

pretest-Advanced Programming

| PRETEST | Individual interactivity | | | | | | | | | | General interactivity | | | | | | | | | |
|--------------------|---------------------------------------|---|------------------------|--------------------------|------------------------------------|--|--|---|--|--|--|---|--------------------------------|---|---|--|--|---|--|--|
| | I interact with the teacher in class. | I am involved in learning during class. | I am engaged in class. | I am attentive in class. | I participate in class discussion. | I provide my opinion to questions from the teacher during the class. | I receive feedback in class on my understanding of the course materials. | I receive feedback from the teacher during the class. | I can comprehend whether I am understanding the course materials during the class. | I can assess my understanding of the course materials with respect to other students during the class. | Students interact with the teacher in class. | Students are involved in learning during class. | Students are engaged in class. | Students participate in class discussion. | Students provide their opinions to questions from the teacher during the class. | Students receive feedback in class on their understanding of the course materials. | Students receive feedback from the teacher during the class. | Students can comprehend whether they are following the course materials during the class. | Students can assess their understanding of the course materials with respect to other students during the class. | |
| Tidsstempel | | | | | | | | | | | | | | | | | | | | |
| 10/05/2016 14.01.5 | 2 | 3 | 4 | 5 | 2 | 3 | 3 | 3 | 6 | 5 | 5 | 6 | 5 | 5 | 6 | 5 | 5 | 4 | 4 | |
| 10/05/2016 14.01.5 | 3 | 3 | 3 | 3 | 3 | 5 | 3 | 5 | 1 | 1 | 6 | 5 | 5 | 5 | 5 | 5 | 6 | 1 | 1 | |
| 10/05/2016 14.02.1 | 1 | 7 | 6 | 8 | 1 | 1 | 4 | 3 | 3 | 3 | 5 | 6 | 5 | 4 | 5 | 5 | 5 | 3 | 6 | |
| 10/05/2016 14.02.1 | 1 | 6 | 7 | 7 | 7 | 1 | 1 | 1 | 8 | 8 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| 10/05/2016 14.02.1 | 4 | 5 | 7 | 9 | 3 | 3 | 6 | 8 | 7 | 9 | 8 | 8 | 8 | 7 | 7 | 8 | 8 | 8 | 8 | |
| 10/05/2016 14.02.2 | 8 | 7 | 7 | 6 | 5 | 6 | 6 | 6 | 4 | 3 | 9 | 7 | 7 | 7 | 7 | 6 | 6 | 6 | 5 | |
| 10/05/2016 14.02.2 | 6 | 7 | 8 | 7 | 7 | 6 | 4 | 4 | 4 | 2 | 7 | 8 | 7 | 6 | 6 | 6 | 6 | 2 | 2 | |
| 10/05/2016 14.02.4 | 2 | 8 | 7 | 7 | 2 | 2 | 2 | 2 | 7 | 1 | 6 | 6 | 7 | 6 | 7 | 7 | 7 | 7 | 1 | |
| 10/05/2016 14.02.4 | 7 | 1 | 1 | 8 | 1 | 1 | 7 | 3 | 8 | 2 | 3 | 3 | 3 | 4 | 5 | 4 | 6 | 6 | 1 | |
| 10/05/2016 14.02.5 | 7 | 6 | 6 | 6 | 3 | 2 | 6 | 5 | 7 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | | |
| 10/05/2016 14.02.5 | 6 | 7 | 7 | 9 | 5 | 4 | 3 | 3 | 8 | 8 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | |
| 10/05/2016 14.03.0 | 2 | 9 | 2 | 9 | 2 | 2 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 5 | 6 | |
| 10/05/2016 14.03.0 | 3 | 7 | 5 | 8 | 2 | 3 | 6 | 6 | 7 | 7 | 7 | 7 | 8 | 8 | 8 | 8 | 8 | 5 | 7 | |
| 10/05/2016 14.03.0 | 3 | 5 | 5 | 5 | 5 | 8 | 3 | 3 | 3 | 5 | 4 | 5 | 4 | 6 | 5 | 5 | 5 | 3 | 5 | |
| 10/05/2016 14.03.1 | 3 | 9 | 9 | 9 | 6 | 1 | 9 | 3 | 9 | 9 | 7 | 5 | 5 | 4 | 8 | 9 | 9 | 6 | 7 | |
| 10/05/2016 14.03.1 | 2 | 7 | 7 | 7 | 3 | 3 | 2 | 2 | 9 | 9 | 9 | 8 | 7 | 8 | 6 | 9 | 9 | 8 | 9 | |
| 10/05/2016 14.03.2 | 8 | 8 | 8 | 8 | 6 | 5 | 8 | 8 | 7 | 5 | 8 | 8 | 7 | 6 | 7 | 8 | 8 | 5 | 5 | |
| 10/05/2016 14.03.3 | 5 | 9 | 9 | 9 | 5 | 5 | 6 | 7 | 9 | 9 | 6 | 6 | 5 | 7 | 6 | 8 | 8 | 8 | 9 | |
| 10/05/2016 14.03.3 | 4 | 4 | 6 | 8 | 1 | 1 | 4 | 5 | 5 | 7 | 7 | 7 | 8 | 7 | 7 | 7 | 7 | 7 | 7 | |
| 10/05/2016 14.03.4 | 1 | 7 | 8 | 8 | 1 | 1 | 5 | 6 | 7 | 8 | 7 | 8 | 7 | 8 | 7 | 8 | 7 | 7 | 7 | |
| 10/05/2016 14.03.4 | 3 | 5 | 5 | 5 | 4 | 1 | 1 | 1 | 5 | 6 | 5 | 7 | 7 | 6 | 5 | 7 | 4 | 4 | 5 | |
| 10/05/2016 14.03.4 | 3 | 5 | 6 | 4 | 8 | 3 | 3 | 3 | 8 | 6 | 4 | 6 | 5 | 5 | 3 | 2 | 2 | 7 | 3 | |
| 10/05/2016 14.03.4 | 8 | 6 | 4 | 8 | 2 | 2 | 3 | 4 | 6 | 2 | 6 | 5 | 5 | 5 | 3 | 4 | 6 | 5 | 4 | |
| 10/05/2016 14.03.5 | 8 | 6 | 4 | 8 | 2 | 2 | 3 | 4 | 6 | 2 | 6 | 5 | 5 | 5 | 3 | 4 | 6 | 5 | 4 | |
| 10/05/2016 14.03.5 | 2 | 8 | 8 | 8 | 1 | 1 | 5 | 7 | 7 | 9 | 4 | 8 | 5 | 5 | 6 | 5 | 5 | 5 | 5 | |
| 10/05/2016 14.03.5 | 1 | 5 | 8 | 9 | 2 | 2 | 7 | 8 | 6 | 7 | 7 | 7 | 7 | 5 | 5 | 8 | 7 | 5 | 7 | |
| 10/05/2016 14.04.0 | 7 | 5 | 5 | 6 | 4 | 4 | 5 | 5 | 7 | 5 | 9 | 9 | 9 | 8 | 7 | 6 | 7 | 7 | 7 | |
| 10/05/2016 14.04.0 | 2 | 3 | 3 | 5 | 2 | 3 | 4 | 5 | 6 | 6 | 8 | 7 | 7 | 7 | 7 | 6 | 5 | 7 | 5 | |
| 10/05/2016 14.04.0 | 5 | 5 | 4 | 6 | 3 | 4 | 7 | 5 | 5 | 5 | 7 | 6 | 4 | 6 | 6 | 8 | 9 | 6 | 5 | |
| 10/05/2016 14.04.0 | 1 | 9 | 7 | 9 | 1 | 4 | 9 | 7 | 5 | 7 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 7 | |
| 10/05/2016 14.04.1 | 3 | 3 | 3 | 7 | 3 | 3 | 5 | 5 | 5 | 7 | 7 | 6 | 6 | 6 | 6 | 3 | 3 | 5 | 5 | |
| 10/05/2016 14.04.2 | 6 | 8 | 7 | 9 | 5 | 4 | 8 | 8 | 9 | 9 | 7 | 5 | 5 | 5 | 5 | 8 | 8 | 8 | 8 | |
| 10/05/2016 14.04.2 | 2 | 4 | 4 | 8 | 2 | 2 | 2 | 2 | 2 | 2 | 6 | 6 | 5 | 7 | 6 | 6 | 5 | 5 | 5 | |
| 10/05/2016 14.04.3 | 7 | 7 | 7 | 7 | 7 | 5 | 6 | 7 | 9 | 7 | 4 | 4 | 4 | 5 | 4 | 7 | 8 | 7 | 7 | |
| 10/05/2016 14.04.3 | 2 | 2 | 6 | 8 | 5 | 4 | 5 | 8 | 6 | 5 | 8 | 8 | 8 | 7 | 7 | 8 | 8 | 6 | 7 | |
| 10/05/2016 14.04.3 | 5 | 9 | 8 | 8 | 2 | 5 | 2 | 2 | 3 | 4 | 7 | 8 | 9 | 8 | 7 | 2 | 2 | 3 | 3 | |
| 10/05/2016 14.04.4 | 2 | 4 | 3 | 9 | 7 | 3 | 5 | 7 | 3 | 6 | 7 | 9 | 8 | 7 | 5 | 7 | 7 | 5 | 7 | |
| 10/05/2016 14.04.4 | 1 | 4 | 5 | 6 | 2 | 1 | 5 | 5 | 6 | 4 | 7 | 7 | 4 | 4 | 4 | 5 | 6 | 5 | 5 | |
| 10/05/2016 14.04.5 | 4 | 7 | 3 | 8 | 1 | 1 | 4 | 4 | 7 | 5 | 9 | 7 | 9 | 8 | 8 | 7 | 7 | 7 | 6 | |
| 10/05/2016 14.05.0 | 2 | 6 | 6 | 7 | 2 | 2 | 2 | 3 | 1 | 5 | 7 | 5 | 5 | 3 | 4 | 3 | 4 | 4 | 2 | |
| 10/05/2016 14.05.1 | 6 | 9 | 9 | 9 | 5 | 4 | 7 | 7 | 6 | 7 | 7 | 7 | 7 | 8 | 8 | 8 | 8 | 8 | 8 | |
| 10/05/2016 14.05.2 | 4 | 6 | 6 | 8 | 4 | 5 | 5 | 8 | 7 | 8 | 7 | 6 | 6 | 6 | 6 | 5 | 6 | 5 | 5 | |
| 10/05/2016 14.05.3 | 9 | 9 | 9 | 9 | 5 | 5 | 6 | 6 | 5 | 4 | 9 | 9 | 9 | 9 | 6 | 5 | 5 | 7 | 5 | |
| 10/05/2016 14.05.3 | 6 | 9 | 6 | 4 | 3 | 5 | 6 | 7 | 8 | 7 | 8 | 7 | 8 | 8 | 8 | 6 | 8 | 7 | 7 | |
| 10/05/2016 14.06.0 | 8 | 7 | 3 | 2 | 7 | 9 | 1 | 8 | 4 | 7 | 8 | 8 | 5 | 6 | 4 | 9 | 6 | 6 | 5 | |
| 10/05/2016 14.06.2 | 9 | 9 | 7 | 5 | 4 | 8 | 7 | 4 | 9 | 3 | 7 | 4 | 4 | 6 | 5 | 5 | 5 | 5 | 5 | |
| 10/05/2016 14.07.0 | 4 | 6 | 6 | 8 | 6 | 4 | 7 | 7 | 7 | 7 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 7 | 7 | |
| 11/05/2016 21.12.5 | 8 | 7 | 7 | 7 | 4 | 5 | 5 | 6 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 9 | 6 | 8 | |

posttest-Advanced Programming

| POSTTEST | Ease of use | | | Perceived usefulness | | | | |
|-----------------|---|---|--------------------------------|---|---|--|---|--|
| Tidsstempel | It is easy for me to become skillful at using the system. | I find it easy to get the system to work as intended. | I find the system easy to use. | Using the system increases my interaction in the class. | Using the system makes it easier for me to interact in the class. | I find the system useful in enhancing my interaction in the class. | What are the advantages and disadvantages of using a classroom response system in the classroom? | While answering questions, did you test your answers (for example using the console, a REPL, Chrome DevTools, JSFiddle etc.) |
| 10/05/2016 15.1 | 8 | 8 | 8 | 9 | 9 | 9 | | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 6 | 6 | | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 9 | | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 9 | | Yes |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 9 | Obvious | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 9 | | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 9 | | No |
| 10/05/2016 15.1 | 5 | 5 | 5 | 9 | 9 | 9 | | Yes |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 9 | It's good lol | No |
| 10/05/2016 15.1 | 7 | 9 | 9 | 9 | 9 | 9 | | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 9 | | No |
| 10/05/2016 15.1 | 9 | 8 | 8 | 8 | 8 | 8 | I don't see any disadvantages | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 6 | 7 | Increases my attention during the lectures | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 9 | good stuff | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 9 | It increases the attention of the class | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 7 | Fun and interactive | Yes |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 9 | | No |
| 10/05/2016 15.1 | 7 | 7 | 7 | 7 | 7 | 7 | | No |
| 10/05/2016 15.1 | 8 | 8 | 7 | 8 | 8 | 8 | Makes the lecture more interesting | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 7 | 9 | 8 | | No |
| 10/05/2016 15.1 | 6 | 7 | 7 | 8 | 8 | 8 | Easy to check the understanding | No |
| 10/05/2016 15.1 | 9 | 5 | 9 | 7 | 7 | 7 | Student attention is higher. I see no immediate disadvantages, unless of course it is overused. | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 9 | If the questions are well designed, makes you think quickly and carefully | No |
| 10/05/2016 15.1 | 8 | 5 | 8 | 7 | 7 | 7 | More interaction between teachers and students | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 9 | Easier less personal interaction, but with awkward pauses. | No |
| 10/05/2016 15.1 | 7 | 7 | 7 | 8 | 8 | 8 | | No |
| 10/05/2016 15.1 | 8 | 8 | 8 | 9 | 9 | 9 | It keeps the students more focused on the class and its interactivity makes it fun to use. | No |
| 10/05/2016 15.1 | 8 | 7 | 7 | 8 | 8 | 8 | | Yes |
| 10/05/2016 15.1 | 7 | 6 | 7 | 8 | 8 | 8 | Only good things, anonymous | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 9 | | No |
| 10/05/2016 15.1 | 9 | 8 | 8 | 8 | 8 | 9 | Better response. | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 7 | 7 | 7 | It keeps you engaged and forces you to think. | No |
| 10/05/2016 15.1 | 7 | 7 | 7 | 9 | 9 | 9 | Advantage: I can see if my class mates are on the same level. | No |
| 10/05/2016 15.1 | 8 | 9 | 9 | 9 | 9 | 8 | You are forced to think actively about what is taught during the lecture and apply it. Makes it easier to understand in the end | No |
| 10/05/2016 15.1 | 7 | 8 | 9 | 9 | 9 | 9 | | No |

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| | | | | | | | | |
|-----------------|---|---|---|---|---|---|---|-----|
| 10/05/2016 15.1 | 9 | 8 | 9 | 9 | 9 | 9 | I think it is very nice. you get to participate "anonymously" and get feedback on your understanding. TBH I did not know the first part of the questionnaire was related to the govote system at all. | No |
| 10/05/2016 15.1 | 7 | 7 | 7 | 9 | 6 | 7 | advantage is that even shy people can be more involved. | No |
| 10/05/2016 15.1 | 8 | 8 | 9 | 8 | 8 | 9 | | No |
| 10/05/2016 15.1 | 7 | 5 | 6 | 6 | 7 | 6 | | Yes |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 5 | 9 | | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 9 | what system? | Yes |
| 10/05/2016 15.1 | 7 | 8 | 6 | 9 | 9 | 9 | | No |
| 10/05/2016 15.1 | 5 | 5 | 5 | 5 | 5 | 5 | | Yes |
| 10/05/2016 15.1 | 7 | 5 | 7 | 9 | 7 | 7 | You are forced to think about an answer and actually give an answer. | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 9 | 9 | 9 | Just much more interaction, in the class, i Think it was really helpfull! | Yes |
| 10/05/2016 15.1 | 8 | 9 | 9 | 9 | 8 | 7 | | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 8 | 9 | 9 | Its easy to see if the class knows the curriculum in general. Some people might be too shy to speak up during class even though they know the answers. Disadvange could be that people might not get the help they need during Classes. | No |
| 10/05/2016 15.1 | 9 | 9 | 9 | 8 | 9 | 9 | | No |
| 10/05/2016 15.1 | 8 | 7 | 8 | 8 | 8 | 8 | Measure your own progress and not just nodding along whatever the teacher says | No |
| 10/05/2016 17.4 | 7 | 8 | 6 | 9 | 9 | 9 | | No |

pretest-Frameworks and Architectures for the Web

| PRETEST | Individual interactivity | | | | | | | | | | General interactivity | | | | | | | | | |
|--------------------|---------------------------------------|---|------------------------|--------------------------|------------------------------------|--|--|---|--|--|--|---|--------------------------------|---|---|--|--|---|--|---|
| Tidsstempel | I interact with the teacher in class. | I am involved in learning during class. | I am engaged in class. | I am attentive in class. | I participate in class discussion. | I provide my opinion to questions from the teacher during the class. | I receive feedback in class on my understanding of the course materials. | I receive feedback from the teacher during the class. | I can comprehend whether I am understanding the course materials during the class. | I can assess my understanding of the course materials with respect to other students during the class. | Students interact with the teacher in class. | Students are involved in learning during class. | Students are engaged in class. | Students participate in class discussion. | Students provide their opinions to questions from the teacher during the class. | Students receive feedback in class on their understanding of the course materials. | Students receive feedback from the teacher during the class. | Students can comprehend whether they are following the course materials during the class. | Students can assess their understanding of the course materials with respect to other students during the class. | |
| 12/05/2016 11.08.1 | 4 | 5 | 4 | 4 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 6 | 7 | 7 | 6 | 5 | 5 |
| 12/05/2016 11.08.3 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 |
| 12/05/2016 11.11.5 | 6 | 9 | 9 | 8 | 5 | 5 | 5 | 5 | 6 | 8 | 8 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 6 | 6 |
| 12/05/2016 11.12.1 | 5 | 5 | 5 | 6 | 6 | 5 | 3 | 6 | 6 | 6 | 5 | 4 | 6 | 6 | 6 | 4 | 4 | 7 | 4 | 6 |
| 12/05/2016 11.13.3 | 5 | 5 | 5 | 7 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 12/05/2016 11.14.5 | 7 | 7 | 5 | 6 | 3 | 5 | 6 | 6 | 6 | 6 | 8 | 8 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| 12/05/2016 11.35.3 | 3 | 4 | 3 | 6 | 5 | 2 | 3 | 3 | 8 | 8 | 3 | 4 | 4 | 4 | 4 | 3 | 5 | 5 | 5 | 5 |
| 14/05/2016 21.50.3 | 9 | 9 | 9 | 9 | 9 | 9 | 4 | 7 | 4 | 6 | 7 | 7 | 7 | 7 | 7 | 7 | 4 | 6 | 5 | 5 |

posttest-Frameworks and Architectures for the Web

| POSTTEST | Ease of use | | | Perceived usefulness | | | | |
|--------------------|---|---|--------------------------------|---|---|--|--|--|
| Tidsstempel | It is easy for me to become skillful at using the system. | I find it easy to get the system to work as intended. | I find the system easy to use. | Using the system increases my interaction in the class. | Using the system makes it easier for me to interact in the class. | I find the system useful in enhancing my interaction in the class. | What are the advantages and disadvantages of using a classroom response system in the classroom? | While answering questions, did you test your answers (for example using the console, a REPL, Chrome DevTools, JSFiddle etc.) |
| 12/05/2016 11.36.1 | 8 | 5 | 7 | 8 | 7 | 7 | | Yes |
| 12/05/2016 11.36.3 | 7 | 9 | 8 | 6 | 7 | 7 | | Yes |
| 12/05/2016 11.36.3 | 7 | 7 | 9 | 6 | 7 | 7 | | Yes |
| 12/05/2016 11.36.3 | 8 | 7 | 9 | 7 | 6 | 8 | | Yes |
| 12/05/2016 11.36.3 | 5 | 8 | 7 | 6 | 6 | 4 | | No |
| 12/05/2016 11.37.0 | 8 | 8 | 8 | 5 | 5 | 7 | | No |
| 12/05/2016 11.37.4 | 9 | 9 | 9 | 9 | 9 | 9 | It really helps examining yourself and seeing what you got or didn't get- at real time. I think it's obviously better if you can't see what others answered- or only at a later stage- so that you don't just get lazy and answer like everyone else before examining the question. :) | Yes |
| 12/05/2016 11.38.3 | 8 | 8 | 8 | 8 | 8 | 7 | It may be a slow way of going through material. The number of questions should probably be limited or done at different points during a lecture (e.g. after finishing up a specific topic before moving on to the next) | No |
| 12/05/2016 11.38.5 | 7 | 7 | 7 | 9 | 9 | 9 | advantages : interesting, can be more intensive disadvantages : less individual feedback | Yes |
| 12/05/2016 11.46.1 | 9 | 9 | 9 | 2 | 2 | 5 | I think the system should be used without being able to look at the answers of the majority while answering the questions. Give people 30 seconds or 1 minute to answer before showing what people have answered. Students are easily biased, and it is hard to not look at what everyone else has answered before answering yourself. Advantage: The teacher is able to go through some materials that were not learned by the students. Disadvantage: If the the students are already active during the class, this tool kinda de-personalize the connection between the teacher and the students. Also: The students are only to give one answer, if the answer is wrong, the teacher might not know why the student answered this, and if the majority answered something different, a student may not say why they thought the wrong answer was correct... And then you'll have the: "Ok... I guess that's the right answer but I don't know why" effect again... | No |