**User requirement**: Does the assignment indicate which user requirements the evaluation tests the designs against? Are those user requirements objective and testable and properly grounded in the context of use? Is each requirement properly explained and justified?

* **User Requirement 5**: User should be able to locate and enter emojis, punctuations, and numbers on the mobile device with one hand faster than their default (i.e., current or existing) one-handed method of entry (U05-15, U05-16, U05-17, U05-37, U04-09, U04-18, U02-08, U03-06, U03-18, U03-19).

Prototype: Does the assignment contain a quality description of the prototype together with screenshots of the prototype?

* tbc

Purpose, Method, Task: Does the assignment contain a proper summary of the purpose of the experiments, method, tasks and procedures, and participants? Note that you will likely have more than one participant in this individual assignment.

Purpose: To test whether our new keyboard design is faster to locate and input special characters for users who text with one hand

Method:

* We created the prototype on figma for users to use on their phones via the figma app
* Study Design
  + 1 independent variable
    - Keyboard Design
  + 3 different dependent variables
    - Time (s) for Punctuation
    - Time (s) for Emoji
    - Time (s) for Numbers
  + We are using a within-subjects (paired) design.
  + 2 Sessions: within a session we do 1 round for the current keyboard and 1 round for our keyboard, and we randomly assign a keyboard that the participant types on first
  + The participant uses one hand to type on both keyboards.
  + Assume not normal for text entry speed as the sample size is not large enough
    - T-test vs wilcoxon

Task/Procedure:

* We utilize the figma for the tests
* Each task will be performed with only the right hand.
* Each session, we randomly assign a keyboard design (our new one-handed keyboard vs the current iphone keyboard) to the participant (one keyboard per session) for them to type on the first
* Within sessions, participants will write the same texts
* Between sessions, participants will write another slightly different set of texts

Procedure.

Sentences enclosed by quotation marks are what we need to say to the participant word for word. Those that are not in quotations are instructions for investigators on what exactly needs to be done.

1. Obtain consent
   * Explain the purpose of the study: “In this study, we are testing the effect of keyboard design on typing speed.”
   * Briefly explain the participant’s responsibilities: “You will be using two Figma keyboards, which you have to download on your phone, to enter a series of short texts with your right hand (thumb). Specifically, you will need to enter a total of 12 pieces of text and the time for each will be recorded.”
     + 12 = (1 for punctuation + 1 for emoji + 1 for number) \* 2 (keyboards per session) \* 2 (sessions)
   * “The participation of the study is completely voluntary and you may quit the study at any time. The data collected from the study would be completely anonymous and confidential. Should you choose to participate in this study, please respond with ‘yes’, or ‘no’ otherwise.”
2. If the participant agreed to participate, then proceed with the following procedure. If not, then terminate the study and thank the participant for their time.
3. First, ask the participant to download Figma on their phone and sign up.
4. Ask the participant to open the link to the prototype and experiment with the keyboard.
   * <https://www.figma.com/proto/H67CtXLBhiUwUZ64UMXx3i/593-Functional-Prototype?type=design&node-id=1-133&t=KAkYGVyiXmpU6eGJ-1&scaling=scale-down&page-id=0%3A1&starting-point-node-id=1%3A133&mode=design>
5. While they are experimenting with the keyboard, clearly explain to the participants **all of the features in our prototype**.
   * i.e. the different possible interactions
   * See [Functional Prototype](https://docs.google.com/document/d/1sI_Dh_3sXKKnvcT5gzLU5-U1Av7lq92gbFMyW0MzUbA/edit?usp=sharing)
6. After the participant is familiar with every feature of the prototype, explain the instructions for the participants in detail.
   * “I (the investigator) will first assign you one of the two keyboards in Figma that you have to type on first.”
   * “Then, I will show you a piece of text and you have to type this text using the keyboard with *your right hand*.”
   * “Please type (i.e. press on) one character at a time; make sure the current character has been entered (i.e. shown on the screen) before typing the next character.”
   * “Please type at your normal speed *but try your best to* ***not make mistakes***. If you do make a mistake, we have to restart.”
   * Make sure the participant clearly understands the instructions.
7. For both sessions, follow the following instructions exactly.
   1. First, randomly pick one of the two keyboards for the participant to *start* on & clearly tell them which one.
      * Make sure the participant currently has that keyboard opened in Figma on their phone.
   2. Shuffle (randomly) the order of the 4 strings for punctuation, concatenate them into one string (i.e. piece of text), and show it to the participant (either on paper or on a laptop).
      * Make sure the piece of text is in a very large font so the participant can easily see.
        + e.g. hello,hello?hello!hello.
      * Ask participants to look at this piece of text and ask if they have any questions
   3. Start the timer as soon as the participant begins typing, and end the timer as soon as the participant finishes typing the last character in the text.
      * Record this time in the corresponding cell of the table.
   4. If the participant made a mistake, ask them to stop, give the participant a 60 seconds break, restart this test by repeating steps **ii** to **iii** (i.e. need to re-shuffle the order of the 4 strings).
   5. Repeat steps **ii**, **iii**, **iv** for emojis, and then numbers.
      * By the end of this step, the participant would have entered 3 pieces of texts and you would have recorded 3 different times.
   6. Repeat steps **ii**, **iii**, **iv**, **v** for the other keyboard.
      * By the end of this step, the participant would have entered 3 more pieces of texts, with now a total of 6 pieces of texts entered and 6 different times recorded (by you).
      * This ends the first session.
      * Take a 2 minute break.
   7. Repeat steps **ii**, **iii**, **iv**, **v**, **vi** for session 2.
      * Note: please use the strings we created for session 2.
      * Session 2 would result in 6 new pieces of texts entered by the participant with 6 different times recorded.

Tasks

* Session 1 (Practice)
  + 1. Randomly assign a keyboard design (our new one-handed keyboard vs the current iphone keyboard) to the participant for them to type on the first
  + 2. Randomly give out the 12 texts for participants to type on the assigned keyboard
    - a. randomly pick from punctuation, emoji, and numbers
    - b. randomly order the 4 texts within each punctuation/emoji/numbers
  + 3. Ask the participant to type the 4 texts we selected
  + 4. Repeat steps 1 to 3 for the other keyboard the participant has yet to type on.
  + The 12 texts that we randomly give out to the participants from this pool of texts:
    - for punctuation (random order) (start time = first letter, end time = last text done)
    - Ex: hello,hello.hello?hello!
      * HELLO,
      * HELLO.
      * HELLO?
      * HELLO!
    - for emojis (random order)
      * WORLD😐
      * WORLD😆
      * WORLD🙏
      * WORLD😵‍
    - for numbers (random order)
      * BREAD37
      * BREAD42
      * BREAD10
      * BREAD96
  + We time for practice, but not used for analysis
* Session 2 (Actual)
  + 1. Randomly assign a keyboard design (our new one-handed keyboard vs the current iphone keyboard) to the participant for them to type on the first
  + 2. Randomly give out the 12 texts for participants to type on the assigned keyboard
    - a. randomly pick from punctuation, emoji, and numbers
    - b. randomly order the 4 texts within each punctuation/emoji/numbers
  + 3. Ask the participant to type the 4 texts we selected
  + 4. Repeat steps 1 to 3 Randomly give out the same 12 texts participants to type on for the other keyboard
  + The 12 texts that we randomly give out to the participants from this pool of texts:
    - for punctuation
      * HORSE,
      * HORSE.
      * HORSE?
      * HORSE!
    - for emojis
      * WHALE😐
      * WHALE😆
      * WHALE🙏
      * WHALE😵‍
    - for numbers
      * CRUMB37
      * CRUMB42
      * CRUMB10
      * CRUMB96
* We time in seconds to complete each group of punctuation, emoji and numbers separately
  + see table below

Participants’s info: Does the assignment contain a table with participant data from the quantitative user evaluation?

* Do on your own

Results Table:

Session 1 (do not count towards analysis)

|  | Time for punctuation (s) | Time for emoji (s) | Time for numbers (s) |
| --- | --- | --- | --- |
| Our Keyboard Design |  |  |  |
| Existing Keyboard Design |  |  |  |

Session 2 (counts towards analysis)

|  | Time for punctuation (s) | Time for emoji (s) | Time for numbers (s) |
| --- | --- | --- | --- |
| Our Keyboard Design |  |  |  |
| Existing Keyboard Design |  |  |  |