



# Il mio nuovo evento


Numero di partecipanti: 44



smILies  
reSilient coMputer archtectures  
and LiFE Sciences



Politecnico  
di Torino  
Department of Control and  
Computer Engineering



DAIN

## LET'S GET TO KNOW EACH OTHER

STEFANO DI CARLO

25/09/2024

Computer architecture and operating systems

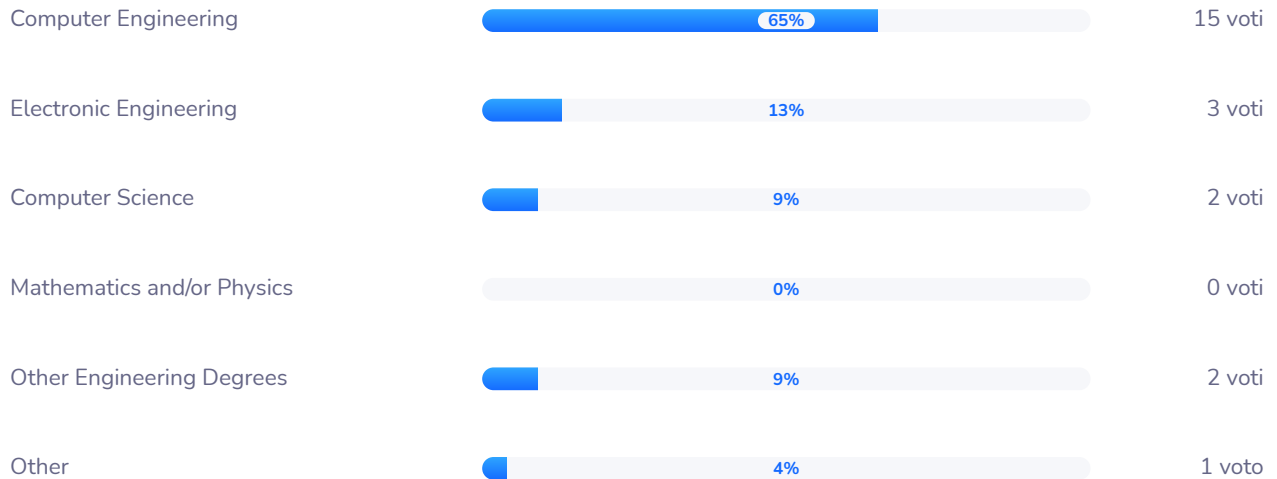
1



## STUDIES

**1. Which bachelor do you hold?**

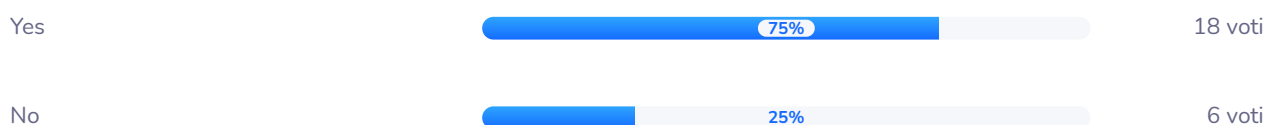
23 intervistati

**2. Where did you study (write the acronym of your university, e.g., POLITO, UNITO, UNIBO, etc.)**

22 intervistati

**3. Have you attended any Operating Systems course before?**

24 intervistati



4. If you attended an OS course before, which OS did you study?

20 intervistati

# Linux

## Minix

5. Cat or Dog?

25 intervistati



Cat



12 voti



Dog



13 voti



# KNOW-HOW

25/09/2024

Computer architecture and operating systems

3



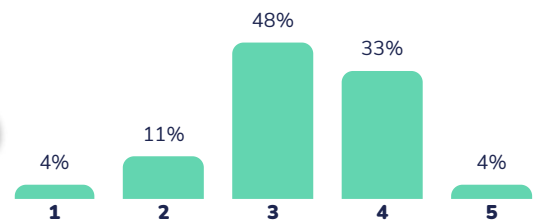
## 6. Rate your current knowledge of the following topics

27 intervistati

1

C/C++ programming

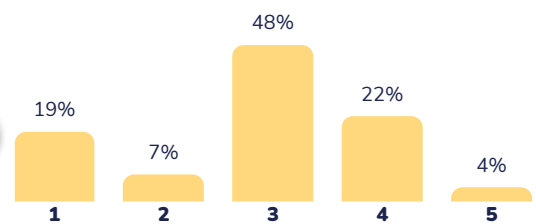
3.2



2

Computer Architecture

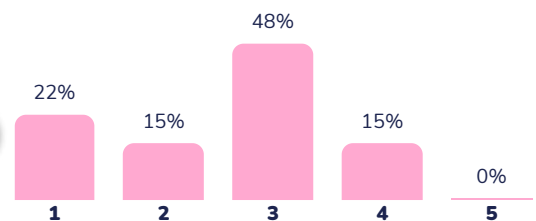
2.9



3

Operating Systems

2.6





# KNOW-HOW C programming

25/09/2024

Computer architecture and operating systems

4

## 7. Do you know the C language?

23 intervistati

Yes

100%

23 voti

No

0%

0 voti



## 8. What the keyword static in this example means

24 risposte corrette  
de 24 intervistati

```
/* Inside file1.c */  
static void fun1(void)  
{  
    printf("fun1 called\n");  
}
```

The function cannot be changed

0%

0 voti



The function scope is limited to the file  
where it is defined

100%

24 voti

The function can called only once

0%

0 voti



## 9. What the keyword static means in this example

21 risposte corrette  
de 26 intervistati

```
#include<stdio.h>
int fun()
{
    static int count = 0;
    count++;
    return count;
}

int main()
{
    printf("%d ", fun());
    printf("%d ", fun());
    return 0;
}
```

The variable cannot change its value

0%

0 voti

The variable can be accessed only within the function

19%

5 voti



The variable retains its value among multiple executions of the function

81%

21 voti



## 10. What volatile int irq\_result; means in a C program

19 risposte corrette  
de 25 intervistati

The variable loses its value after a while

4%

1 voto



Instruct the compiler not to optimize the code related to a variable,

76%

19 voti

The variable is dynamically allocated

20%

5 voti

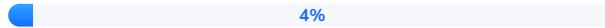


### 11. Which of the following best describes the difference between a compiler and a linker?

**23 risposte corrette**

de 24 intervistati

The compiler converts source code into machine code, while the linker converts high-level code into assembly language.



1 voto



The compiler translates source code into an intermediate or object code, while the linker combines object code files and resolves external references to create an executable.



23 voti

The compiler translates source code directly into an executable file, and the linker is responsible for optimizing the program's performance.



0 voti

The compiler checks for syntax errors and logic errors in the code, while the linker ensures that the program runs on different operating systems.



0 voti



### 12. Which of the following statements about performing bitwise operations on float types in C is correct?

**4 risposte corrette**

de 23 intervistati

Bitwise operations, like &, can be directly applied to float variables without any issues.



2 voti

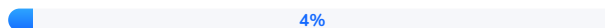


Bitwise operations cannot be applied to float types; they are only valid for integer types.



4 voti

To apply bitwise operations on float types, you need to use a special library function.



1 voto



You can apply bitwise operations directly to float types, but the result will be automatically converted to an int.




16 voti




 **13. What is the output of the following code? `int a = 10; int *p = &a; printf('%d', *p);`** **26 risposte corrette** de 27 intervistati

	<code>&amp;a</code>	<div><div></div></div> 4%	1 voto
	<code>10</code>	<div><div></div></div> 96%	26 voti
	<code>*p + 1</code>	<div><div></div></div> 0%	0 voti
	<code>p</code>	<div><div></div></div> 0%	0 voti

 **14. Which operator is used to get the address of a variable in C?** **29 risposte corrette** de 29 intervistati

	<code>&amp;</code> (ampersand)	<div><div></div></div> 100%	29 voti
	<code>#</code> (hash)	<div><div></div></div> 0%	0 voti
	<code>*</code> (asterisk)	<div><div></div></div> 0%	0 voti
	<code>@</code> (at symbol)	<div><div></div></div> 0%	0 voti

 **15. Which of the following correctly allocates memory for an array of 5 integers using pointers?** **22 risposte corrette** de 23 intervistati

	<code>int arr = (int*)malloc(5 * sizeof(int));</code>	<div><div></div></div> 4%	1 voto
	<code>int *arr = new int[5];</code>	<div><div></div></div> 0%	0 voti
	<code>int arr[5];</code>	<div><div></div></div> 0%	0 voti
	<code>int *arr = (int*)malloc(5 * sizeof(int));</code>	<div><div></div></div> 96%	22 voti

**16. What does the 'NULL' pointer represent in C?****26 risposte corrette**  
de 26 intervistati

A pointer that points to the first element of an array.

0%

0 voti



A pointer that does not point to any valid memory location.

100%

26 voti

A pointer that points to the last element of an array.

0%

0 voti

A pointer that points to a random memory location.

0%

0 voti

**17. What is the purpose of the 'const' keyword when used in `const int *ptr;`?****4 risposte corrette**  
de 27 intervistati

To allocate memory for the pointer.

0%

0 voti

To indicate that the pointer is pointing to a function.

0%

0 voti

To make the pointer itself non-modifiable.

85%

23 voti



To prevent modification of the data being pointed to.

15%

4 voti

**18. In the context of pointers, what does pointer arithmetic allow you to do?****25 risposte corrette**  
de 25 intervistati

Allocate more memory for the pointer.

0%

0 voti

Convert a pointer to an integer.

0%

0 voti

Change the type of the pointer.

0%

0 voti



Navigate through an array using pointer increments.

100%

25 voti

**19. What is the difference between 'int \*p' and 'int \*\*p' in C?****27 risposte corrette**  
de 27 intervistati

'int \*p' and 'int \*\*p' are the same.

0%

0 voti

'int \*p' is used for arrays, while 'int \*\*p' is used for single variables.

0%

0 voti



'int \*p' is a pointer to an integer, while 'int \*\*p' is a pointer to a pointer to an integer.

100%

27 voti

'int \*p' is a pointer to a pointer to an integer, while 'int \*\*p' is a pointer to an integer.

0%

0 voti

**20. What is the result of the following code? int a = 5; int \*p = &a; \*p += 2; printf('%d', a);****27 risposte corrette**  
de 27 intervistati

2

0%

0 voti

5

0%

0 voti



7

100%

27 voti

10

0%

0 voti

**21. Which of the following statements is true regarding pointer types?****15 risposte corrette**  
de 26 intervistati

Pointers of different types cannot be assigned to each other without casting.

58%

15 voti

Pointer types are irrelevant in C.

15%

4 voti

All pointers can be assigned to each other without any issues.

23%

6 voti

Pointers can only point to variables of the same type.

4%

1 voto



# KNOW-HOW Architectures

25/09/2024

Computer architecture and operating systems

5



## 22. Cache Levels

25 intervistati

L1 Cache	1	23 risposte corrette	B	Fastest cache level
L2 Cache	2	25 risposte corrette	A	Intermediate speed
L3 Cache	3	23 risposte corrette	C	Largest but slowest cache



## 23. Cache Mapping

24 intervistati

Direct Mapping	1	22 risposte corrette	C	One-to-one mapping
Associative Mapping	2	20 risposte corrette	A	Flexible mapping
Set-Associative Mapping	3	21 risposte corrette	B	Combination of direct and associative



## 24. Cache Write Policies

21 intervistati



## 25. Cache Hit

25 intervistati





**26. If I ask what is an ARM Cortex M7 can you answer using a maximum of 5 words?**

19 intervistati

RISC architecture processor

Processor

Powerful processor

Embedded system microprocessor

Risc cpu

Middle range ARM architecture

low-power RISC microprocessor

No

Cpu, soldered memory

RISC architecture processor

multi-core ARM processor

ARM based processor embedded systems

A microprocessor with Arm Architecture

low power

Microprocessor

Idk

No

A microprocessor design

no



# KNOW-HOW Operating Systems

25/09/2024

Computer architecture and operating systems

6



## 27. What is a thread in the context of operating systems?

27 risposte corrette  
de 27 intervistati



A lightweight process that can run concurrently with other threads.

100%

27 voti

A type of hardware component in a computer.

0%

0 voti

A program that manages user input.

0%

0 voti

A method for storing data on a hard drive.

0%

0 voti



## 28. What is the main difference between a process and a thread?

25 risposte corrette  
de 25 intervistati

A process cannot have multiple threads.

0%

0 voti

A thread can run without a process.

0%

0 voti

A process is always faster than a thread.

0%

0 voti



A process is an independent program, while a thread is a smaller unit of a process.

100%

25 voti

**29. What does it mean for threads to be 'concurrent'?****20 risposte corrette**  
de 25 intervistati

They can only run on separate computers.

0%

0 voti



They can run at the same time or overlap in execution.

80%

20 voti

They are completely independent and do not share resources.

0%

0 voti

They must run one after the other without overlap.

20%

5 voti

**30. Which of the following is a benefit of using threads?****27 risposte corrette**  
de 27 intervistati

Threads make debugging easier.

0%

0 voti

Threads can only run on one core of a CPU.

0%

0 voti



Improved application performance through parallelism.

100%

27 voti

Increased memory usage for each thread.

0%

0 voti

**31. What is a context switch?****22 risposte corrette**  
de 23 intervistati

A technique for optimizing memory usage.

4%

1 voto



The process of saving and restoring the state of a CPU so that multiple processes can share a single CPU.

96%

22 voti

A method for switching between different operating systems.

0%

0 voti

A way to change the user interface of an application.

0%

0 voti



**32. What is a race condition?****25 risposte corrette**  
de 26 intervistati

A type of error that occurs when a program is not responding.

0%

0 voti

A technique for managing memory allocation.

4%

1 voto



A situation where two threads access shared data and try to change it at the same time.

96%

25 voti

A method for speeding up the execution of a single thread.

0%

0 voti

**33. Can you name a scheduling algorithm that you studied in previous courses? Write NONE if you didn't study any scheduling algorithm**

25 intervistati

Readers-Writers SJF (Shortest Job First)  
shortest Priority scheduling  
priority RR None FCFS remaining  
time SJN Round Robin gto  
lru Round-robin

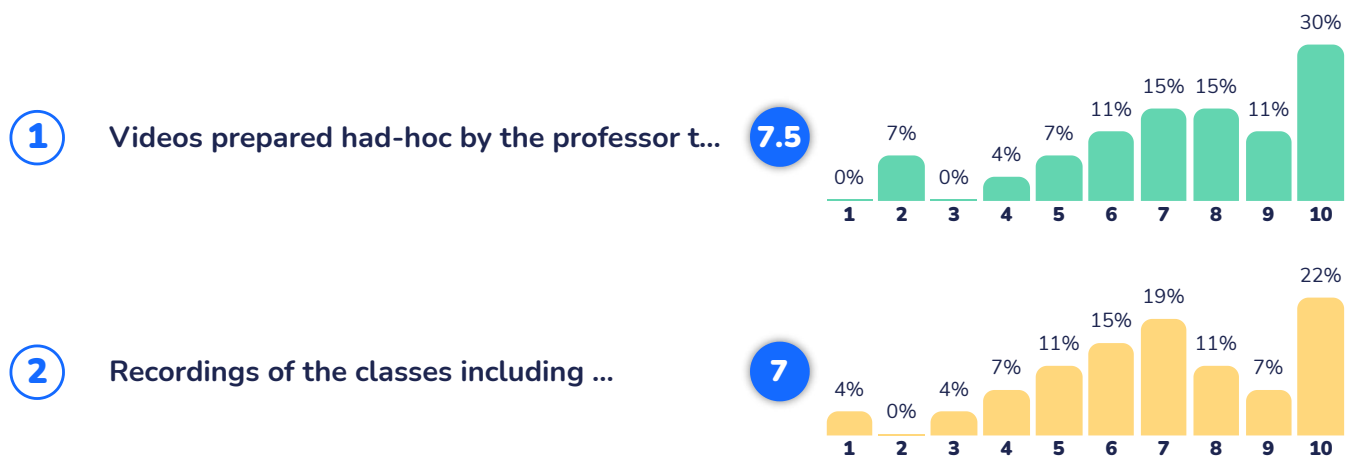
## COURSE ORGANIZATION

25/09/2024

Computer architecture and operating systems

7

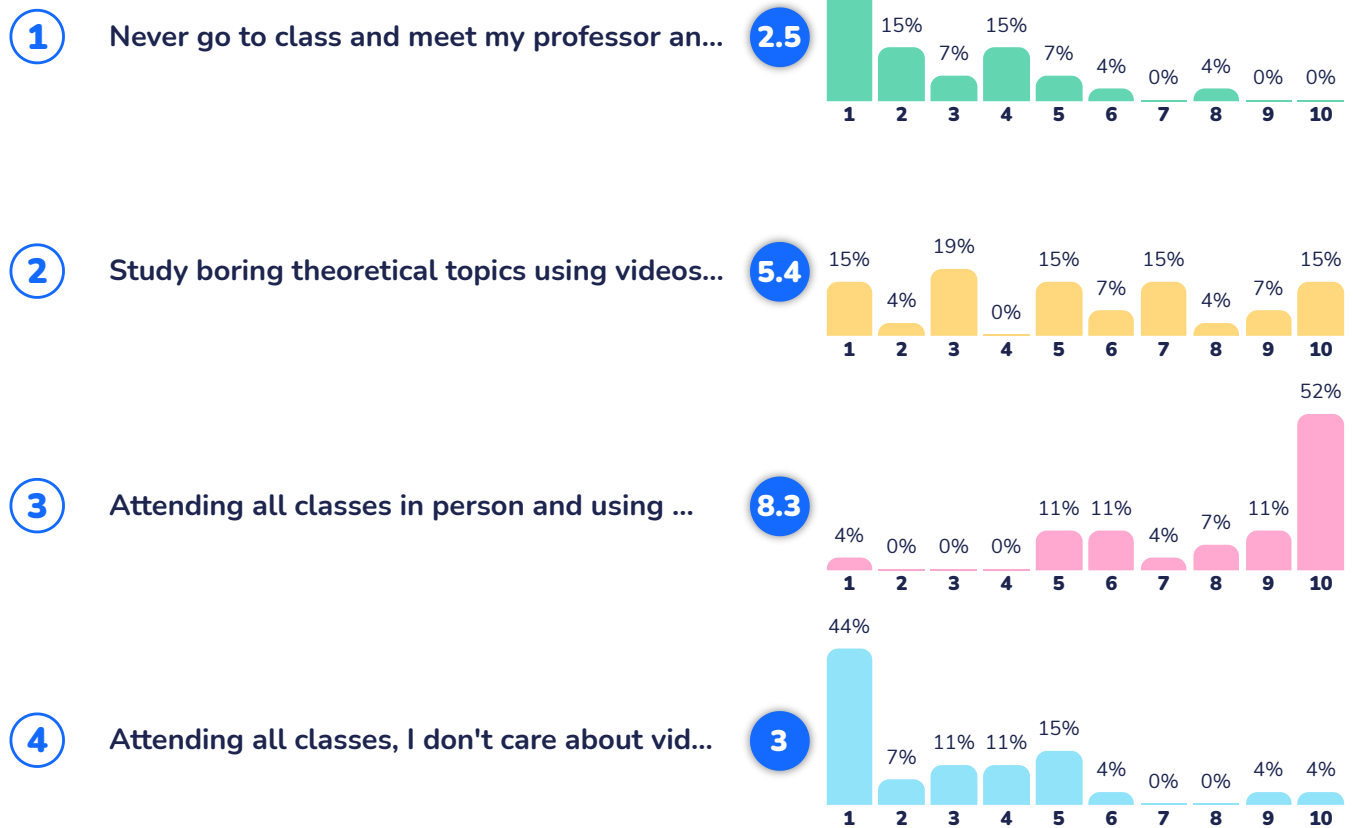
 **34. If videos are provided rate the type of video you prefer.** 27 intervistati





### 35. If you can dream the perfect course organization how do you rate the following options?

27 intervistati





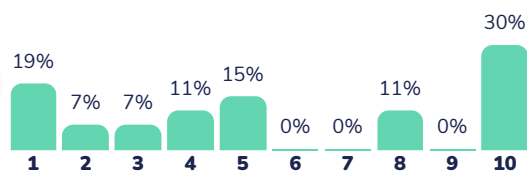
### 36. Rate the following operating systems according to your preference for a working environment

27 intervistati

1

Windows

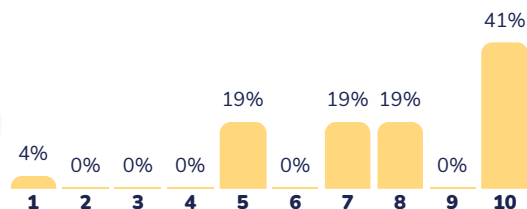
5.6



2

Linux

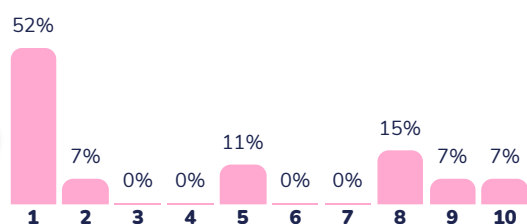
7.8



3

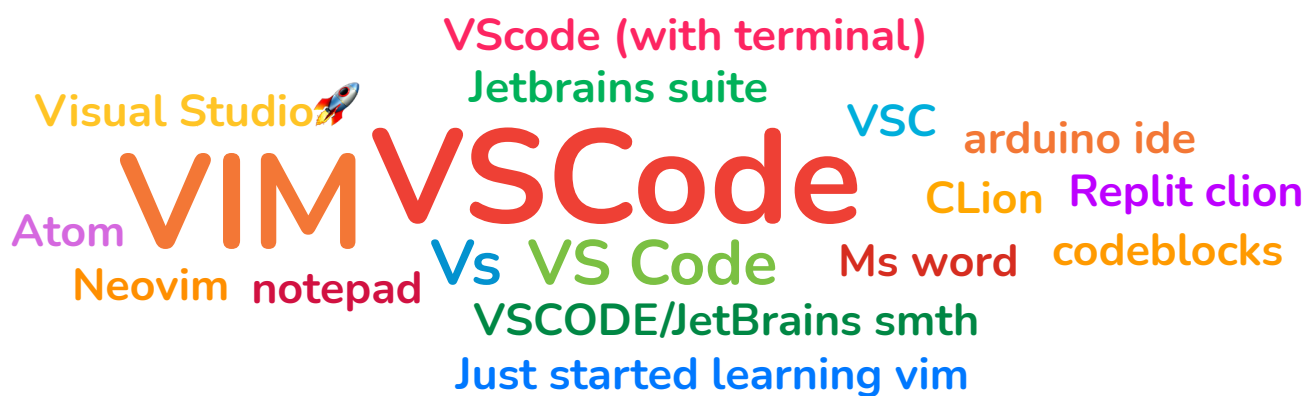
Mac OSX

3.8



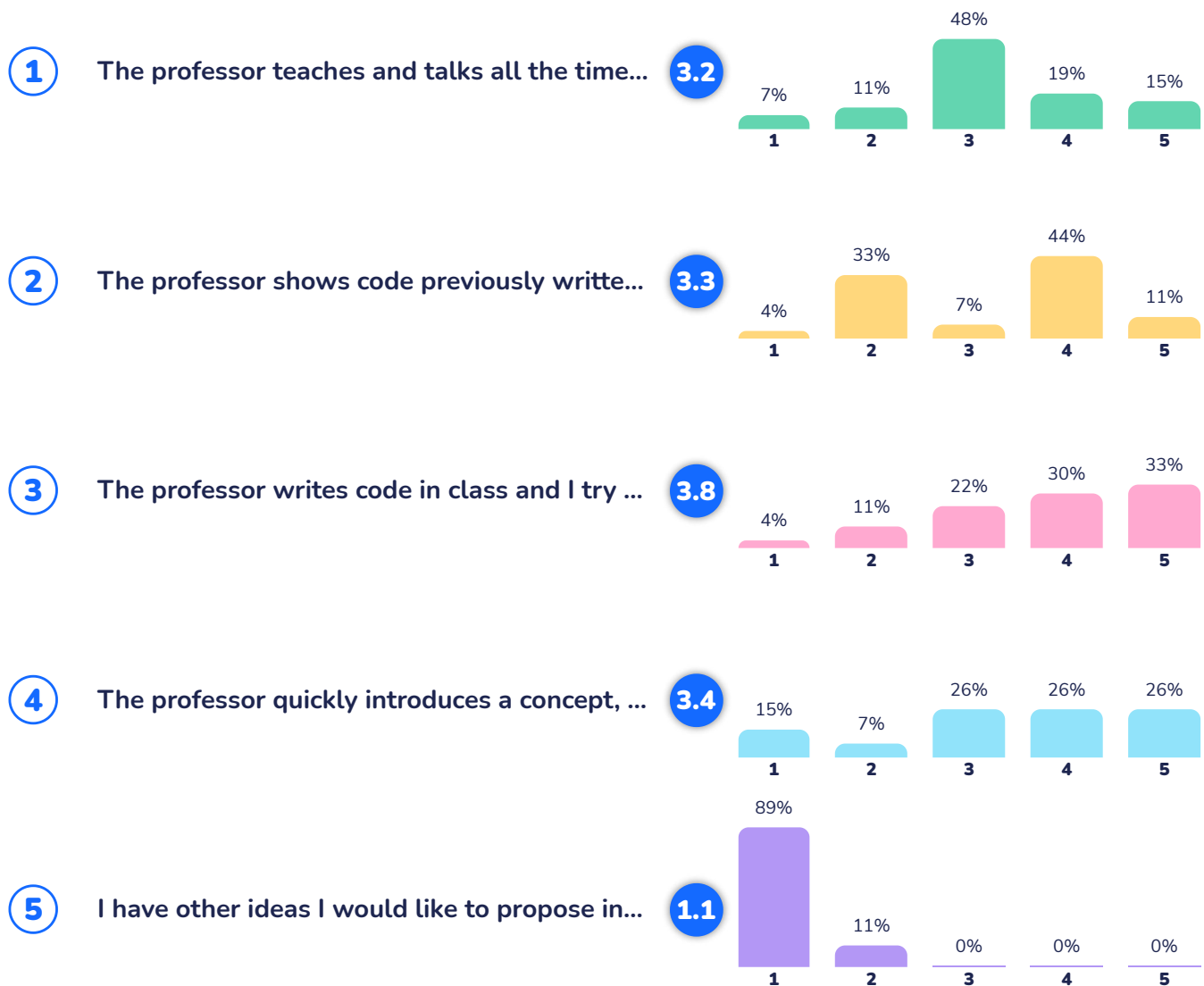
### 37. Which is your favorite code editor/IDE?

30 intervistati



**38. Rate the following lecture organizations**

27 intervistati

**39. Are you familiar with git?**

28 intervistati

Yes



22 voti

No



6 voti

