Programování II (cvičení)

Středa 21/2/2018

Zápočet

- Práce na cvičení
- 70% bodů z domácích úkolů
- Zápočtový program
  - Domluvené téma do 31.3.
- Zápočtový test
  - Poslední cvičení (opravné pokusy individuálně ve zkouškovém)

Interview to Amazon/Oracle

You are given an integer array, where all numbers except for TWO numbers appear even number of times.

Q: Find the two number which appear odd number of times.

Interview to Microsoft

Given an array having 16 000 unique integers, each lying within the range 1 < x < 20 000. You can load only 1000 number at a time into the memory.

Q: How do you sort it?

Interview to Google

You have k lists of sorted integer.

Q: Find the smallest range that includes at least one number from each of the k lists.

For example:

L1: [4, 10, 15, 24, 26]

L2: [0, 9, 12, 20]

L3: [5, 18, 22, 30]

The smallest range here would be [20,24] as it contains 24 from L1, 20 from L2 and 22 from L3.

Assembler

```
HxDgt:
cmp dl, 0xA
jb .lwr
add dl, 'A'-0xA
ret
.lwr:
or dl,'0'
ret
```

Assembler

HxDgt:

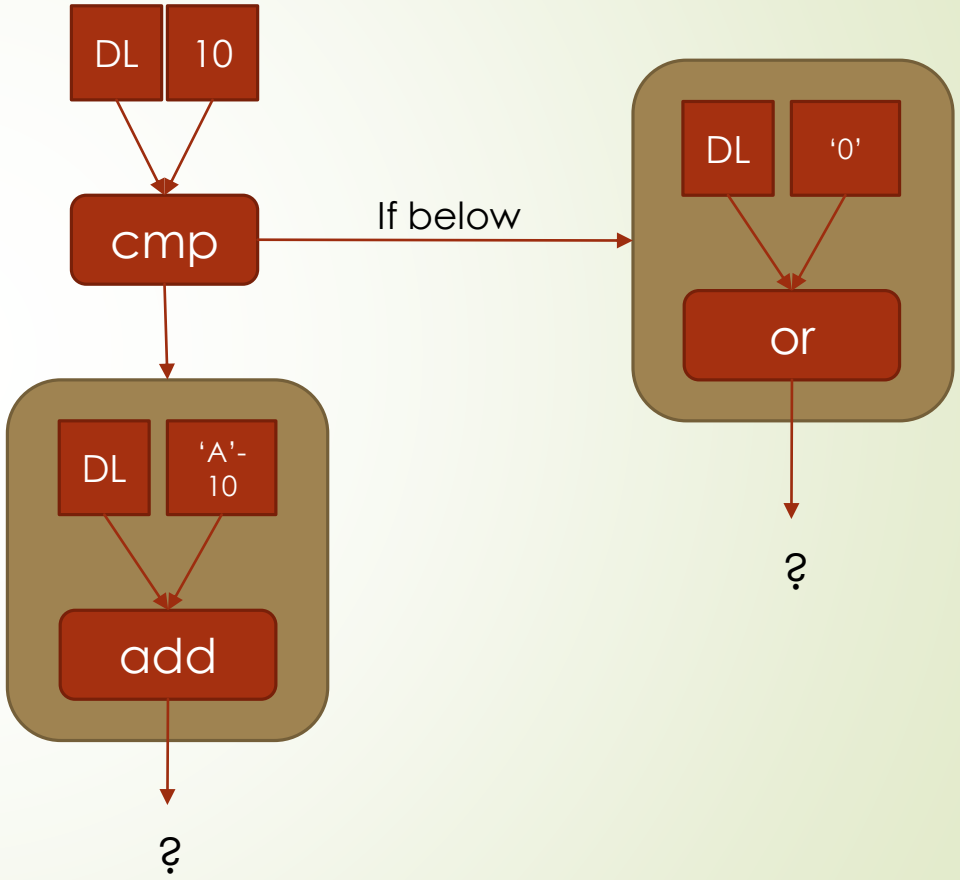
cmp dl, 0xa
jb .lwr
add dl, 'A'-0xa
ret

compare

Jump if below

return

.lwr:
or dl,'0‘
ret



Rust

```
fn f(i: u64) -> u64 {
    let mut acc = 1;
    for num in 1..(i+1) {
        acc *= num;
    }
    acc
}
```

Java

```
public static String tb(int base10Num){
        boolean isNeg = base10Num < 0;
        base10Num = Math.abs(base10Num);
        String result = "";

        while(base10Num > 1){
            result = (base10Num % 2) + result;
            base10Num /= 2;
        }
        assert base10Num == 0 || base10Num == 1 : "value is not <= 1: " + base10Num;

        result = base10Num + result;
        assert all0sAnd1s(result);

        if( isNeg )
            result = "-" + result;
        return result;
    }
```

Javascript

```
LCM.prototype = {

  gcd: function() {
      var a = Math.abs(this.a), b = Math.abs(this.b),  t;

      if (a < b) {
          t = b;
          b = a;
          a = t;
      }

      while (b !== 0) {
          t = b;
          b = a % b;
          a = t;
      }

      this['gcd'] = function() {
          return a;
      };

      return a;
  },

  lcm: function() {
      var lcm = this.a / this.gcd() * this.b;
      this.lcm = function() {
          return lcm;
      };
      return lcm;
  }
};
```

Návrh multimediálního přehrávače

- Audio přehrávač
- Video přehrávač

Domácí úkoly

- Přihlásit se do ReCodexu na tohle cvičení
- Poslat na mail: faltin@ksi.mff.cuni.cz
  - svůj minulý zápočtový program z PRG1
  - OOP návrh multimediálního přehrávače
- Deadline – 27.2.2018 23:59

Zdroje

- Učíme se programovat v jazyce Assembler pro PC
- https://en.wikipedia.org/wiki/Rust_(programming_language)
- https://www.cs.utexas.edu/~scottm/cs307/javacode/codeSamples/BinaryConverter.java
- https://en.wikipedia.org/wiki/JavaScript