Columbia University

VideO Processing Language

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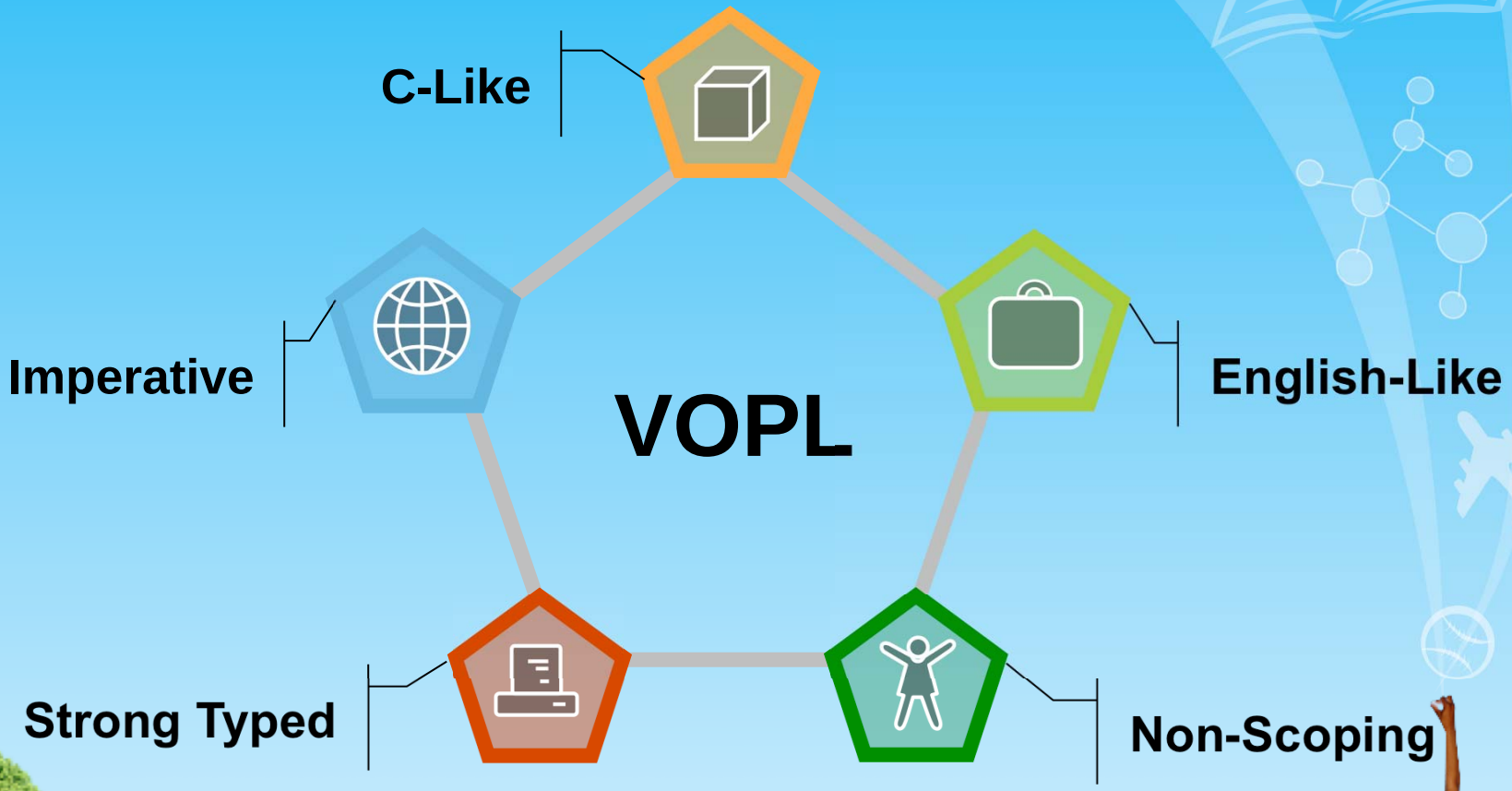
What is VOPL?



Why VOPL?

Feature 1

Easy to Use

Feature 2

More Strict

Feature 3

Using English-like Statement

What VOPL has?

- **Provide two levels abstraction for programmers:**

  (1) Video-Level

  (2) Image-Level

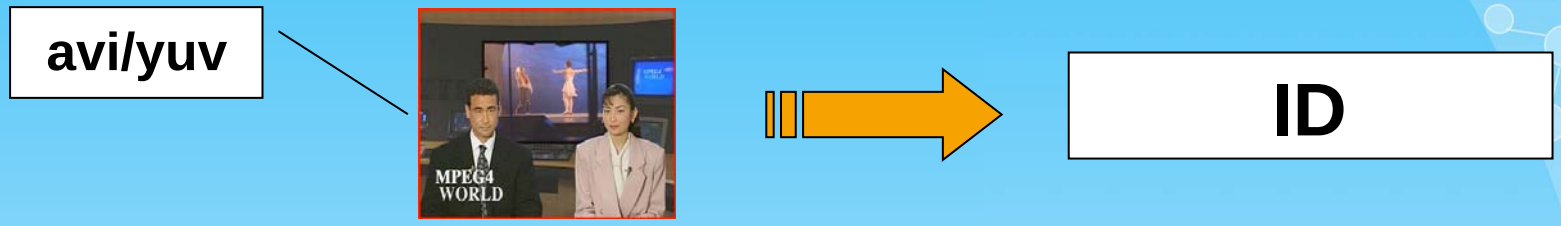
- **Provide basic arithmetic operations control flow construct**

What VOPL misses?

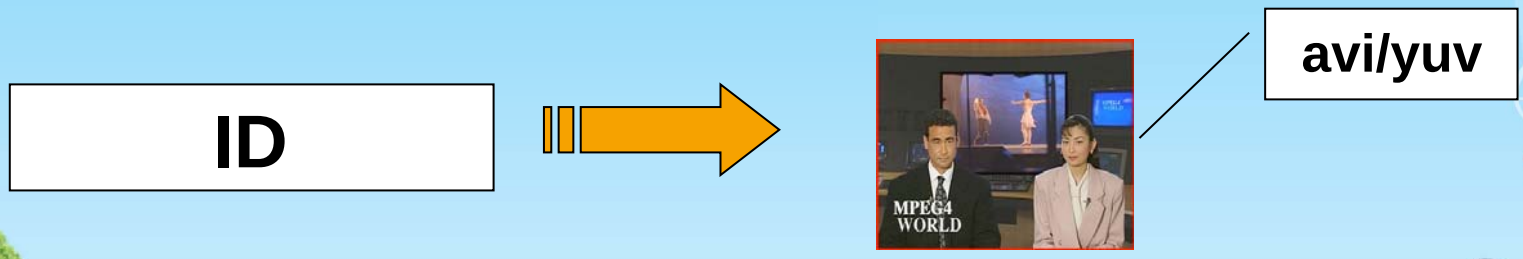
- Limited Format Support
- No Scoping Rule
- Weak in Tracking BUG

Language Tutorial (1)

load *ID* from *"/path/filename"* with *Height* and *Width*

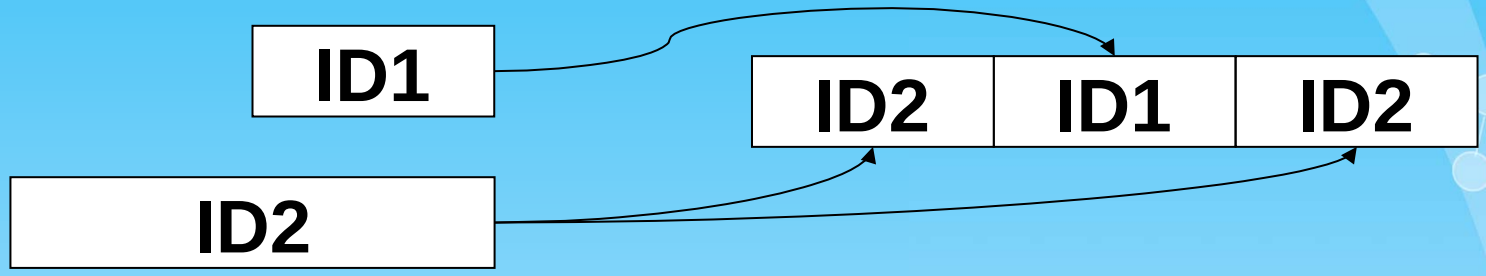


store *ID* to *"/path/filename"*

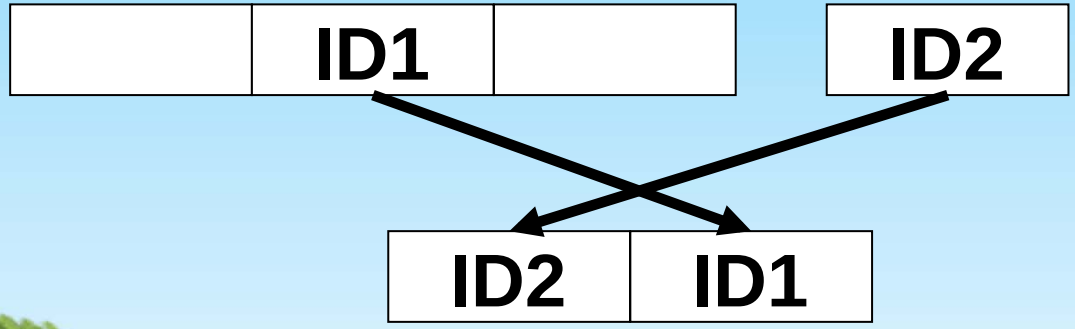


Language Tutorial (2)

insert *ID1* to *ID2* from *fnum*

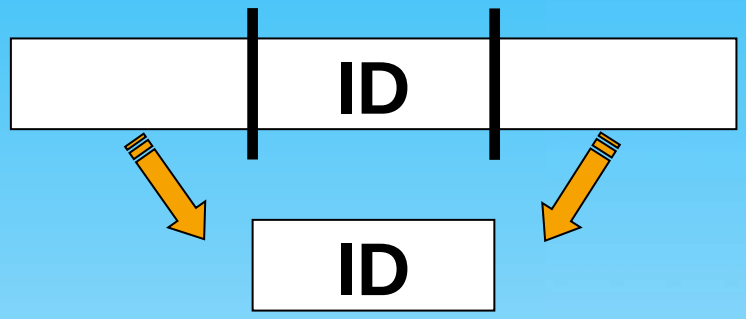


copy *ID1* from fnum_begin to fnum_end to *ID2*



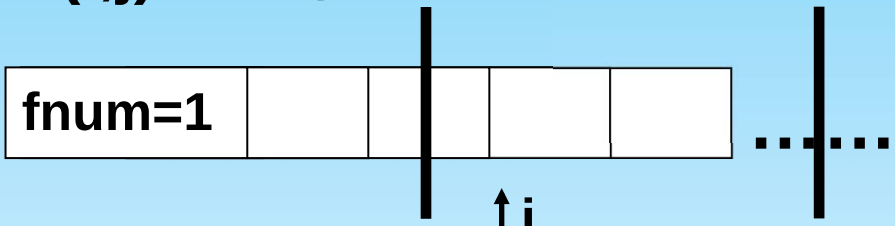
Language Tutorial (3)

delete *ID* from *fnum_begin* to *fnum_end*



update *ID* from fnum_begin to fnum_end

{ …. this(i,j) ….. }



for every frame do…

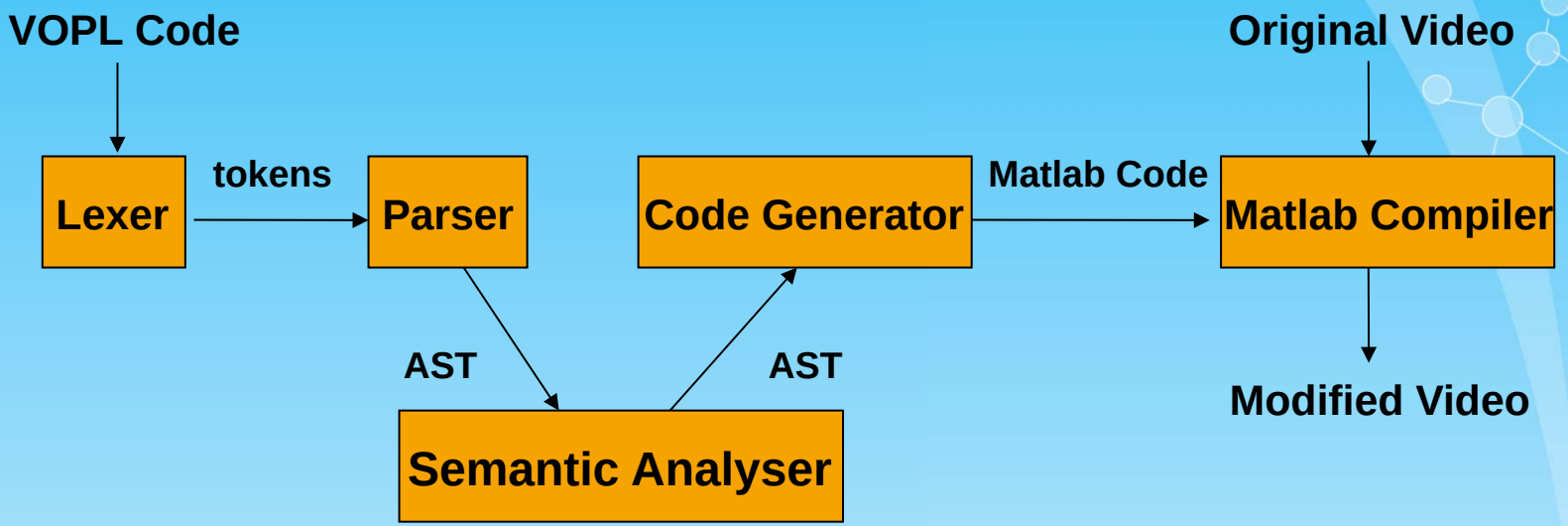
fnum=15 **to** **fnum=100**

Language Tutorial (4)

```
/*This is a sample of VOPL file*/
void foo(video a,video b,video c ,video d)
{
    delete a from 1 to 150;
    copy b from 101 to 200 to d;
    insert c to d from 100;
    insert d to a from 75;
    store a to "news-composed.yuv";
}
```

```
void main()
{
    video v1,v2;
    video v3,v4;
    load v1 from "news.avi" with 352 and 288;
    load v2 from "news2.yuv" with 176 and 144;
    load v3 from "coastguard.avi" with 352 and 288;
    update v2 from 1 to 300
    {
        int i,j;
        for (i=1;i<143;i=i+1)
        for (j=1;j<175;j=j+1)
        this(i,j)=(this(i,j)+this(i+1,j)+this(i,j+1)+
        this(i+1,j+1))/4;
    }
    foo(v1,v2,v3,v4);
}
```

Language Implementation



Lesson Learnt

- Designing a language is far more complicated than implementing it.
- Ocaml is an effective language for developing a compiler and it has powerful IDE.
- It is very important to test every segmental part of a compiler.


Thank you !
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