Hackatron.org

Tuesday, January 20th, 7:00 PM @Serra, H-Farm

Challenge yourself with algorithmic programming problems

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Everyday life

Everyday we face new programming problems:
the good solution is the right compromise between available time and efficiency.

Three algorithmic puzzles will be proposed: let's start the challenge to train your skills!

```
function sum_bricks(floor) {
   var total = 0;
   for (i = 1; i <= floor; i++) {
       total += 2;
   }
   return total + 1;
}
function sum_floors(first, last) {
   var total = 0;
   for (i = first; i < last; i++) {
       b = sum_bricks(i)
       total += b;
   }
   return total;
}
function bricks_in_a_pyramid(floors) {
   return sum_floors(0, floors)
}
console.log(bricks_in_the_pyramid(10));
```

Round 1: The Pyramid

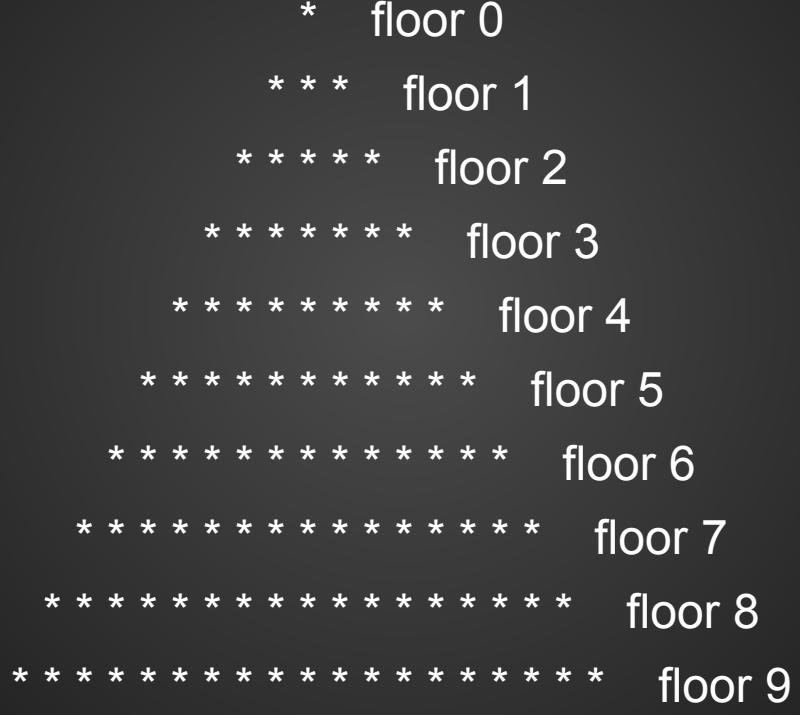
/ javascript */*

Round 1: solution

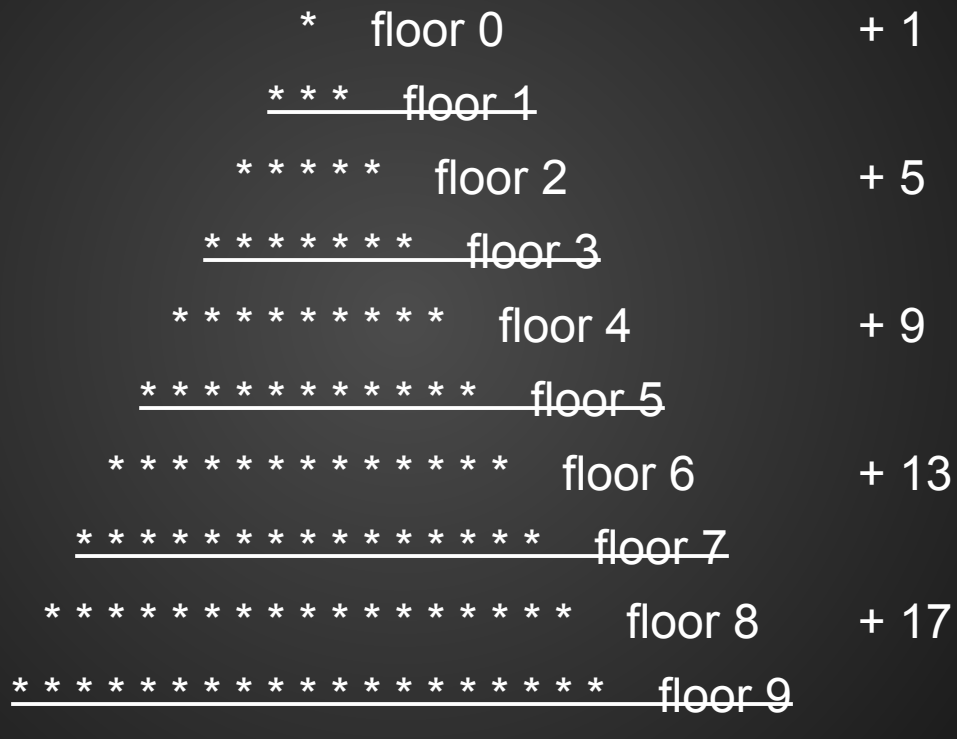
The scope of variables matters

```
for (i = 1; i <= row; i++)
for (var i = 1; i <= row; i++)
```

Round 1: solution



Round 1: solution



= 45

Round 2: best year for movies

TOP 250:

www.imdb.com/chart/top

BOTTOM 100:

www.imdb.com/chart/bottom

“The best year in the history of movies was when the sum of votes for each top250-movie in that year was the largest. Moreover, remind to subtract the double of the vote for each bottom100-movie in the same year.” (cit. Marlon Brando)

Round 2: solution

```
top = (
      ((23), ("Seven"), (1995), (8.6)),
      ((24), ("I soliti sospetti"), (1995), (8.6)),
      ((80), ("Braveheart - Cuore impavido"), (1995), (8.3)),
      ((108), ("Toy Story - Il mondo dei giocattoli"), (1995), (8.3)),
      ((126), ("Heat - La sfida"), (1995), (8.2)),
      ((144), ("Casino'"), (1995), (8.2)),
      ((209), ("L'esercito delle 12 scimmie"), (1995), (8.1)),
      ((218), ("Prima dell'alba"), (1995), (8.0)),
      ((229), ("L'odio"), (1995), (8.0)),
      …
)
bottom = (
      ((81), ("Dis - en historie om kjaerlighet"), (1995), (2.4)),
      … )
```

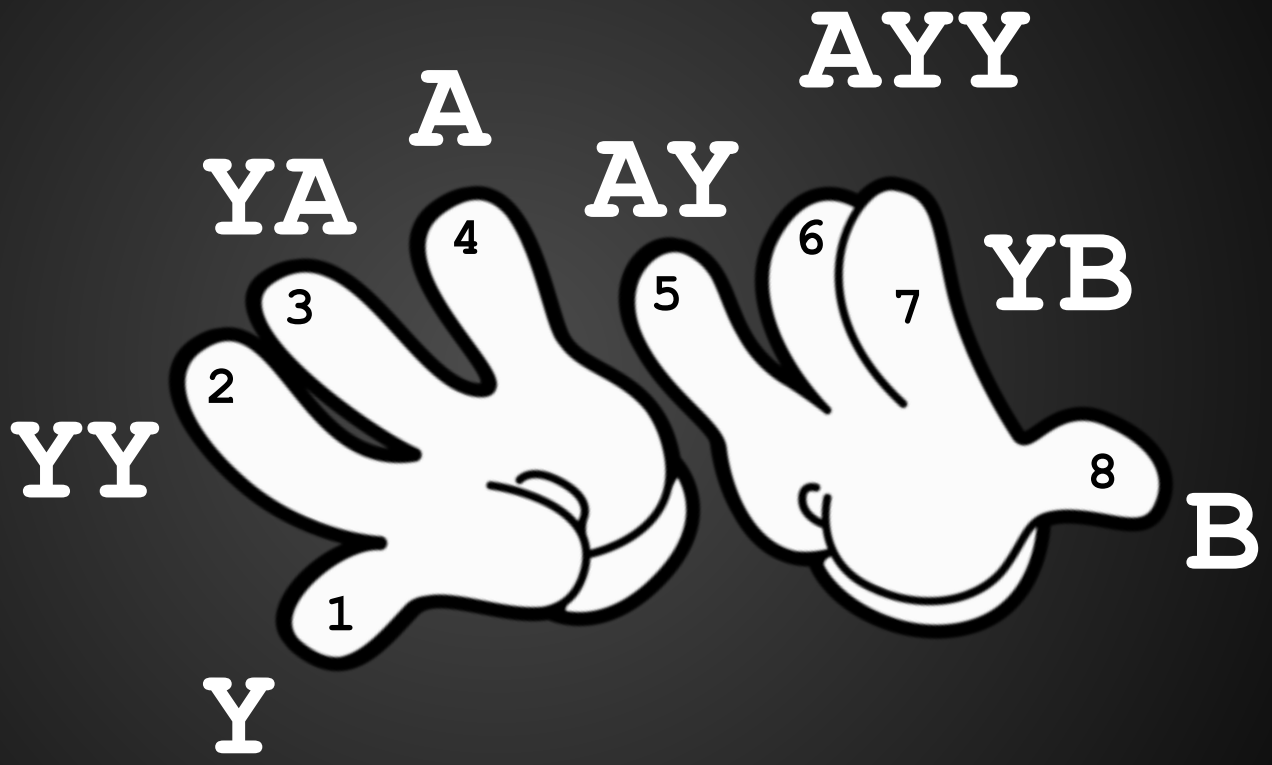
1995

Round 2: solution

```
# Python 2.7
years = {}

for x in top:
   cur_year = x[2]
   cur_vote = x[3]
   years[cur_year] = years[cur_year] + cur_vote if cur_year in years else cur_vote

for x in bottom:
   cur_year = x[2]
   cur_vote = x[3] * 2
   years[cur_year] = years[cur_year] - cur_vote if cur_year in years else -cur_vote

print max(years, key=lambda k: years[k])
```

1995

Round 3: Alien Numerals


AYY
A
YA
AY
YB
YY
B
Y
1
2
3
4
5
6
7
8

BB

BH

H

HB

BH

H

HT

T

Is that clear?

Round 3:

Find out the sum of these alien numbers!

bit.ly/hackatron

Round 3: solution

```
alienNumeralMap =
    (('T',  64)
     ('HT', 56)
     ('H',  32)
     ('BH', 24)
     ('B',  8),
     ('YB', 7),
     ('A',  4),
     ('YA', 3),
     ('Y',  1))
```

```
# Python 2.7
def fromAlien(s):
    result = 0
    index = 0
    for numeral, integer in alienNumeralMap:
        while s[index:index+len(numeral)] ==
numeral:
            result += integer
            index += len(numeral)
    return result
```

solution: 12830656