Maths for Computer Science

- Write down the binary representation of 76 (Decimal)
- Find the value of 2^{16} in 4 multiplications
- If $\log_{10}^{a} = b$, How many digits are there in the decimal representation of a?
- If $x = 100101011011$ is a binary number, write down the representation of $2 \cdot x$
- How do you convert from Binary to Octal representation?

Algorithms - How to DO things?

- Square 53 in your head
- Can you teach someone how to sort a deck of cards? Just think about that.
- Have you heard about Tower of Hanoi? If yes, do you know how to solve TOH of any size?
- You are the postman/woman of your locality. How would you deliver the posts with least effort / maximum efficiency?

Bonus Questions

- Have you heard about Fibonacci series? Do you know the connection of rabbits and computer science?
- What is the difference between a NIBBLE and a WORD
- Do you already know how to print "Hello World" with some programming language?
- Write a program that prints the numbers from 1 to 100. But for multiples of three print "Fizz" instead of the number and for the multiples of five print "Buzz". For numbers which are multiples of both three and five print "FizzBuzz".

Attraction

How do the following work?

- A search engine.
- A code-beautifier.
- RSS feed system.
- Spell checker.

Maths for Computer Science

- Write down the binary representation of 76 (Decimal)
  76 = 64 + 8 + 4 = 1001100
- Find the value of 2^{16} in 4 multiplications
  $(((2^2)^2)^2)^2$
- If $\log_{10}^{a} = b$, How many digits are there in the decimal representation of a?
  $\log 100 = 2$ and there are three digits.

The representation issues

- If $x = 100101011011$ is a binary number, write down the representation of $2 \cdot x$
  Any decimal number multiplied with 10 just adds a zero to the end. So any binary number multiplied with 2 should...

- How do you convert from Binary to Octal representation?
  Take 3 at a time.

The way of doing things

- Square 53 in your head.
  $53^2 = (50+3)^2 = 50^2 + 3^2 + 2 \cdot 50 \cdot 3$
- Can you teach someone how to sort a deck of cards? Just think about that.

  ....
- Have you heard about Tower of Hanoi? If yes, do you know how to solve TOH of any size?
  Solve the TOH of one lower to the temporary pole; move the bottom disc; now solve the TOH of one lower form temporary to the final one.

The way of doing things!

- You are the postman/woman of your locality. How would you deliver the posts with least effort / maximum efficiency?
  Minimum Spanning Tree.

- Have you heard about Fibonacci series? Do you know the connection of rabbits and computer science?
  $1, 1, 2, 3, 5, 8, 13, 21, 34,$
  A pair of rabbits in the beginning of a month.

- What is the difference between a NIBBLE and a WORD
  4 bits and 4 bytes

Why Python?

- Excellent for beginners, yet superb for experts
- Rapid development
- portable, cross-platform
- Object-oriented
- You can get the job done
- Simple stable and mature
- Wealth of 3rd party packages

`http://pythoncard.sf.net/what_is_python.html`

Who uses it anyway?

- Google, Yahoo! - for internet services.
- IBM, Seagate, Hewlett Packard - for hardware testing.
- `http://www.python.org/about/success/`

Getting Ready for the Byte

- Download
  http://www.python.org/download/releases/2.6.2/
- Should we use Python 3.0?
- Install In Windows it is easy. In Linux, one has to do
  `./configure; make ; make install` to have it
  installed.
- Run In Windows: Demo
- In Linux, one can run it from terminal/console.

Using IDLE

Python comes with an own editor/programming environment.

IDLE

Hello World

```
print "Hello World"
print 'Hello World'
```

Compiler and Interpreter

A compiler takes all of the code and translates it into something a computer can understand. This compiled code is then executed or saved to a file to be executed at a later time.

While an interpreter takes code and translates it line by line. An doesn't save the translated code in a file.
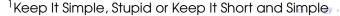Python is interpreted.
Byte Code

What do you need?

- Do you need credits? or Pass/Fail or Attendance?
- Is there anything else I could do?

Course Details

- We'll KISS [1]
- Homework - What is you opinion?
- Constant Feedback

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[1]Keep It Simple, Stupid or Keep It Short and Simple

Does Size Matter?

What do you think? Does it matter?