**Assignment 1: Learning and Memory PSY 306 (Winter 2023)**

**Name:**

**Roll Number:**

**Instructions:** Please write your own responses and DO NOT copy or lift text/code from any source, including the attached paper. If you are referring to credible external sources other than the attached paper for your answers, please cite those sources (within the body of text and the provide a reference list at the end) in the APA citation format (<https://www.mendeley.com/guides/apa-citation-guide>). Word limits given are indicative and less than the indicated numbers may also be used.

**Please download this MS word question-cum-response template to TYPE your answers and feel free to add sheets as required. Convert this document to a PDF and rename the file: name\_roll no. before submitting. Please note that answers in this template only will be evaluated and hand-written or scanned answer sheets will not be evaluated. Verbatim copying of any extent and total percent similarity with other sources exceeding 20% will be deemed plagiarized and dealt as per IIITD policies.**

**[Strict deadline for submission: 22 Feb, 11 PM]**

**Q2) Please do the following for this question:**

* **Register on PsyToolkit (**[**https://www.psytoolkit.org/**](https://www.psytoolkit.org/) **) & log in. References**

*Ref-1, Stoet, G. (2010). PsyToolkit - A software package for programming psychological experiments using Linux. Behavior Research Methods, 42(4), 1096-1104. Ref-2,Stoet, G. (2017). PsyToolkit: A novel web-based method for running online questionnaires and reaction-time experiments. Teaching of Psychology, 44(1), 24-31.*

* **Click on ' Get from Library' on the left-hand side panel of the screen.**
* **On the central panel of the screen click on ' Official PsyToolkit experiment library' (**[**https://www.psytoolkit.org/experiment-library/**](https://www.psytoolkit.org/experiment-library/) **)**
* **Scroll down and click on ‘N-back Task (2 back)'.**
* **Scroll down on this page (**[**https://www.psytoolkit.org/experiment-library/nback2.html**](https://www.psytoolkit.org/experiment-library/nback2.html)**) & click under Download on 'The PsyToolkit code zip file'.**
* **Follow the instructions in this video to compile the experiment from the downloaded zip file in the previous step :** [**https://www.youtube.com/watch?v=VIf-UuLbi3Y&feature=youtu.be**](https://www.youtube.com/watch?v=VIf-UuLbi3Y&feature=youtu.be) **.**
* **Read the documentation of the experiment and the detailed instructions of**

**running the experiment and the output data structure (**[**https://www.psytoolkit.org/experiment-library/nback2.html**](https://www.psytoolkit.org/experiment-library/nback2.html)**).**

* **Run the experiment either 'in the browser' or download the compiled experiment offline by clicking on 'Download for Running Offline'**
* **PLEASE CARRY OUT ALL 75 TEST TRIALS given in three blocks of 25 trials each .**
* **At the end, a table of results will be displayed and the column headers of**

**the results table are here** <https://www.psytoolkit.org/experiment-library/nback2.html>  **under ‘Data output file’.**

* **Download the results table (text file ('.txt')) and then answer the following…**

**Insert a figure (wherever required) and paste the MATLAB/Python code for the same. The datasheet generated from the test trials may also be pasted on this sheet at appropriate places. All figures must be properly labelled and should have accompanying captions/legends to provide all information necessary to interpret the figures…**

**A) Which cognitive process does the test measure. Briefly explain how? [1+3]**

[Answer]

**B) Plot two simple bar diagrams showing the average reaction times with their standard deviations (error bars) of the total ‘match’ trials and the ‘false alarm’ trials respectively. [3+3]**

[Answer]

**C) Calculate the mean (M) reaction time of all trials. Split the original data into two parts such that all the trials of one part has reaction time less than M and the trials of the other part has reaction time equal to or greater than M. Next, calculate the total number of erroneous responses (i.e., incorrect responses, false alarms, misses, in match and non-match trials as relevant) and express that as a percentage of the total trial number for both parts of the split data. Report both percentages.**

**Based on a comparison of the above two percentages, what can be concluded about the relationship between response accuracy and reaction time in your experimental data? [9+1]**

**(Hint: report all steps; conclude based on your own data + analysis)**

[Answer]