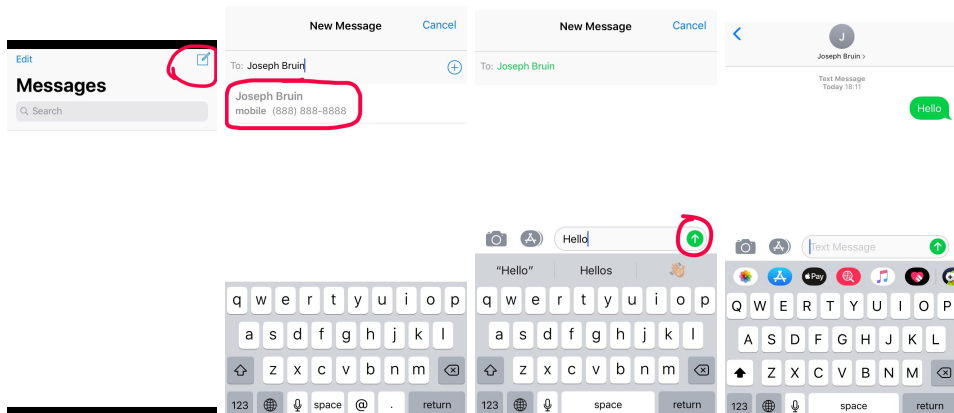


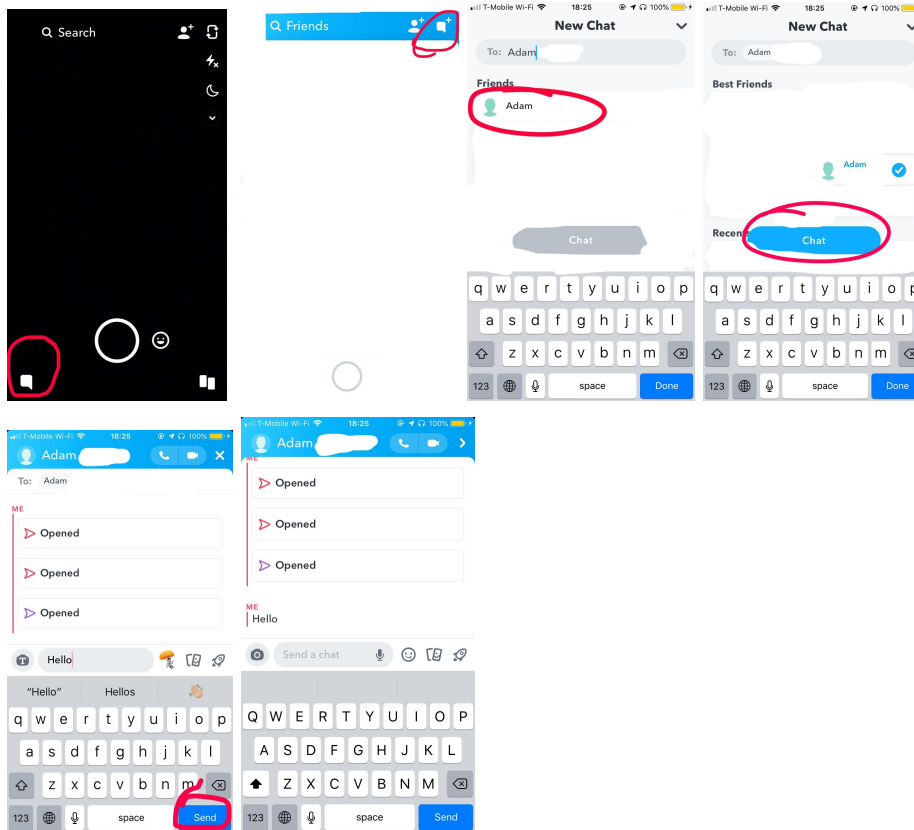
- a. The three applications are Snapchat, Instagram, and iMessage. The task is sending a direct message to one other person. The hypothetical user is inexperienced with technology, so recognition time is very important to them. Of these three applications, iMessage allows users to complete the task of sending a direct message most quickly. With iMessage, sending a message is very clear because this is the only function of the application. With Snapchat, one can also watch stories, view memories, or take a picture. With Instagram, one can also watch stories, scroll through a main feed of pictures, scroll through an explore page, scroll through an activity feed, take a picture, or post a picture. Thus, with Snapchat and Instagram, the direct message functionality is not as prominent. For iMessage, on the other hand, it is the only functionality; resultantly, iMessage has a very short recognition time. For someone who is not as familiar with technology, this will be much more important. Instagram makes the task the slowest because it has the most extraneous functionalities compared to iMessage and Snapchat. Thus, in terms of recognition time, Instagram is slower than iMessage and Snapchat for sending a direct message.

iMessage: (movements are marked with red circles)



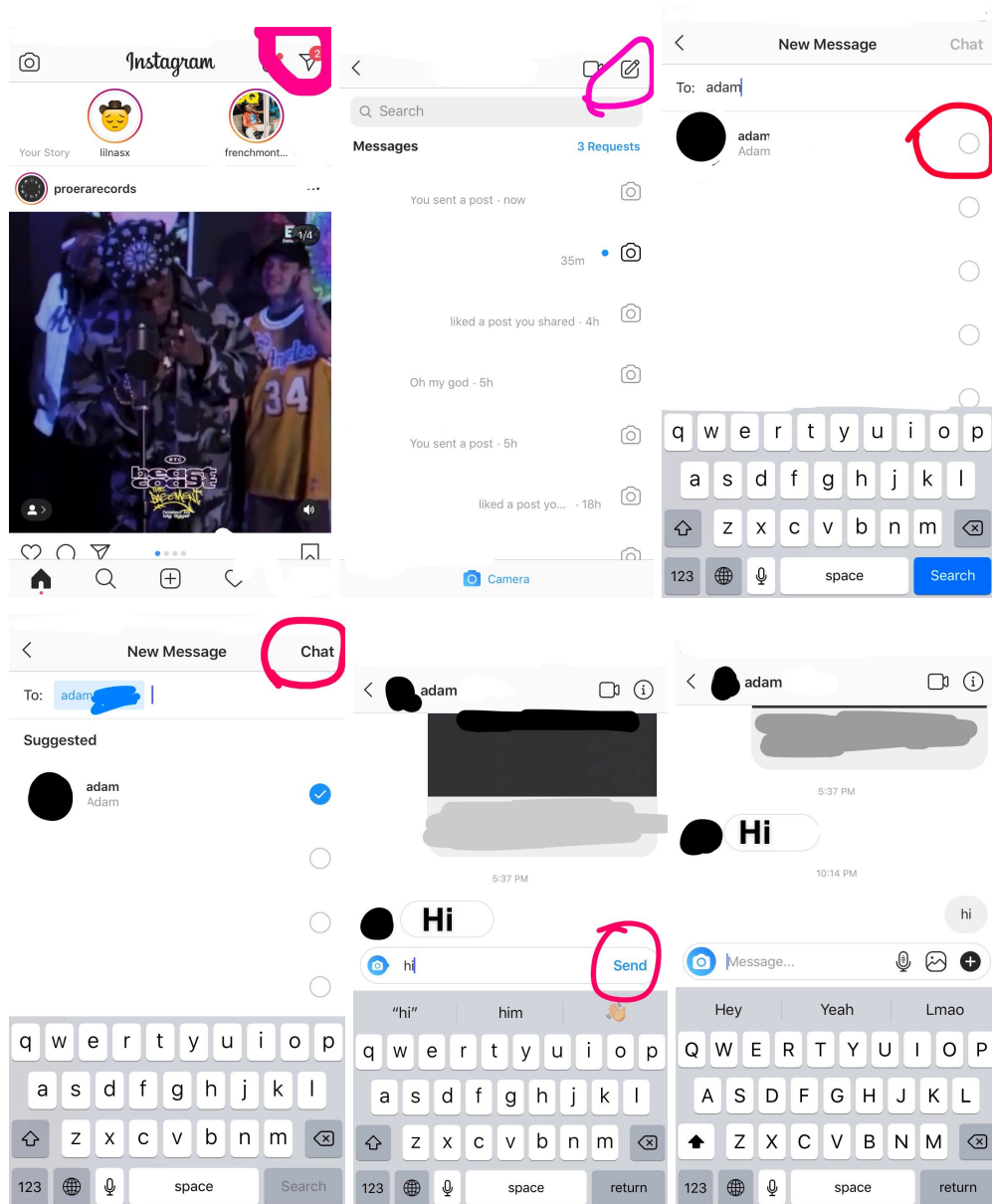
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Snapchat: (movements are marked with red circles)



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Instagram: (movements are marked with red circles)



b.

Fitts's Law:  $P = C1 + C2 (\log_2(2D/W))$

Used cm for all.

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Since all three applications are mobile applications there is no mouse over to show where the user starts.

$C1$  and  $C2$  are constants depending on device which will be the same for all–  $D$  is distance to the center of the target –  $W$  is size (width) of the object.

For all since there is no pointer, we assume that the pointer starts in the center of the device.

Note that the device we calculated  $P$  was on iPhone 6 for all the applications.

- Instagram

$$D1 = 5.5 \text{ cm}, W1=0.5\text{cm}$$

$$P1= C1+ 4.46C2$$

$$D2= 5.5 \text{ cm}, W2= 0.5\text{cm}$$

$$P2= C1+ 4.46C2$$

$$D3= 5.5 , W2=0.5 \text{ CM}$$

$$P3= C1 + 4.46C2$$

$$D4= 2.5\text{cm} , W4=0.8\text{cm}$$

$$P4= C1+2.64 C2$$

$$j\text{Total } P \text{ for Instagram} = 5C1 + 16.02C2$$

- Snapchat

$$D1 = 5.2 \text{ cm}, W1=0.5\text{cm}$$

$$P1= C1+ 4.38C2$$

$$D2= 5 \text{ cm}, W2= 0.5\text{cm}$$

$$P2= C1+ 4.32C2$$

$$D3= 2.5 , W2=5.2 \text{ CM}$$

$$P3= C1 - 1.04C2$$

$$D4= 1\text{cm} , W4=3.5\text{cm}$$

$$P4= C1-1.8 C2$$

$$D5= 5\text{cm}, W5=1.4\text{cm}$$

$$P5= C1 + 1.83C2$$

$$\text{Total } P \text{ for Snapchat} = 5C1 + 7.69C2$$

- iMessage

$$D1 = 5.2 \text{ cm}, W1=0.5\text{cm}$$

$$P1= C1+ 4.38C2$$

$$D2= 3 \text{ cm}, W2= 5.6\text{cm}$$

$$P2= C1+ 0.099C2$$

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$D3 = 5.5$  ,  $W2 = 1.5$  CM

$P3 = C1 + 2.87C2$

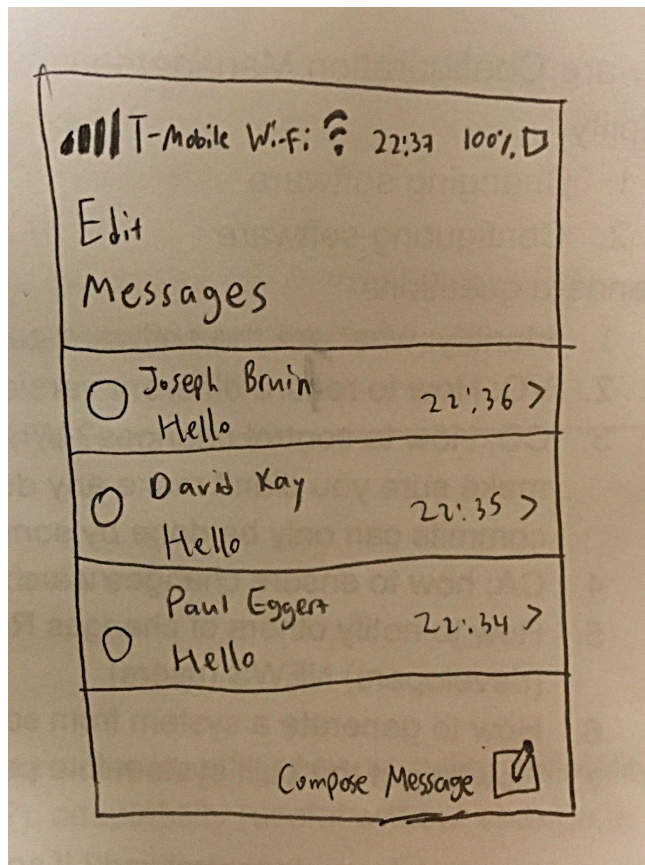
Total P for Snapchat =  $5C1 + 7.35C2$

Based on Fitts's law, it takes less time for iMessage then Snapchat, and finally Instagram.

c.

The result from part a and b are identical as iMessage is the fastest, then Snapchat then Instagram. This makes sense as iMessage is solely a messaging app; it should be simple and fast. Snapchat is sort of a messaging app with a few more features. Instagram is not a messaging app so it is not unexpected that it has a slower time compared the other two applications.

d. Our best performing application was iMessage. The redesign is shown below:



d.1. In our redesign, we moved the "Compose message" button to the bottom right of the screen. We also added a description for the button that simply says "Compose Message", because in the original iMessage application, one has to assume the functionality of the button. In the original

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iMessage, one must understand the context of the notepad and paper and understand that that is a reference to writing a message. By adding in the label, people who are less familiar with this will be able to know right away where they can click in order to compose a message. It does not take up much space on the screen, so it does not make the screen more cluttered in any way. It only helps the user more quickly understand the functionality of the application. The reasoning for moving the button to the bottom right portion of the screen is that it will make it easier for most users to click on it. Most users are right handed, meaning that most users hold their iPhone with their right hand. In the most natural and most common way to hold the iPhone, this means that the right thumb is very close to the bottom right corner of the phone. Thus, by moving the button in that direction, it is very easy for users to start composing an iMessage. This reduces the hassle of having to move the thumb all the way up to the top of the screen, reducing the distance from the starting point to the target. This reduces the time according to Fitts's law.

d.2.

