrome made from the product of two 3-digit numbers.



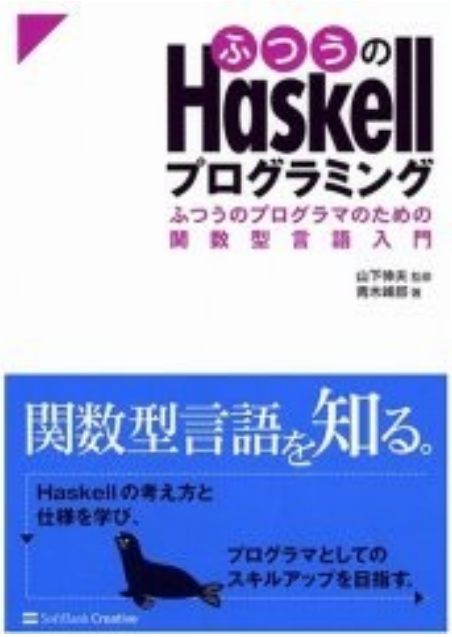
Problem 5

- 2520 is the smallest number that can be divided by each of the numbers from 1 to 10 without any remainder.
- What is the smallest number that is evenly divisible by all of the numbers from 1 to 20?



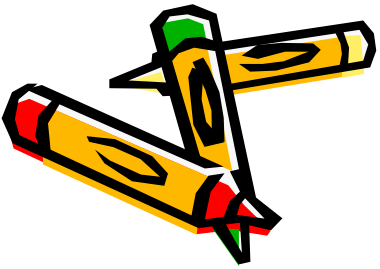
次のステップ

- ふつうのHaskellプログラミング
  - 青木峰郎著



それから

- Hoogle - API検索
  - http://www.haskell.org/hoogle/
- 栄光のGHCシステム利用の手引き
  - http://www.kotha.net/ghc_users_guide_ja/



fin.