

DESAIN DAN ANALISIS ALGORITMA

Course Policy

- Grading policy
 - Tugas : 20% (60% final project + 40% tugas)
 - Quiz : 20%
 - Keaktifan : 10%
 - UTS : 25%
 - UAS : 25%

References

- Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, **Introduction To Algorithms**, MIT Press/McGraw-Hill, 2001
- Anany Levitin, **Introduction To The Design & Analysis of Algorithms**, Addison Wesley, 2003

- Kompleksitas algoritma
- Model dan analisis
- Algoritma Brute Force
- Algoritma divide and conquer
- Algoritma decrease and conquer
- Algoritma greedy
- Dynamic programming
- Algoritma searching and sorting
- Graph
- Space and time tradeoff

WHY ARE WE HERE?

ALGORITMA

Algorithm is a recipe

SHOE



ALGORITMA

Algorithm

- Commands

- Iteration

- Decision

- Row-column

- elements

Beginning

Problem
Solving



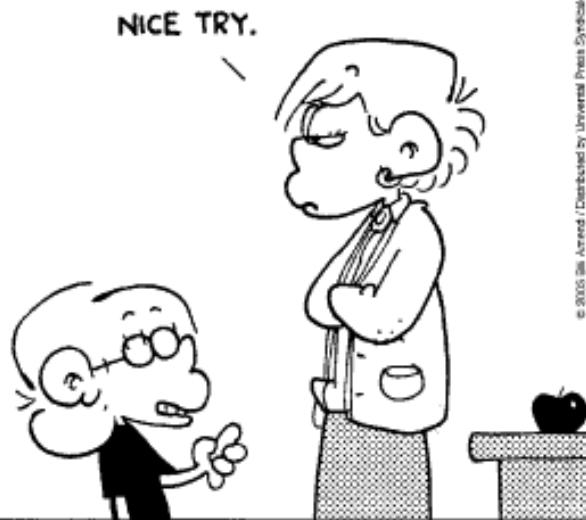
ASPEK PENTING ALGORITMA

FINITENESS

```
int a=6;  
main()  
{  
    while(a>5)  
    {  
        cout<<a;  
        a++;  
    }  
}
```

```
#include <stdio.h>
int main(void)
{
    int count;
    for(count = 1; count <= 500; count++)
        printf("I will not throw paper airplanes in class.");
    return 0;
}
```

AMEND 10-3

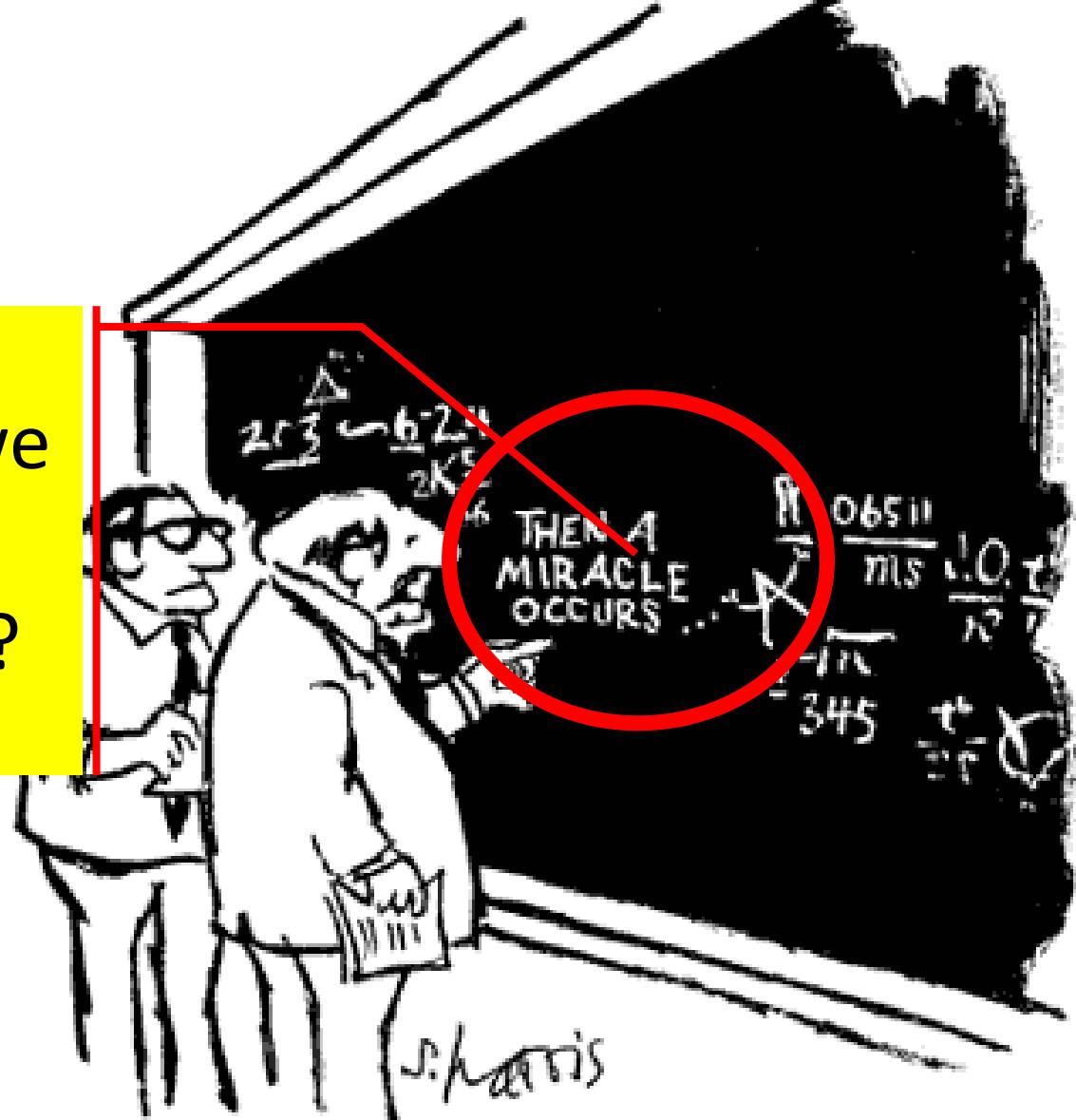


Finiteness

Algoritma harus berhenti setelah melalui beberapa tahapan (langkah)

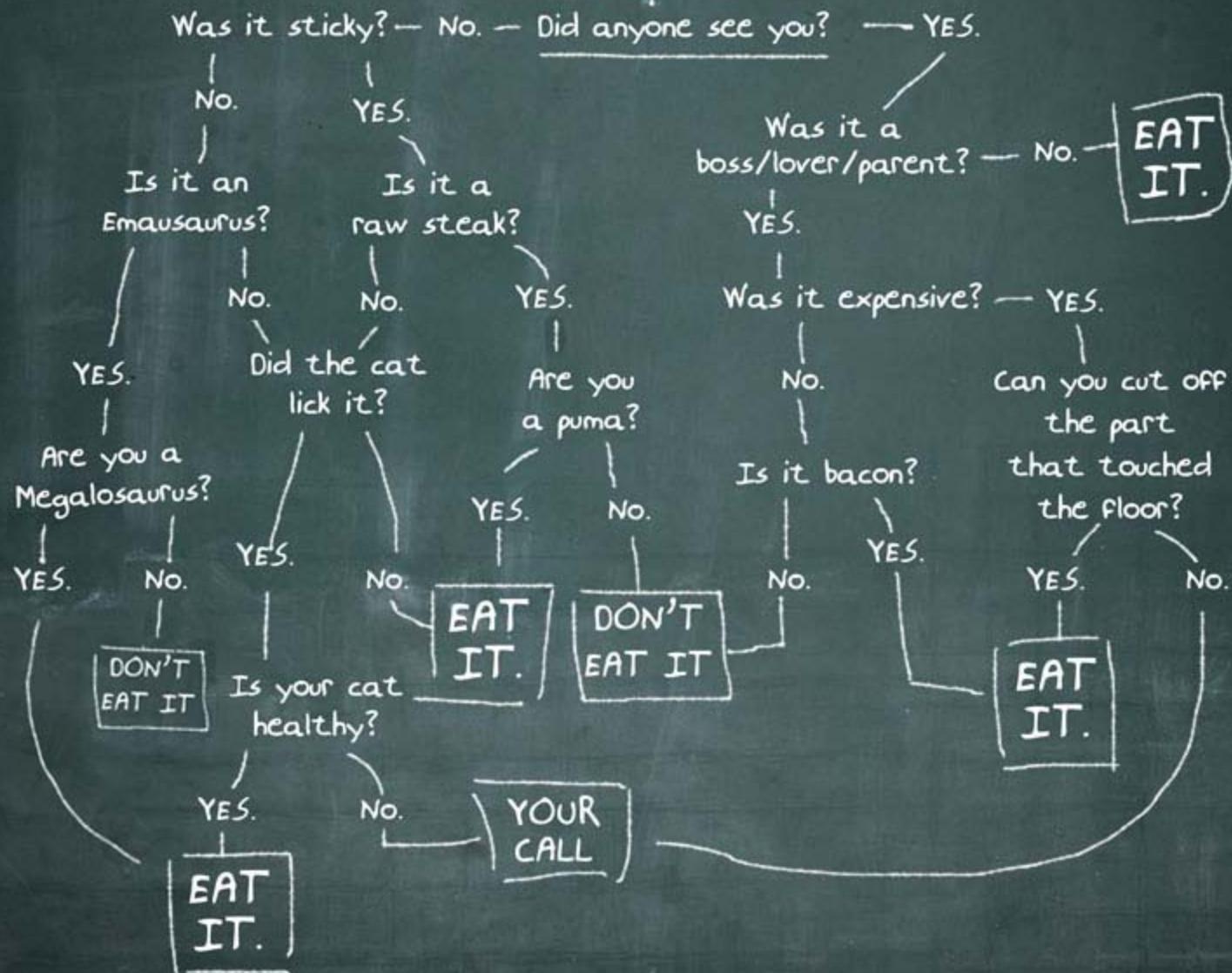
DEFINITENESS

How could we
define the
“MIRACLE”?



“I think you should be more explicit here in step two.”

You Dropped Food on the Floor Do You Eat It?



Definiteness

Setiap langkah harus
didefinisikan secara tepat, tidak
boleh membingungkan (ambigu)

EFFECTIVENESS

Effectiveness

Setiap algoritma
harus
berhasil-guna
(sangkil/ efektif)

I'm absolutely committed
to getting the right result!



Algoritma

- Recipe for getting things done successfully
 - "Recipe" - well defined sequence of computational steps
 - "things" - computational problems specifying an input/output relation
 - "done" - in finite steps and time
 - "successfully" – correctly

DESAIN DAN ANALISIS ALGORITMA?

Design dan Analysis Algorithm

- Design an algorithm (**Correctness**)
 - Prove the algorithm is correct.
- Analyze the algorithm (**Efficiency**)
 - Time
 - Space

Tugas

- Buat sebuah algoritma yang akan menerima sebuah bilangan X dari user. Tampilkan pesan “benar” jika X habis dibagi 2, 3 atau 7 dan tampilkan “salah” jika tidak habis dibagi.
- Terdapat 10 buah apel dalam sebuah keranjang. Buatlah algoritma untuk membagikan apel itu kepada sepuluh orang secara adil dengan menyisakan satu apel di keranjang