Activation of students with the aid of clickers

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Lecture

- Lecturer runs a lecture
- What do the students do?
  - make summary
  - think about the topic of the lecture
  - ask questions
  - ...
  - check Facebook
  - play
  - communicate
  - ...

Clickers at the Institute of Computer Science

- from December 2011
  - 150
  - 3 receivers
  - With the aid of Estonian Information Technology Foundation

Lectures in Object-oriented Programming

- 2 * 50 clickers
  - ca 150 – 130 participants
- answer in pairs
- anonymous
- ca 2 + 4 blocks
  - 2-5 questions in each
    - different types of questions

The slides and experiment of Eno Tõnisson have been used
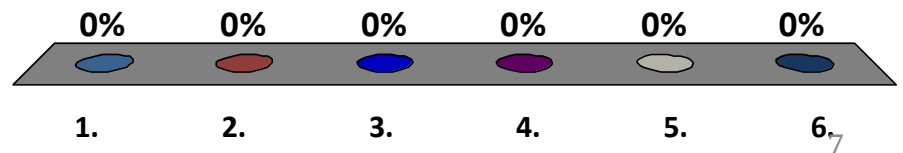
Mini-course in programming

Have you written programs?

1. yes
2. no

0%   **0%**

1.   2.

Choose the programming languages

✓1. Java

✓2. C#

✓3. Python

✓4. Pascal

✓5. Logo

✓6. Perl

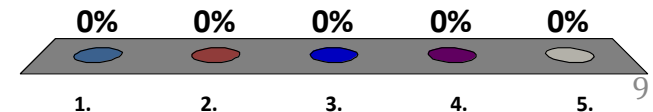| 0%	0%	0%	0%	0%	0%
1.	2.	3.	4.	5.	6.

Python

- 1989
- Guido van Rossum
- Clear syntax
- Different programming paradigms
  - object-oriented programming
  - imperative
  - functional
- Introductive course to the programming in our university

What is printed?

```
n = 7
a = 3*n
print("a")
```

✓ 1. a
2. 21
3. 3
4. 7
5. something different

0%　0%　0%　0%　0%

1.　2.　3.　4.　5.

What is printed?

```
n = 7
a = 3*n
print(a)
```

1. a
✓ 2. 21
3. 3
4. 7
5. something different

0%   0%   0%   0%   0%
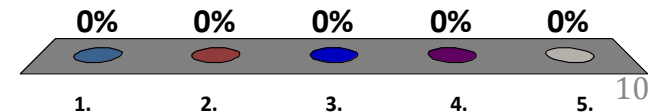
1.   2.   3.   4.   5.

Variable

- **name**
  - `n, number_of_houses`
- **type**
  - `int` (integer)
    - 1
  - `float` (floating point number)
    - 1.0
  - `str` (string)
    - '1' or "1"

Functions

- `abs(n)`
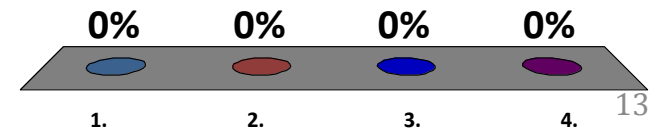- `print(a, b, c)`
- `exit()`

What is printed?

```
b = abs(-3)
print(b + 5)
```

1. 2
2. 5
3. 8
4. Something else

What is printed?

```
a = 5
b = 3
a = 2
if (a > b):
    print(a)
else:
    print(b)
```

1. 2
2. 3
3. 5
4. Something else

What is printed?

```
a = 5
b = 3
a = 2
if (a > b):
    print(a)
else:
print(b)
```

1. 2
2. 3
3. 5
4. Something else

```
a = 5
b = 3
a = 2
if (a > b):
    print(a)
else:
print(b)
```
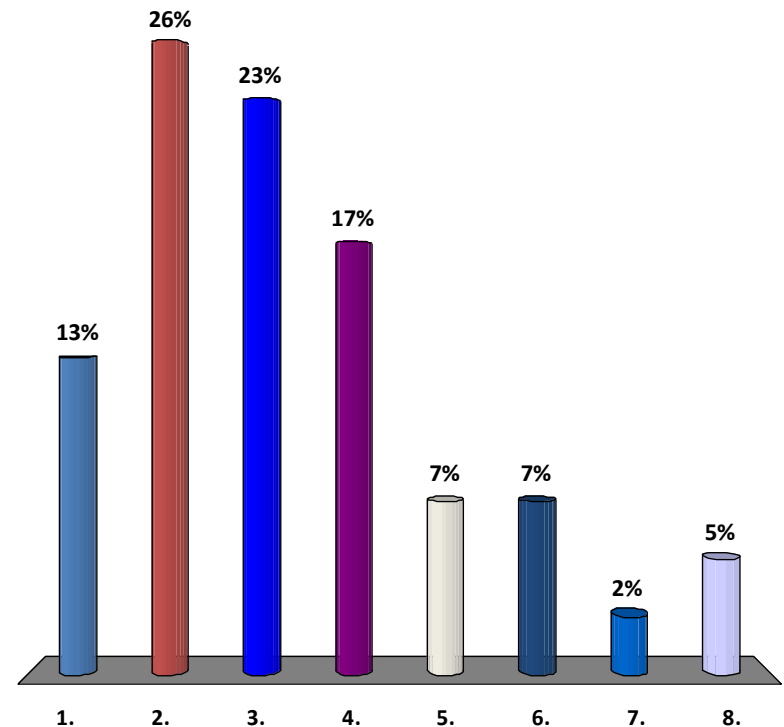
Question

- Three different types
  - about individual advancement
  - to check knowledge
  - for new topic 'tricky question'

Question

- Three different types
  - about individual advancement
  - to check knowledge
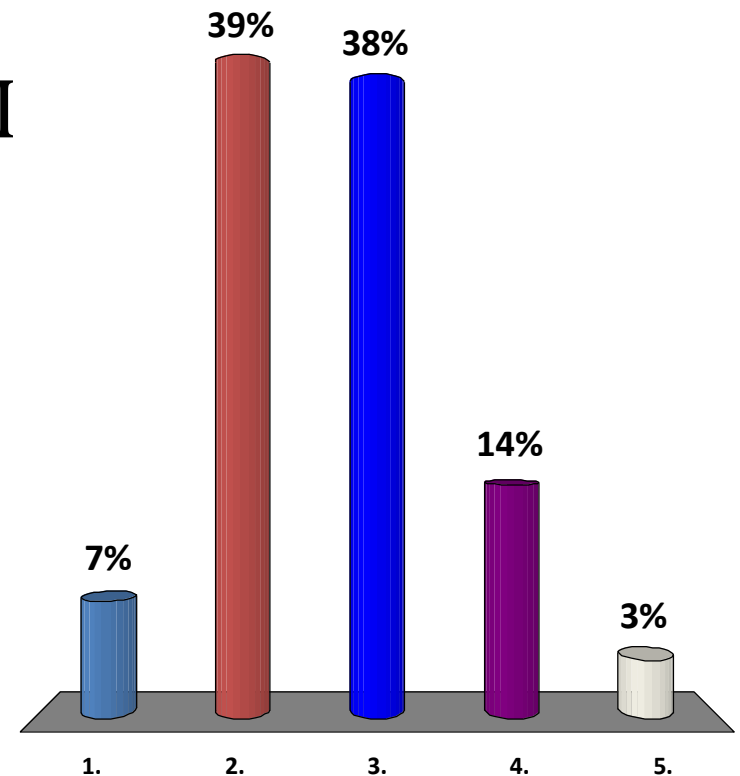 - for new topic 'tricky question'

How many hours have you spent for the subject last week (lecture + lab + independent work)?

1. 0-2 hours
2. 2-4 hours
3. 4-6 hours
4. 6-8 hours
5. 8-10 hours
6. 10-12 hours
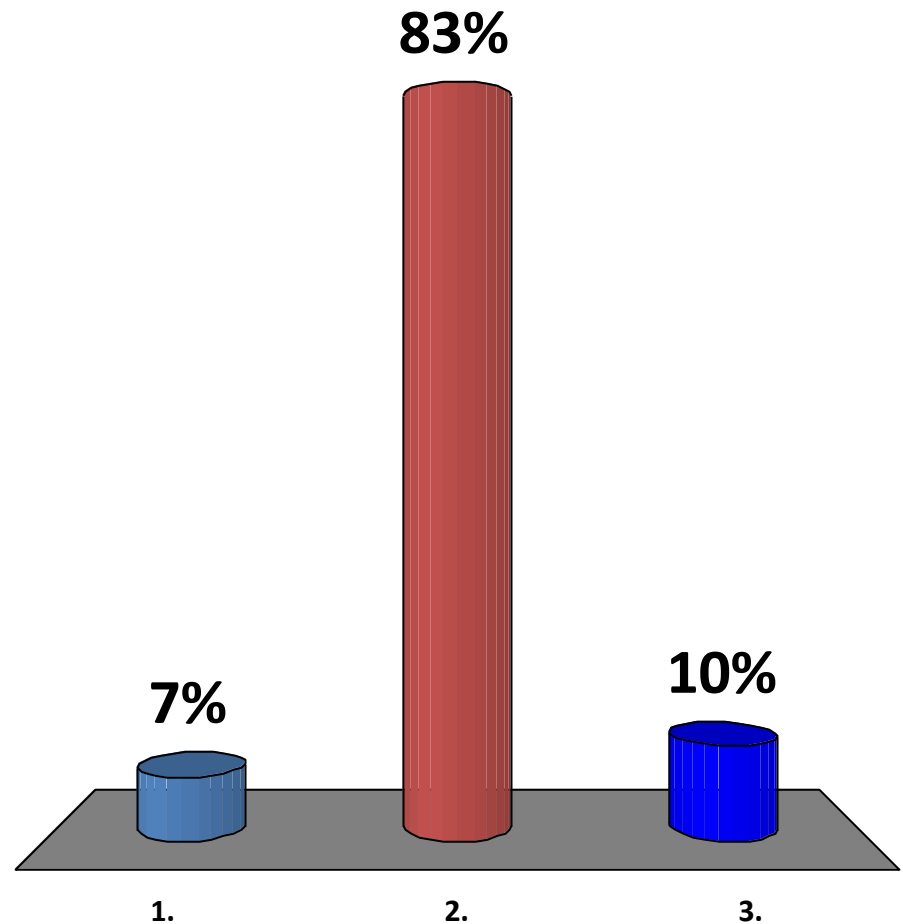7. 12-14 hours
8. more than 14 hours

Are you in schedule in this subject?

1. Even ahead.
2. Absolutely in schedule.
3. A little behind schedule. I can manage myself.
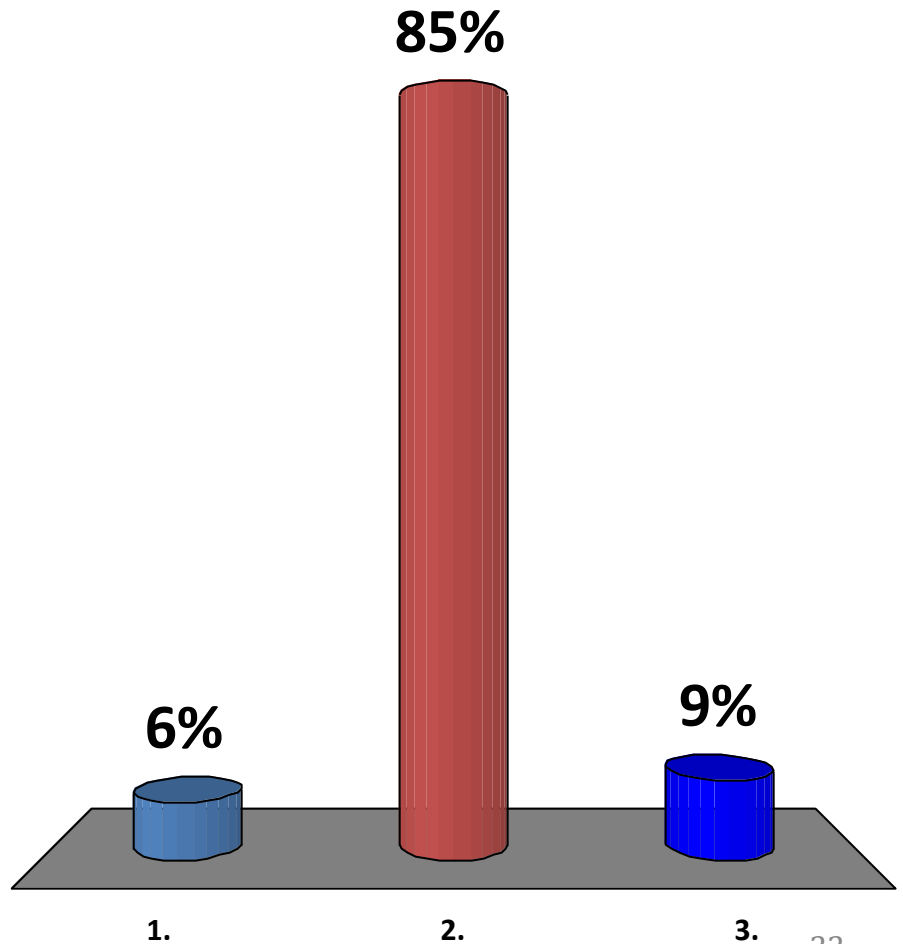4. Much behind schedule. I need help.
5. I don't know.

The lecture was …

1. Too fast.
2. In right pace.
3. Too slow.

83%

7%

10%

1.

2.

3.

The material was

1. Too simple
2. Normal
3. Too complicated

85%

6%

9%

1.   2.   3.
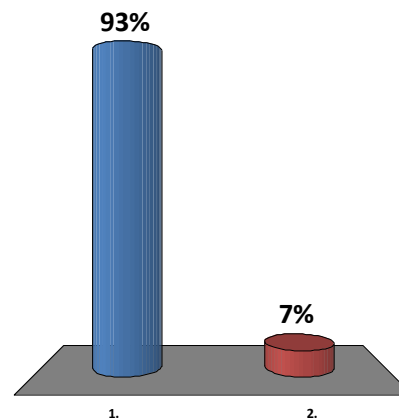
Question

- Three different types
  - about individual advancement
  - to check knowledge
  - for new topic 'tricky question'

Does the text "Pärast ohtu" appear on screen?

```java
public static void main(String[] args) {
    try {
        int[] arvud = {3, 7, 8};
        System.out.println(arvud[3]);
    } catch (ArrayIndexOutOfBoundsException e) {
        //e.printStackTrace();
    }
    System.out.println("Pärast ohtu");
}
```
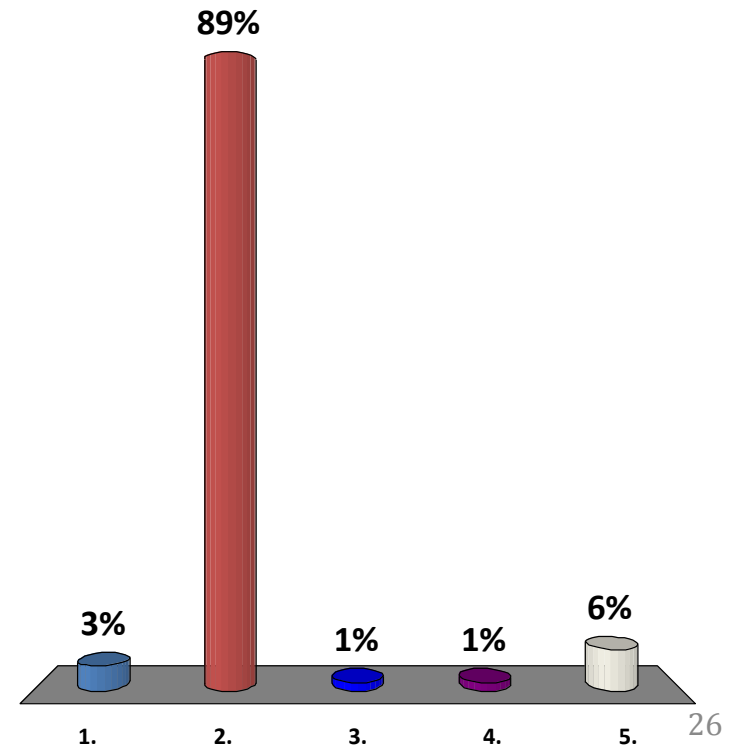
✔ 1. yes
   2. no

93%

7%

1.   2.

Question

- Three different types
  - about individual advancement
  - to check knowledge
  - for new topic 'tricky question'

What does the following code print?
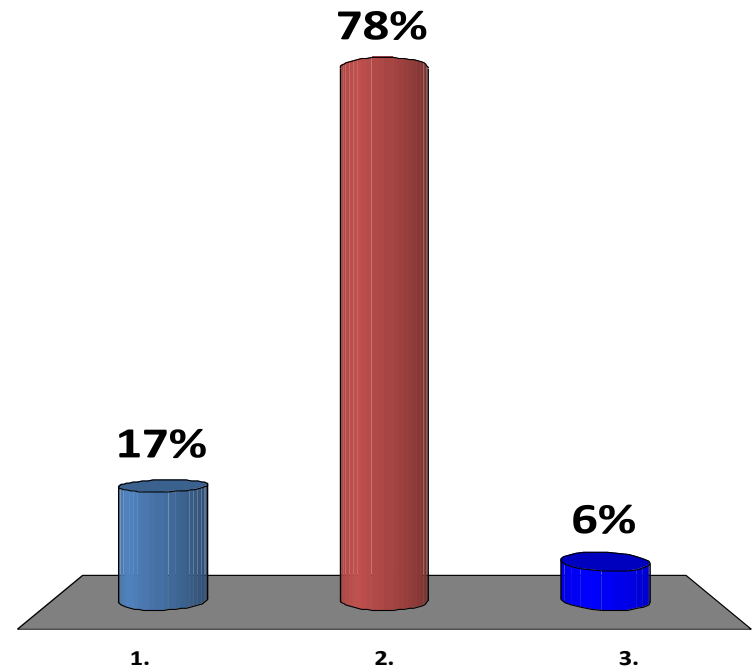
```
A a2 = new B(14,78);
System.out.println(a2.a);
```

1. 0
✔ 2. 14
3. Something else
4. Nothing
5. Error

89%

3%   1%   1%   6%
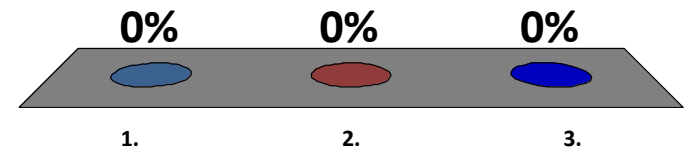
1.   2.   3.   4.   5.

Ambiguous questions

Who do you trust most of all?

1. Andrus Ansip

2. Andrus Kivirähk

3. Andrus Veerpalu

78%

17%

6%

1.   2.   3.

What is Exception?

1. Town in south of Albany

2. Indian politician, member of parliament

3. Abnormal, unexpected event or extraordinary condition in code that may occur at runtime

0%   **0%**   **0%**

1.   **2.**   **3.**

What do the students think?

- on 7-th week
  - in free form
- on 14-th week
  - questionnaire in Internet
  - 14 questions
  - 95 students

Clickers

- help us concentrate on the topic of the lecture
  - 62%/37%/1% (absolutely agree/tend to agree/tend not to agree)

- Give more profound understanding
  - 40%/52%/7% (absolutely agree/tend to agree/tend not to agree)

- Ensure effective feedback
  - 96% (absolutely agree or tend to agree)

- Would you suggest to use clickers next year
  - 100% (yes)

Summary

- Laborious process
- Lecture will be better