YouNote

Formative Research Report

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Introduction

YouTube is one of the effective tools that many students use for their learning. However, students feel discomfort when they watch YouTube and try to take notes at the same time. A user might need to use the spare computer or note to watch the big size of video. Also, a user cannot easily copy the information from a video to one's own note. Programmers, in particular, must stop and play a video to type in the code provided by the video, and work alternately between the video page and the note page if they want to watch the widescreen video. Thus, our team will create a useful note-taking solution using YouTube especially for programmers.

There are several reasons why our note-taking solution using YouTube is needed. There are many books that have been written by a lot of scholars and useful sources to learn programming. However, reading books can be time consuming and can be too hard to understand from the first place. Even though YouTube provides concise and easy explanations, YouTube does not provide a good environment to watch a video and take a note at the same time for students.

There are several existing solutions about this problem. The existing solutions are Rocket Notes, Gnotes, and YouTube notes. However, these solutions have some shortcomings. For example, the font size cannot be changed by a user, the video cannot be seen because of the big size of a note, or the note disappears when the video size is increased. Our application, YouNote, will provide functions that allow users to create a Notepad as a background and to place any size of a video on top. Also, a user can put sticky notes anywhere on the note to emphasize something. A user can use screen capture mode to capture a part of video and put on the note. The high level goal of our project is making code environments that allow users to type various languages in notepad.

Background

Since the Internet has influenced our lives, YouTube has become an integral part of our education. According to our survey while studying through YouTube, students have a lot of things to take notes, and there are many students who feel uncomfortable when using YouTube and Note-taking apps respectively. We already have some solutions to this problem but they still have shortcomings.

Evernote is one of the services optimized for note-taking. A user can click the Evernote icon on the top tab then the notepad screen appears that covers parts of the video (Figure 1). It is necessary to turn the notepad on and off to see the covered part and a user is not able to move the notepad.

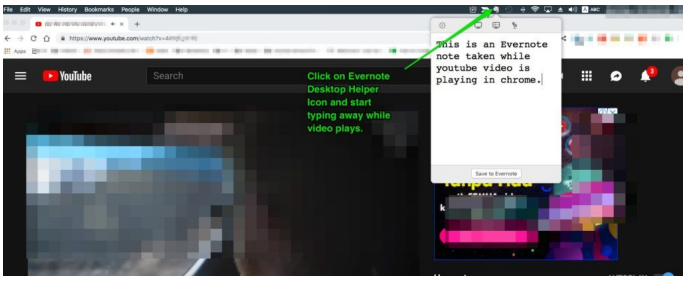

Figure 1: A user can click the Evernote desktop icon to take a note

RocketNote is a note-pad application that makes users be able to note-taking on YouTube (Figure 2). One of the features from the RocketNote is timestamping of video in the note. However,

because every note has a timestamp, it can be considered an unnecessary feature if you need to make notes without needing this feature.

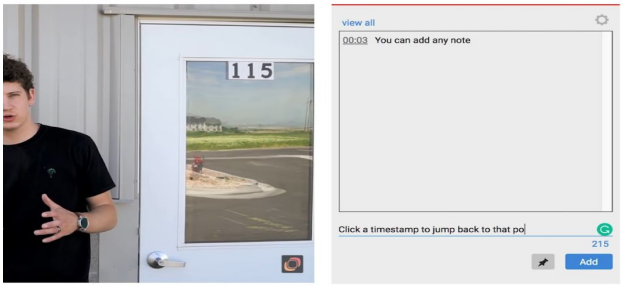

Figure 2: RocketNote provides timestamp and tagging functions

YouTube Note is also a chrome extension based application which provides note-taking features (Figure 3). The Notepad hides the partial screen of the video after it runs. And when a user clicks on the video screen to stop the video, the note pad disappears.

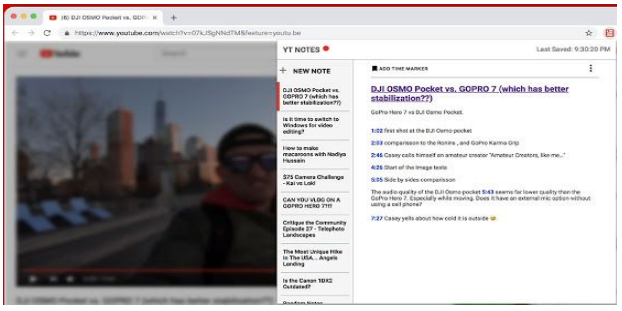

Figure 3: YouTube Notes provide timestamp function

GNote is an application that is an integration of YouTube video and Google doc (Figure 4). While watching the video to take a note, we have to scroll down to see the notepad in Google doc screen. Unless we have a large monitor, watching YouTube and taking a note cannot be accompanied at the same time without scrolling up and down.

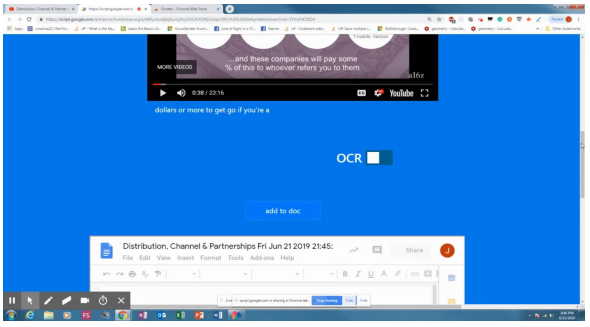

Figure 4: A user can use Gnote to make a google doc while playing a video

YouNote's notepad will be placed as background and the video screen will be hovering on the notepad. Advantage of YouNote is that users can resize the video screen which will provide more convenience to users when their note line is hidden from the video. Since our target user is CS students, we focus on note-taking features that users can choose from various code environments such

as python and javascript in our notepad. We believe note-taking applications with our feature will be an effective tool for any online learners on YouTube as well.

Target Users

Our target user is CS(Computer Science) students. By using YouNote, CS students can relieve the inconvenience of going back and forth between several programs and video sizing problems. The reason why CS students need YouNote the most is that other note applications literally function only as notes, but YouNote has a feature that supports programming code in the notepad. Therefore, YouNote is the most suitable note taking application for CS students.

Formative User Research

In-depth Interview

Participants were recruited from our CS undergraduate and graduate students. We selected interview questions related to our projects before the interview and as we go through the interview, we were able to ask more questions based on the response of the interviewee as we were processing the interview. Our group was able to come up with different ideas through the interview.

Overall, the interview was conducted in an informal environment so that we do not pressure the interviewee. Student A has taken CSE 316, 320, and other many classes higher than 300. We started off with the easy questions that are not directly connected to the answers that we were looking for. He responded that he uses YouTube to study computer science. He also added that some professors provide YouTube links to study more about the lecture contents. Student A offered several ideas of functions such as sticky notes and screen capture.

Student B is a freshman student who has taken CSE114. She does not have a good amount of experience in computer science and is still struggling with how programming languages work. She does not use YouTube to learn programming. She prefers asking questions to the TAs because it is easier to contact them. Moreover, she prefers to take a note with her own hand, not electronic devices.

Student C is a CS graduate student who deeply agreed with our idea. During the interview he expresses his opinion that he wants more than the existing notepad functions. One of features from YouNote is providing a screenshot with video screen size. C wants a function to recognize subtitles appearing on videos with machine learning technology and make it appear in notes as text. He even quoted “It would be an innovative notepad application to have the function to write text automatically using voice recognition”.

Majority of CS students have an experience of learning programming through YouTube. Not only that, they are also using YouTube to study programming these days. Overall, interviewees agreed with our idea and it will be very helpful for them when they use it.

Survey & group discussion

Since our target users are CS students, we sent the survey link in SUNY Korea CS group chat. Moreover, we asked classmates who are majoring in CS through private kakao chat. We prefered junior and senior CS students, because we want responders who have various learning experiences especially in programming.

We organized our survey questions after we finished in-depth interviews because we wanted to add more critical questions that we could not make by ourselves. Therefore, we made 13 questions to get the data from respondents about their learning experiences and opinion on our product. We

created a google survey form and sent the link to the CS students and collected the responses. With the collected datas, we discussed how to improve our project.

Through the survey results, we were able to find out that 86.4% of respondents responded that video is the most effective learning material to learn programming because it can give visual support, and easy to go back and review unclear concepts (Figure 5).

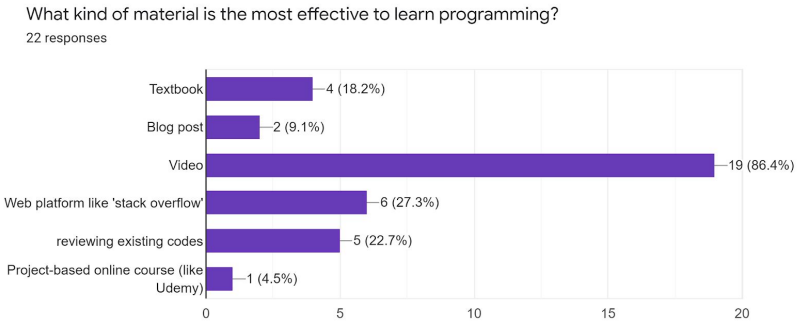

Figure 5: Effective Material

When they are watching videos, 72.7% of them are using two or more programs or windows in a single screen to take a note or reviewing code (Figure 6). Therefore, 45.5% of them experienced uncomfortable moments since they have to switch screen and window several times to take a note while they are watching videos (Figure 7). Therefore, when we asked responders “Do you think it is helpful if you can take a note on the same screen with video?” 95.5% of them said “yes”. Moreover, the top 3 functions that responders most desire were attaching sticky memo, screen capture, and code writing function (Figure 8 & Figure 9).

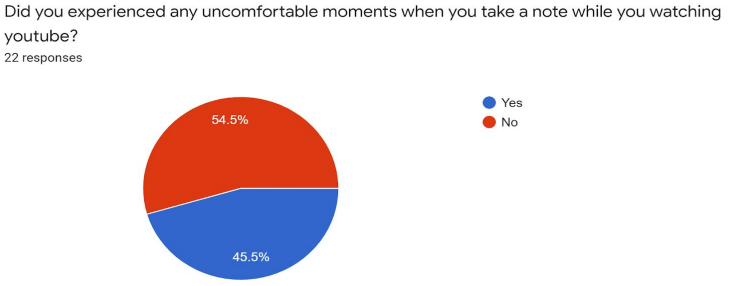

Figure 6: Use of Two Programs

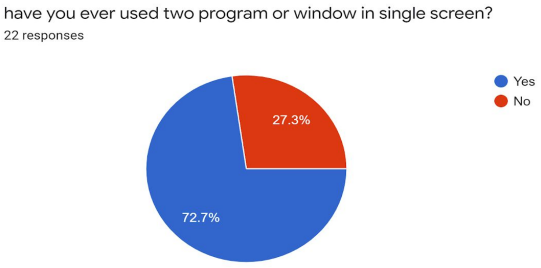

Figure 7: Uncomfortable Moments

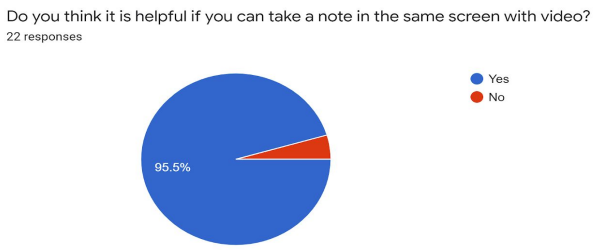

Figure 8: Most People Think Taking a Note While Watching a Video Will Be Helpful

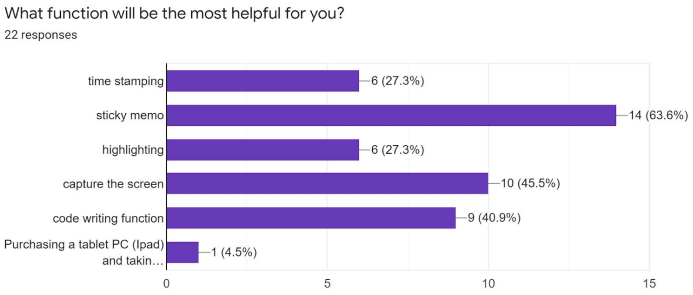

Figure 9: Helpful Function

Conclusion

As we walked through the process of survey, in-depth interviews, and focus group discussions, we decided that the note-taking application will be useful to the CS students who are using YouTube. Majority of the students use the Video material to study. CS students prefer video materials like YouTube than textbooks because it is easy to access and better to understand when it is visualized. Students usually use two-sided screens or go back and forth to other applications to follow up with the video. But they have faced difficulties because sometimes video gets too small to see the following code when using the two-sided screen and easy to lose track of the video when moving to other applications.

Many students did not feel the necessity for the note-taking application, but when we asked them if there is one existing(note-taking application), Majority of the students agreed that we will be helpful if the note-taking function exists on the same screen as the video. Our group discussed what functions would be helpful if we decide to make it, one of the main functions was code writing functions. But as we conducted the survey and in-depth interview, many students want sticky note function and capturing screen function of the screen. So we will focus on the functions that users want and provide what they want.

References

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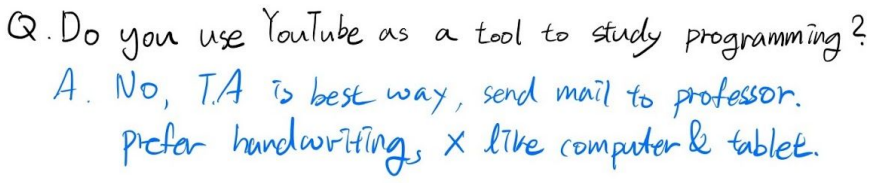
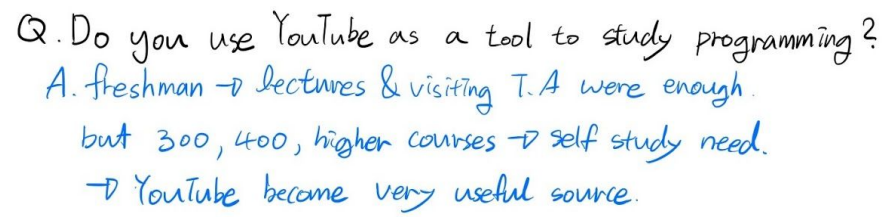
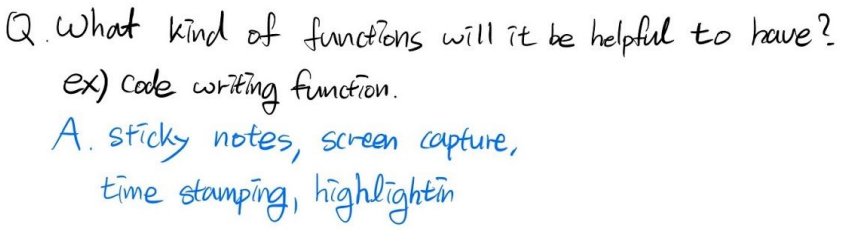
Appendix



[Appendix 1. Interview B, March 25, 2020 8 PM by all group members]

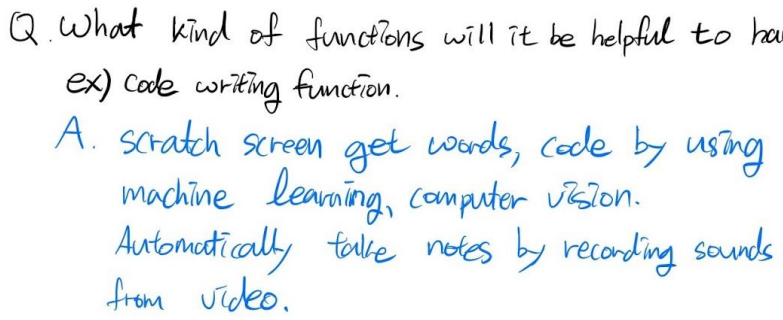


[Appendix 2. Interview A, March25, 2020 9PM by all group members]



[Appendix 3. Interview A, March25, 2020 9PM by all group members]

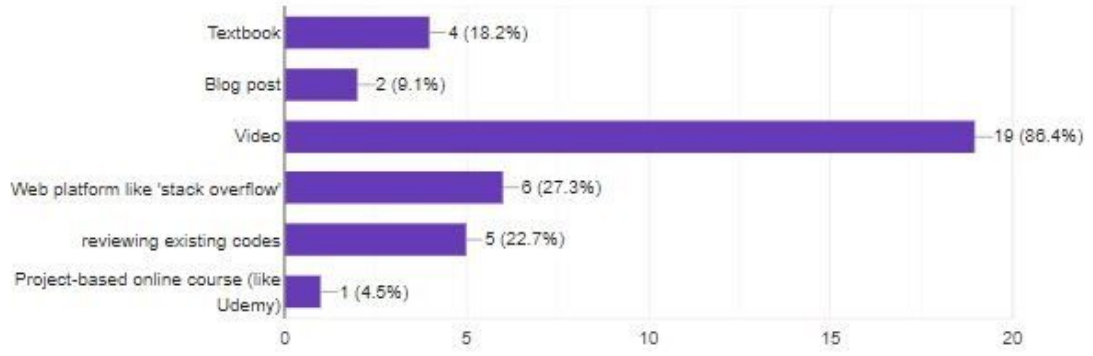
[Appendix 4. Interview A, March25, 2020 9PM by all group members]



[Appendix 5. Interview C, March26, 2020 7:30PM by all group members]

What kind of material is the most effective to learn programming?

22 responses



Why do you think it is the most effective material?

21 responses

Because I can get visual support

Provides a clear explanation and a feature to replay the content.

Can imirate easily

I think it will be more easier to understand and follow.

video

I can try coding while watching the video

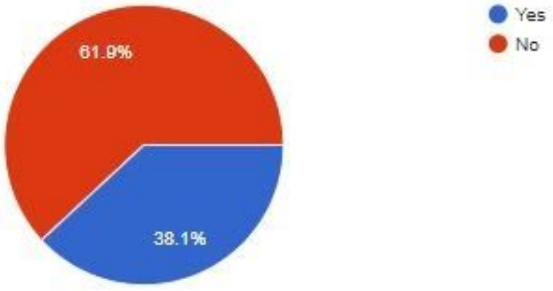
It's easy to go back and review the point that I didn't understand.

Easier to understand with visual

Easy and quick

Do you have any problem while you use that material?

21 responses



Untitled Section

What was the problem?

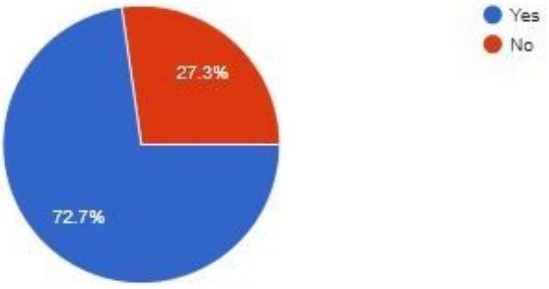
8 responses

- Many of materials are eng. This is crititical who are not good at eng.
- I have to change screen very often to take a note, and cannot copy the words from the video
- Sometimes, I need to spend time to find exact solution for the problem.
- While watching video when i do note-taking, it was quite annoying to switch between the video and notepad
- Applying to my codes was difficult sometimes
- I had look back and forth to review the code on my screen
- When I have to take a note while watching the video (which is necessary most of the time), it was disturbing to use other window back and forth on my laptop.
- It is hard to go back and forth on video screen to other screen.

Untitled Section

have you ever used two program or window in single screen?

22 responses



What was the purpose?

16 responses

-

To easily navigate around both programs/windows.

debugging, take a not while watching video, write a code while watching video or blog

For debuging

multitasking

To watch a video and take a note at the same time.

For note-taking

To see the references

using for windows and mac ox

Untitled Section

How do you use youtube to study programming?
19 responses

- Watching the lecture and mimick the code.
- Turn it on and code after
- search a lecture and watch them
- For my eng speaking mostly.
- To watch lectures
- Search for a specific topic and listen
- I didnt
- I watch a youtube video to understand with the detailed explanation.
- To figure out concepts or hard to grasp content

What do you think are the benefits of using youtube to study programming?
21 responses

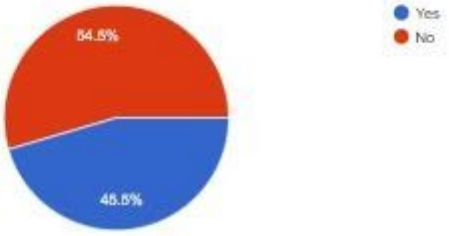
- Thesedays lots of free coding materials on youtube. I like it
- Easy to understand and follow the steps.
- Variety of topics and quite good explanation
- it can explain very specific steps
- Um... many different kinds.
- Its really helpful
- Number of good data and explanation
- Donno
- I can understand something with image explanation.

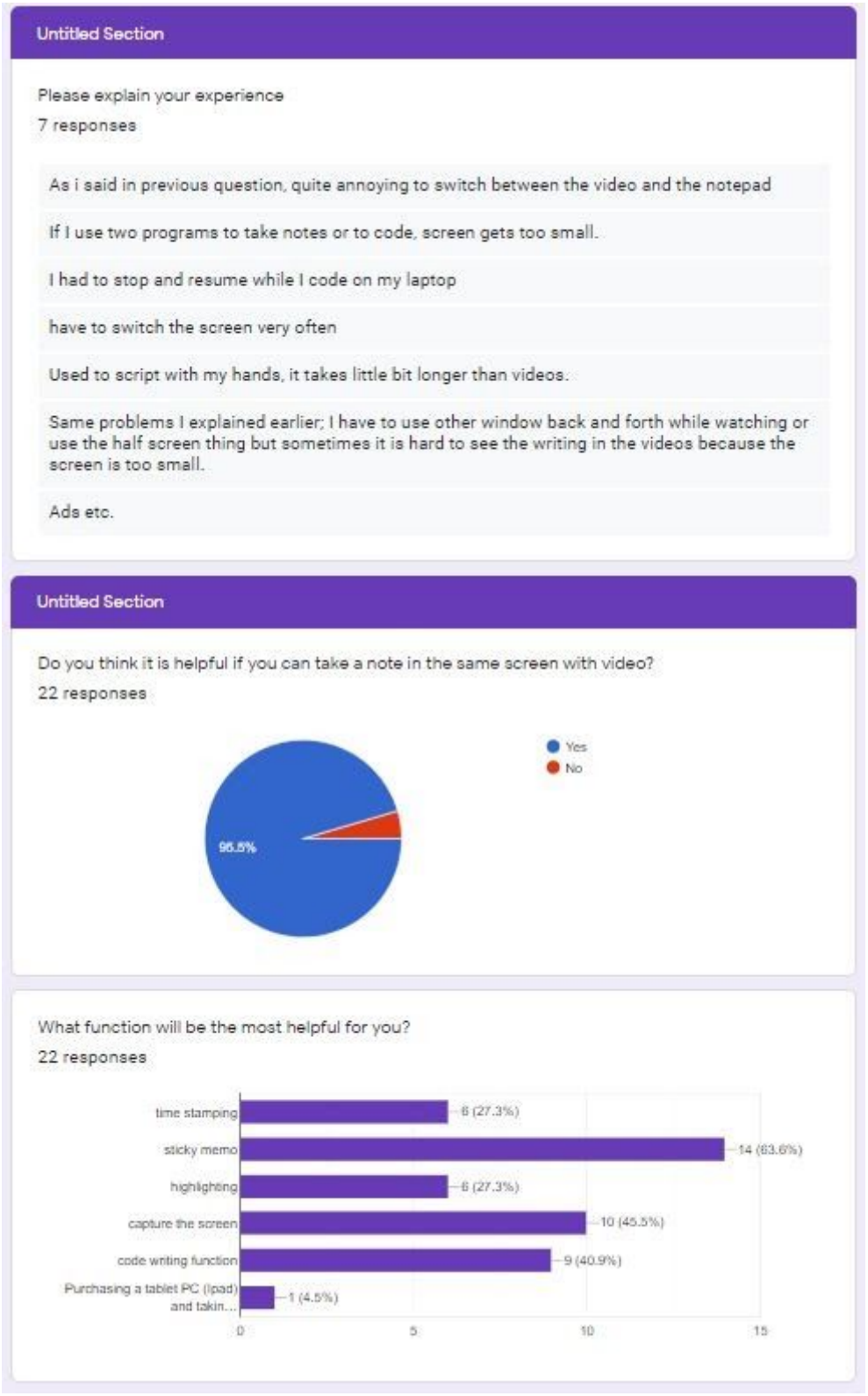
Which material you use to take a note while you watching youtube?

22 responses

Did you experienced any uncomfortable moments when you take a note while you watching youtube?

22 responses





[Appendix 6. Survey Responses]