



# A #1 lang for All Seasons

Ben Greenman,  
Racket Con 2015

*“One who remains true to himself and his beliefs  
while adapting to all circumstances and times,  
despite external pressure or influence”*



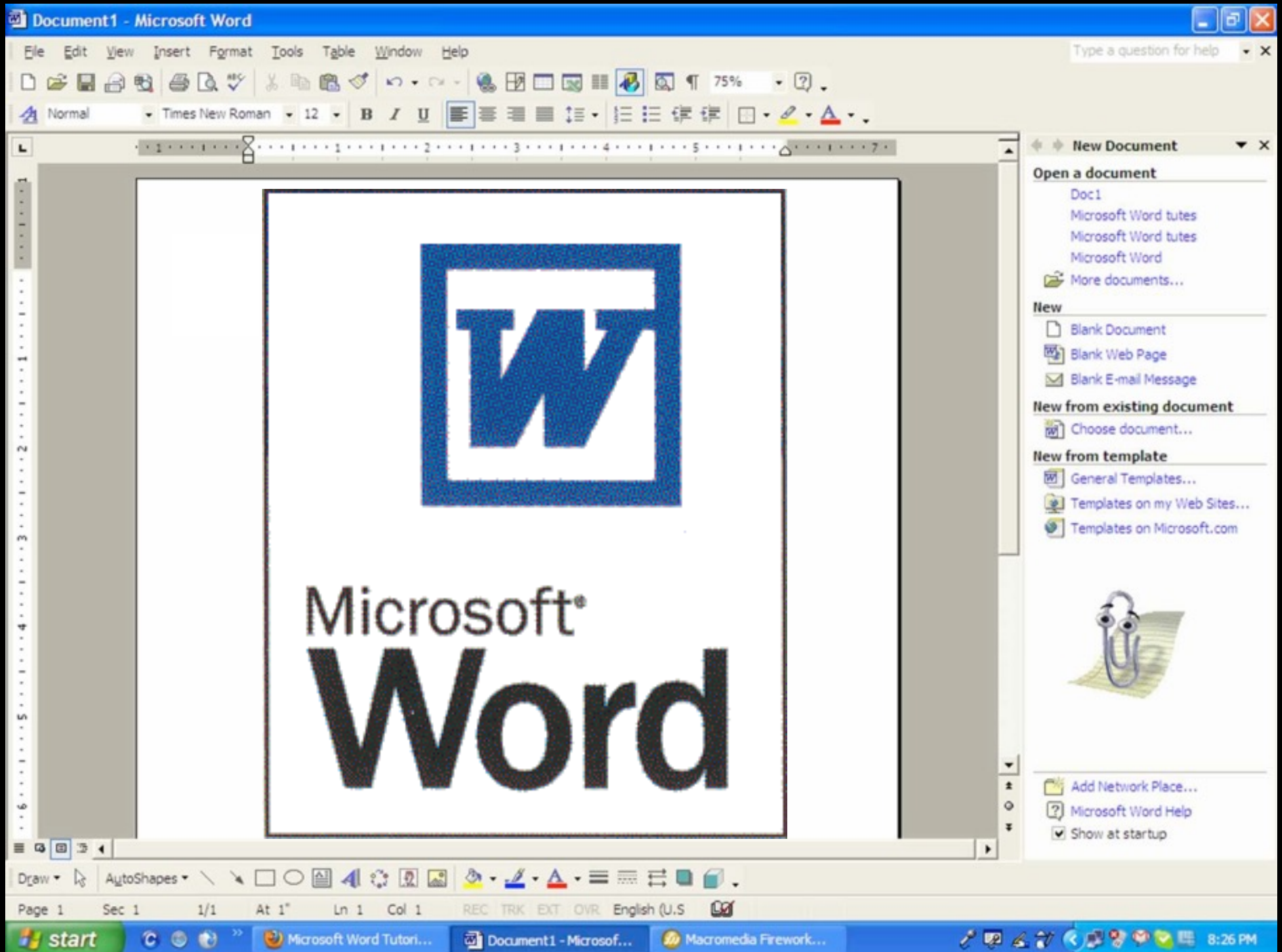


# iPoe

Interactive Poetry Editor

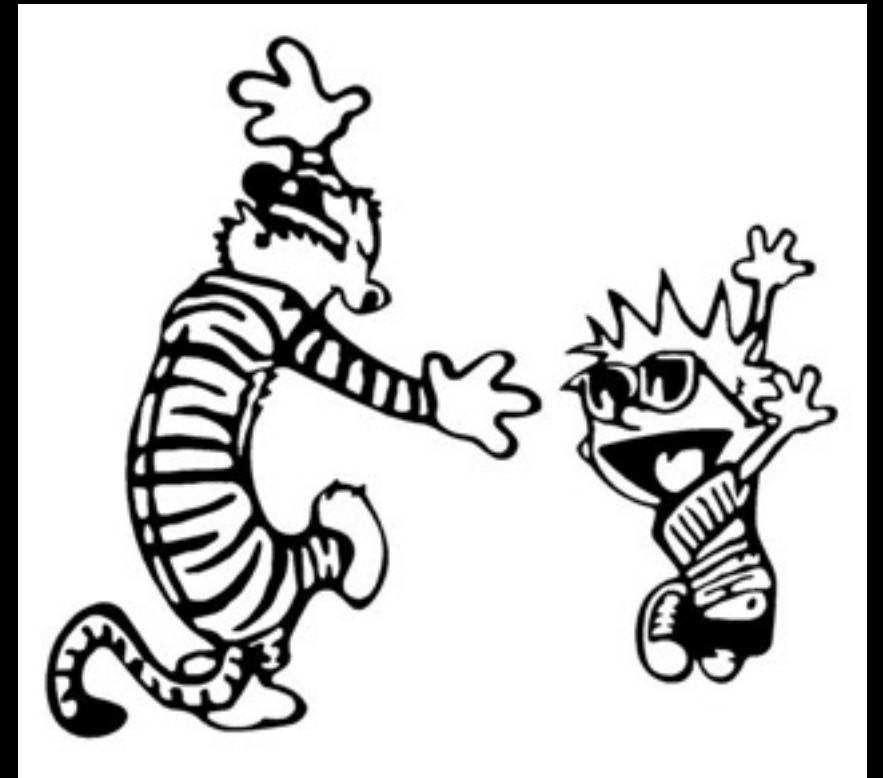
<http://github.com/bennnn/ipoe>



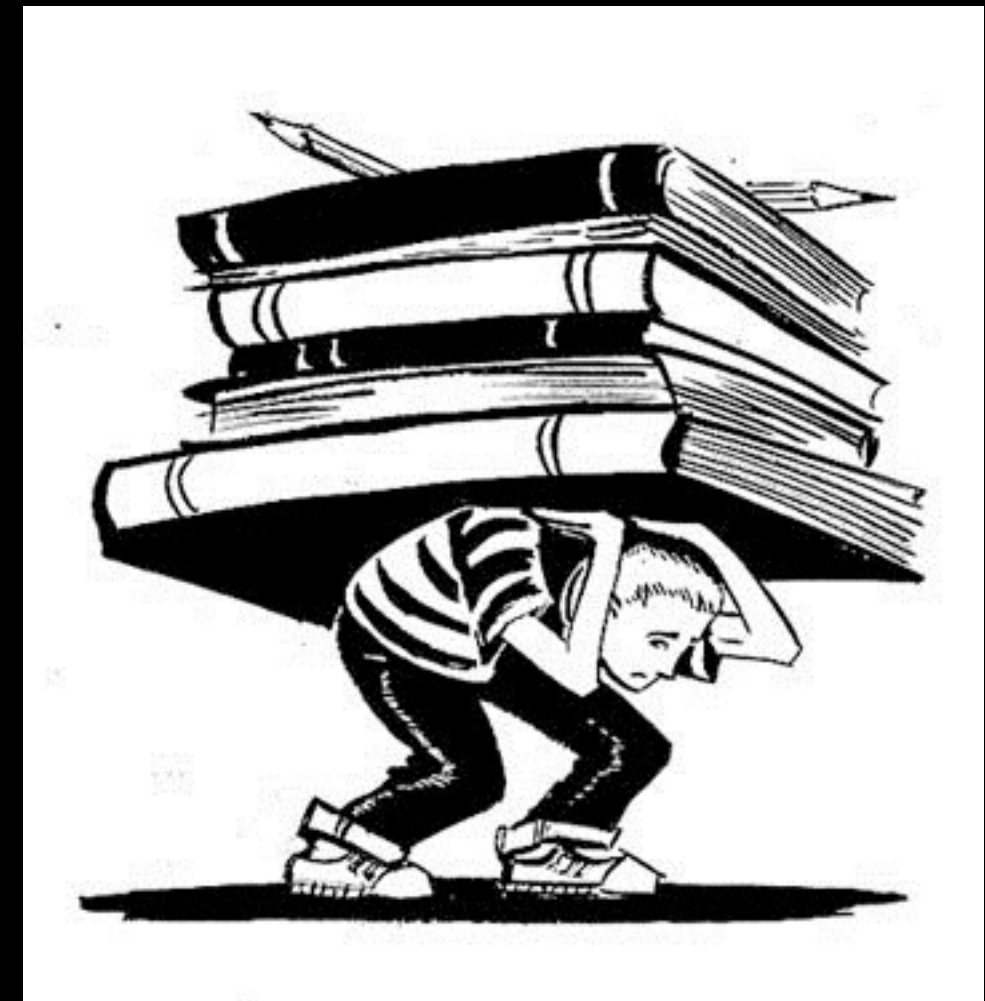




# Ye olde 2000 A.D. ...

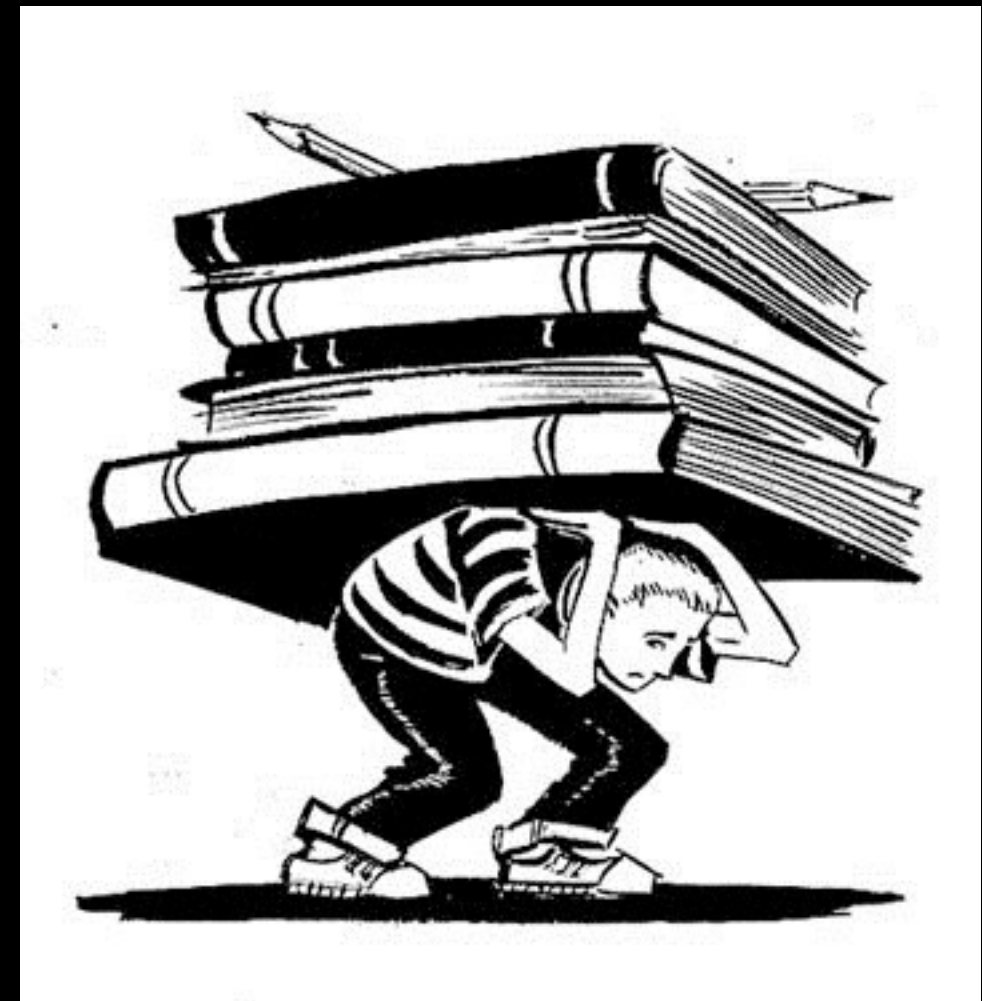
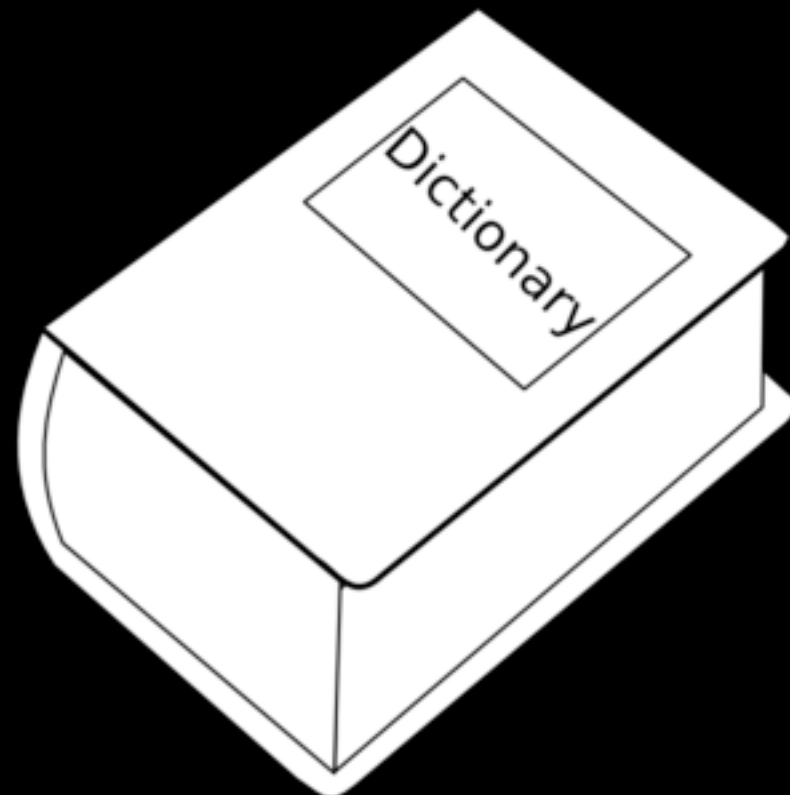
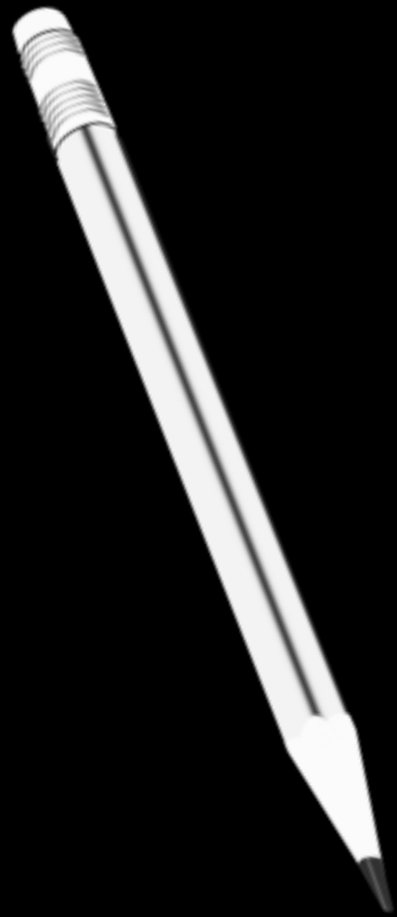


# Ye olde 2000 A.D. ....



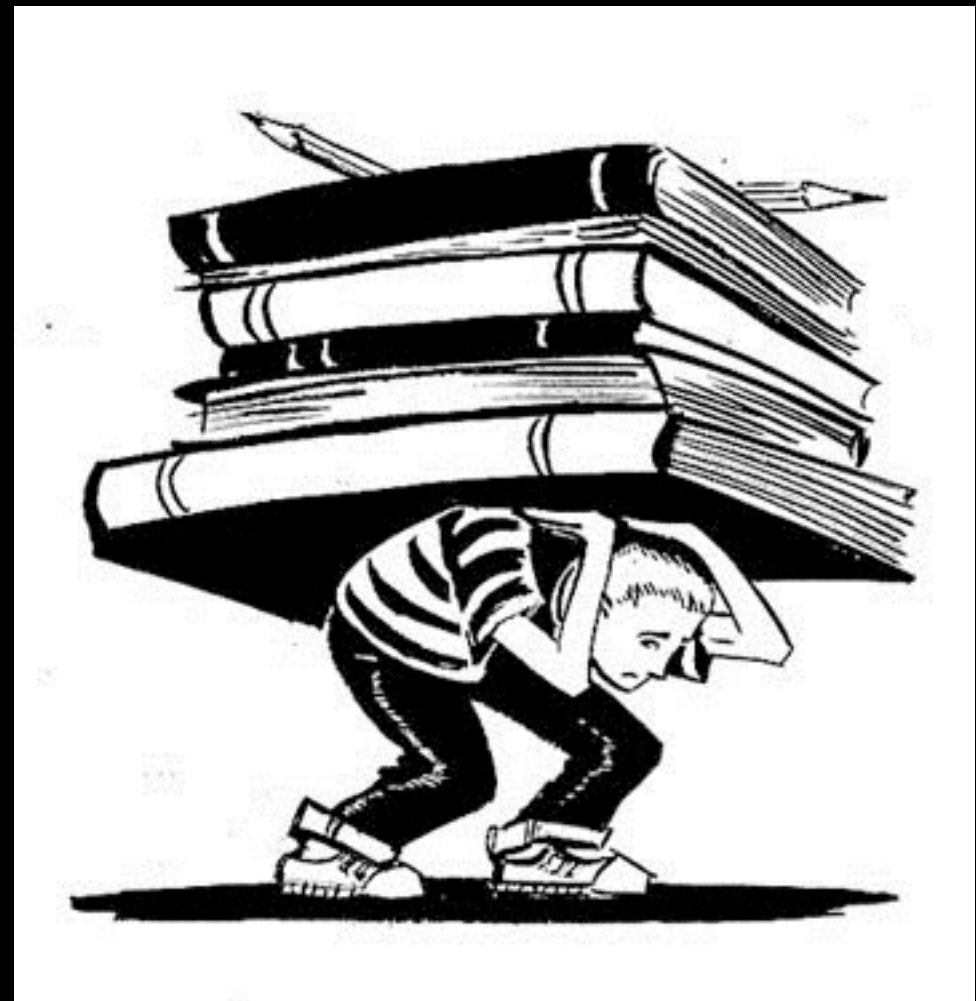


# Ye olde 2000 A.D. ...





Ye olde 2000 A.D. ...



Ye olde 2000 A.D. ...



# Ye olde 2000 A.D. ...



- Load / Save
- Backspace / Insert
- Spellcheck

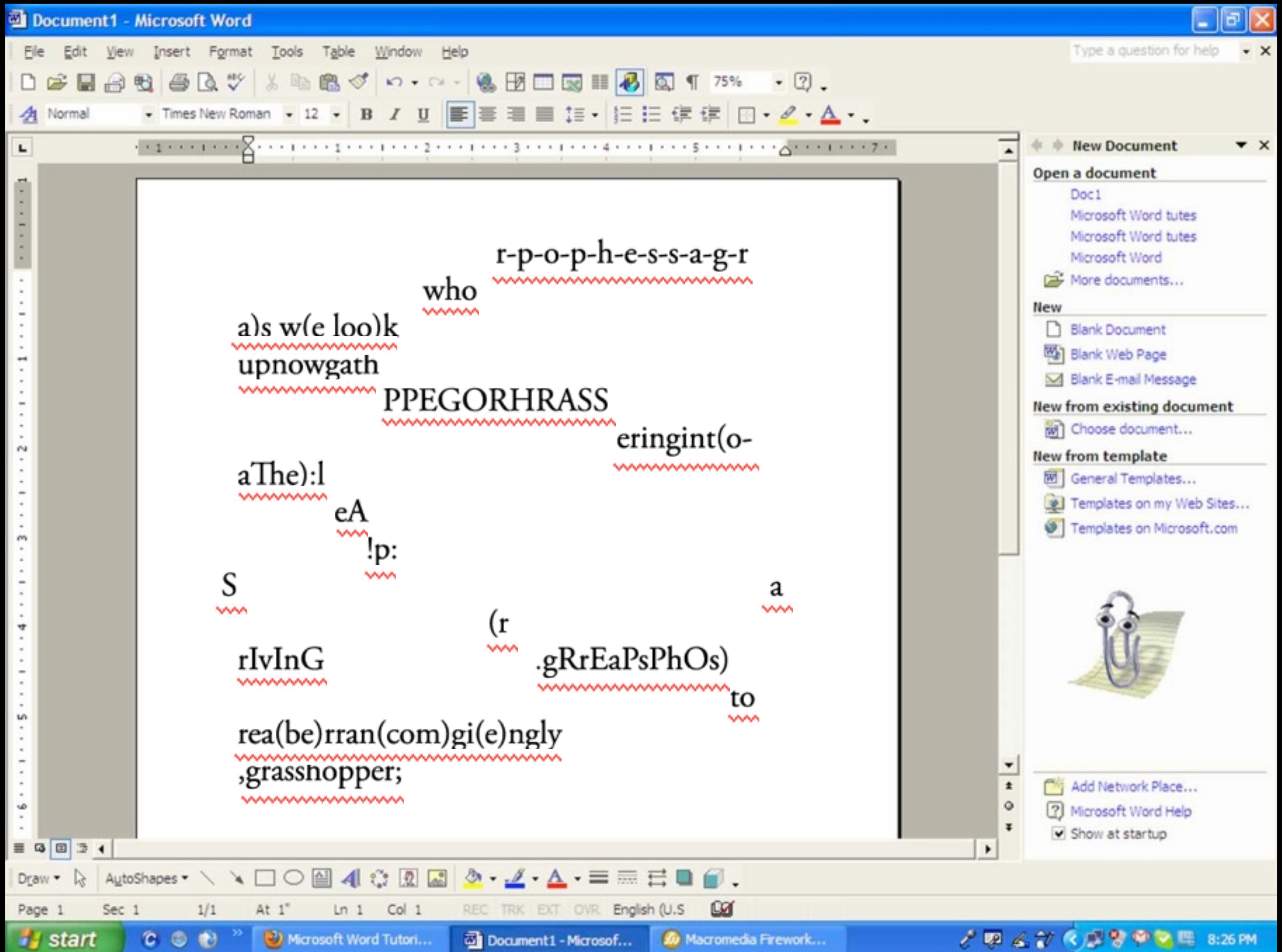
their ~~vs.~~ thier ?

Ye 2010 A.D. ...



How to use  
this new  
POWER?



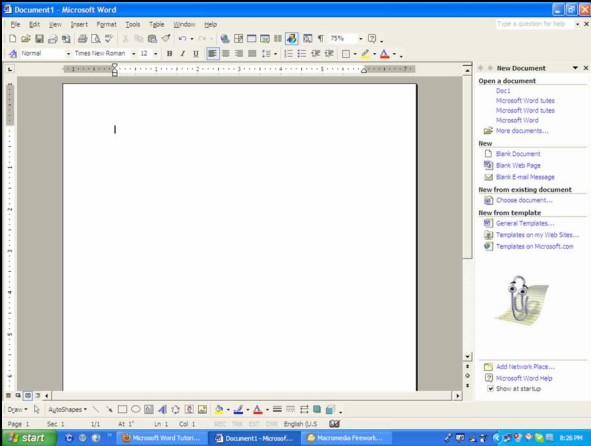


# MS Word, for poetry

- Multiple notions of correctness
- Rhyme scheme, visual appearance matter

What would an elegant solution  
look like?

# Designing a solution



UI

DB

ENTITY NAME	RAM HARDNESS
ENTITY IDENTIFIER	F4.10
DEFINITION	A measure of the resistance to penetration offered by the snowpack to a 40 mm wide cone with a 60 degree pitch. The cone is driven vertically down by a blow from a hammer typically of kg mass which is dropped from heights of 5 to 50 cm. The principal action is one of disaggregation involving both shear and compression (ref. Keeler 1967). Ram Hardness is expressed as a force (in Newtons). This is the product of its mass (kg) multiplied by the acceleration due to gravity (approx. 10 m/sec). Ram hardness gives an index of snow strength.
UNIQUE IDENTIFIER	Ram Hardness Id = Snow Profile Observation Id + Ram depth
VOLUME	
TRUSTEE	Avalanche Technician
ALIASES	
ATTRIBUTE LIST	Ram Hardness Height Vertical Ram Hardness
RELATIONSHIP LIST	

U I

# class Poem

# class Sonnet

# class Couplet

# class Limerick

# class Villanelle

# class Haiku

# class Stanza

# class Rhyme

class ...



UNIQUE IDENTIFIER	RAM HARDNESS
10-10	A measure of the resistance to penetration offered by the snowpack to a 40 mm wide cone with a 60 degree pitch. The cone is driven vertically down by a blow from a hammer typically of kg mass which is dropped from heights of 5 to 50 cm.
aiiku	The principal action is one of disaggregation involving both shear and compression (ref. Keeler 1967). Ram Hardness is expressed as a force (in Newtons). This is the product of its mass (kg) multiplied by the acceleration due to gravity (approx. 10 m/sec).
class ...	Ram hardness gives an index of snow strength.
	Ram Hardness Id = Snow Profile Observation Id + Ram



# Issues with `class Poem`

- User-defined poem types?
- How to specify & select a type at runtime?
- Syntactic overhead



# Pope, 1734

*#lang ipoe/couplet*

Hope springs eternal in the human breast

Man never is, but always to be blest

# Wright, 1960

#lang ipoe/haiku

Burning autumn leaves,

I yearn to make the bonfire

Bigger and bigger



# Scholtes, 2007

`#lang ipoe/limerick`

Each computer, in theory, is suitable

To attack any problem computable.

This thesis (Church Turing),

Unproven, alluring,

Remains, as we speak, irrefutable

# couplet/lang/reader.rkt

```
#lang ipoe
```

```
#:name couplet
```

```
#:description "Two rhyming lines"
```

```
#:rhyme-scheme {[A A]}
```

# haiku/lang/reader.rkt

```
#lang ipoe
```

```
#:name haiku
```

```
#:description "No rhyme, but  
a strict number of syllables"
```

```
#:rhyme-scheme {[5 7 5]}
```

# limerick/lang/reader.rkt

```
#lang ipoe
```

```
#:name limerick
```

```
#:description "Rhyme & syllables"
```

```
#:rhyme-scheme {[(A . *) (A . *)  
                 (B . *) (B . *)  
                 (A . *)]}
```



# The iPoe Library

- The **ipoe** language compiles a **specification** into a new language (**ipoe/haiku**, etc)
- Poems are "type-checked" when compiled

# Adding a new language

- `mkdir -p new-poem/lang`
- Fill out `new-poem/lang/reader.rkt`
- `raco pkg install ./new-poem`
- Now use `#lang new-poem`

# Sonnet

`#lang ipoe`

`#:name english-sonnet`

`#:description "Shakespearean!"`

`#:syllables 10`

`#:rhyme-scheme {[A B A B]`

`[C D C D]`

`[D E D E]`

`[G G]}`

Overrides wildcards (\*)

# Villanelle

```
#lang ipoe
```

```
#:name villanelle
```

```
#:description "Triplets with a refrain"
```

```
#:syllables 10
```

```
#:rhyme-scheme {
```

```
  [R1 B R2]    [A B R1]    [A B R2]
```

```
  [A B R1]    [A B R2]    [A B R1 R2]}
```

```
#:constraint (line=? (line 0 (stanza 0))
```

```
                (line 2 (stanza 1)) ...)
```

# Thomas, 1952

#lang ipoe/villanelle

→ Do not go gently into that good night  
Old age should burn and rave at close of day  
Rage, rage against the dying of the light.

Though wise men at their end know dark is right,  
Because their words had forked no lightning they

→ Do not go gentle into that good night.

...



# Coming Attractions

- Metre checking (true iambic pentameter)
- Syntax highlighting by parts-of-speech
- Semantically useful rhyme suggestions

<http://github.com/bennn/ipoe/issues>

