Visualization Survey

This survey explores four analogies depicting the difference between how primitive and reference type variables are stored and accessed. You'll first provide feedback on each visual analogy. In the end, you'll compare and rank the analogies.

1. I am a... *

   Mark only one oval.

   ◯ CS Student   *Skip to question 2*

   ◯ CS Instructor   *Skip to question 4*

CS Student

These questions are for CS Students

2. Which CS courses have you completed? *

   Check all that apply.

   ☐ COSC 101
   ☐ COSC 102
   ☐ COSC 202
   ☐ COSC 208
   ☐ COSC 290

3. Select any courses below that you have tutored/TAed for:

Check all that apply.

- [ ] COSC 101
- [ ] COSC 102
- [ ] COSC 202
- [ ] COSC 208
- [ ] COSC 290

Skip to question 5

CS Instructor

These questions are for CS Instructors

4. Which courses have you taught in the last five years? *

Check all that apply.

- [ ] COSC 101
- [ ] COSC 102
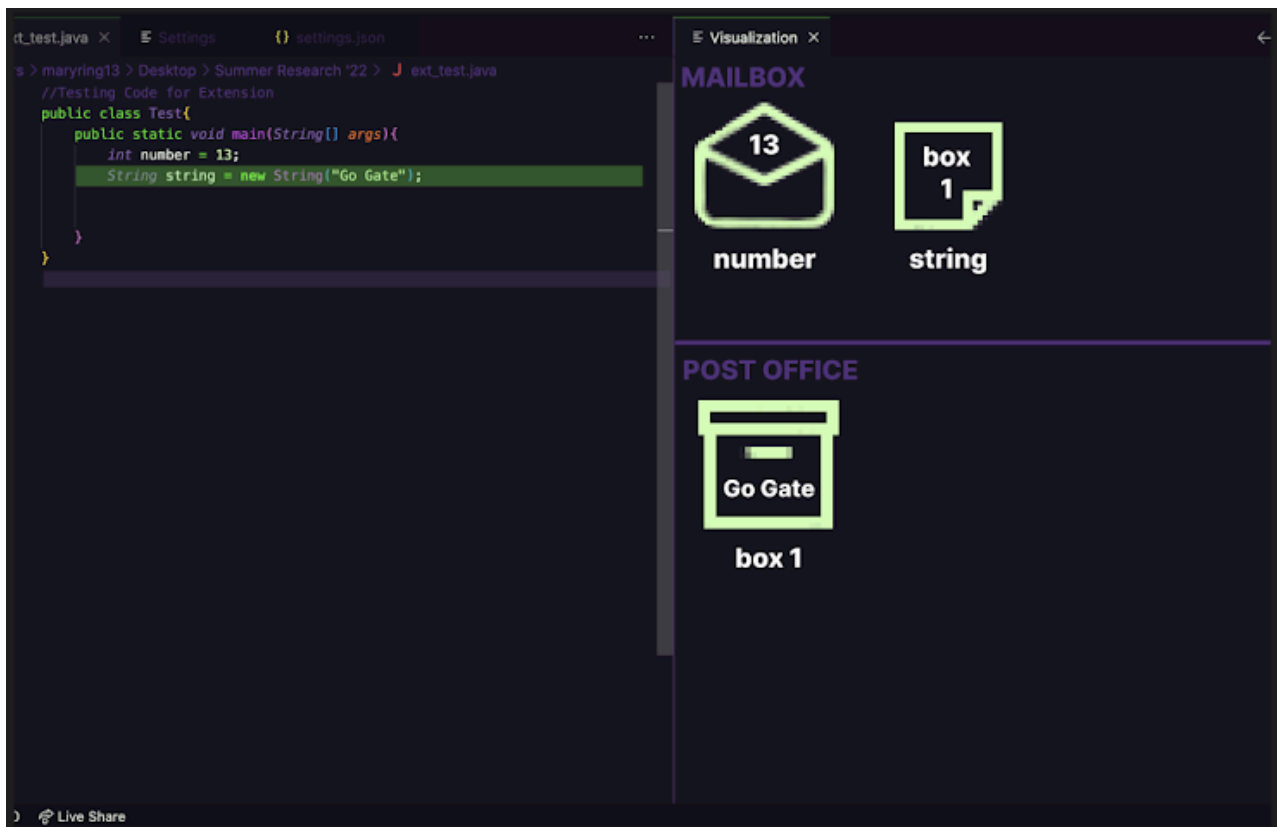- [ ] COSC 202
- [ ] COSC 208
- [ ] COSC 290

Skip to question 5

Postal Office

The post office delivers envelopes directly to your mailbox. For larger items, a slip is left in the mailbox for the package to be retrieved from the post office. In this analogy:

- Envelopes are primitive variables
- Package slips are reference variables
- Packages are reference data

Postal Office Visualization After Executing Line 5


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ct_test.java ×    ≡ Settings    {} settings.json                           ···    ≡ Visualization ×                    ←
s > maryring13 > Desktop > Summer Research '22 > J ext_test.java                  MAILBOX
    //Testing Code for Extension
    public class Test{
        public static void main(String[] args){                                        ┌──────┐      ┌──────┐
            int number = 13;                                                            │  13  │      │ box  │
            String string = new String("Go Gate");                                      │      │      │  1   │
                                                                                        └──────┘      └──────┘
        }                                                                               number         string
    }

                                                                                  POST OFFICE
                                                                                      ┌──────┐
                                                                                      │      │
                                                                                      │ Go Gate
                                                                                      └──────┘
                                                                                       box 1

)  Live Share
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5. **Rate this statement:** The postal office **analogy** makes sense to me (I have experienced this situation before).

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Rating	○	○	○	○	○

6. **Rate this statement:** The postal office **analogy** helps me understand the differences between primitive and reference types.

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Rating	○	○	○	○	○

7. Which aspects of the postal office **analogy** don't make sense to you?

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8. What aspects of the postal office **visualization** don't make sense to you?

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9. What are your ideas for clarifying the postal office analogy or visualization?

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Valet
Service

At an establishment, you can park your car in a nearby parking lot or use valet service. If you park yourself, you have direct access to your car. If you use the valet service, the vale tags your keys and parks/ retrieves the car for you. In this analogy:

- Cars in the customer lot are primitive variables
- The valet key tags are reference variables
- Cars in the valet lot are reference data

Valet Service Visualization After Executing Line 5
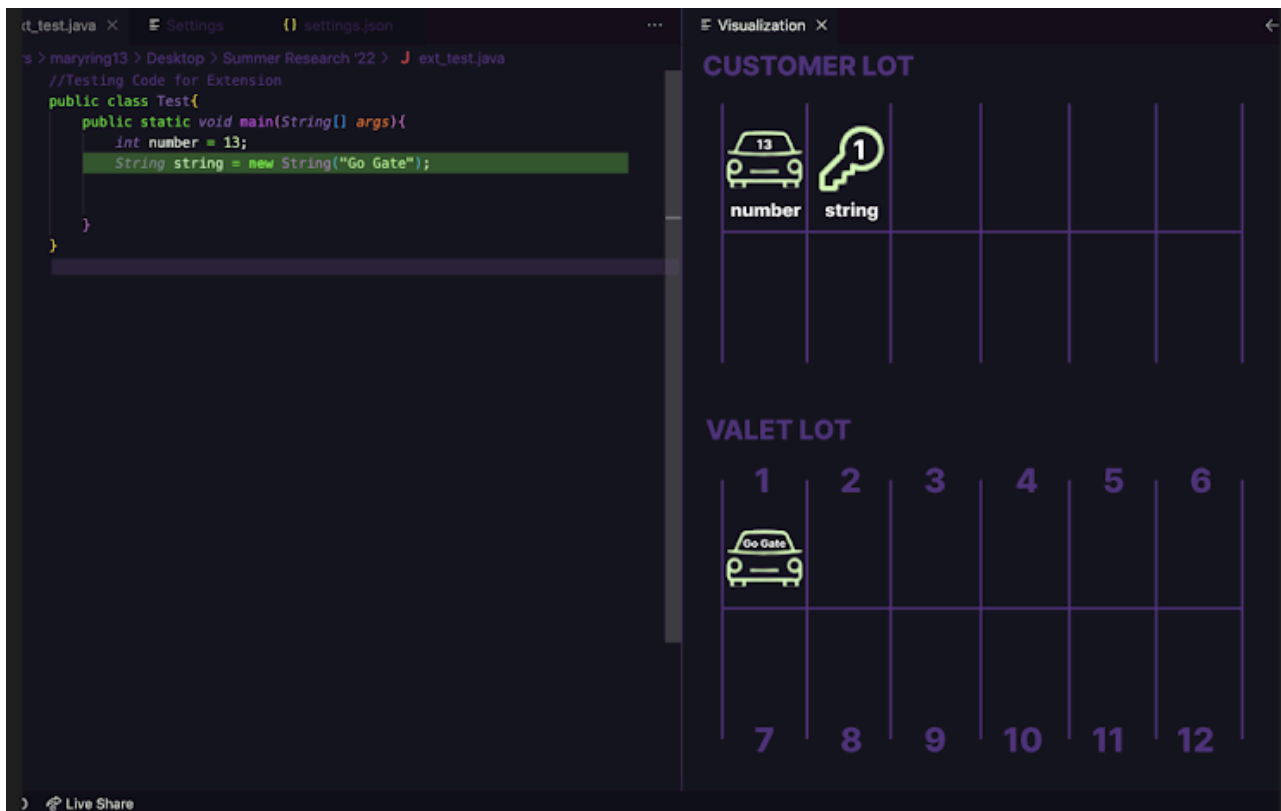
10. **Rate this statement:** The valet service **analogy** makes sense to me (I have experienced this situation before).

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Rating	○	○	○	○	○

11. **Rate this statement:** The valet service **analogy** helps me understand the differences between primitive and reference types.

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Rating	○	○	○	○	○

12. Which aspects of the valet service **analogy** don't make sense to you?

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13. What aspects of the valet service **visualization** don't make sense to you?

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14. What are your ideas for clarifying the valet service analogy or visualization?

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Coat
Check

At a theater, if you have a small coat, you take it to your seat with you. If you have a bulky coat, you use a service to check it. Checked coats are stored in a coat room and the customer holds a tag to retrieve it later. In this analogy:

- Small coats are primitive variables
- Coat tags are reference variables
- Checked coats are reference data

Coat Check Visualization After Executing Line 5
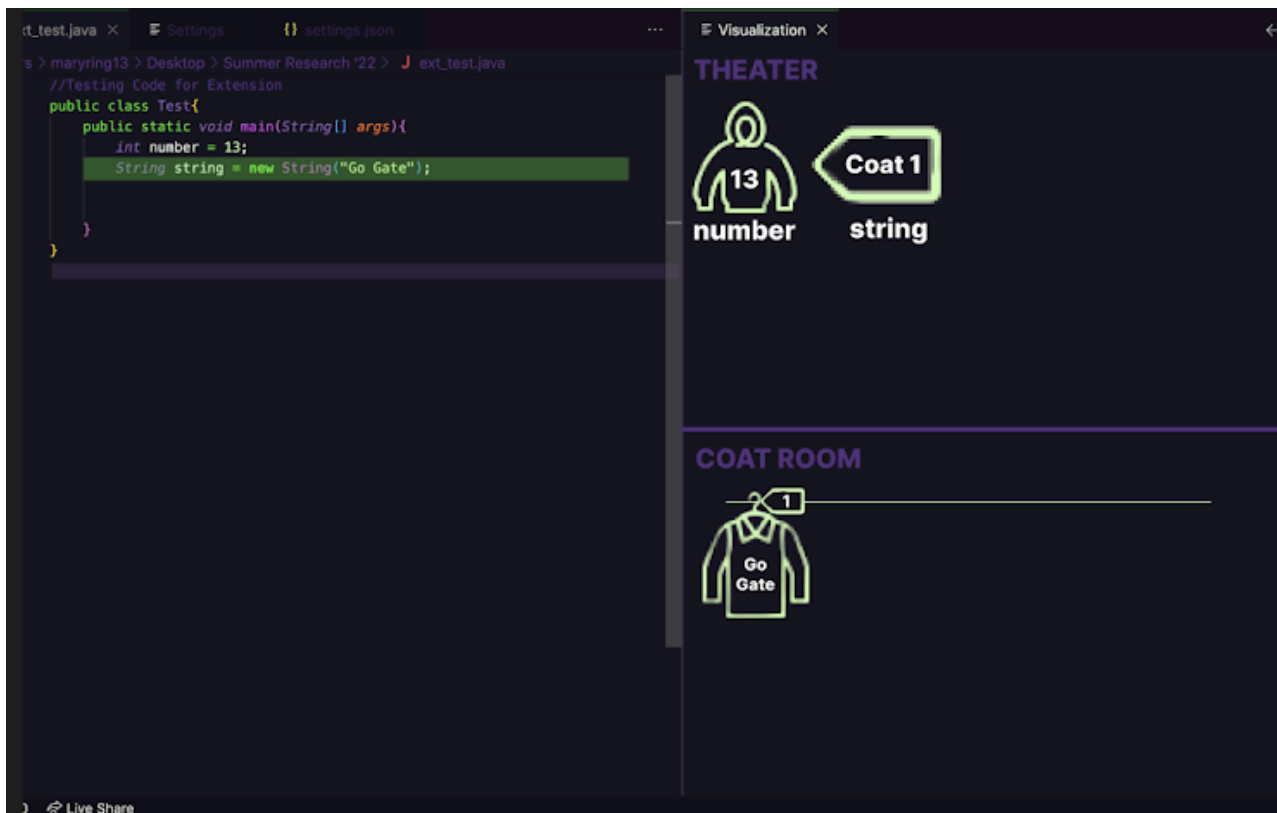
15. **Rate this statement:** The coat check **analogy** makes sense to me (I have experienced this situation before).

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Rating	◯	◯	◯	◯	◯

16. **Rate this statement:** The coat check **analogy** helps me understand the difference between primitive and reference types.

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Rating	◯	◯	◯	◯	◯

17. Which aspects of the coat check **analogy** don't make sense to you?

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18. What aspects of the coat check **visualization** don't make sense to you?

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19. What are your ideas for clarifying the coat check analogy or visualization?

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Restaurant

At a restaurant, if you dine in, your food is served to you at your table. If you order takeout, you are given a ticket to pick up your food at the counter when ready. In this analogy:

- Food at the table is primitive variables
- Takeout tickets are reference variables
- Food at the counter is reference data

Restaurant Visualization After Executing Line 5
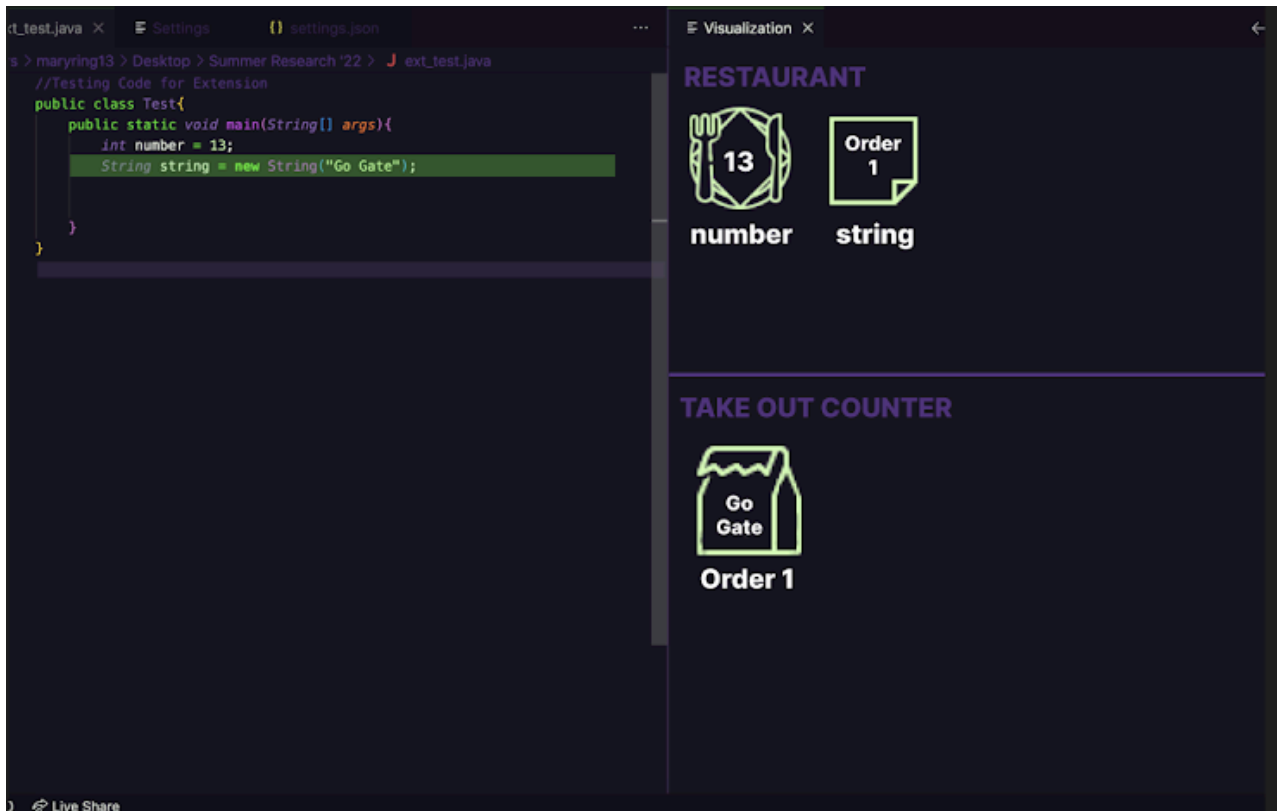
20. **Rate this statement:** The restaurant **analogy** makes sense to me (I have experienced this situation before).

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Rating	⬭	⬭	⬭	⬭	⬭

21. **Rate this statement:** The restaurant **analogy** helps me understand the differences between primitive and reference types.

Mark only one oval per row.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Rating	⬭	⬭	⬭	⬭	⬭

22.   Which aspects of the restaurant **analogy** don't make sense to you?

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23.   What aspects of the restaurant **visualization** don't make sense to you?

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24.   What are your ideas for clarifying the restaurant analogy or visualization?

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Comparing All
Four

Here's the link to re-visit all four options if you'd like to refresh your memory:
link

25. Which **analogy** are you most likely to use as a study/teaching tool? *

    Mark only one oval.

    ◯ Postal Office

    ◯ Car Valet

    ◯ Coat Check

    ◯ Restaurant

    ◯ I would not use any of the options to study/teach

26. Which analogy/visualization pairing most clearly shows the differences between primitive and reference types?

    Mark only one oval.

    ◯ Postal Office

    ◯ Car Valet

    ◯ Coat Check

    ◯ Restaurant

27. Considering both analogy and visualization, how would you rank the four options? *

    Mark only one oval per row.

	Least Favorite	Third Favorite	Second Favorite	Favorite
Postal Office	◯	◯	◯	◯
Car Valet	◯	◯	◯	◯
Coat Check	◯	◯	◯	◯
Restaurant	◯	◯	◯	◯

28. Do you have any final comments on how to improve the analogies or visualizations?

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