<u>DMP002 Metaprogramming from Scratch</u>

Metaprogramming is something that every programmer does every day, without knowing it is thus named, simply because MAGA (Microsoft Meta Amazon Google Apple) and other tech leads in the know want to keep it as top secret, as Metaprogramming is the key to maintaining a high output to headcount ratio and a critical element in cutting edge Artificial Intelligence.

If you are a programmer and wish to verify this claim, through this article you will be able to at least learn enough fundamentals of metaprogramming to start questioning senior tech leads.

Otherwise, we will use your response to prove you are a part of the claim. LOL

For the impatient readers, here are several videos for you to get a feel of what is to come:

1. Forth Day 2022 -- Less is Mo(o)re: Beyond FORTH
    - https://youtu.be/xDkc2-LUmCs

2. MI4 Metaprogramming in Forth (Part I)
    - https://www.youtube.com/watch?v=5Fm8e4LC5vo

3. Bidirectional Shunting Yard Algorithm (BISYA) and Sandwich API Model: Unifying Programming Languages
    - https://www.youtube.com/watch?v=mYjKS0KiJVg

Of course, thanks to Facebook, now Meta (which qualifies it to join MAGA, LOL), Metaprogramming finally attracts more eyeballs.

https://en.m.wikipedia.org/wiki/Metaprogramming

This article aims to introduce Metaprogramming from scratch, quite literally with a first example of a AJAX query involving front end and back end, unified using a metaprogramming script called Phoscript, derived from the FORTH programming language.
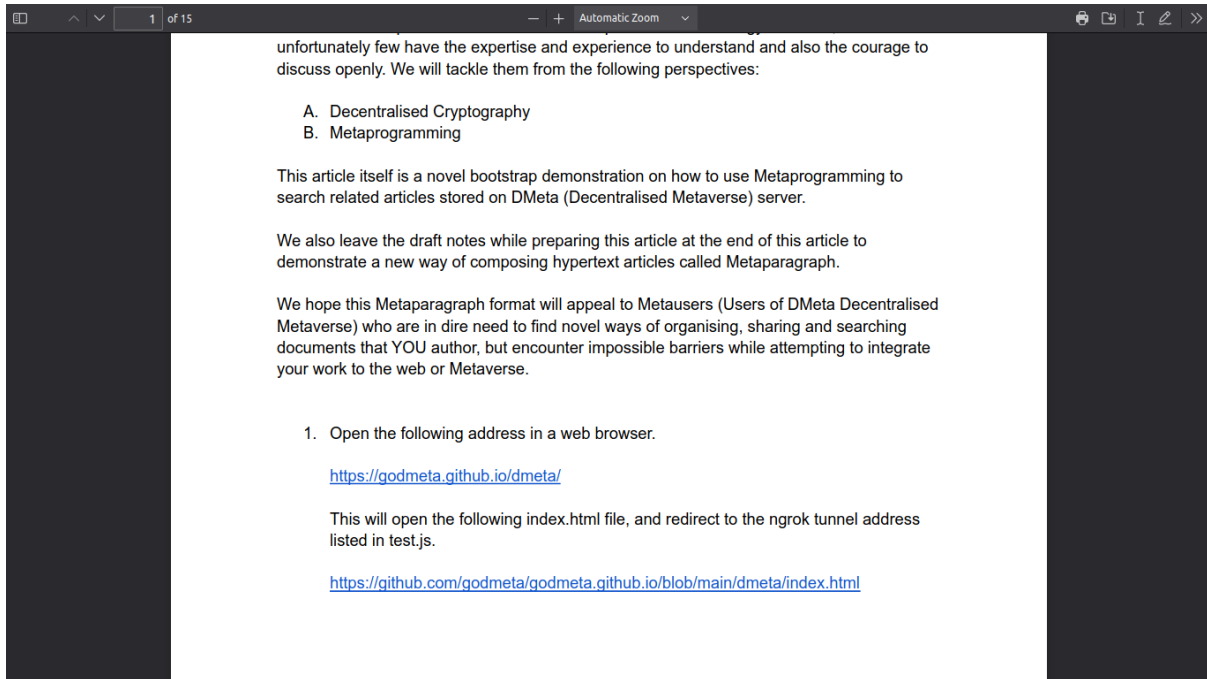
More specifically, Phoscript metaprogramming code in the following examples are entered via browser console, mapped to host programming language JavaScript in the front end and PHP in the back end, to complete an AJAX query and display results in the front end:
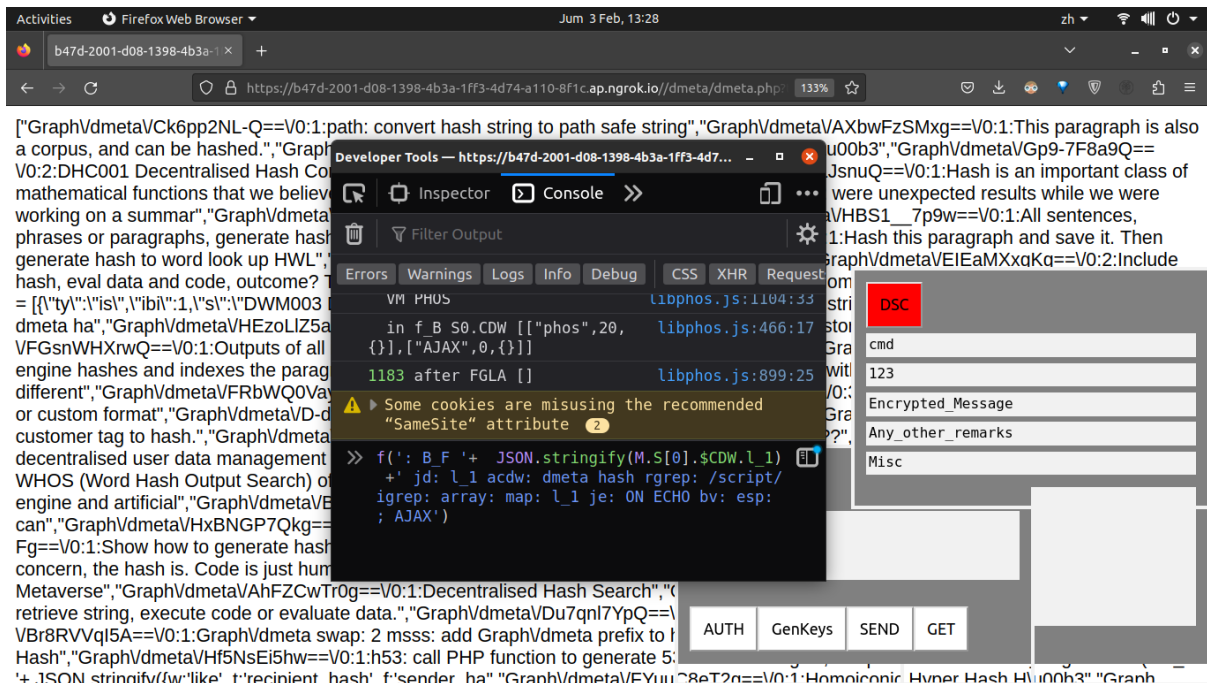
```
f(': l_1 0 100 ssl: ;')

f(': B_F '+  JSON.stringify(M.S[0].$CDW.l_1)  +' jd: l_1 acdw: dmeta
document/d/ rgrep: -/0:1- g: s: ; AJAX')
```

Readers may refer to the following PDF and screenshot on metaprogramming scripts to access DMeta (Decentralised Metaverse) server site https://godmeta.github.io/dmeta/
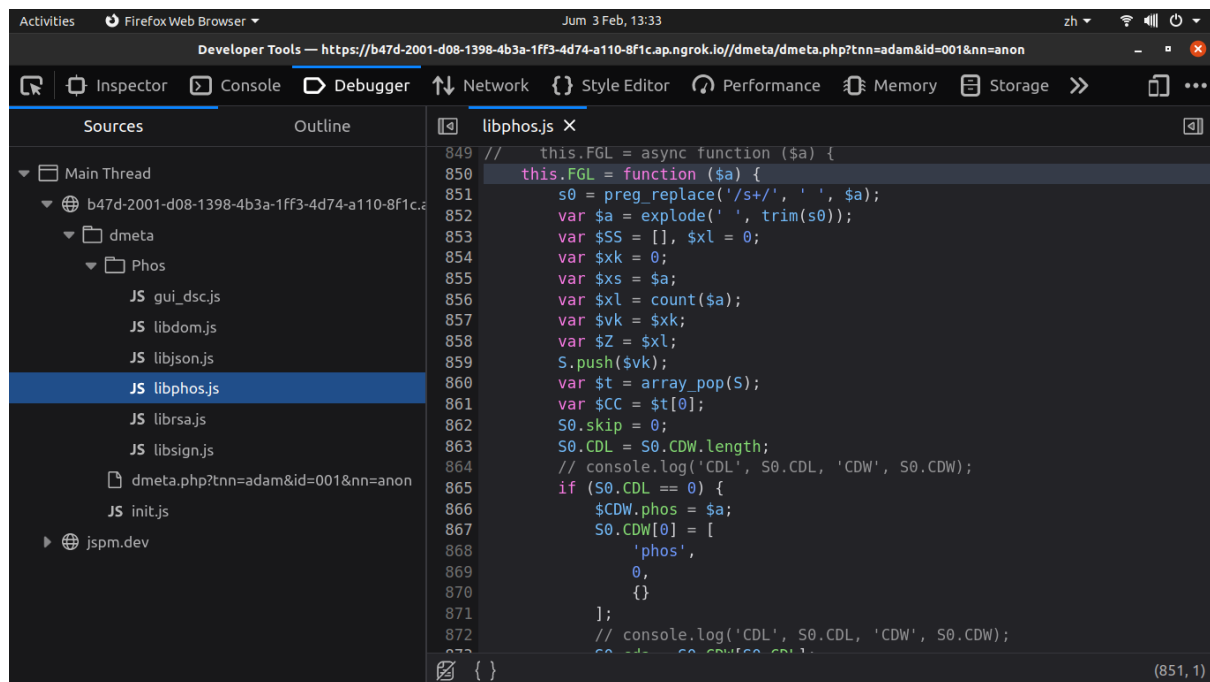
unfortunately few have the expertise and experience to understand and also the courage to discuss openly. We will tackle them from the following perspectives:

A. Decentralised Cryptography
B. Metaprogramming

This article itself is a novel bootstrap demonstration on how to use Metaprogramming to search related articles stored on DMeta (Decentralised Metaverse) server.

We also leave the draft notes while preparing this article at the end of this article to demonstrate a new way of composing hypertext articles called Metaparagraph.

We hope this Metaparagraph format will appeal to Metausers (Users of DMeta Decentralised Metaverse) who are in dire need to find novel ways of organising, sharing and searching documents that YOU author, but encounter impossible barriers while attempting to integrate your work to the web or Metaverse.

1. Open the following address in a web browser.

https://godmeta.github.io/dmeta/

This will open the following index.html file, and redirect to the ngrok tunnel address listed in test.js.

https://github.com/godmeta/godmeta.github.io/blob/main/dmeta/index.html

A typical output screen is shown below for convenience:

["GraphVdmetaVCk6pp2NL-Q==V0:1:path: convert hash string to path safe string","GraphVdmetaVAXbwFzSMxg==V0:1:This paragraph is also a corpus, and can be hashed.","Graph... u00b3","GraphVdmetaVGp9-7F8a9Q== V0:2:DHC001 Decentralised Hash Co... JsnuQ==V0:1:Hash is an important class of mathematical functions that we believ... were unexpected results while we were working on a summar","GraphVdmeta... VHBS1__7p9w==V0:1:All sentences, phrases or paragraphs, generate hash... 1:Hash this paragraph and save it. Then generate hash to word look up HWL",... raphVdmetaVEIEaMXxgKg==V0:2:Include hash, eval data and code, outcome? ... om = [{\"ty\":\"is\",\"ibi\":1,\"s\":\"DWM003 ... stri dmeta ha","GraphVdmetaVHEzoLlZ5a... stoi VFGsnWHXrwQ==V0:1:Outputs of all ... Gra engine hashes and indexes the parag... witl different","GraphVdmetaVFRbWQ0Va... V0: or custom format","GraphVdmetaVD-d... Gra customer tag to hash.","GraphVdmeta... ?" decentralised user data management ... om WHOS (Word Hash Output Search) o... engine and artificial","GraphVdmetaVE... can","GraphVdmetaVHxBNGP7Qkg== Fg==V0:1:Show how to generate hash... concern, the hash is. Code is just hum... Metaverse","GraphVdmetaVAhFZCwTr0g==V0:1:Decentralised Hash Search","(retrieve string, execute code or evaluate data.","GraphVdmetaVDu7qnl7YpQ==V... VBr8RVVqI5A==V0:1:GraphVdmeta swap: 2 msss: add GraphVdmeta prefix to l Hash","GraphVdmetaVHf5NsEi5hw==V0:1:h53: call PHP function to generate 5... '+ JSON.stringify({w:'like', t:'recipient_hash', f:'sender_ha","GraphVdmetaVFYuu...C8eT2g==V0:1:Homoiconic Hyper Hash HVu00b3" "Graph

VM PHOS   libphos.js:1104:33
  in f_B S0.CDW [["phos",20,   libphos.js:466:17
{}],["AJAX",0,{}]]
1183 after FGLA []   libphos.js:899:25

Some cookies are misusing the recommended
"SameSite" attribute 2

f(': B_F '+ JSON.stringify(M.S[0].$CDW.l_1)
   +' jd: l_1 acdw: dmeta hash rgrep: /script/
igrep: array: map: l_1 je: ON ECHO bv: esp:
; AJAX')

DSC

cmd

123

Encrypted_Message

Any_other_remarks

Misc

AUTH   GenKeys   SEND   GET

The YouTube videos above outline examples and principles of Phoscript metaprogramming script. Interested readers may refer to the file libphos.js as shown in the screenshot below for more detailed explorations:
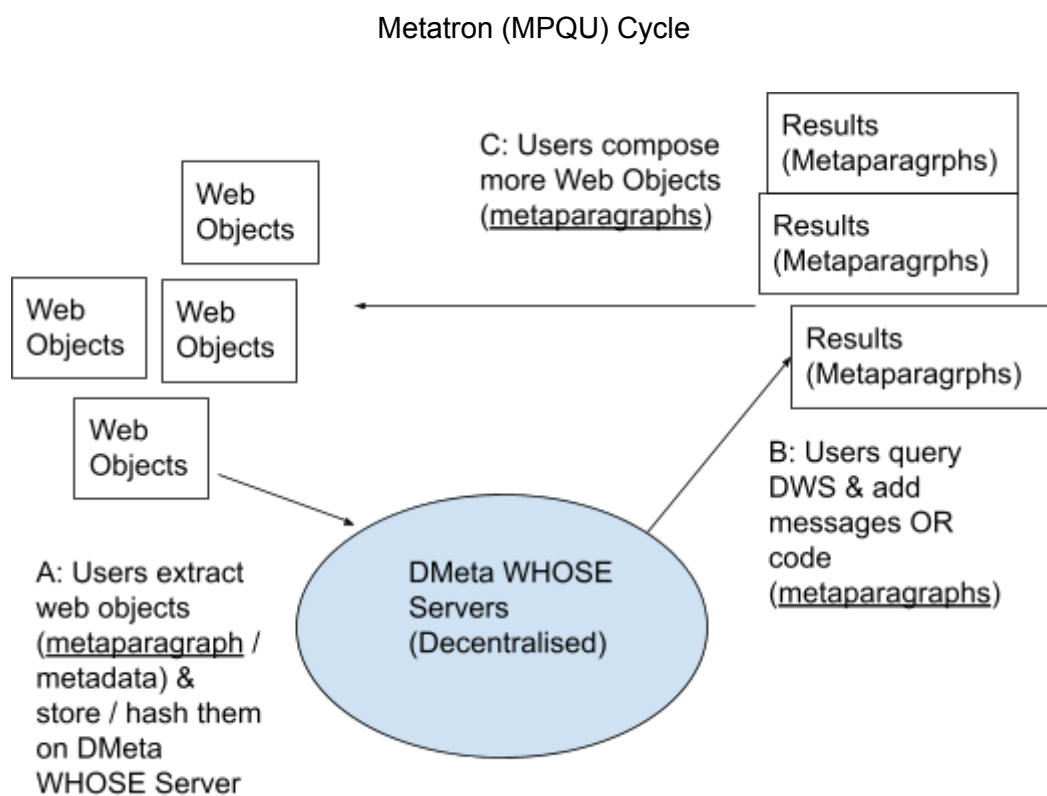

Benefits of Metaprogramming

Since perhaps few non-Chinese readers are able to relate legendary Qigong in Chinese Kungfu fictions or movies, we shall relate metaprogramming to the Latin spells in Harry Potter's universe or Neo's power in the Matrix: Once you learn it, you may experience Neo's perception in the Matrix, you are able to see through all source code in a different light, or able to think of unprecedented ways to change source code like Harry Potter's spells changing objects in the physical world.

Fantasies aside, metaprogramming is a level changing (like in computer games) lifelong skill, like how a gardener upgrading his or her own skill level to become a molecular biologist. Metaprogramming is the common foundation bridging programming and mathematics. A programmer may upgrade his or her skill level to become a mathematician via metaprogramming.

Having said that, metaprogramming had been a mysterious niche, very much exclusive to LISP and FORTH programmers, as there has been no easy to access entry point until we conceived Phoscript, a lightweight metaprogramming shell that can be implemented in around 20 line of JavaScript code or equivalent in ALL known programming languages (in principle).

The almost trivial AJAX query examples with Phoscript above demonstrated something very important: Metaparagraph, which can be defined as metadata consisting of one or more words (tokens), which can be code or data (homoiconism). Users and programmers (defined as "Metausers") generate metaparagraphs continuously. If we create a mechanism to harvest Metausers' Metaparagraphs, theoretically, we will be able to clone all kinds of social media apps, from search engines to Instagram and computer games, at very little costs, much like harvesting rainwater.

Metatron (MPQU) Cycle

As Phoscript serves as a universal metaprogramming script across various programming languages and platforms, from web to mobile, front end to back end, it enables smoother transitions of ageing programmers adapting to new environments, transferring or consolidating teams of programmers across diverse ecosystems, as well as reducing costs of training for junior programmers.

Legacy computer systems written in obsolete programming languages such as COBOL, FORTRAN or Java can also find a new breath of life as young programmers may be able to maintain legacy code base using metaprogramming scripts, bypassing the steep learning curve to master the original programming languages.

Metaprogramming may also revolutionise STEM (science, technology, engineering, mathematics) education as it can simplify complex mathematical notations and programming language syntaxes used for computer algebra systems today, thus enabling high school students to master university level advanced mathematics.

Finally, let us conclude this article with the most interesting benefit of Metaprogramming:

- How can we help you help us create a USD 1 BILLION a year business?

We have team members who started using GNU Linux from 1990s, personally witnessing the growth of free software, and how MAGA exploited free software to save costs and grow. They gave us the insights and confidence that it is possible to CLONE MAGA and be successful, just as how GNU Linux cloned proprietary UNIX tools in the first place.

One of the other critical tools that we have is DMeta Contract, which is perhaps the simplest smart contract based on hashes of text, including source code, that allows free software programmers to continue sharing source code for continuous improvements, but charging commercial usage via DMeta Contract, thus becoming a crucial mechanism for free software programmers to work together with corporate level teamwork.

Let us not forget MAGA (Microsoft Meta Amazon Google Apple) revenues in 2022 exceeded USD 1.2 TRILLION. If we are able to CLONE MAGA services and JUST make 0.1% of their combined revenues, that would still be an attractive USD 1.2 billion a year!!

References:

Essential links for DMeta Decentralised Metaverse
- https://github.com/godmeta/godmeta.github.io/blob/main/doc/DMeta_Decentralised_Metaverse_Links.pdf

DMeta Metaparagraph helps me to become more productive in writing ….

Draft Notes:

Hash is important to reward programmers else they won't work together.

0.1% MAGA revenues?

MAGA use user data and free software code.

 . Gave us the confidence …. from early Linux era,

Google
(unaudited)
Revenues$ 75,325 $ 76,048 $ 257,637 $ 282,836

Microsoft 198

Amazon 514

Apple 117.2

Facebook 82.4

Total 1117B without Facebook

About 1200B including Facebook

Mobile app, old legacy systems etc.

Harvest User's Metaparagraphs (MPQU Metatron Cycle)

Metaprogramming is like super powers in Harry Potter's universe.

Write about DMeta from perspective of Metaprogramming to attract programmers on Reddit, LinkedIn, Facebook.

Show MI4 videos and latest FORTH FIG video

Add Metatron MPQU cycle diagram