PRASK – an Algorithmic Competition for Middle Schoolers in Slovakia

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Correspondence seminars in Slovakia

- for high schoolers (age 15-19)
- 35 years long history
- 4 task sets a year
- 2 camps a year
- ranging difficulty of tasks
- focus on algorithms and algorithmic thinking
- gateway to Olympiad

PRASK

Goals

- competition for middle schoolers (age 10-15)
- development of algorithmic and programming skills
- suitable for beginners, challenge for advanced
- increase interest in computer science

Assumptions

- talented pupils
- age 12 to 15
- a broad spectrum of prior knowledge

Format of competition

- 4 rounds a year
- 5 tasks in a round
- no performance categories
- 1-2 months for solving
- camps for top 18 competitors

Types of tasks

- Theoretical (2 in a round)
- Practical (1 in a round)
- Programming (2 in a round)

Programming tasks

- instant feedback
- only program submissions
- `C++`, `Python` (mostly)
- basic concepts and library algorithms
- programming tutorial for beginners

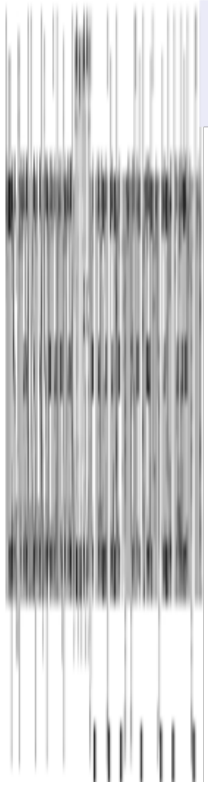
Examples

If we take all possible words we can create from letters in alphabet and sort them by length and then lexicographically, what is the n-th such word?

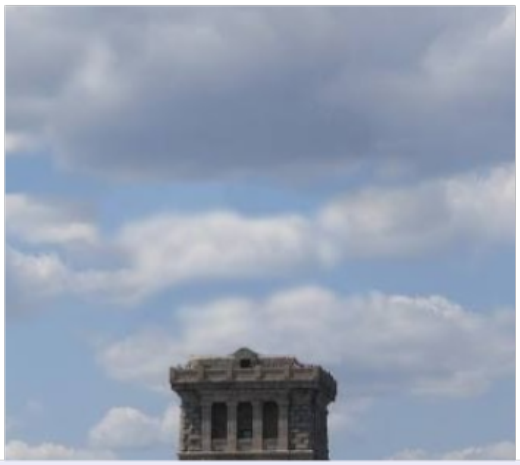
Find longest consecutive subsequence with zero sum.

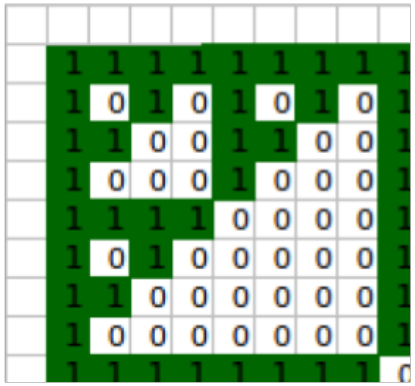
Practical tasks

- presents new technology or different type of programming
- often interactive
- contains tutorial
- most popular



GZWL DL QTYO-CPAWLNP L FCNTEP DL ET KTOP.
SPDWZ UP JSREOJFZI





```
SELECT *
FROM pupils
WHERE name = "John" OR name = "James" OR surname = "Smith";
```

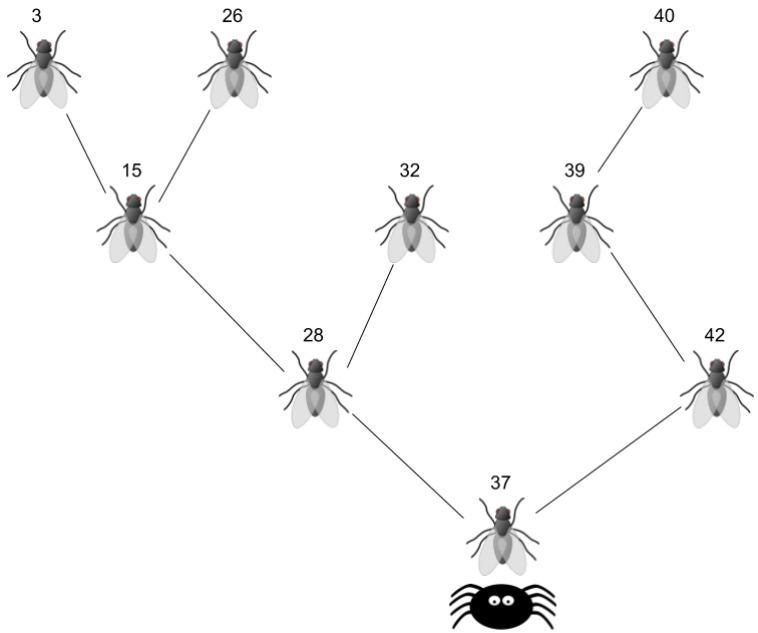
Theoretical tasks

- devising algorithms
- submit text descriptions
- personal feedback
- least popular

Difficulties during preparation

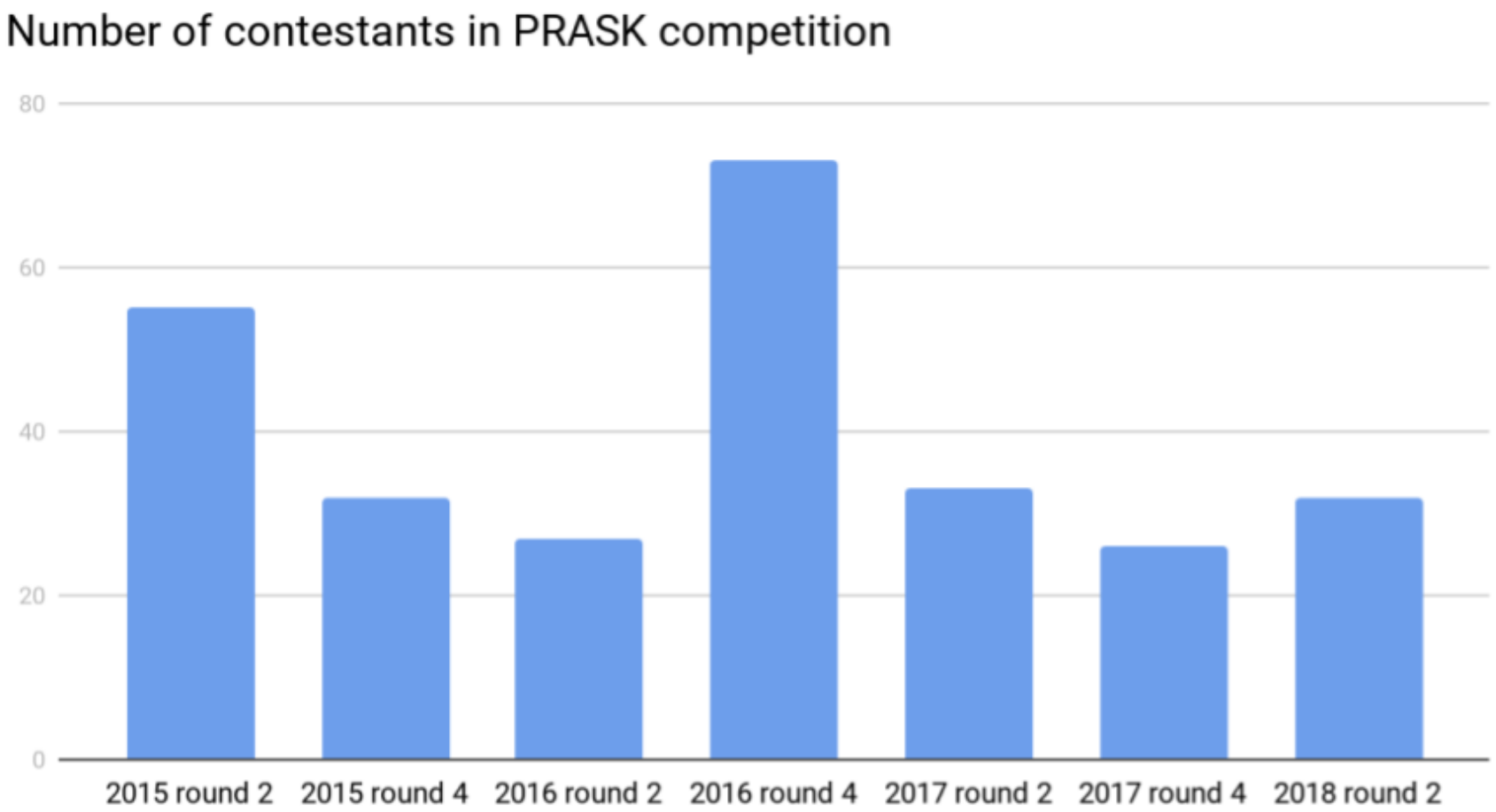
- needs to be solved from scratch
- suitable metaphor
- subtasks
- time complexity

Example

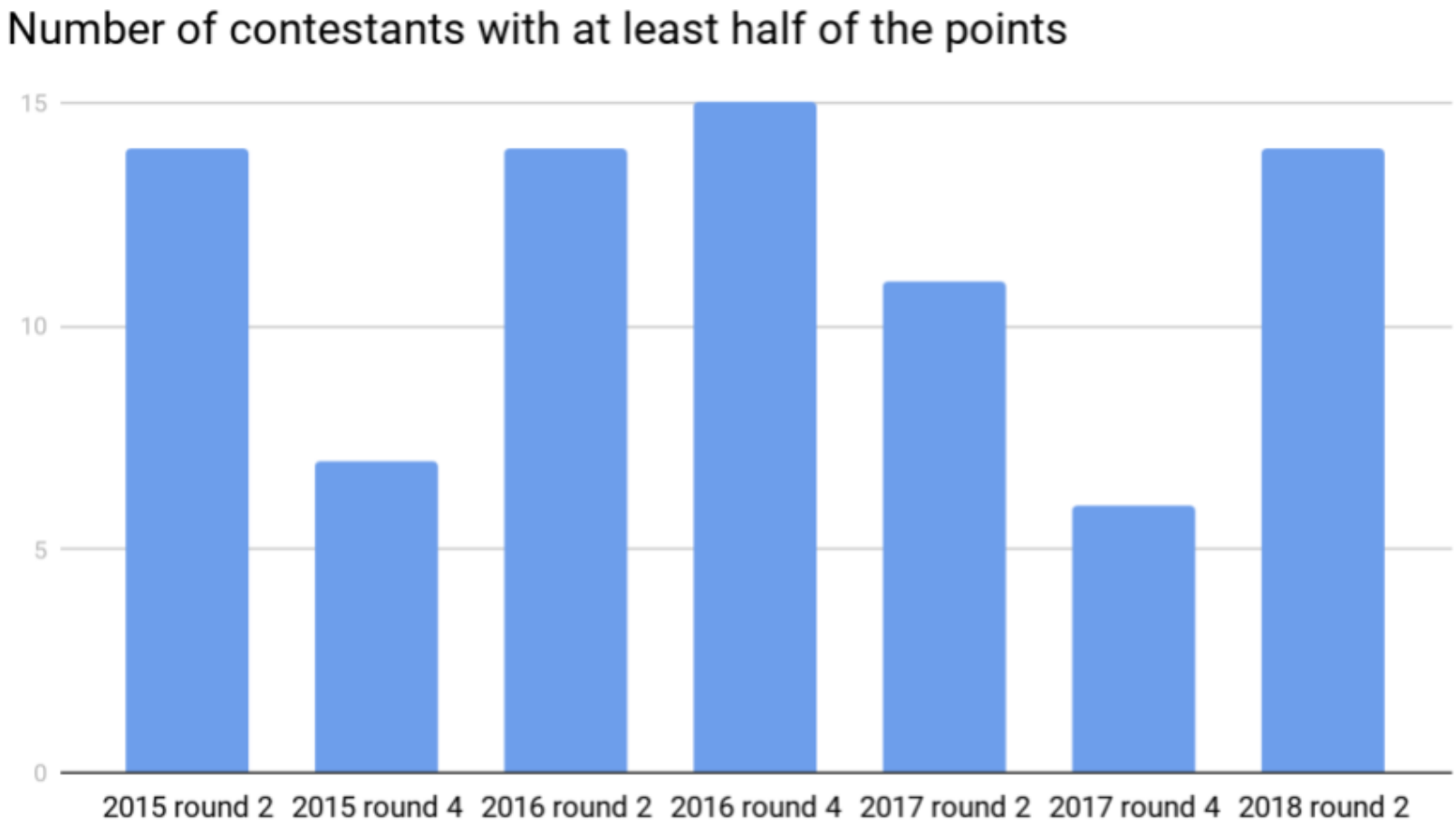


1. Find the smallest element.
2. Find the smallest element larger than root.
3. Find out, if element x is present.
4. Insert element x.
5. Delete element x.

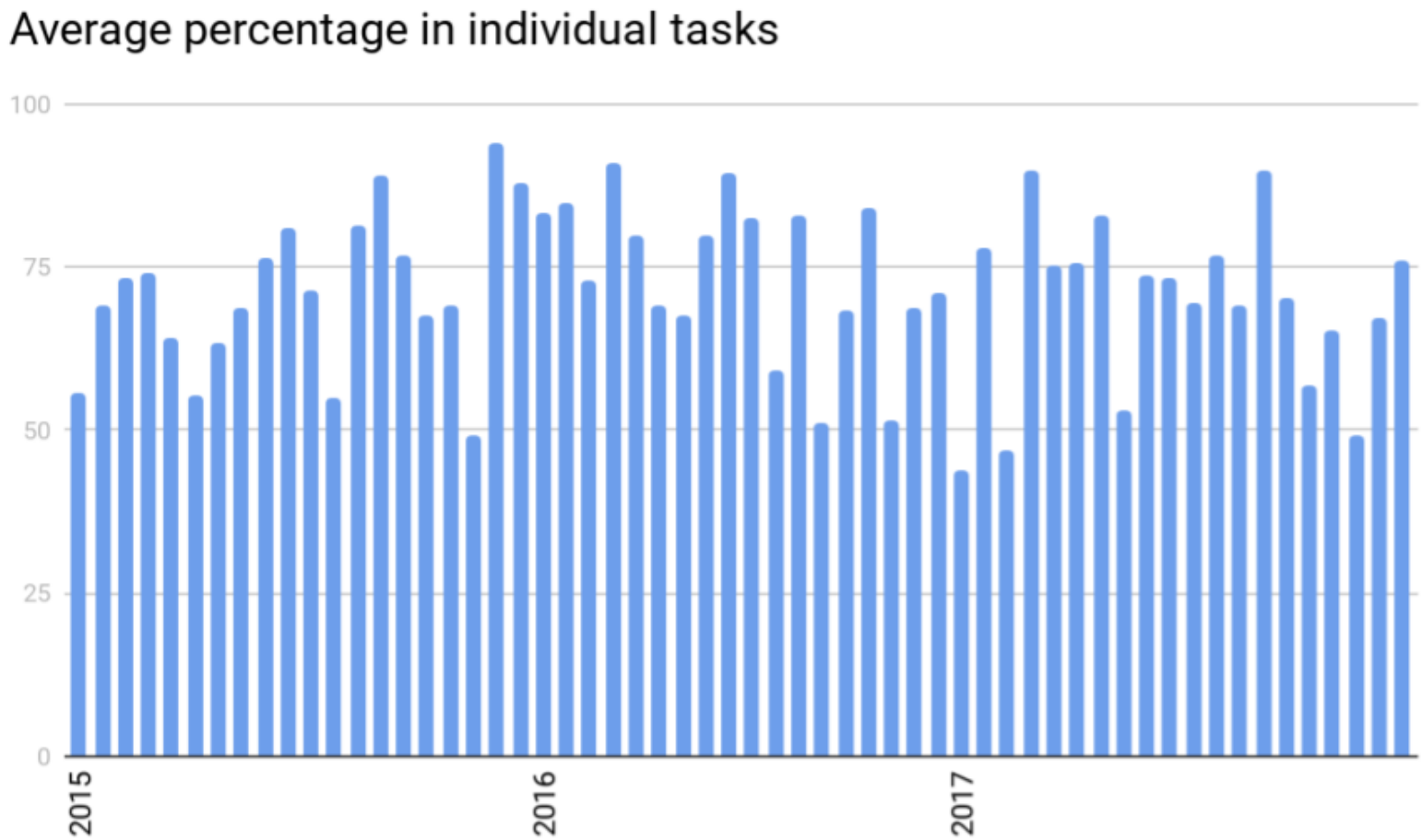
Statistics


Number of contestants in PRASK competition
80
60
40
20
0
2015 round 2
2015 round 4
2016 round 2
2016 round 4
2017 round 2
2017 round 4
2018 round 2

Statistics


Number of contestants with at least half of the points
15
10
5
0
2015 round 2
2015 round 4
2016 round 2
2016 round 4
2017 round 2
2017 round 4
2018 round 2

Statistics


Average percentage in individual tasks
100
75
50
25
0
2015
2016
2017

Sideeffects

Involvement of high schoolers

- creating statements, test data and solutions
- deepening understanding
- planning camp activities
- developing soft skills
- continuity

Materials for teachers

- all materials are public
- inspiration

Future challenges

- raise participation count
- target more teachers
- theoretical and practical tasks
- make theoretical tasks more popular
- improve beginners tutorial
- prepare materials for teacher

Thank you for your attention

Contact

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