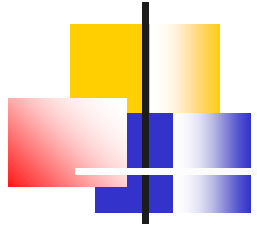


Forth without Forth

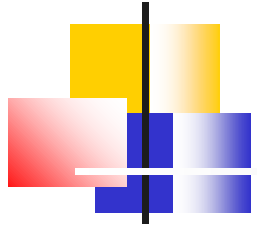
SVFIG Forth Day

**Chen-Hanson Ting
November 20, 2021**



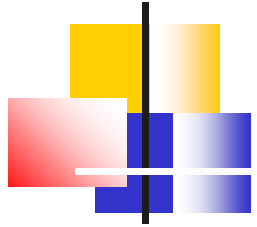
Summary

- **Forth in Forth**
- **Forth without Forth**
- **Forth GUI**
- **Forth in JavaScript**
- **Forth in Java**
- **Forth in C++**
- **Forth in Windows**
- **Forth for ESP32**
- **Conclusion**



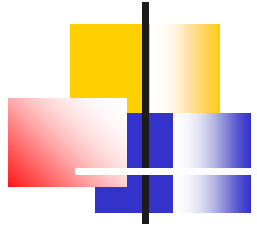
Forth in Forth

- **Chuck Moore developed the first Forth systems.**
- **He compiled new Forth systems from existing Forth systems.**
- **He wrote Forth in Forth.**
- **Forth became fragmented.**
- **Outer interpreter became a mystery.**



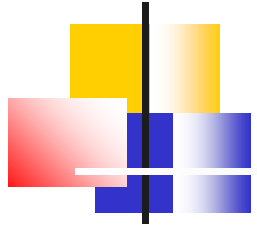
Forth in Forth

- **Forth-in-Forth mysteries:**
 - cold**
 - warm**
 - abort**
 - quit**
 - parse**
 - eval**
 - execute/compile**
 - nest/unnest**



Forth without Forth

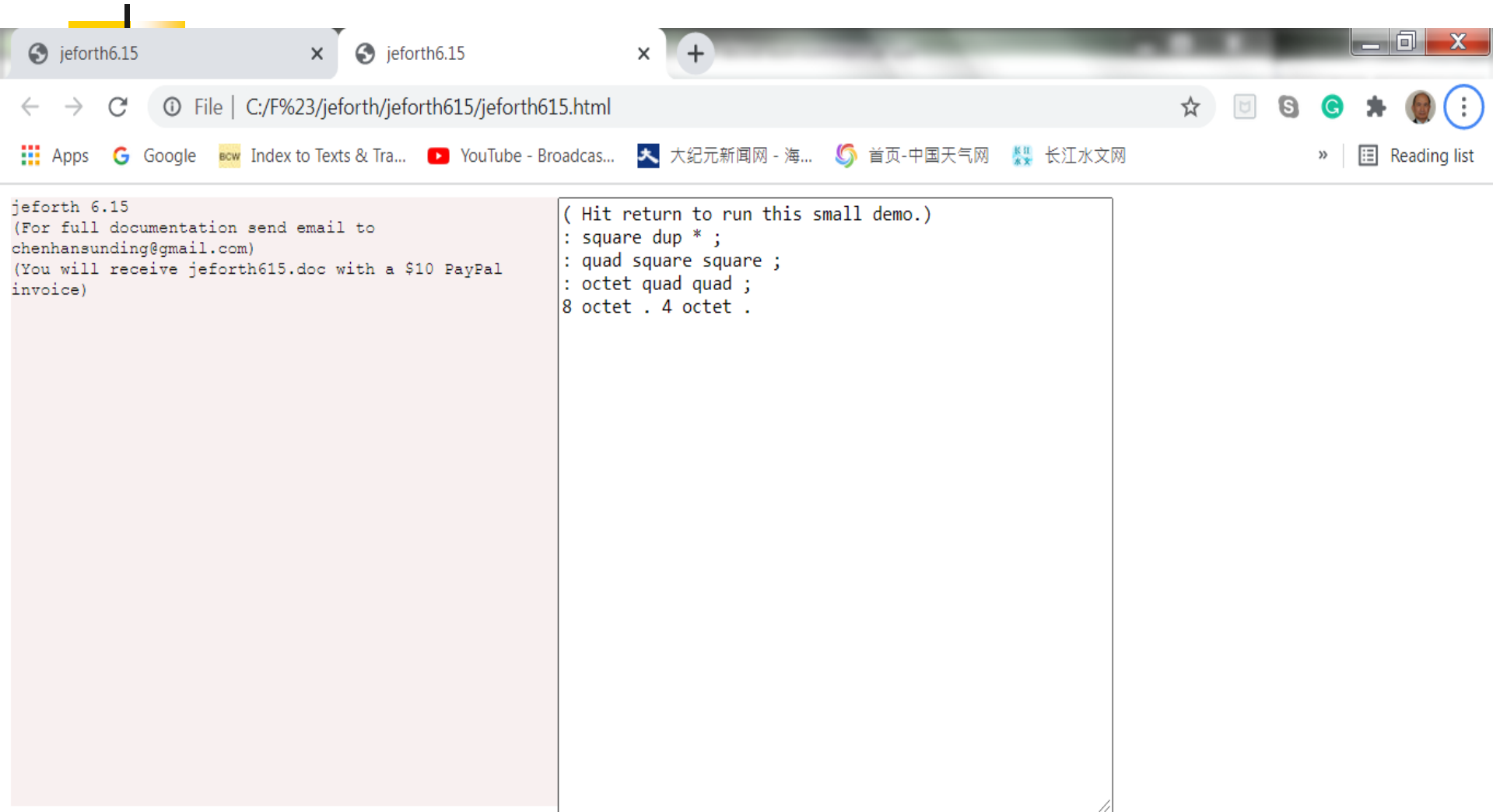
- **I ventured out into the lands of Java, JavaScript, C++, and Windows.**
- **I tried object-oriented Forth.**
- **I built Forth Virtual Machines in other languages.**
- **I found that a better Forth could be built without Forth.**



Forth without Forth

- **All Forth primitive words can be written in other languages.**
- **Outer and inner interpreters can be easily written, independent of the primitives.**
- **Forth Virtual Machine can be greatly simplified.**

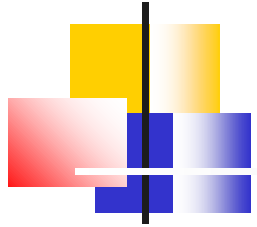
Forth GUI



The screenshot shows a web browser window with two tabs, both labeled 'jeforth6.15'. The address bar shows the file path 'C:/F%23/jeforth/jeforth615/jeforth615.html'. The browser's toolbar includes navigation buttons, a star icon, and several extension icons. Below the toolbar, there are search engines and other website shortcuts. The main content area is divided into two panels. The left panel has a light pink background and contains text about documentation and a PayPal invoice. The right panel has a white background and contains a small demo of Forth code.

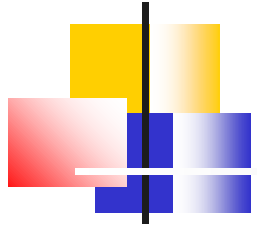
```
jeforth 6.15
(For full documentation send email to
chenhansunding@gmail.com)
(You will receive jeforth615.doc with a $10 PayPal
invoice)
```

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



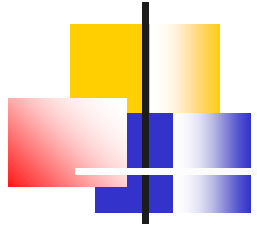
Forth in JavaScript

- **jeforth615.html**
- **We all need a Forth for modern browsers.**
- **Dictionary and stacks are arrays.**
- **It has floating-point transcendental functions.**
- **It can build significant browser applications.**



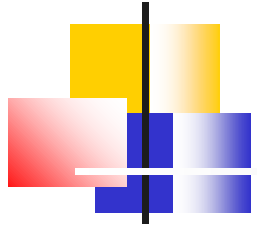
Forth in Java

- **ooeforth204.java**
- **Object-Oriented eForth in Java.**
- **Forth words are objects.**
- **All literals are objects.**
- **All control structures are objects.**
- **Methods in java.awt class are used to build the Windows interface.**



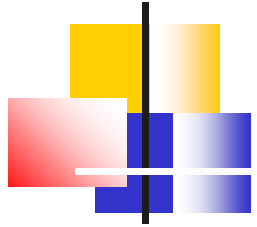
Forth in C++

- **ceforth403.cpp**
- **It was a C++ console application in Visual Studio 2019.**
- **Forth words are objects.**
- **Dictionary and stacks are lists.**
- **Forth Virtual Machine executes bytecode.**



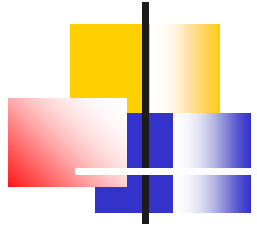
Forth in Windows

- **wineforth502.cpp**
- **Extended from ceforth403**
- **Win32Forth is very complicated.**
- **Windows might be complicated, but Forth should not.**
- **Windows just supplies an input box and an output box.**



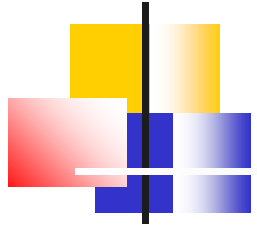
Forth for ESP32

- **esp32forth_85.ino**
- **Extended from ceforth403.**
- **ESP32S Devkit is inexpensive and powerful.**
- **Traditional dictionary**
- **SPIFFS flash memory for turnkey applications.**



Conclusion

- **Forth-without-Forth benefits:**
 - **A new eForth Model**
 - **Simpler and more efficient Forth Virtual Machine**
 - **Ease in porting and optimization**
 - **Takes advantage of modern languages and operating systems.**

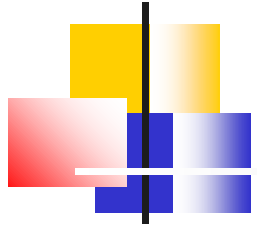


Conclusion

Link to jeforth615.html:

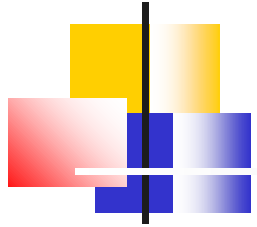
https://drive.google.com/file/d/1rfd4eIZAB2N1X9pH_RYI1bcxQDV5q-it/view?usp=sharing

**If you need any of these Forth-
without-Forth implementations,
write to me at:
chenhansonding@gmail.com.**



eForth Evolves

- **eForth v.1, 1990**
 - **36 implementations**
- **eForth v.2, 2000**
 - **8086, 8051, 6805, 6812, ADSP2181, and 80C51VA**
- **eForth v.3, 2021**
 - **JavaScript, Java, C++, ESP32**



Thank You!