Participant ID

Enter your participant ID

[   ]

Background and Demographics NEw

How do you describe yourself?

○ Man

○ Woman

○ Non-binary

○ [   ] Prefer to self-describe

○ Prefer not to say

Are you currently enrolled as a student at the University of Waterloo?

○ Undergraduate

○ Master's

○ PhD

○ No

What is your program?

[   ]

Please enter your current school term in the field below

[   ]

Have you passed the course CS 246 - Object-oriented Programming?

○ No
○ Yes

Have you passed or are you enrolled in CS 247 - Software Engineering Principles?

○ Yes
○ No

How would you rate your familiarity with the following concepts?

	Poor	Satisfactory	Good	Great
C++	○	○	○	○
Object-oriented Programming	○	○	○	○
Graph database	○	○	○	○

Do you have any work experience as a software developer?

○ Yes
○ No

How much work experience do you have as a software developer/engineer (number of months or years)?

[   ]

What was the size of the largest codebased you worked on? (e.g., over 1,000 lines of code)

[   ]

IDE Preference

What is your favourite code editor? Specifically, the code editor that you will use for this study.

[   ]

Block 6

You have finished the demographics form.

Please let the researcher know you are done with that part of the study before moving to the next part. You will be provided with the link to Neo4j Browser tutorial, which you mst complete before proceeding with the study.

You should also start sharing your screen and close your camera for the video recording.

Block 7

For this study you will perform six tasks: three using your preferred code editor and three using Neo4j Browser. The questions are

grouped together so you will not have to alternate between tools. Each question specifies the tool that should be used.

IDE

For this question, please use your favourite code editor.

Throughtout the program, there are variables being assigned an expression that refers to data within the chessboard array (**arr**). For all such assignments, name (1) the variable being assigned and (2) the function in which the variable assignment occurs. Please ignore assignments executed within **Board::swap**, **Board** copy/move constructors, and **Board** copy/move assignment operators.

```

```

For this question, please use your favourite code editor.

The identification of legal moves (**legalMoves**) is <u>directly</u> or <u>indirectly</u> called by which functions?

```

```

For this question, please use your favourite code editor.

Which function(s) check whether a player (i.e., **side**) has no possible moves (**noMoves**) and uses one of its own arguments when calling **noMoves**? For each such instance, name (1) the function that calls **noMoves** and (2) that function's parameter in the call to **noMoves**?

Browser

For this question, please use Neo4j Browser.

Throughout the program, there are variables being assigned to data within the chessboard array (**arr**). For all such assignments, name the variable writing to **arr**.

For this question, please use Neo4j Browser.

Which functions may <u>directly</u> or <u>indirectly</u> check if a piece is pinned in the board (**isPinned**)?

For this question, please use Neo4j Browser.

Which function(s) move a piece (**movePiece**) and uses one of its own arguments when calling **movePiece**? For each such instance, name (1) the function that calls **movePiece** and (2) that function's parameter passed to **movePiece**?

Block 8

You have finished the study tasks. Now we will ask you some feedback questions about your experience.

You can stop sharing your screen now. Please let the research now you have finished the tasks to stop the video recording.

Participant Feedback

How much do you agree with the following statements?
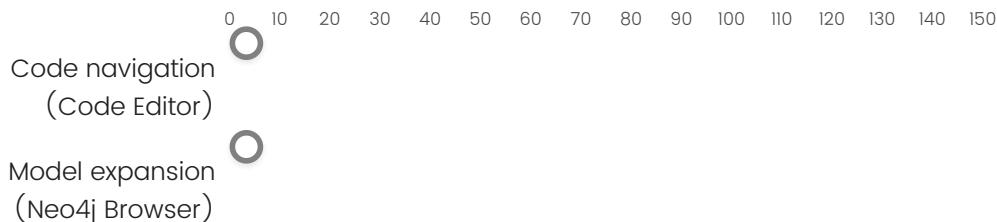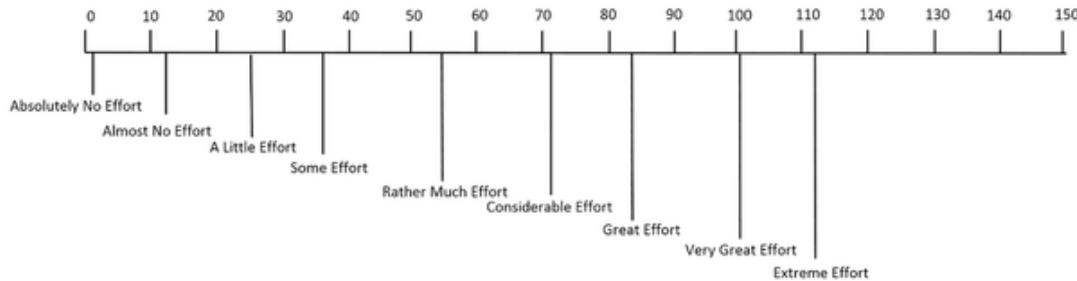
	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I found that interpreting the model expansion to be unnecessarily complex	○	○	○	○	○
I found the model expansion very complex to understand	○	○	○	○	○
I found the model expansion was easy to create and read	○	○	○	○	○
I found the model expansion made it easier to understand the program behaviour	○	○	○	○	○
I needed to learn a lot of things before I could understand the model expansion	○	○	○	○	○
I thought the model expansion was easy to use	○	○	○	○	○
I would imagine that most people would learn to expand the model very quickly	○	○	○	○	○

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I found that the model expansion increased the mental effort to perform the tasks	○	○	○	○	○

Place a mark on the scale indicating the mental effort you applied for each type of task

	0	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150

Code navigation (Code Editor) ○

Model expansion (Neo4j Browser) ○

Suppose you have $100 dollars to spend on features that could improve the program comprehension through model expansion, and that the number of dollars assigned to each feature represents the feature's importance. Distribute your $100 dollars among the following features:

Show answers to more than one question about a node at the same time $ | 0

Expansion preview (e.g., number of nodes that will be added) $ | 0

More questions (provide some examples) [   ] $ | 0

Total $ | 0

Please use the box to input any additional comments you may have about the interface