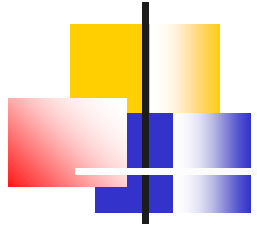




# jeforth Karaoke

---

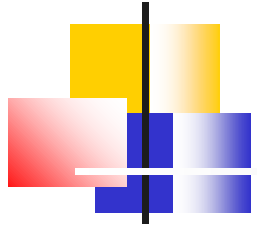
**SVFIG**  
**C. H. Ting**  
**March 27, 2021**



# Jeforth

---

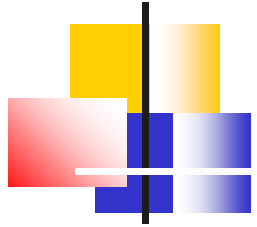
- **I was not happy with Forth systems on Windows.**
  - polyForth, figForth, F83, F-PC
  - Win32Forth, gForth
  - F#(eForth)
- **Forth was handicapped by the interface to the complicated Windows.**



# Jeforth

---

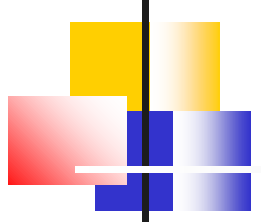
- **With jeforth, I felt liberated.**
- **Now, I myself seem to be the limiting factor. I cannot blame the computer for my inadequacy.**
- **I am allowed to do whatever I please.**
- **Finally, karaoke!**



# Jeforth

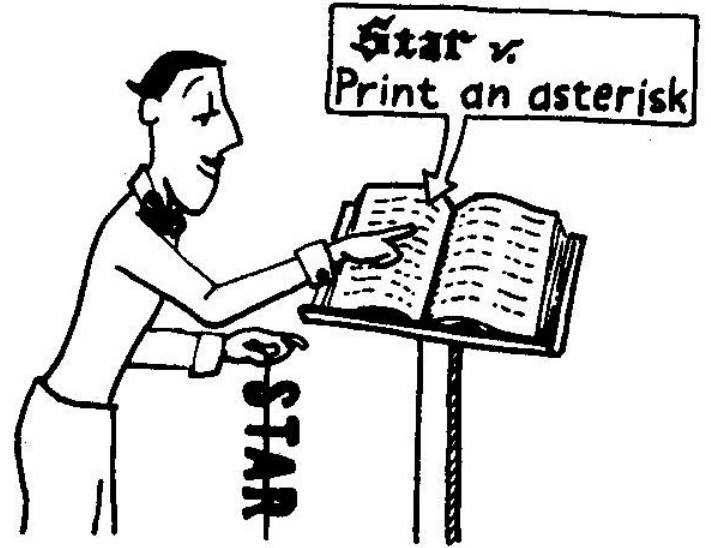
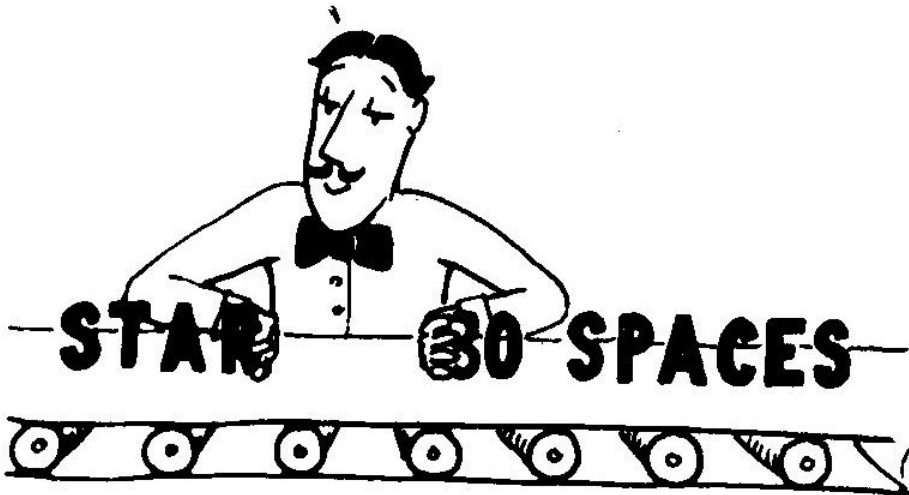
---

- **We heard Leo Brodie in Forth2020 meeting.**
- **Every cartoon character in *Starting Forth* has an one-line executable code in jeforth.**
- **It shows how efficient jeforth is.**



# Interpreter: begin browse evaluate again

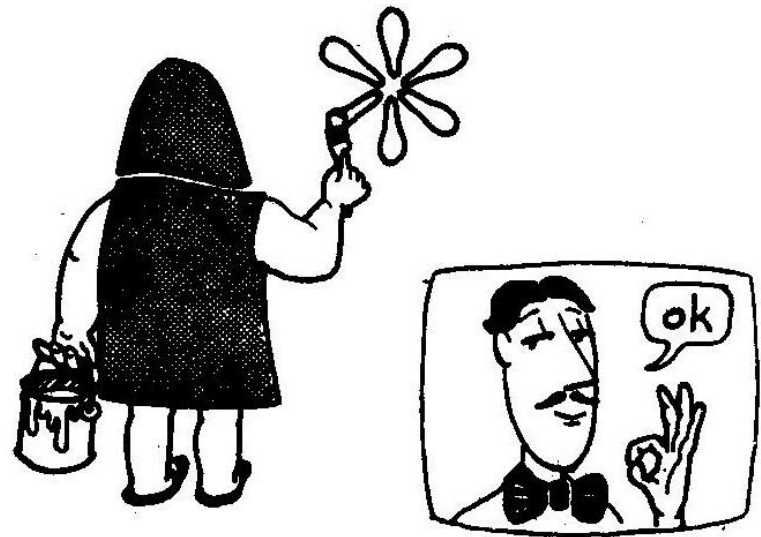
---

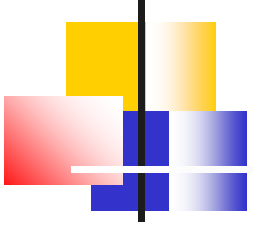


# Executioner:

```
exec(n){w=n; words[n].xt();}
```

---

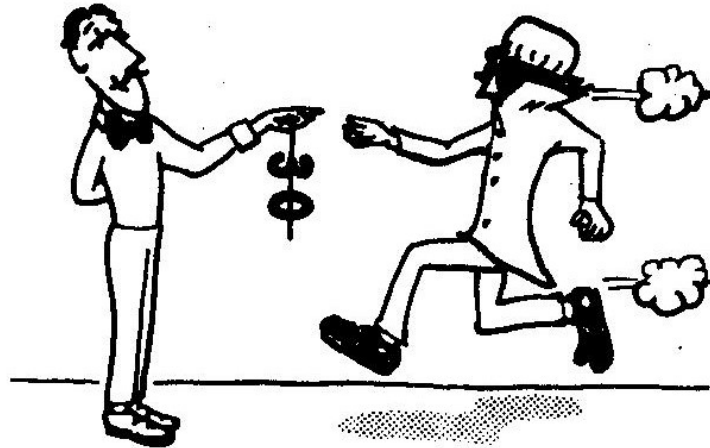
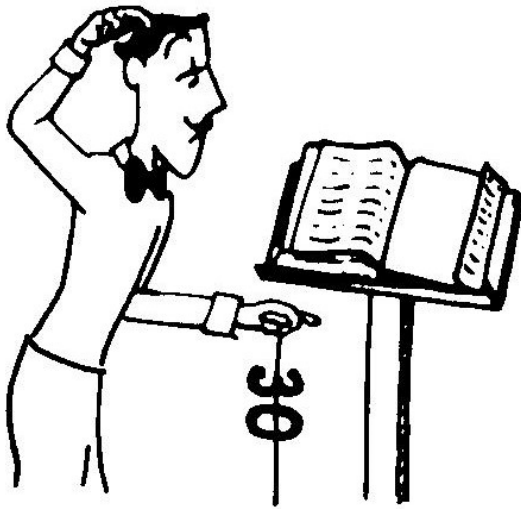


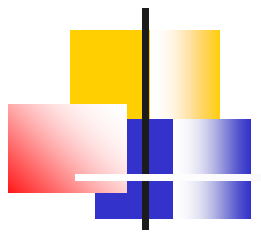


# Number:

```
{n=parseInt(idiom,base);}
```

---

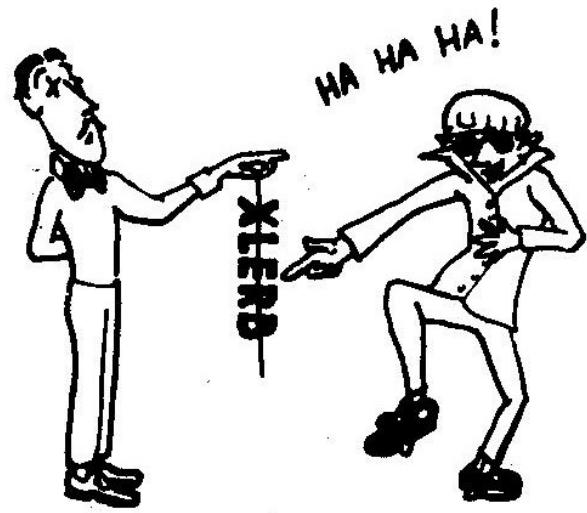
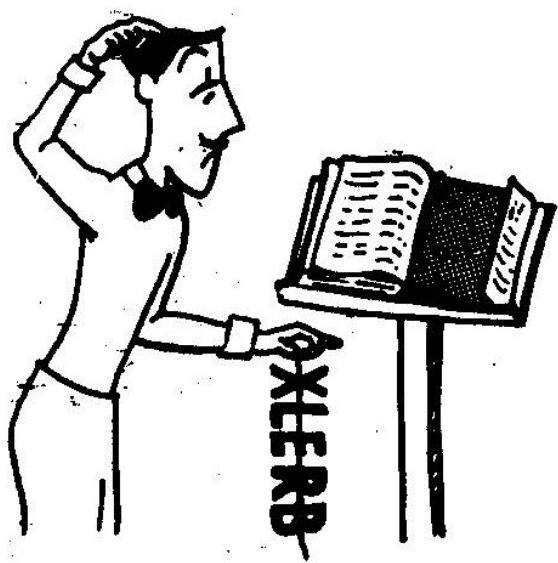




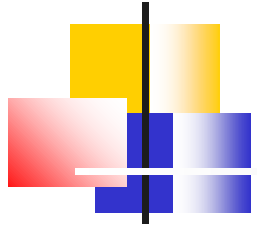
# Abort:

```
throw(" "+idiom+" ? ");
```

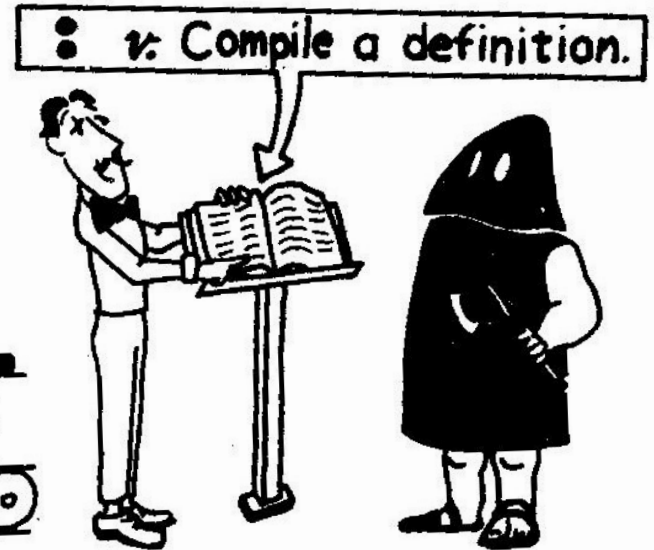
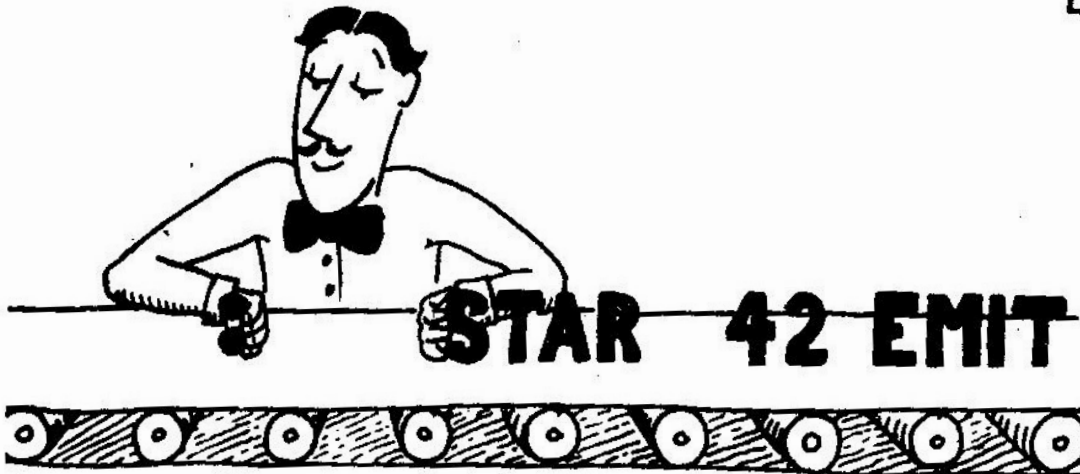
---





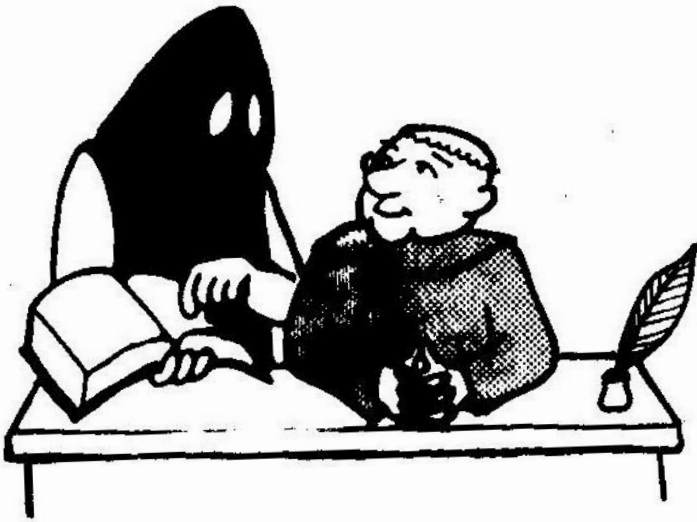


# Parser: function parse(delimit){...};

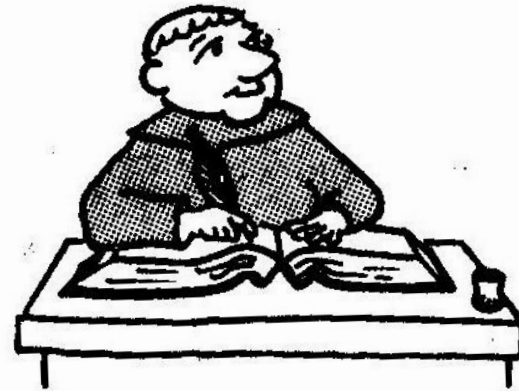


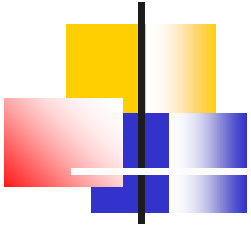
# Compiler:

```
{ words[ words.length - 1 ].push( n ); }
```

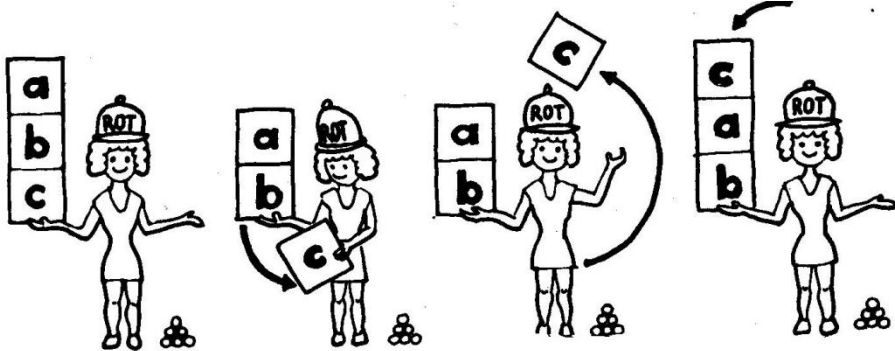
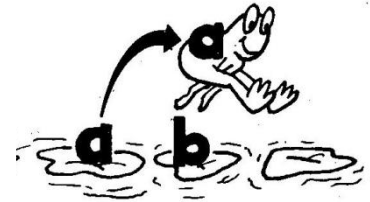
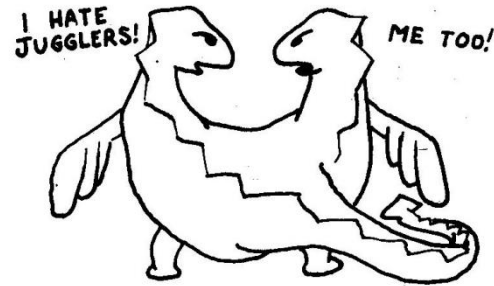
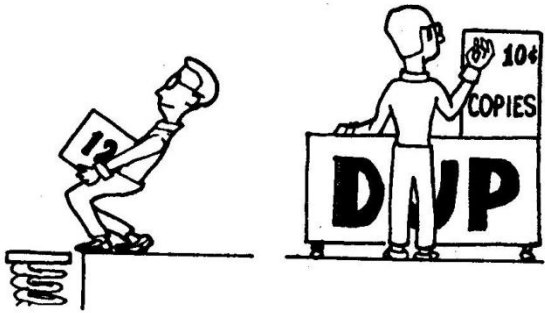



```
: STAR 42 EMIT ;
```





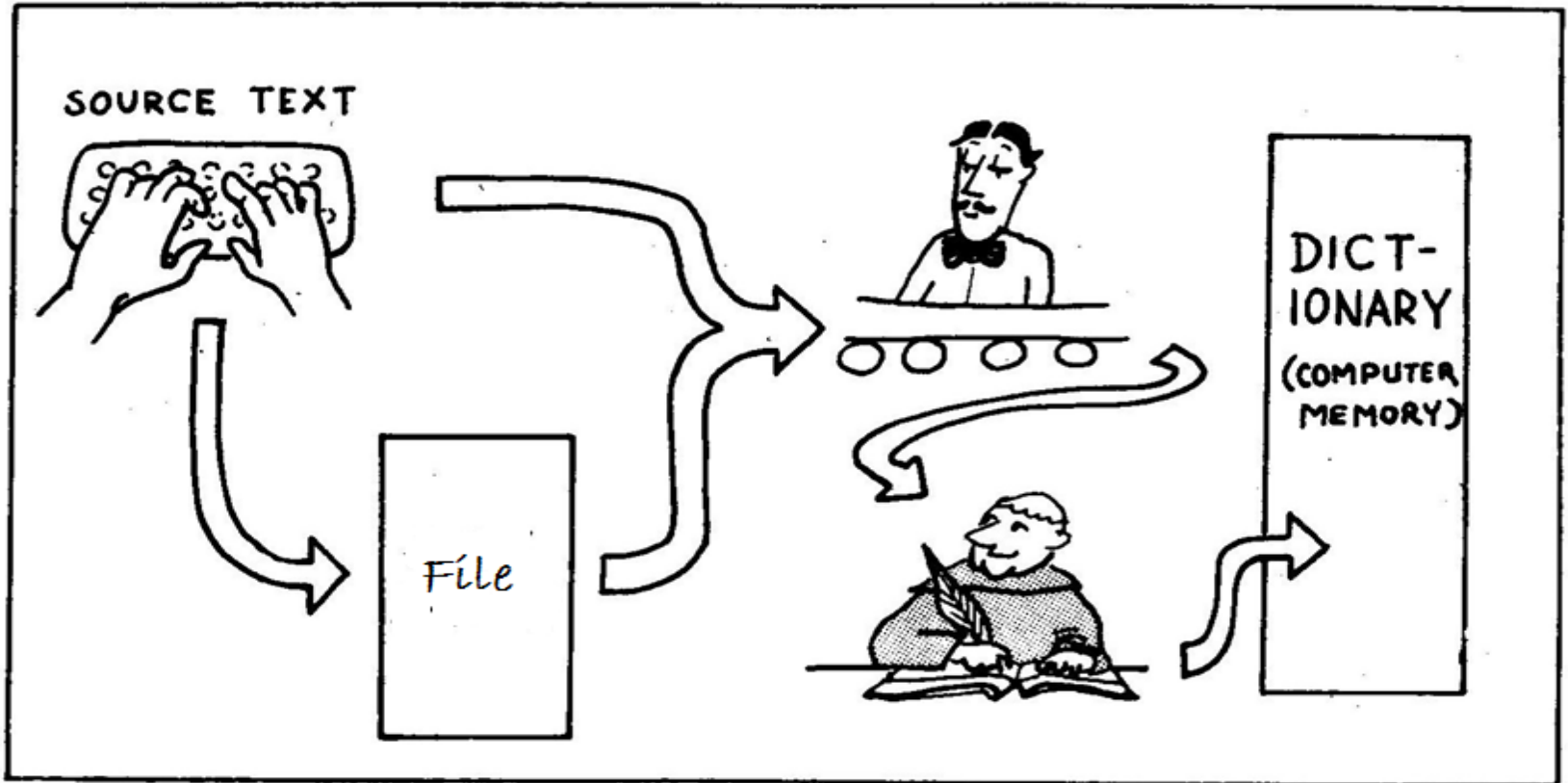
# Stack Operations

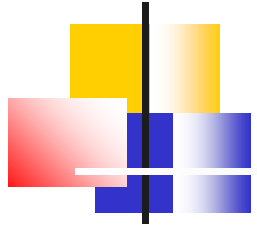




```
dup{stack=stack.concat(stack.slice(-1));}}
over{stack=stack.concat(stack.slice(-2,-1));}}
2dup{stack=stack.concat(stack.slice(-2));}}
2over{stack=stack.concat(stack.slice(-4,-2));}}
4dup{stack=stack.concat(stack.slice(-4));}}
swap{stack=stack.concat(stack.splice(-2,1));}}
rot{stack=stack.concat(stack.splice(-3,1));}}
-rot{stack.splice(-2,0,stack.pop());}}
2swap{stack=stack.concat(stack.splice(-4,2));}}
2over{stack=stack.concat(stack.slice(-4,-2));}}
drop{stack.pop();}}
nip{stack[stack.length-2]=stack.pop();}}
2drop{stack.pop();stack.pop();}}
```

# Forth Outer Interpreter

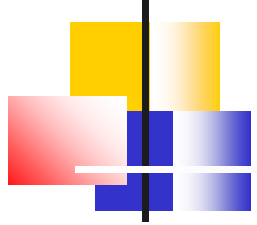




# Link to jeforth6.13

---

- [https://drive.google.com/file/d/15pjFff6ciNDIBR-jVIE\\_Eusob72YLPm0/view?usp=sharing](https://drive.google.com/file/d/15pjFff6ciNDIBR-jVIE_Eusob72YLPm0/view?usp=sharing)



# Karaoke

---

- **It is very difficult to sync music to words.**
- **I only sync to stanza.**
- **It is possible to sync to sentences. Then it requires lots more work and lots more code.**

# Jeforth6.13



In input box, enter text and hit return key:

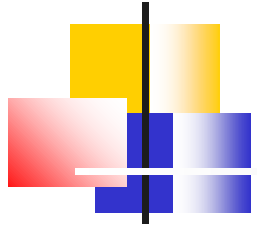
```
( Hit return to run this small demo.)  
: square dup * ;  
: quad square square ;  
: octet quad quad ;  
8 octet . 4 octet .
```

jeforth 6.13

## ( Lessons )

```
( There are 20 lessons to learn using this Forth  
system )  
( Try typing these lessons into the input box and  
run them. )  
( You can copy a lesson and paste it into the input  
box. )  
( You can copy the entire file and run all lessons.  
)  
( Try these commands: )  
( words          show all commands in the  
dictionary )  
( date          show current date and time )  
( see <name>    disassemble a command )  
( reboot        remove all added commands )  
( forget <name> remove all commans after <name> )  
  
( eforth system tests )  
  
: test1 1 2 3 4 5 ;  
: test2 if 1 else 2 then . ;  
: test3 10 for r@ . next ;  
: test4 10 for aft r@ . then next ;  
: test5 10 begin dup . dup while 1 - repeat drop ;  
: test6 1000000 for next ; ( 80 ms )  
: test7 100 for test6 next ;  
( date test7 date )
```





# Jeforth6.13

---

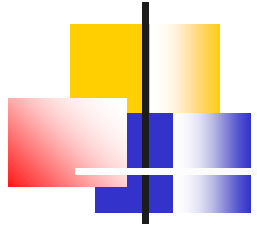
- **The page layout has 4 boxes:**

**A canvas for graphics**

**An input text box**

**An output text box**

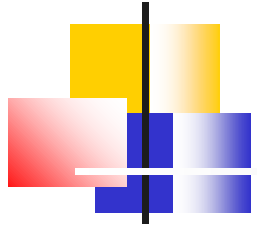
**A document text box**



# Karaoke

---

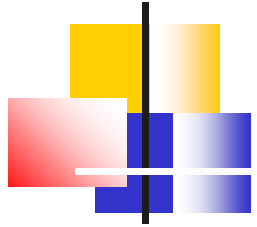
- **I do not need the document text box.**
- **The other three boxed are layered and collapsed to cover the entire web page.**



# Karaoke

---

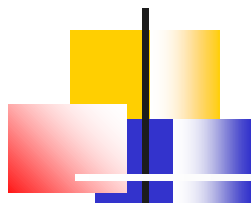
- **The video layer is on the bottom playing live video.**
- **The output layer is in the middle, displaying text in yellow.**
- **The input layer is on the top, displaying text in white.**



# Karaoke

---

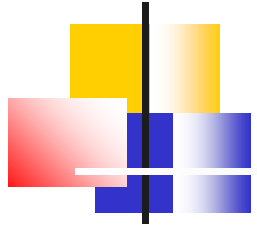
- **The video layer is on the bottom playing live video.**
- **The output layer is in the middle, displaying text in yellow.**
- **The input layer is on the top, displaying text in white.**



# Karaoke

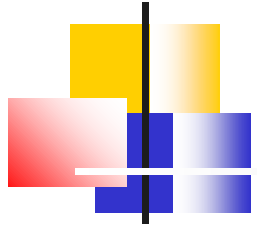
s256

三一颂，  
赞美真神万福之根  
世上万民赞美主恩  
天使天军赞美主名  
赞美圣父圣子圣灵，  
阿门



# Video Background Layer

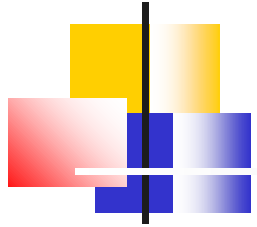
- **The video in the background shows nice scenery.**
- **It plays when the music starts and stops when the music stops.**



# Text Output Layer

---

- **It shows one stanza of a hymn which is currently playing.**
- **Texts are in large yellow characters.**

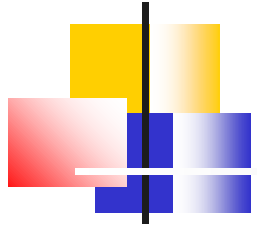


# Text Input Layer

---

- **White characters can be distinguished from the output layer.**
- **Forth commands can be entered and executed.**
- **Large source file can be copied and compiled.**

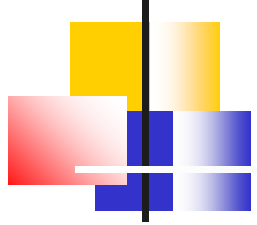




# Hymn Book

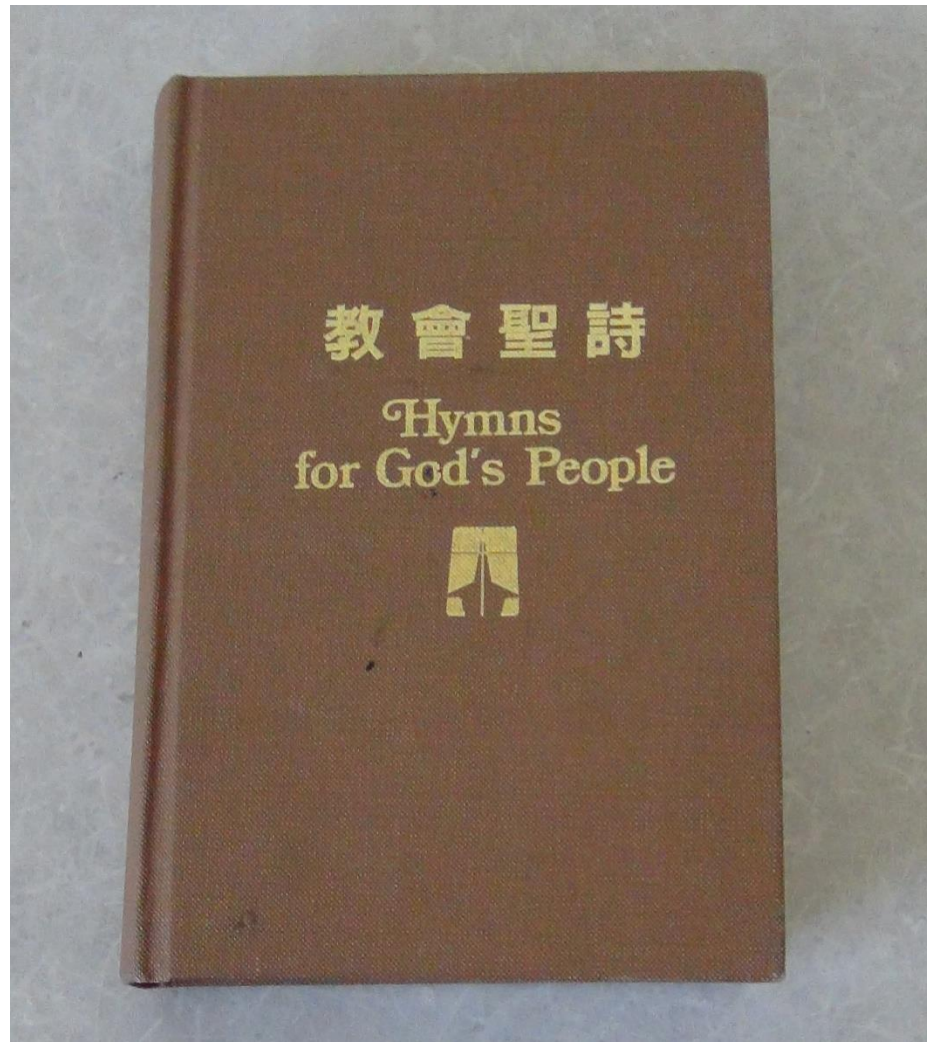
---

- All 527 hymns in the *Hymns for God's People* were digitized.
- Lyrics were entered in simplified UTF-8 Chinese characters.
- Music data were supplied by Dr. Peizhen Liu of HymnMaster.



# Hymn Book

---





# Doxology (Hymn 256)

三一頌 (1)


## Praise God, from Whom All Blessings Flow 256

... Who hath blessed us with all spiritual blessings. — Ephesians 1:3



OLD 100th

Attributed to Louis Bourgeois  
Genevan Psalter


Thomas Ken

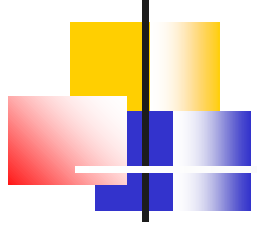


讚美真神萬福之根；世上萬民讚美主恩；  
Praise God, from whom all blessings flow; Praise Him, all creatures here be - low;



天使天軍讚美主名；讚美聖父聖子聖靈。阿門。  
Praise Him a - bove, ye heaven - ly host; Praise Fa - ther, Son, and Ho - ly Ghost. A - men.





# Doxology (Hymn 256)

---

- : w256 . " 三一颂, " cr**
- . " 赞美真神万福之根" cr**
- . " 世上万民赞美主恩" cr**
- . " 天使天军赞美主名" cr**
- . " 赞美圣父圣子圣灵, " cr**
- . " 阿门" cr**
- ;**

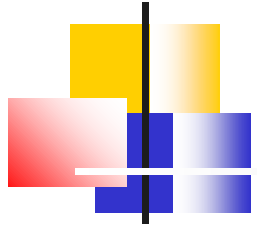
# HymnMaster Player



# Music Encoded as Forth Words



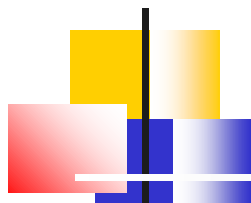
**: fe g4 d4 b3 g3 600 play g4 d4 b3 b3 600 play f4# d4 a3 d3  
600 play e4 b3 g3 e3 600 play d4 b3 f3# b2 600 play g4 b3  
g3 e3 600 play a4 d4 f3# d3 600 play b4 d4 g3 g2 1800 play ;  
: fb b4 d4 g3 g3 600 play b4 d4 b3 g3 600 play b4 g4 d4 g3  
600 play a4 f4# d4 d3 600 play g4 g4 b3 e3 600 play c5 g4  
e4 c3 600 play b4 g4 d4 g2 600 play a4 f4# d4 d3 1800 play  
g4 g4 b3 e3 600 play a4 f4# d4 d3 600 play b4 g4 d4 g3 600  
play a4 f4# d4 d3 600 play g4 d4 d4 b2 600 play e4 e4 c4 c3  
300 play e4 e4 b3 c3 300 play f4# d4 a3 d3 600 play g4 d4  
b3 g3 1800 play ;  
: fd d5 d4 a3 f3# 600 play b4 d4 g3 g3 600 play g4 g4 b3 e3  
600 play a4 f4# d4 d3 600 play c5 e4 e4 a2 300 play c5 f4#  
e4 a2 300 play b4 g4 d4 b2 300 play b4 g4 d4 c3 300 play a4  
f4# d4 d3 300 play a4 f4# c4 d3 300 play g4 g4 b3 g2 1800  
play ;  
: ff g4 e4 c4 c3 1200 play g4 d4 b3 g2 1200 play ;  
: s256 7 font cls w256 | fd fe fb fd ff ;**



# Karaoke Files

---

- **Karaoke.html (3 KB)**
- **Karaoke.js (21 KB)**
- **Ep3.mp4 (794 MB)**
- **Lyrics5\_2.f (398 KB)**
- **Songs5\_2.f (886 KB)**

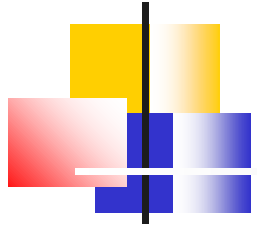


# Karaoke

s256

三一颂，  
赞美真神万福之根  
世上万民赞美主恩  
天使天军赞美主名  
赞美圣父圣子圣灵，  
阿门

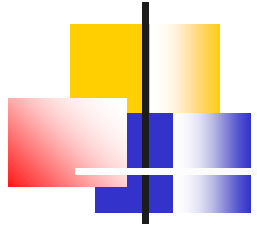




# Conclusion

---

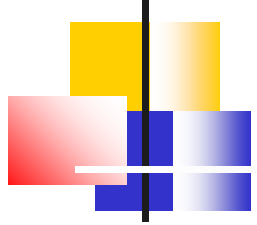
- **Karaoke is multimedia.**
- **It integrates video, audio and poetry.**
- **It encourages people without music training to sing along with images and music accompany.**
- **People are surprised at how musical they actually are.**



# Conclusion

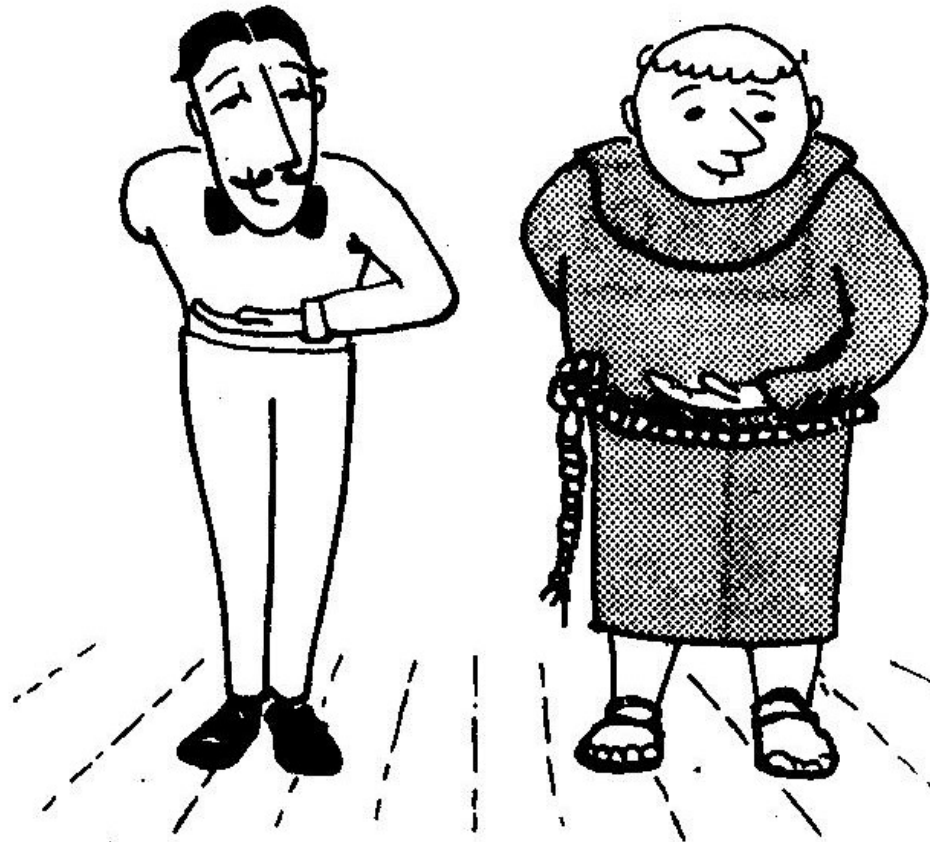
---

- **JavaScript has built-in functions to call video, audio, and text services.**
- **Jeforth integrates these functions to play karaoke.**
- **Thanks to Brad Nelson in synchronizing audio and texts.**

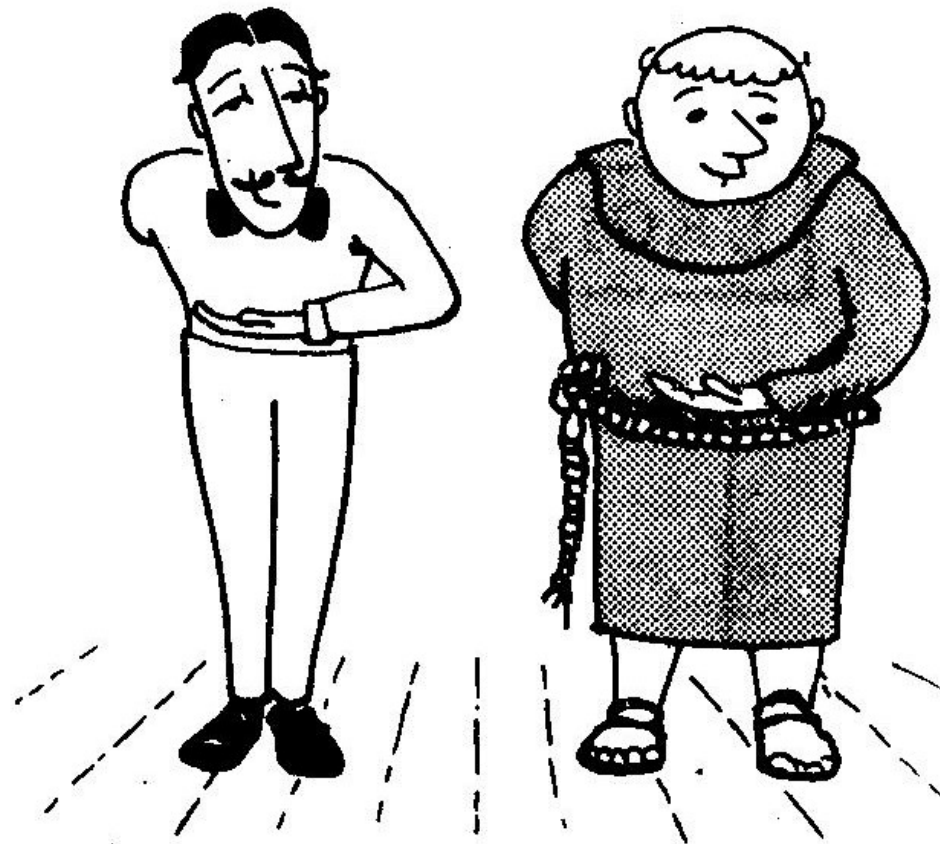
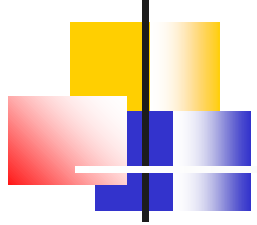


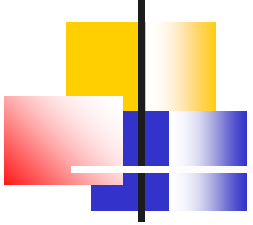
# Thank You!

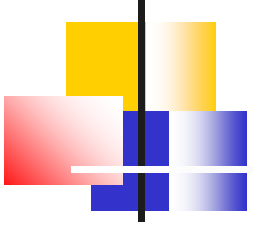
---

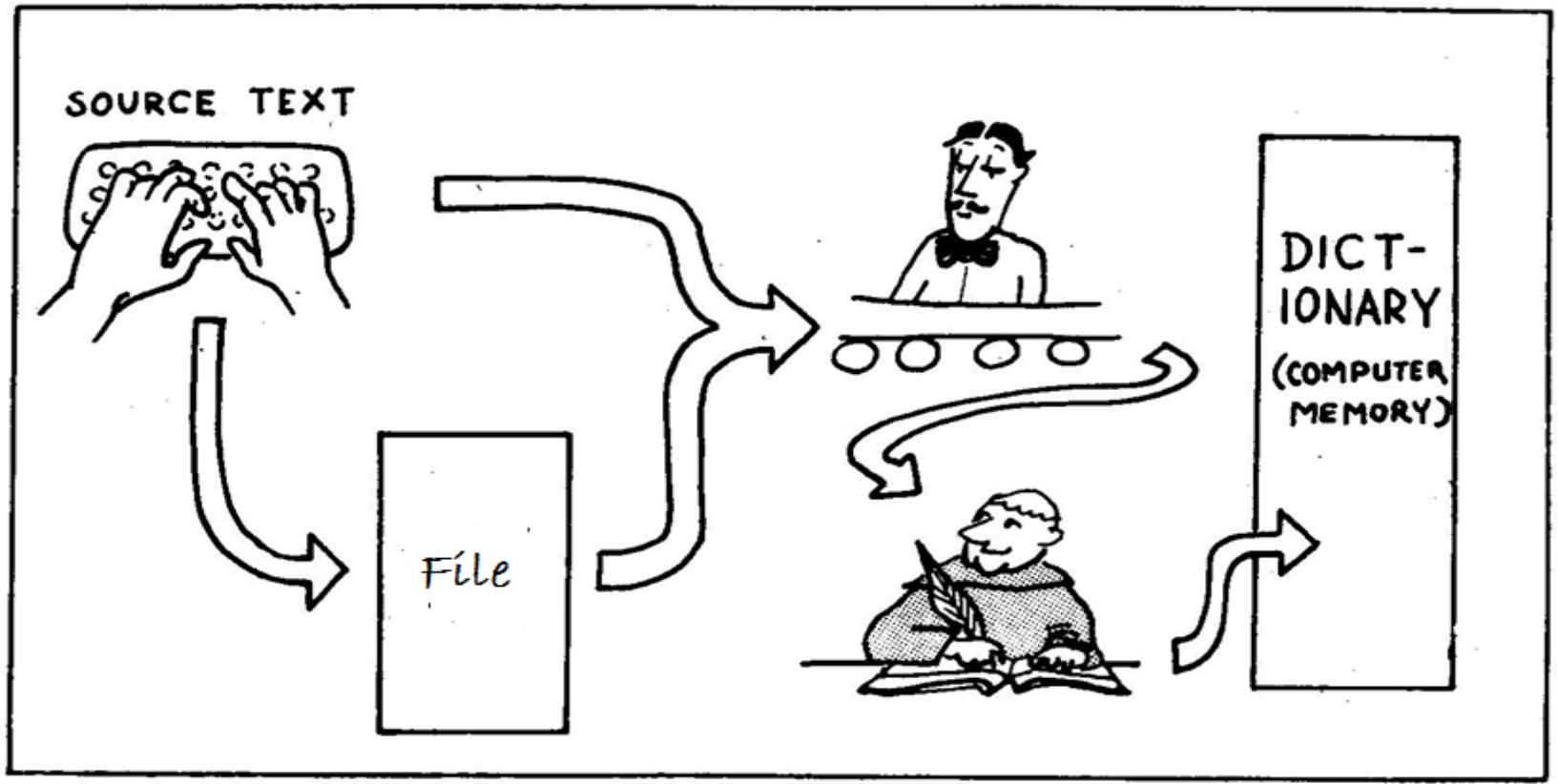
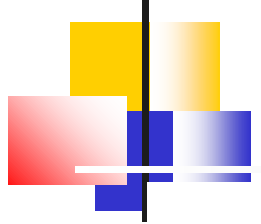




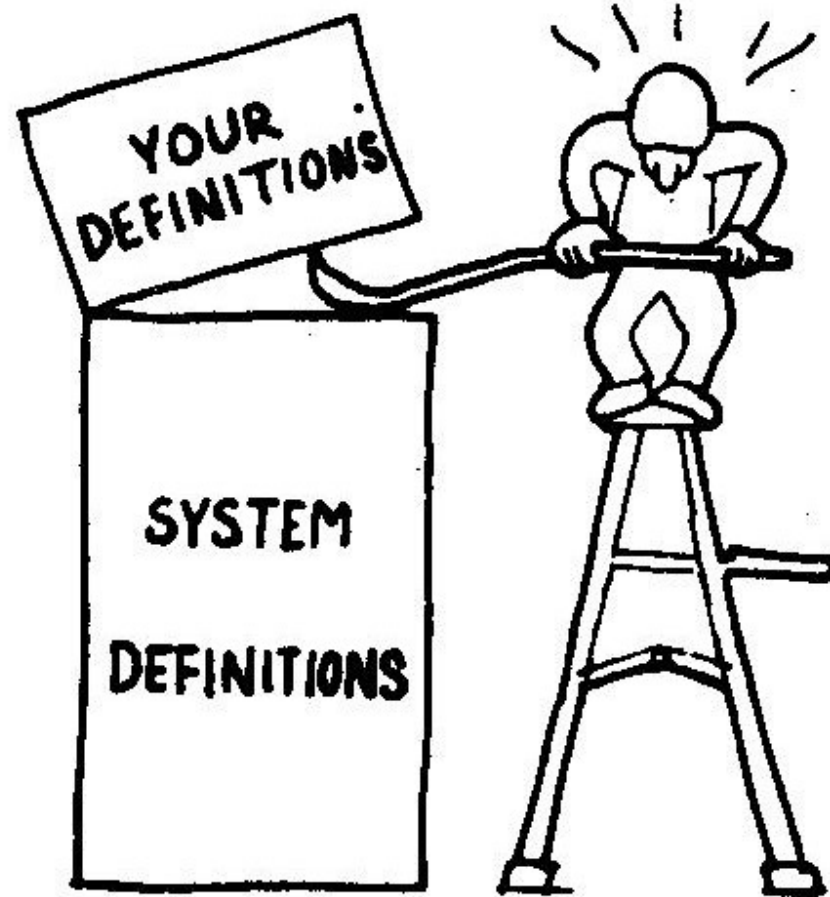
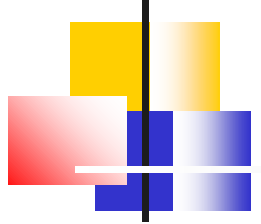


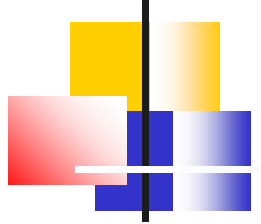




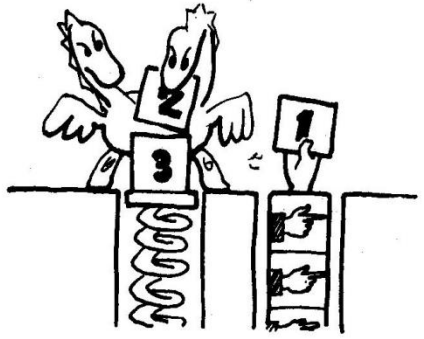


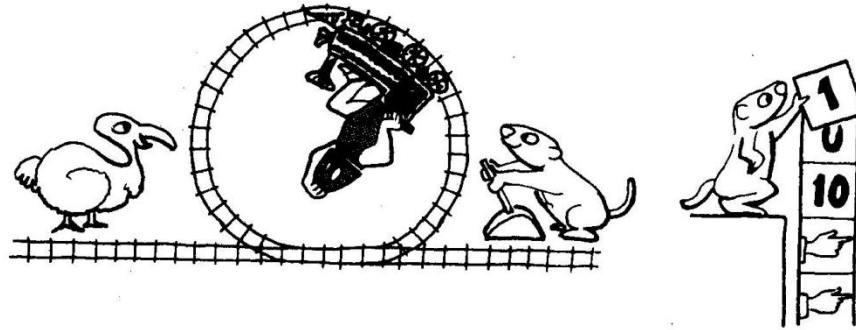
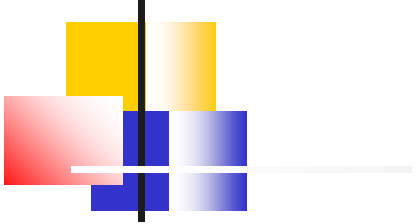






Aunt Min and Uncle Max





LATER:

