Web3 full stack design tutorial

02 - how programming language works

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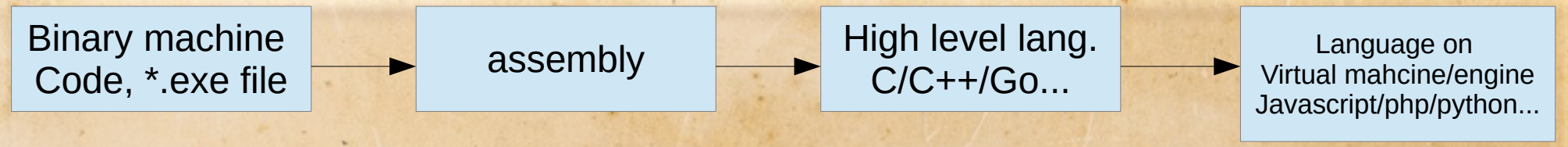
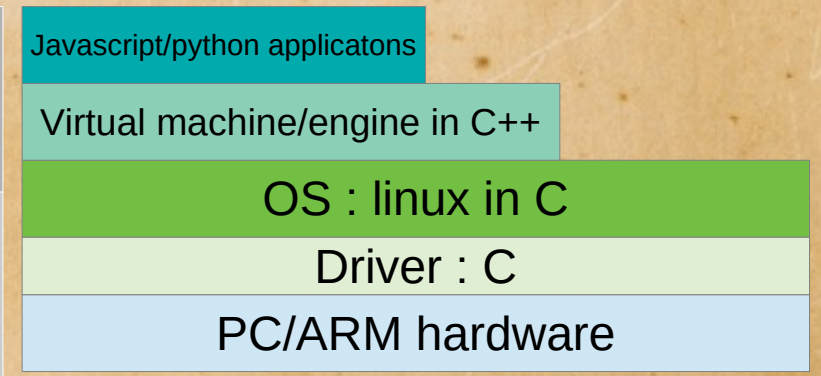
Language is easy to learn

- If you understand how it works,and why it is designed that way
- Learning a programming language from its designer’s perspective, knowing its history and motivation to invent it
- All languages have flaws,knowing its flaws help us write better applications
- This episode gives you a birds eye view of language evolution,you don’t have to understand in detail but grab a general idea of how languages works,after knowing the big picture and the future direction the programming languages are moving forward,you will know where you are in study level and what you are missing.
- Having clear target bear in mind,you know what you are learning the certain language for! Knowing the history of physics helps one better understand the theory,same is learning programming languages! So in the future when you discover some problem is difficult for the current programming languages to solve, you know how to develop your own programming language

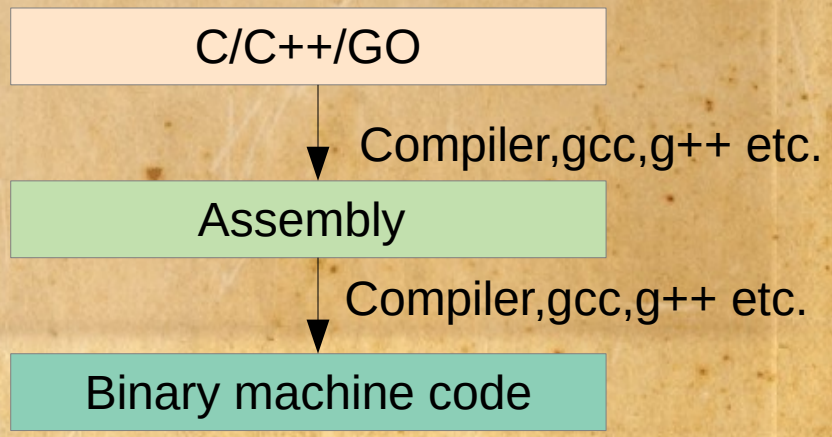
Brief history of program language evolution



Binary machine code	It looks like this: 01001001… (32bit/64bit), very hard to remember binary instructions and program
Assembly	Symbolic language, like mov 0xFF R2,still not easy for programming,one needs to check the manual for instructions
High level lang.	Human readable logic language,more efficient for programming but not as efficient for performance compared to hand-written assembly
Dynamic script lang. Like javascript,python...	Much easier for programming compared to C++/C,no need to take tare of low level stuff,like memory allocation and deallocation. Since it runs in a virtual machine/engine



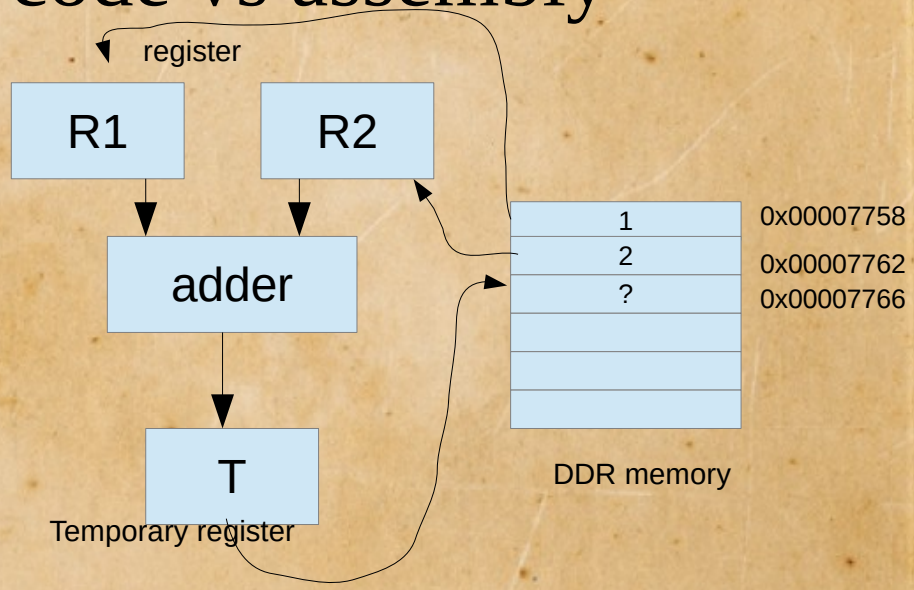
- Language compilation flow



Binary machine code and assembly language, C

- Human unreadable machine code vs assembly

```
FDED-   6C 36 00    JMP   ($0036)
FDF0-   C9 A0       CMP   #$A0
FDF2-   90 02       BCC   $FDF6
FDF4-   25 32       AND   $32
FDF6-   84 35       STY   $35
FDF8-   48          PHA
FDF9-   20 78 FB    JSR   $FB78
FDFC-   68          PLA
FDFD-   A4 35       LDY   $35
FDFF-   60          RTS
FE00-   C6 34       DEC   $34
FE02-   F0 9F       BEQ   $FDA3
```




```
MOV @0x00007758 R1
MOV @0x00007762 R2
ADD R1  R2
MOV  T  &0x00007766
```

Compile

```
void adder () {

    int* R1 = 0x00007758 ;
    int* R2 = 0x00007762 ;
    int* Result = 0x00007766 ;

    *Result = *R1 + *R1

}
```

One can build a soft-microcontroller on FPGA and build a compile to do the same job as illustrated,this briefly demonstrate how micro-controller/ARM/CPU works and how program are compile from C to assembly and to machine code and how it is executed one by one on hardware.

C++,what is the fancy name of OOP

- OOP stands for Object Orientated Programming
- C++ is one of the representative.
- Why C++ ? (even though one also can write C in a OOP style,it is not convenient in grammar,OOP is more of a mindset which change the way people wire high level program)
- In circumstance like game development,we need create several soldiers,it would be very neat to group all the variables and functions related to the soldier in a object/class. So we can reuse the code repeatedly!
- Every time we need to create a soldier,we just need to instantiate the soldier class/object in memory,and delete it when finish. As shown in next slice:

C++,what is the fancy name of OOP 2

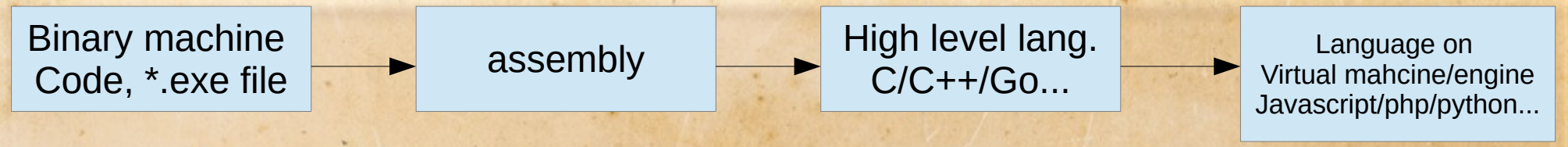
```cpp
#include <string>
#include <iostream>


class soldier {

    public :
        std::string name_ ;

        soldier (std::string name){
            name_ = name ;
        }

        void fire (){
            std::cout << name_ << " fires" << std::endl ;
        }

};


void callByReference (soldier& s){
    s.fire();
}
void callByPointer (soldier* s){
    s->fire();
}
void changeBbyReference(int& b){
    b = 11111;
}
void changeBbypointer(int* b){
    *b = 2222;
}
void changeBbyReference2(int& b, int value){
    b = value;
}
```

```cpp
int main() {


    soldier& soldier1 = *(new soldier("limin")) ;
    soldier* soldier2 = new soldier("zhangsan");
    callByReference(soldier1);
    callByPointer(soldier2);


    // demo reference vs pointer in C++
    int B = 4 ;
    // & get address operator
    int* ptr2B = &B ;
    /* note that ther is
    no get reference openator in C++ */
    int& reference2B = B ;
    changeBbypointer(ptr2B);
    std::cout << B << std::endl ;
    changeBbyReference(reference2B);
    std::cout << B << std::endl;
    changeBbyReference2(B, 3333);
    std::cout << B << std::endl;

    return 0;
}
```

Dynamic programming languages

- Javascript,PHP,python,etc…
- Also OOP, javascript has a different situation,early version is not design for OOP
- They are dynamic because they can add/remove members to object class on the fly,flexible
- They are running on virtual machine/engine,so it is better for cross platform,but slow than static languages like C++/C/Go…
- Reasons that people want to invent dynamic languages despite C++/C runs faster is that C++/C are much more difficult,because programmers have to take care of low level things like memory management,also installing dependence is a headache,so they are not portable and not easy for deployment on the cloud server once project has finished.
- With virtual machine/engine like javascript's nodejs,it abstract low level stuff from application,so developers can focus on pure software design. So it is easy for deployment,all it is needed is to install nodejs engine,and automatically download the dependencies with single command like: npm install .
- Later GoLang brings ideas from Dynamic languages, so it is easy for deployment and faster.

Brief history of program language evolution .recap



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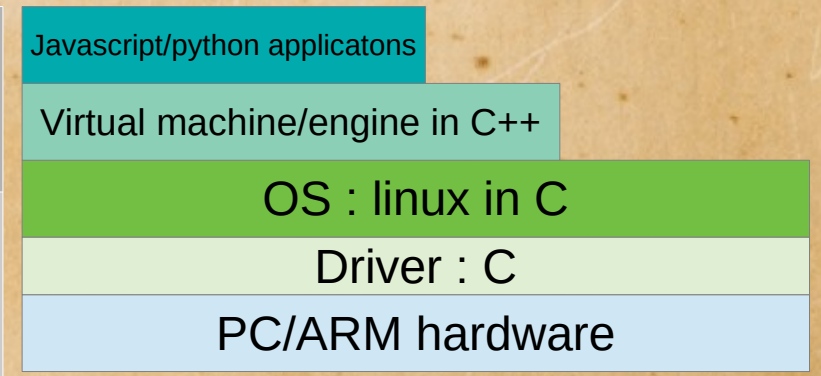

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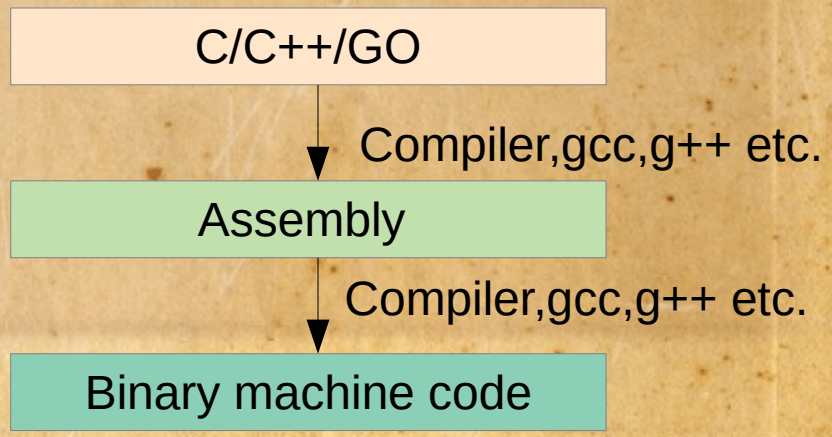


Global mRNA genetics,global mindcontrol

We are in silent world war III

mRNA **Global mindcontrol**

Neural cell genetics

Dose by dose plot

Precise neural control

A beam of microwave can control the entire Army,like harvesting peaches on the tree! Human will have no chance to fight back!

《 1984 》 is happening,for we are being genetically changed by the doses

Pdf : http://www.decensormedia.org/mindcontrol

Global mRNA genetics,global mindcontrol

Brain wave! AI brain control! 두뇌 제어

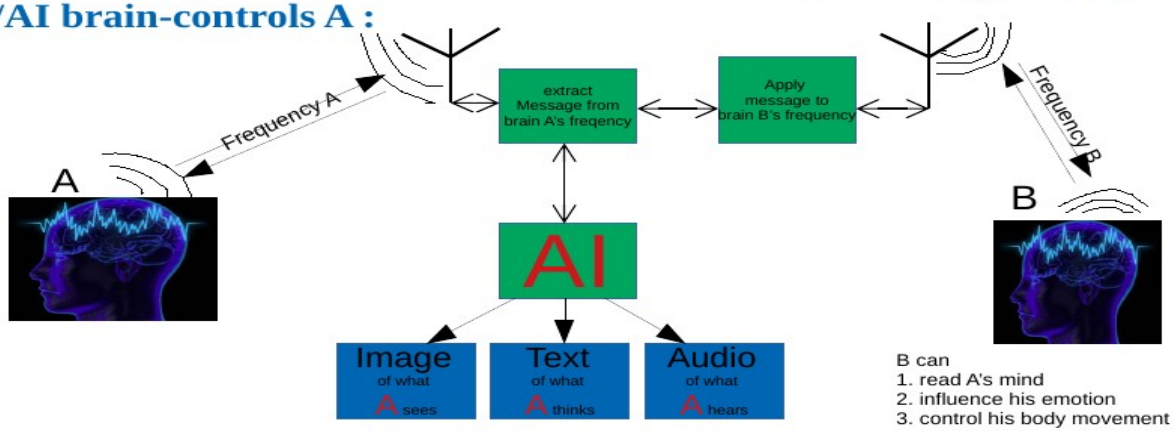
그들은 우리의 두뇌를 읽고 있습니다

They **read our mind**, Influence our **emotion**

Even **control body movement** when kidnap

We need decentralization:www.decensormedia.org

A picture explains how B/AI brain-controls A :



Military군사 수준 VS Commercial 상업 급료

SOS: **hackers destroying my online job,isolating/corner me,stalking me!**

China Operation Fox Hunt, Kidnap

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Global mRNA genetics,global mindcontrol

you don’t hear this from the mainstream media, because big figures are mindcontrolled! They will be facing lawsuit and in big trouble, even life danger if they go against the dark shadow!

Mindcontrol is far beyond just reading your brain knowing your secret and set a trap for you, so they have some evidence to make you end up in jail for thousand years long!

To be honest I still feel like in a dream to realize that they are so mad to inject uniform-slavery-control gene into our blood and our offspring’s blood!

We see many many cases of people dying from heart problem, these are live feedback test and warning signals as well ! Because our information is severely censored, many accounts are shut down for talking about the dose! So you should smell something familiar ! NO body has the right to silence anybody in the name of love or their justice standard! Only they are afraid of something or try to hide something ugly!

Remember one very basic physics: light is electromagnetic wave! If they can control mouse’s sex intercourse desire with a beam of light, they can also control our heart and many other organ with a beam of electromagnetic wave!

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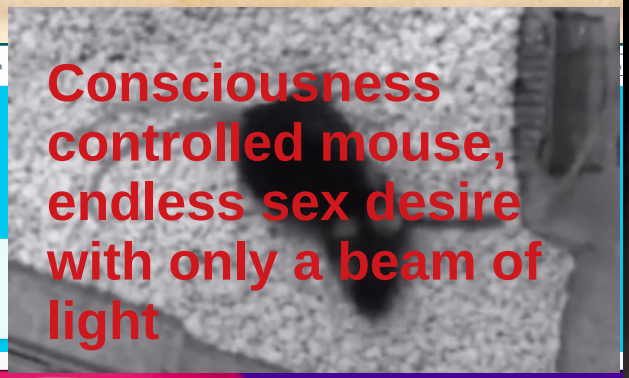
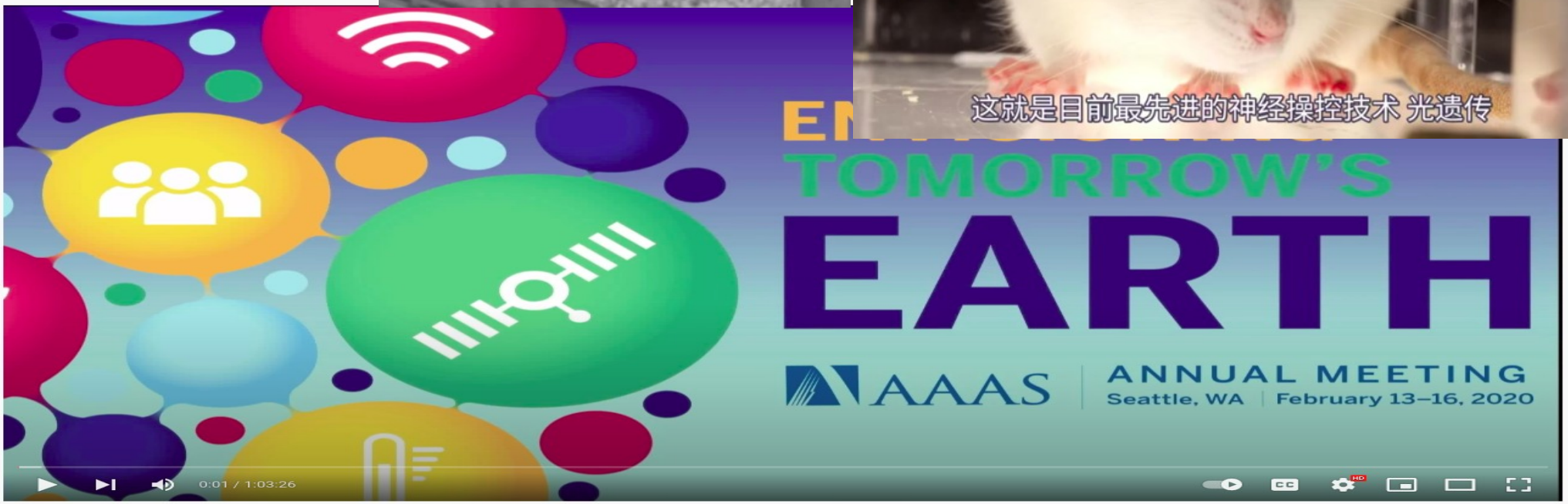
Bill Gates: How Gene Editing, AI can Benefit World's Poorest





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Wake up & Thank you

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