Pre-Study

* Each activity is prepared in advanced before the participant arrives.
* The researcher will set the save location and participant number in the data collection program.
* The researcher will make a copy of the programming activities for the current participant so changes will not override the master copy.
* Participants are welcomed.
* Participants are led to the area where the study will be conducted and offered water.
* The researcher will explain the study to the participant.
* It will be explained that no video will be recorded of the user, only the location of the gaze points and relative movements of their eyes will be collected.
* The researcher will then gain consent from the participant and continue with the study.

Study

* Participants will then be placed in front of a computer, with their eyes approximately 60cm away from the centre of the computer monitor.
* The Tobii EyeX will be calibrated for the participant.
* The user will be instructed that they will be performing several different activities whilst their gaze data is being recorded.
* Each activity from *table 1* will be completed in random order, with the NULL activity coming last. Each activity will be allocated 5 minutes.

*Table 1*

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| **Activity** | **Description** |
| 1: Reading Text | The participant is asked to read a passage1 and then quickly summarise the passage to the researcher. The participant continues to read until they have completed the story. No interaction with keyboard/mouse apart from the left and right keys to change the page. |
| 2: Watching Video | The participant is asked to watch a short video2 and then quickly summarise the video to the researcher. No interaction with keyboard/mouse. |
| 3: Googling to Find Answers to Multiple Quiz Questions | The participant is presented with a list of 10 questions3 they need to find the answers to using Google. They continue trying to find the answers until 5 minutes has elapsed. Interaction with keyboard/mouse permitted. |
| 4: Playing a Simple Game | The participant is presented with a simple game and the rules are explained to the participant. The participant is instructed to play the game until 5 minutes has elapsed. Restarting as many times as needed. Mouse okay. |
| 5: NULL | The participant is presented with a video of white noise and asked to watch the video for 2 minutes. The video is not explained beforehand. No mouse/keyboard permitted. |
| 6: Determining the Output of a Function (Reading Code) | The participant is presented with 3 short functions4 and are asked to determine what the code will print for each one. Interaction with keyboard/mouse permitted. Explain the answers do not matter. Enable VSLocations in tracking software. |
| 7: Writing Simple Algorithms (Writing Code) | The participant is asked to implement 3 different functions. Counting characters, Fibonacci sequence and bubble sort. (Explain Fibonacci sequence and bubble sort algorithm with images.) Interaction with keyboard/mouse permitted. Explain how to see output when testing. Explain the answers do not matter. Explain that the participant can change the code any way they like to complete the algorithm. Enable VSLocations in tracking software. |
| 8: Find and Fix a Bug in a Short Function (Debugging) | The participant is presented with a function6 that is supposed to output a certain value, however the output is incorrect. The participant is asked to identify the fix the bug and confirm that their fix works. Interaction with keyboard/mouse permitted. Explain how to see output when testing. Explain the answers do not matter. Explain that we want the mean of the test scores only, not the max values. Explain that the participant can change the code any way they like to complete the algorithm. Enable VSLocations in tracking software. |

* After each activity, the researcher will stop the current data collection in the data collection program and start the next activity’s collection.

Post-Study

* The participant will be asked to complete a short survey
* The participant will be thanked for their time and the study will conclude